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PAUL SEABRIGHT

Foreword by Daniel C. Dennett

THE COMPANY OF STRANGERS

A NATURAL HISTORY OF ECONOMIC LIFE

Revised Edition

CHAPTER 5

How Did the Social Emotions Evolve?

Three Explanations for the Evolution of Strong Reciprocity

For social primates like us, navigating a room full of other members of our species requires us to launch the shaky vessel of our psyche onto an unpredictable hormonal tide. Where are the people we know? As we scan the horizon our cortisol levels rise, and blood pressure rises too. There's a wash of oxytocin as a friend moves into view—she did us such a kind favor the other day. But then, when she fails to notice us, the stress returns. Was it a deliberate snub? Or would it be worse if it was unintentional? An adrenaline rush now as we spot a rival we hadn't expected to see—will he come over for a challenge? He drifts away, the adrenaline fades, and the cortisol creeps up again as we wonder whether that means we're too insignificant to be worth worrying about. Then we spot someone else who let us down last week, and the indignation mounts; cortisol levels decline and the blood pressure falls too as we plot how to retaliate.[1] In a few short moments we have been distracted by several reminders of recent events: people who have been kind to us, people who have let us down, people who may be snubbing us, people to whom our endocrine system is urging us to react. Wouldn't it be easier if instead of dwelling on the past we could just rationally evaluate the future and decide what it was in our best interests to do? Surely the solitary orangutan has an easier life.

It's not just our sex hormones that complicate our lives and lead us do things we may later regret. As group-living primates we are intensely sensitive to slights, to tiny differences in status, to favors given and returned, to omissions and snubs. Our responses to these things are not just based on calculation but on powerful feeling, and they sometimes assume an importance out of proportion to anything our calculating brains can justify. They can literally make us sick with anxiety: studies of British civil servants over many years have shown that low relative

status (and an associated history of being pushed around by others in the workplace) is associated with heightened risk of stress-related illnesses such as cardiac disease.[2] Preliminary research on monkeys also suggests that obesity in low-status individuals may come about partly because certain kinds of high-calorie food block the receptors of stress hormones in our brains, so that our stress responses may make us more vulnerable to the allure of junk food.[3] But even if they don't make us sick they often lead us to act in ways that just don't seem in our own best interests. Why have we evolved to be like this? Is it a design flaw in the psychology of *Homo sapiens sapiens*?

Researchers are still puzzling over this question.[4] To understand their puzzlement, let's focus just on those emotions that support strong reciprocity, though similar arguments could be made about the others (for instance, recent research has suggested that a genetic predisposition to attention-deficit hyperactivity disorder may have arisen as a result of selection for exploratory behavior in nomadic groups during prehistory).[5] The fact that, in the laboratory, people are willing to incur personal costs to reward those who have treated them well and punish those who have treated them badly even when these people will never knowingly see them again, has led some researchers to suppose that strong reciprocity is an evolutionary "mistake."[6] It would have been more adaptive, according to this view, to evolve a tendency to show reciprocity only toward those you are likely to see again (we could call people with such a tendency "opportunists").[7] However, asking why strong reciprocity evolved may be a little like asking why human males have developed a desire to have sex with beautiful females who are currently using contraception. Obviously an evolutionary mistake (if only all mistakes were so enjoyable). But not such a surprising mistake, since what evolved was a desire to have sex with beautiful females, period. Reliable contraception arrived on the scene far too late in evolutionary history to have created any kind of adaptive pressure for a more discriminating desire, directed only toward those currently not taking contraception. Perhaps the evolution of strong reciprocity is no more of a puzzle than this.

Since Professor Ernst Fehr and his fellow experimenters have arrived on the scene even later in evolutionary history than the contraceptive pill, it is evident that whatever else strong reciprocity may be, it cannot helpfully be described as a tendency to return in kind the behavior of others whom the experimenter has ensured we shall never knowingly see again. It is a tendency to return in kind the behavior of others, period.

So were our ancestors often enough exposed to people whom they had reason to believe they would never see again for there to have been some real selective pressure against strong reciprocity over evolutionary time? This remains a hotly debated question.[8] One possibility is that they were not, that most people who were generous to our ancestors were people they had at least some reason to expect to see again in the future. Although our ancestors were certainly highly wary of strangers, most of whom would have been hostile if not lethal, *friendly* strangers may have been a great rarity, certainly unusual enough for there to be no great adaptive pressure in favor of cheating them. Indeed, friendly strangers can be thought of as successful mimics of our genuine friends, successful because of their comparative rarity until very recent times. This implies in turn that selective pressure against reciprocity and in favor of opportunism has been operating for too short a time to have become dominant in human populations—the experimental evidence suggests that a proportion of subjects display reciprocity, not that they all do.[9] In short, reciprocators and opportunists coexist, and they did so even in prehistoric times because the behavior they engaged in wasn't very different.

A second possible explanation for the evolution of strong reciprocity is that there was indeed some real selective pressure against it at an individual level, but that this was offset by the adaptive benefits to *groups* that displayed strong reciprocity. Such groups might be better placed to trade with others, for instance, or might be more cohesive in intergroup warfare. The anthropologist Sarah Blaffer Hrdy has recently argued that the real benefits came via our ability to engage in cooperative child care, which is strikingly different from the practice of the other great apes.[10] Group selection theories have attracted renewed support in biology and the human sciences recently, though they have also generated fervent opposition. Might this be an example where they could usefully be applied?[11]

Because there has been so much controversy over the plausibility of group selection, let me suggest a simple way to think about it, which emphasizes that it is not, as it sometimes appears to be, a departure from the principles of gene selection. We can compare the effects on behavior of two rival versions ("alleles") of a gene, given the average environment in which they are expressed (they might of course have quite different effects in a different environment; as Steve Jones has written, if everybody smoked, lung cancer would be a genetic disease[12]). One of these versions will be selected in preference to the other if the behavior it causes results in there being more copies made of itself than there

are copies of the rival allele. This is what is meant by saying that all natural selection is gene selection; any talk of individual selection or group selection just refers to one of the possible mechanisms by which gene selection takes place. However, the behavior can have this result in two ways. The first is by helping the individual bearing it to reproduce, thus creating more copies of itself directly. Though often called individual selection this should not be understood as an alternative to gene selection but rather as one of the mechanisms of gene selection: gene selection via the reproduction of the bearer individuals. The second is by helping some other individual bearing that gene to reproduce, thereby creating more copies of itself indirectly. All of the theories that purport to explain the evolution of traits of cooperative behavior (such as strong reciprocity) do so by explaining why a gene that does not help its bearer to reproduce might nevertheless cause more copies of itself to be made indirectly by helping another bearer of the gene to reproduce. Each theory proposes a different reason why the beneficiaries of the cooperative behavior might be more likely than average members of the population to be carriers of the gene.

The first and best-known such theory is that of kin selection, according to which cooperative behavior directed towards an individual's close relatives has a chance of helping copies of itself to be made because these individuals are likely to be bearers of the gene in question through their shared ancestry. The theory of group selection proposes a different reason why the beneficiaries of the cooperation might be more likely to be bearers of the gene. Cooperative behavior helps other members of the group. Suppose there are some random factors that determine the distribution of individuals bearing the cooperative gene across groups in the population. Suppose that these factors result in there often being "clusters" of such individuals: that is, instead of every group having more or less the same proportion of cooperators, some groups have many and other groups have few. Then because of the clustering, most cooperators will find themselves in groups with other cooperators. A similar process explains why most people who fly tend to perceive their flights as more crowded than the average: if some flights are crowded while others are not, there are fewer people who will notice the uncrowded flight and more who will notice the crowded one. In fact, if half the flights are full and the other half are empty, the average flight is only half full, but everyone who travels does so on a full flight.

Thus, if the behavior of cooperators creates a big benefit to the other cooperators with whom they are clustered, it is likely to lead to more

copies of the gene being produced in spite of its cost to the individual. Those without the cooperative gene will do better than cooperators in the same situation, but they are likely (because of the clustering) to find themselves with fewer cooperators in their groups, so they will do worse overall.

The third possible explanation for the evolution of strong reciprocity also appeals to the clustering effect, but suggests reasons why this may happen other than just the randomness of distribution across groups. Clustering of cooperators may happen because they are drawn to each other.[13] In other words, opportunists may do better than reciprocators when they get a chance to cheat, but unless they can hide the fact that they are opportunists, they may be given fewer opportunities to cheat in the first place. They may face collective ostracism from the reciprocators within their group.[14] Or they may just be less attractive as mates, business partners, or friends. This explanation is like the group selection story, in that it makes the spread of strong reciprocity depend on the fact that reciprocators tend to find themselves in groups with other reciprocators. However, it depends on some means by which reciprocators may be able to recognize each other and reinforce the clustering process.

Overall, therefore, we need to remember that all selection is selection of genes. What is sometimes called "individual selection" can also be called "gene selection through the effect of the gene on the reproduction of the individual bearing it." What is sometimes called "kin selection" can also be called "gene selection through the effect of the gene on the reproduction of the bearer's relatives who are likely to carry copies of the gene." And what is sometimes called "group selection" can also be called "gene selection through the effect of the gene on the reproduction of other members of the bearer's group who are likely to carry copies of the gene."

How can we use evidence to choose between these three competing explanations for the ability of genes favoring cooperative behavior to spread through the population at the expense of rival genes favoring uncooperative behavior? I suggested in chapter 4 that it did not seem likely that in prehistoric times calculators and strong reciprocators would have behaved in exactly the same way. Put simply, even in a small hunter-gatherer band there would have been too many opportunities to cheat. It's hard to believe the "evolutionary mistake" explanation for strong reciprocity. However, some scholars argue that we need very

strong evidence for alternative explanations before we can reject those based on purely individual selection.

So what about group selection? Several scholars have recently argued that conditions in hunter-gatherer societies were quite favorable to the emergence of cooperative behavior under group selection.[15] For instance, the frequency of warfare—Samuel Bowles has estimated the average risk of death from violence at 14% among hunter-gatherers—made the difference between effective cooperation and the lack of it a matter literally of life and death.[16] Together with evidence about the diversity of average genotypes across groups in the population (of "clustering," in other words), Bowles suggests this shows that even quite costly forms of cooperative behavior could have been favored by group selection. It is hard to know exactly how much the kind of strong reciprocity documented in economic experiments would have contributed to the probability of a group's survival under the conditions of hunter-gatherer warfare. But so far at least the evidence seems consistent with a role for group selection, given the violent conditions of hunter-gatherer existence, and there will undoubtedly be much more research exploring this possibility in the near future.

Of course, anything that favored clustering, by enabling reciprocators to recognize each other and choose to cooperate together, would also have favored the evolution of strong reciprocity by natural selection. Here it is harder to find firm evidence, but it's certainly plausible that intrinsically trustworthy individuals would have tried to seek each other out, as I suggested when discussing the evolution of smiling and laughter. It's more difficult to know how much option individuals had to choose those with whom they cooperated, and therefore to avoid becoming involved in cooperative activities with those whom they suspected of being opportunists. It may also be that other characteristics (strength or intelligence, for instance) made more difference to people's attractiveness as partners in cooperative activities than whether they were reciprocators or opportunists. The fluidity of coalitions in chimpanzee societies, for instance, has been documented in gripping detail by the primatologist Frans de Waal,[17] but strong reciprocity doesn't look like the first quality a chimp would need to do well in the hierarchy.

A possible alternative is that a demonstrated talent for cooperative behavior was important to groups seeking husbands for their daughters, since in prehistoric human groups (as in groups of chimpanzees) it was usually the adolescent females who left the parental home to find mates. However, the idea that this might have provided a significant source of

selective pressure in favor of strong reciprocity, while theoretically possible, remains a conjecture as a point of fact.[18] It's safe to say that this question will occupy economists, anthropologists and primatologists for a long time to come. And we can safely agree that we owe the astonishing complexity of modern society to the presence of at least some reciprocators among our ancestors, as well as to those unrecorded heroes of prehistory who risked slaughter at the hands of strangers to explore the opportunities for mutually beneficial trade.

Whatever the explanation, it will not necessarily imply that any particular form of strong reciprocity is hardwired into the human brain. There has been much controversy in recent years over the arguments of some evolutionary psychologists that natural selection has given the human brain a large number of very precise cognitive modules, which were adaptive in prehistoric times but may no longer be adaptive in modern societies. A potential example of such a module is the talent for "cheater detection" demonstrated by the Wason selection task discussed in chapter 4. There is controversy over the interpretation of these findings,[19] but however that controversy is resolved it will remain an open question to what extent our talents for cheater detection are developed from experience in childhood as opposed to being present in our brains from birth. Performing the Wason selection task on adults tells us nothing about this.

To see why, consider a task I perform on groups of students each year. I show them a photograph taken in rural Africa showing a group of people standing around a trestle table on which there are some pieces of cloth. I ask the students what is happening in the photograph. The students all realize it is a market, so I ask them next who is buying and who is selling. The students all identify without hesitation the buyers and the seller, but when pressed as to how they know, they have some difficulty in answering. They eventually realize it is because of the position of the subjects' eyes: the buyers are looking at the cloth, while the seller is looking at the buyers. What is interesting about this test is that it shows we all have a very sophisticated ability to size up social situations (using the position of people's eyes, for instance, to determine the economic relations between them); so sophisticated, indeed, that we know what the social relationships are before we know how we know. But it seems unlikely that we have a "market-relations-detection-mechanism" hardwired in our brains. Hunter-gatherers knew about cheats but they would not often have found themselves in markets. Instead it makes sense to infer that we have a sophisticated talent for sizing up social

relationships, and that we apply this talent to learning which social relationships have economic significance for us. Similarly, the likelihood that natural selection has given us—or at least some of us—a tendency to behave in ways characterized by strong reciprocity tells us nothing about the share of inheritance and learning in the development of that behavior. We *may* be—some of us—programmed to reciprocate more or less independently of what we learn in childhood. Or we may just be programmed to learn to respond to others in ways that adults around us teach us to follow—reciprocity being an understandable characteristic for others to want to instill in us.

Reciprocity and Revenge

Strong reciprocity can of course be dangerous, and not just when it is manipulated. Certainly, it helps to establish cooperation and exchange. This is partly because of the tendency to repay kindness with kindness, and partly because the tendency to repay unkindness with revenge makes people more likely to keep their promises. But this second characteristic also means that once promises are broken, the participants can become trapped in a cycle of revenge. Testimonies to this from history, anthropology, and imaginative literature are legion. Modern tragedy has often located dramatic compulsion within human beings' own iron subjection to the laws of revenge, which endows the action with a sense of inevitability in works such as Shakespeare's *Romeo and Juliet* and Gabriel García Márquez's *Chronicle of a Death Foretold*. The codes of honor of the Mafia culture of Sicily have come to seem strangely dysfunctional in the modern world, but they have a comprehensible rationale, as the work of sociologist Diego Gambetta has shown us.[20] Gambetta emphasizes the way in which Mafia families originally took upon themselves the role of providing some of the underpinnings of trust in a complex modern society, because the Italian state proved incapable of doing so in Sicily at the time of Italy's unification in the mid nineteenth century. But this role came at a heavy cost: the same human motivations that can reinforce a culture of trust can also entrench a culture of distrust. In Sicily's case, trust of insiders has reinforced distrust of outsiders, a cultural handicap that has cost the region dear as it seeks to integrate itself into modern Italy and the modern world.

Fortunately, the disposition to trust in members of a certain group more than others has often been a help, not a hindrance, in widening the range of people on whom we can rely. An unknown trader coming into

our village may suffer from being an outsider to our group, but he may benefit from belonging to some other group or tribe with some of whose members we have previously dealt or to a more distant branch of our own tribe; he may even come with tokens or letters of recommendation. To this day, immigrants to North America often seek out members of their own ethnic community; migrants from the countryside to Indian cities often contact members of their own caste; the stranger at my door stands a better chance of admission if he is wearing the uniform of a reputable company.

The gradual integration of local cultures of trust into larger regional, national, or even global cultures of trust, punctuated though it has been by many episodes of reversal, is at the heart of the history of modern life. It is important not to romanticize this process: when I say I can trust a stranger, I do not mean that I like him, have any curiosity about him as a person, or care in any deep sense about what happens to him. The point is that I do not need to like or care about him in order to be able to deal confidently and reliably with him. Some people have seen in this fact a chilling, even dehumanizing quality of modern societies and have yearned for the times when those who mattered to us were those we knew, people whom we might hate or love but to whom we could not feel indifferent. The economist James Buchanan has described how a purchase of fruit at a roadside stall can take place in spite of the fact that neither of the people concerned has any particular interest in the well-being of the other: they are "able to…transact exchanges efficiently because both parties agree on the property rights relevant to them." In reply the economist Samuel Bowles describes this as creating "a psychological environment of anonymity, indifference to others, mobility, lack of commitment, autonomy" and concludes that "we learn to function in these environments, and in doing so we become someone we might not have become in a different setting."[21] People vary in how much this troubles them (Bowles is pointing out that anonymous markets have an important effect, though not necessarily one we should, on balance, regret). But it is absolutely clear that a warmer timbre of human interaction in all our encounters is quite incompatible with the degree of complex interaction upon which most of us now depend.

Indeed, it is precisely the most tenuous, the most anonymous, of our links to the outside world that do most to connect us to new opportunities. The powerful implications of this simple fact were drawn by the sociologist Mark Granovetter in a famous article entitled "The Strength of Weak Ties." Granovetter began by reporting a study of the social

networks that helped unemployed people to find jobs. Personal contacts are often a more important means of finding work than formal institutions such as employment exchanges. Yet Granovetter found that people were much less likely to find work through close friends (their "strong ties") than through casual acquaintances (their "weak ties"), even though close friends should in principle have more reason to help them. The reason is that your close friends are likely to know many of the same people that you do; they are therefore less likely to be able to bring you genuinely new information and opportunities.[22] Casual acquaintances, in contrast, are more likely to act as a bridge between otherwise closed groups and the outside world. Granovetter's article, and other work inspired by it, have provided a welcome counterweight to the elegiac strain in sociology,[23] which has spoken of the alienation induced by modern living without noting how this is linked to the very conditions that give it energy and creativity.

Of the impersonal institutions that have enabled this gradual integration of local cultures of trust into a wider culture governing relations between strangers, none has been more central to the process than the institution of property rights. Property rights are a set of rules governing who has the right to manage the various valuable resources in our environment, to enjoy their fruits, and to dispose of them to others. Without the assurance that the resources you theoretically own now will be protected from marauders until the time comes for you to repay me, no amount of trust in your good intentions may induce me to be generous to you today. Another way to express this is that trust cannot be purely bilateral: trust between any two people rests on a web of trust between each of them and the others with whom they also deal. For this reason, as we shall see in later chapters, all societies have needed the maintenance of defense, civil order, and some degree of consensus about what the social rules decree. Some historians have even argued that the ability to establish such property rights, and the social consensus that enables them to be enforced, is the single most cogent explanation for why some countries (such as Britain and the Netherlands) were able to industrialize and grow faster than others at a critical period in early modern history.[24] As with other institutions, property rights rest on a delicate balance between reciprocity and self-interest, and different societies have placed different emphasis on the formal and the informal (or consensual) components of that balance. A growing literature on what has come to be called "social capital" examines the many subtle factors that explain why trust appears to have become

more securely embedded in some societies than in others.[25] What all stable societies have in common, though, is that the balance between reciprocity and self-interest holds even when unscrupulous individuals test its strength.

It is time to look more closely at some of the social institutions that have been responsible for this extraordinary spread of the willingness to trust strangers. The hallmark of the most successful of these institutions is their ability to entrench a culture of trust with a minimum of explicit enforcement. For instance, what distinguishes safe cities from dangerous, crime-ridden ones? Jane Jacobs has written that "the public peace—the street peace and sidewalk peace—of cities is not kept primarily by the police, necessary as police are. It is kept primarily by an intricate, almost unconscious, network of voluntary controls and standards among the people themselves, and enforced by the people themselves." Indeed, she argued, "once a street is well equipped to handle strangers, once it has both a good, effective demarcation between private and public spaces and has a basic supply of activity and eyes, the more strangers the merrier."[26] In other words, cities need an institution of peacekeeping, doubtless backed by formal sanctions but largely informal in its day-to-day activity. And that institution has to be stable, in the sense that people react to its presence by behaving more, not less, cooperatively.

We shall look in more detail at cities in chapter 10. But first we shall look at one of the most remarkable trust-creating institutions of all, one that no sane person would take seriously for a moment were it not for the fact that everyone else in society is normally quite willing to do so. It is money.

CHAPTER 6

Money and Human Relationships

Money and Barter

In northwestern Russia a man and a woman are bartering goods, each offering something they have made against something they want. This is the way goods have been exchanged for most of the human past, and it epitomizes the traditional culture of face-to-face interactions. What are they exchanging? Animal skins, it turns out, against rather simple shoes. You could be forgiven for imagining the scene as taking place in a forest clearing, or at the side of a muddy track, with horses occasionally stamping their feet and launching clouds of breath into the winter air. In fact, the woman is sitting in a heated office, and the man is nowhere to be seen. They are talking on the telephone.

It is February 1992. The consignments whose exchange they are negotiating are far too large to fit on a horse and must be sent for several hundred miles across the frozen landscape by container truck. Almost everything about the transaction speaks of the industrial age: the animal skins have been scalded with chemicals, the shoes have been cut and stitched by machine, the goods will be accompanied by invoices and bills of lading, the man and the woman are dressed in machine-made clothes and work by the glare of strip-lights. Only one thing is preindustrial: they refuse to use money. Inflation is currently running at 2,000 per cent per year, and the money would lose its value faster than they could pass it on.

Throughout the decade that followed the end of communism, barter took the place of money for a remarkable proportion of transactions in a society that in most other respects had been seeking to model itself on the market economies of the industrialized West. These were not just deals between individuals trading household goods or personal services (a well-known phenomenon under communism). Firms were trading commodities with each other instead of trading them for money, and doing so at all stages and all scales of production. No goods were

Figure 6.1. During Germany's high inflation in the 1920s, a shopkeeper uses a tea chest to store money that won't fit into the cash register. Getty Images/ Hulton Archive.

too large or too sophisticated to be part of a barter exchange; tanks, airplane engines, and oil and gas refinery equipment all featured in such deals.

Understanding how a modern society can function without money tells us a great deal about the role money plays in more normal times. For make no mistake: living without money during that crucial decade cost Russian society very dear.[1] There were some obvious costs: the man who receives shoes in exchange for his animal skins could not possibly use so many shoes, not even by distributing some of them to his workers (who would probably have preferred other things, though they were in no position to complain). He had to exchange them in turn, and that meant storing them till he could find someone who wanted them. Building a warehouse cost him his entire annual investment budget; if it could have held its value, money would have been much cheaper to store.

Sometimes the arrangements required to make barter work were even more complex. The woman receiving animal hides had set aside a portion of her firm's annual investment budget to set up a plant making sausage skins. Why? The supplier of hides was getting restive, for good

hides could be sold for American dollars abroad, and he was wondering whether to stop supplying them to Russian buyers. But the supplier had his own problem, which was that he also produced meat, and to dispose of the meat he needed good-quality sausage skins. So the woman had an idea, which was to make her company indispensable to him by producing the elusive skins. That way she had a hostage she could use to secure the supply of his hides. She and her colleagues might know nothing about making sausage skins, but these were extraordinary times.

Her case was not at all unusual, except in being observed by a visiting British economist. At a shoe factory I visited three years later in Tashkent in Central Asia, even more complex deals were in the making. The finance director had tried in vain to persuade his suppliers to take shoes in payment, so now he was setting up as a supplier of general consumer goods. His senior management colleagues spent their time scouring local markets and telephoning their friends in other firms. Tomato paste, porcelain, and pasta were particularly prized, for they could be used to pay not only suppliers but the workforce as well.

I visited a plastics factory and tried to talk to the director about his restructuring plans, but he had other things on his mind. "We've found a reliable source of potatoes," he told me, with evident pleasure. "The workforce will be very glad; the arrears in their wages had been building up. There's not much else to pay them with. Though to tell the truth, we tend to turn a bit of a blind eye these days to pilfering from the company stores."

In Kiev in 1995 I met an energetic young man who had set up a dairy-processing plant on the land beside a coal-fired power station. The collective farms in the region were all hopelessly in arrears for their electricity, and besides useless Ukrainian currency all they had to offer in exchange was milk. The power station was not interested in milk payment, unless some means could be found to process and market it—which was where the entrepreneur came in. It didn't sound very ecological, and it would doubtless be redundant in a few years' time, but in the meantime it was working so well that plans were afoot to build a pasta factory and a brewery on the same site.

In the years that followed the collapse of communism, it was often fashionable to claim that more than seven decades of communism had completely atrophied the Russian people's entrepreneurial spirit. Nobody seeing the ingenuity devoted to these complex barter deals could have believed this facile insult for a moment. But like the creativity with which ordinary Russians evaded taxes, navigated among gangsters,

found their way around shortages, and cared for their families when health and education services were collapsing, this ingenuity made one wonder what Russian society could achieve if it were harnessed to a more fruitful and less mutually destructive end. Money is one of the great human inventions precisely because it helps to narrow the gulf between the ingenuity of each individual and the interest of others; it helps our inventiveness to serve purposes other than mutual theft. Not the least of its benefits is that it frees shoe manufacturers to do what they are good at (making shoes), instead of obliging them to become porcelain merchants, sausage-skin manufacturers, or stockists of potatoes simply in order to keep their shoemaking business afloat.

We shall probably never know when the first forms of money came into existence. Coins have been dated to 600 B.C.E., and clay tablets from Mesopotamia, used to record debts of grain and to transfer them from one bearer to another, may be twice as old.[2] But as James Buchan points out in his book *Frozen Desire: An Enquiry into the Meaning of Money*, "money may be older than writing but we will never know: an archaeologist may think an object he finds is old money, but he cannot know it is without an inscription to tell him so."[3] Modern monetary theorists have devoted enormous attention to understanding what makes it possible for something to function effectively as money—but, as we shall see, the process by which historical economies came to depend upon money is much more mysterious. Understanding how the web of monetary trust was spun in the past is not the same as understanding what holds it in place in the present.

The Web of Monetary Trust

What we do know is that once money has acquired certain characteristics, its use becomes self-enforcing: people are willing to accept it in exchange for their goods because they genuinely prefer to do so, and not because the law says they must. This self-enforcing character is what enables money to be the kind of institution that makes trust in strangers possible: we accept it in exchange for valuable goods in spite of the fact that we may know nothing about the individuals who are offering it to us.

What are the characteristics that make the use of money self-enforcing? Any form of payment people accept for their own goods and services with the intention of later trading it for other goods and services we can call a medium of exchange. In principle a society can try to enforce legal

tender for any medium of exchange (shopkeepers can be fined if they refuse to accept it), but in practice legal tender is enforceable only when the medium has considerable acceptability in its own right. For a medium of exchange to be attractive it has to have a number of characteristics:

- It has to be reasonably easy to store and to transport. Water is a poor medium of exchange even in the desert, where it has considerable value.
- It has to be sure not to lose its value before it is resold—through decay or through theft. Bread is too perishable. Clothing, even valuable clothing, is too easy to steal.
- It must be possible for people without specialist expertise to tell the difference between good quality and bad.[4] Diamonds, though highly valued, fantastically durable, and easy to hide from thieves, have rarely been used as a medium of exchange because too much expertise is required to tell the difference between gemstones and fakes. The only circumstances in which diamonds have functioned temporarily as a medium of exchange is in transactions between experts and during civil wars in diamond-producing countries, where, paradoxically, it may be harder to get hold of convincing fakes than the real thing.
- It must be scarce, either naturally (like gold) or artificially through the restricted printing of banknotes that are difficult to forge. If it were not, there would be easier ways to obtain money than by offering valuable goods in exchange. If acorns functioned as money, for instance, people would stop producing other goods and start collecting acorns instead.
- It has to be more widely acceptable by other people than the goods in exchange for which it is offered. If it were not, then there would be no point in accepting the money; the seller could just hold stocks of her own products until the time came to exchange them.

So the acceptability of money rests in part upon what people believe about its probable acceptability in the future. There are some factors that make acceptability more likely, such as anonymity, which ensures that potentially interested trading partners will not be arbitrarily excluded from using it. It seems obvious today that money is anonymous; this is what gives it a quality at once clean and a little sinister, like a room so exaggeratedly scrubbed as to make one wonder what might have happened there just before it was cleaned. But historically some kinds of

money have been restricted to transactions in certain classes of society, like the shell currencies of the Solomon Islands, which until the late nineteenth century (as the anthropologist Denis Monnerie reports) had separate denominations for use by chiefs and commoners.[5] This had the incidental consequence that a commoner who had sexual intercourse with the wife of a chief could incur the death penalty. This was not because it was a capital offense: it was, on the contrary, considered an offense against property, and like most offenses against property attracted only a fine. However, the fine could only be paid in the currency of the aristocracy, so the offending commoner would be executed for nonpayment of the fine rather than for the original offense.[6]

Not surprisingly, these shell currencies were soon driven out by competition from the currencies brought by foreign traders (most obviously by the U.S. dollar), once such traders arrived in significant numbers in the late nineteenth century. Why accept shell currencies that not everyone else will accept when there is a universal and anonymous alternative readily available? And the story of the shell currencies was very nearly imitated in the 1990s by the Russian rouble.

Many billions of American dollars circulated inside Russia after the collapse of communism, although nobody knew exactly how many since their owners were understandably reticent about revealing their holdings; the uncertainty continues today. This foreign currency cost the Russian economy dearly: it represented many billions of dollars' worth of American goods that could have been bought and shipped to Russia at a time when many of its people were suffering extreme poverty. It would have been much better if the Russian authorities had been able to persuade people to hold roubles instead of these dollars, for the cost of roubles to the country as a whole is only the cost of printing them. But the loss of confidence in a currency is cumulative; once some people are reluctant to hold it, others will become reluctant as well. And the very attractiveness of roubles to the authorities—the fact that they cost so much less to produce than they are worth in exchange—is exactly why confidence may be lost in the first place. For much of the early 1990s roubles were like acorns. The ease with which the authorities could make them made it irresistible simply to print more roubles to pay for the government's spending on everything from the army to old-age pensions, instead of doing hard work to persuade citizens to pay their taxes in full and on time. But if roubles are just printed on demand, their scarcity value—the very quality that makes them valuable as money—will be inevitably undermined.

As it happens, the Russian authorities were able to restore the scarcity value of roubles by the mid 1990s, since the rate of price inflation (and therefore the decline in the value of roubles over time) fell to very modest levels by around 1995. But the incidence of barter went on rising for at least another three years. What was wrong now was not the ease of making money but the ease of transferring it—the very anonymity that makes money in most circumstances such a useful component of modern life. For during the wrenching conditions after the fall of communism, many Russian firms had run up extremely large debts, and large debts create long queues of creditors. If you lend money to a firm which owes money to many other people, the chances are high that your loan will not be used to do anything productive or new, but instead will be used merely to pay off creditors further up the queue. In fact, the creditors further up the queue have a legal right to insist on it, and if these creditors include the tax authorities, they even have a legal right to impound the money from the firm's bank account. In these conditions it is hardly surprising that lenders will lose all willingness to provide finance for business. And without finance it is impossible for Russian business to begin the task of adapting its products and processes to the modern world.

In an economy based on money, then, the queue is long, and the creditors are stern. If the queue becomes too long, barter may provide a way to jump it.[7] If I deliver goods to you in exchange for a promise to pay me back in money, then the money you have earmarked to pay me may be seized by any one of your creditors, and the law will uphold their right to do so. But if you have promised to pay me back in goods, then I count as one of your customers, not one of your creditors. Your other creditors are less likely to want to seize your goods anyway, and even if they do, they cannot invoke the law to help them, so my chances of being repaid are much higher.

Systematic queue-jumping was obviously at best a quick fix, not a permanent answer to the problems of Russia's chronically overindebted firms. Not least of its costs is that everyone ends up settling for second best. You may not want the shoes your trading partner offers you: they may not be the quality or the style you would have chosen, but you accept them because it is better than not being paid at all. Even the government was doing it: a firm manufacturing buses claimed the only way it could pay its local taxes was to deliver buses to the local authority instead of cash. The buses didn't work very well; indeed, they broke down rather often, leaving passengers stranded in the snow. But the local

tax office was not concerned, so long as it could place a tick against the bus company in its records.

Russia's firms found things much easier after the late 1990s, thanks largely to higher prices for Russia's exports (especially oil) that enabled more of the creditors in the queue to be paid off than anyone realistically imagined. Barter declined to insignificant levels as a result—fortunately, for those who have tried barter know how much it hurts. But one effect of the financial crisis on the Russian economy was that by 2009 there were signs of barter emerging again.[8] This is unlikely to last long but it may inflict considerable damage on the Russian economy while it does.

How Did Money Become Established?

Given the characteristics that make certain kinds of money self-enforcing (and without which it loses its attractiveness, as it did for a while in post-communist Russia), it's tempting to think that societies learned historically to use money through a gradual "bottom-up" process by which individual initiative gradually converged on the use of particular commodities as media of exchange, which were then eventually replaced by the state currencies that are the forms of money we know today. And we know of at least one historical episode that fits this characterization perfectly—so well, indeed, that economists have taken it to be typical of the process as it occurred elsewhere in history and even in prehistory. But other evidence suggests that this episode may in fact have been extremely unusual.[9]

The episode in question took place in a German prisoner of war camp. It has come to be so well-known because among the prisoners was an economist called R. A. Radford, who went on to publish an article about his experiences in the journal *Economica* a few months after his liberation in 1945.[10] The currency that emerged was cigarettes, which were "homogeneous, reasonably durable, and of convenient size for the smallest or, in packets, for the largest transactions." Radford noted the way in which all other commodities (cheese, jam, chocolate, and so forth) would have prices quoted in cigarettes. He described episodes of price inflation (following unexpected deliveries of Red Cross parcels containing cigarettes) and deflation (when allied bombing raids disrupted such deliveries). He also showed how cigarettes displayed many other characteristics of money, including Gresham's Law, which states that lower-quality currencies drive out higher-quality ones: high-quality brands of

cigarettes were rarely used as currency because people preferred to keep them to smoke.

Similar episodes have been documented elsewhere. U.S. soldiers in Iraq have also used cigarettes as currency.[11] However, recent developments make cigarettes less than ideal in some settings. Since 2004 smoking has been outlawed in U.S. federal prisons, and inmates are not allowed to carry cash. So in many federal prisons the currency that has emerged is cans or pouches of mackerel fillets. What makes this currency popular, as the *Wall Street Journal* reports, is that "each can (or pouch) costs about $1 and few—other than weight-lifters craving protein—want to eat it"—a striking confirmation of Gresham's Law.[12]

Episodes such as these have helped to convince many economists that the historical development of money followed a process in which, in the words of Paul Samuelson, "the age of commodity money gives way to the age of paper money…Finally, along with the age of paper money, there is the age of bank money, or bank checking deposits."[13] The idea behind this is that a spontaneous convergence on commodities as media of exchange led governments eventually to create currencies (first in coin and then in paper) that fulfilled these functions more efficiently. The development of bank deposits as a form of currency (the exchange of debts of the banking system as means of payment instead of either commodity or paper money) then had to wait for the development of a sophisticated banking system.

Reasonable as this conjecture sounds, the evidence doesn't support it. Evidence of transferable debt tokens from Mesopotamia is twice as old as the oldest coins that have yet been found. Evidently, when one person with a debt to a grain merchant wanted to pay another person with a similar debt, the first would pay off the debt of the second—just like a modern checking system, in fact, but not at all like a cash economy. We don't know whether some commodities also functioned as means of exchange, or whether people just kept tallies of their debts to the leading merchants. But the emergence of money in prison camps and during modern wars tells us nothing about this and may be historically quite misleading; it happens among people who have been used to sophisticated currencies and are temporarily prevented by circumstances from using them.

It seems likely, in fact, that what led historically to the emergence of cash economies in various parts of the world was not the issue by the political authorities of forms of money with the "right" characteristics to make them generally acceptable media of exchange. Debt tokens issued

by various creditors including private banks were probably in circulation in many places where coins did not exist, and many of the great fairs of medieval Europe cleared debts among the merchants "without the use of single coin."[14] These debt tokens typically competed with one another—and with state currencies where these existed. Indeed, as late as 1859 there were nearly ten thousand different kinds of banknotes circulating in the United States as well as over five thousand different counterfeit banknotes,[15] indicating that even so sophisticated an economy as the United States was having real difficulty coordinating on a form of currency that everyone could use. Instead, what brought about convergence on a common currency was the requirement that taxes be paid in the form of money in question. People would then choose to use the money because they needed it to pay their taxes to the political authority. That, rather than any emerging spontaneous consensus, was the foundation of the social equilibrium that established money—and in many parts of the world it did not happen until quite recently.

When it did happen, the political authorities would often demand tax payments in a currency which was designed to have the right characteristics for use as a medium of exchange. But sometimes political realism trumped monetary principles, as William Henry Furness reported when describing the establishment of a tax regime by the German colonial authorities in Uap (part of the Caroline Islands) in 1898. Despairing of ever enforcing their insistence that the islanders repair the local roads, and unable to induce them to work for pay in any known currency, the authorities made use of the fact that *fei*—large stone wheels—were used by the islanders in ceremonial exchange:

> [They] marked a certain number of the most valuable *fei* with a cross in black paint to show that the stones were claimed by the Government. This instantly worked like a charm; the people, thus dolefully impoverished, turned to and repaired the highway to such good effect from one end of the island to the other, that they are now like park drives. Then the Government dispatched its agents and erased the crosses.[16]

Stone wheels are about as unsuitable a currency as anyone could imagine for use as a general medium of exchange, but in the circumstances they were the best available taxable currency. The characteristics that make money a stable basis for social exchange may not have been enough, therefore, to establish money historically as an effective medium of exchange. Quite a lot of coercion may have been needed and, as in the Caroline Islands, the result may not always have been good news for the citizens.

None of this means that political authorities have historically been able just to decide in what form they insisted on the payment of taxes. It would be a mistake, for instance, to think that the Russian economy's flight to barter in the 1990s happened because the government did not always insist on payment of taxes in roubles but was prepared to take buses instead. On the contrary, given the depreciation of the rouble and the unreliability of rouble bank accounts because of their vulnerability to seizure, it's likely that tax authorities who accepted payments in kind did so because of the impossibility of their ever being paid otherwise. What that episode shows, though, is that however the institution of money has come to be established, it plays a vital role in the functioning of a modern economy based on sophisticated networks of exchange. Money may not have been established historically as a more efficient alternative to barter, but given how complex are the networks of a modern economy, barter has become a lot less efficient than money. But money is fragile, and if trust in money is undermined, the consequences can be dire.

Money, Anonymity, and Unease

At the same time that Russia's citizens have been feeling the pain of barter, the attraction of barter has been growing in some parts of the industrialized West. The International Reciprocal Trade Association (www.irta.com) is an enthusiastic ambassador for the benefits of barter trade in the modern world. It claims (though this is impossible to verify) that over 400,000 companies worldwide earned some ten billion dollars through barter transactions in 2008—though even this amounts to only $25,000 per company. It points to the role of computers and the internet in matching the demands of different customers and achieving the "double coincidence of wants" that has been such a challenge for barter transactions in the past—the enormous effort that has to be put by suppliers of one good into finding buyers who not only want the good in question but have a desirable good to offer in return.

Small-scale barter networks (often known as local exchange trading systems, or LETS[17]) have also been growing in a number of towns. They allow individuals to trade goods and services on a small scale and to build up credit in points or some other artificial currency for exchange against other goods and services at a later date. Their attractiveness may depend to some extent on the greater ease with which their transactions escape taxation and to some extent on a yearning to decouple one's community from the monetary economy, but for whatever reason their popularity is

unquestionably on the rise. Similar alternative currencies have been set up in Venezuela with the blessing of President Chavez, apparently in a bid to find alternatives to the institutions of capitalism.[18]

Many claims are made for barter by its enthusiasts: that it is more efficient, that it is more fun, even that it is more ethical. Many people have felt that there is something a little sinister about the ubiquity and anonymity of monetary transactions in the modern world. "Money has no smell," said the emperor Vespasian, and it is precisely this that makes some people shudder (Vespasian was referring, somewhat smugly, to the fact that he had succeeded in imposing a tax on public lavatories). A lyrical, even purple, expression of this point of view appears in the closing paragraph of James Buchan's book *Frozen Desire*, in which he holds out the dream of a world free of money:

> One day, who knows, the human race might stir. My heroes and heroines wake from their sleep and rub their eyes. Honour pushes credit away with an indescribable grimace of disgust, charity runs shrieking from the Charity Ball and virtue and solvency discuss a separation, which becomes permanent. Liberty puts down her shopping bag and rests her bunioned feet. The Owl of Minerva opens one eye, then the other, and extends her tattered wings for flight. And as these dreams dissolve, the Age of Money, which came after the Age of Faith, will itself draw, as all things under the sun, to an end.[19]

But whatever else may be claimed for it, barter is never an efficient system for society as a whole, though taxes and other regulations, or the absence of trustworthy money, may make it an understandable refuge for many individuals. Even with sophisticated computer- and internet-based systems for bringing about a double coincidence of wants, barter will always run up against a fundamental problem: when searching for someone who wants to buy what I have to sell, how can I be sure that what he has to offer in return is of the quality I require? The attraction of money is precisely that I can be more confident of its quality than I can of almost anything else a buyer can offer. Barter will always survive where participants have already overcome the problem of trust in other ways: in small communities where people know each other well, and even on a larger scale where the goods exchanged are sufficiently standardized for their quality to be quickly verifiable without much effort. But as a means of mediating the exchange of inscrutables between strangers, on which more and more of modern life is based, no realistic alternative to money has ever yet been found.

What about the ethical appeal of barter? What is the foundation for this widespread unease about the Age of Money? It doubtless has many roots, and it would take another book than this to explore them all. Disdain for money is sometimes just a shorthand way of expressing disdain for wealth (money is, after all, a shorthand for all the many things it can be used to acquire). More subtly, disdain for money has often been a coded expression of the insecurity of aristocrats and those who lived on *inherited* wealth in the face of wealth acquired through economic activity and—especially—trade. This insecurity may have had important social and economic consequences, through the way it shaped attitudes toward economic activity in many societies, from ancient Athens to modern Britain. The historian Martin Wiener has argued that the "decline of the industrial spirit" in Britain was due to exactly such unresolved insecurities among the dominant figures in British culture, from the landed aristocracy of the nineteenth century to the literary and artistic influences on so important a figure as John Maynard Keynes.[20] More complicatedly still, disdain for money has often played on a deliberate ambiguity between "money" in the sense of wealth and "money" in the sense of an anonymous medium of exchange whose very anonymity and superficiality makes it somehow suspect. As a rhetorical device it becomes a term of disparagement by a hinted association that would rarely stand up to examination if it were presented as an explicit argument. Many writers who bemoan the spread of the market in the modern world have expressed their complaint in terms of the influence of a money mentality,[21] a complaint that might be less rhetorically persuasive if it were directed simply at the division of labor and the spread of social exchange.

Even a cursory glance at the place of money in poetry and prose literature reveals how closely this unease is tied up with ambivalence about the human body, and particularly with the ambiguities of our sexuality. This does not mean that the ambiguities of our sexuality cause us to feel this way about money, but it is likely that we use terms that convey our unease about sexuality in order to express the unease we feel—perhaps for other reasons—about money and its pervasive social influence. The word "luxury" used to mean "lechery" as recently as the seventeenth century, and to this day the French for lechery is "la luxure." The Jacobean dramatist Cyril Tourneur has the duke in *The Revenger's Tragedy* described by an onlooker as "a parch'd and juiceless luxur."[22] The word "expense" (as in Shakespeare's sonnet 129, which begins "the expense of spirit in a waste of shame") used to stand for orgasm, and

until the late nineteenth century the colloquial term for having an orgasm was not "to come" but "to spend." Perhaps this analogy is due to the similarity between the tiredness that follows in the wake of sexual pleasure and the financial depletion that succeeds the pleasure of spending money (both kinds of exhaustion frequently occasioning, and perhaps being confused with, feelings of guilt). Partly it may be due to the sense that money as an accounting mechanism submits pleasures to an unforgiving scrutiny, like that of traditional morality. Most of all it has to do with money's anonymity, the sense that the trust it buys is somehow fraudulently acquired, being based on impersonal rules rather than personal understanding. Sexuality is the area of human life most permeated by the ideal of willing and autonomous exchange between partners motivated by convergent desire, and yet it is also the one most poisoned by the suspicion that the appearance of desire is but simulation, cloaking a more indirect and mercenary motive. The indirect masquerading as the direct is likewise at money's very heart.

Money tantalizes us by the disparity between what it looks like on the surface and what it hints at underneath. As James Buchan puts it: "Money, to use an old-fashioned mechanical metaphor, has become a sort of railway shunting-yard which is for ever receiving the wishes and dreams of countless people and despatching them to unimagined destinations."[23] This sense of limitless possibility also undermines the comfort of familiar categories, leading to an impression that people with money can buy their way out of confinement by the social and moral judgments that constrain the rest of us. Balzac puts this complaint in the mouth of Esther, the rather innocent heroine of his novel *Splendors and Miseries of the Courtesans*:

> A girl with no income finds herself in the mud, as I was before I entered the convent. Men find her beautiful, they make her serve their pleasure without according her the smallest respect, they come for her in a carriage and then send her away on foot. If they never quite spit in her face, it is only her beauty that spares her this outrage. But let her inherit five or six million, and she will be sought out by princes, saluted as she passes in her carriage; she can choose from the most ancient coats of arms of France and Navarre. This world, which would have sneered at us [her and her impoverished lover] for being two handsome creatures, united and content, has constantly honoured Madame de Staël with her bohemian life, because she had an income of two hundred thousand *livres*. The world, which bows before Money and Glory, has no wish to honor happiness or virtue.[24]

A later writer, Martin Amis, uses the same device in a back-to-front way by making his narrator play with the idea of money as protection: "Money," he writes, "I must put money round me, more money, soon. I must be safe."[25] The deceptive promise of safety has become one of the most enduring themes in our contemporary attitude toward money, and one that has become more insistent the safer money has historically become. It is an intriguing feature of modern life that as sexual morality has increasingly been privatized, the ethics of financial probity have become the growing object of collective regulation. This is both inevitable and desirable, but that does not stop it from feeling strange. Even the AIDS crisis has not reversed the growing belief that in prosperous societies financial behavior has more seamless links to the fate of the rest of society than does sexual behavior. Sex may be the subject of endless curiosity but in the end creates smaller ripples in the pond (though the tragic exception of Africa, now ravaged by AIDS, reminds us that in the very poorest societies the reverse may now be true).

The fact that money is safer now in most prosperous societies than it has ever been makes its remaining hazards all the more troubling. It symbolizes the way in which we are connected to strangers as never before. Our response to these connections, and our attempts through political institutions to reassert control over the financial structure of our economies, have led to edifices of regulation as striking in their complexity as the financial institutions they seek to dominate. These are the subject of chapter 7.

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Epilogue to Parts I and II

Part I described how a surprising degree of coordination can be achieved by a system of decentralized activity of production and exchange in which individuals are concerned about nothing more than what is happening in the markets for the things they buy and sell. Modern economic analysis has made this claim very precise.[1] Specifically, markets that satisfy a number of key conditions achieve *Pareto-efficiency*, in which all opportunities for making individuals better off without harming others have been exhausted. The most important of these conditions are:

- There are large numbers of buyers and sellers (so that no one party has the ability to manipulate the market).
- There are no direct interdependencies (known as *externalities*) between individuals other than through their all being participants in the market; one individual's actions do not directly affect the welfare of another.
- There is complete information available to all relevant parties about the quality of the goods being traded.

In reality, no markets precisely satisfy all these conditions, but markets where the conditions are not too flagrantly violated are likely to behave with a reasonable degree of efficiency.[2] Economic analysis also tells us where to look for signs that markets may be failing to coordinate activity efficiently: look out for monopoly, or for externalities like pollution, or for circumstances where some participants know much more than others about the quality of the goods being traded (as in the used car market). The theory also suggests ways to begin to tackle these problems: try to foster more competition where possible; try to make sure that polluters bear the true costs of the damage they cause; and try to ensure that sellers have an incentive (through regulation, for instance) not to deceive buyers.

More recently, economic theorists have systematically compared the merits of imperfect decentralized markets to those of (also imperfect)

centralized administrative structures in tackling different kinds of task. So, for instance, where the costs of coordination failure are very high, and the costs of squandering resources to achieve coordination are comparatively low (as in directing an airplane safely to its destination), markets subject to information frictions may pose unacceptable risks of system failure.[3] Such considerations explain why so many advanced industrialized countries have opted for centralized government intervention and planning in wartime—a choice that has often left them shackled with bureaucratic structures unsuited for responding to the challenges of peacetime. Economists have also explored the risks of globalization in a world in which markets for risk sharing are imperfectly developed.[4]

Impressive as it is, the theory of competitive and efficient markets has two major gaps. The first is that Pareto-efficiency says nothing about equality: if the poor cannot be made better off without harming the rich, competitive markets will not help them. In fact, the history of recent economic development suggests that the poor and the rich *can* have a mutual interest in exchange,[5] but it's important to remember that competitive markets are about exploring avenues of mutual interest, not about redressing preexisting imbalances of power and wealth.

The second gap is that the theory says nothing about what makes it reasonable for individuals to trust those with whom they have to deal. It takes for granted that when people make deals and write contracts with each other, the deals will be respected and the contracts carried out. The fact that the people in modern market societies do seem to trust each other enough, most of the time, at least to do business together is one important reason why these societies can achieve such feats of decentralized coordination. But it is a fact that requires in turn an explanation of its own. Why do we believe that strangers can usually be trusted? This was the subject of part II.

The divorce between an interest in the psychological and cultural foundations of economic life and an interest in the consequences of economic interaction has been a peculiar feature of professional economics during the second half of the twentieth century, rather than an intrinsic character of the subject. Indeed, Adam Smith famously wrote about both "The Moral Sentiments" and "The Wealth of Nations,"[6] and the economics profession has been rediscovering the intimate links between these themes, as a book by Peter Dougherty describes.[7] Part II focused on a subset of the many questions that have been explored in this literature, namely, why people are willing to trust strangers, and what happens when this trust becomes fragile. The difficulty people face in trusting the quality

of the goods offered by their trading partners has been the subject of a vast literature in the field that has come to be known as "the economics of information."[8] The fact that this might prevent some markets from functioning well, or even from existing at all, was the subject of a famous article on the used car market ("The Market for Lemons") by George Akerlof.[9] Akerlof's point was that when some traders sell low-quality goods, buyers will be so cautious that even sellers of high-quality goods cannot get a reasonable price unless they can find some credible way to signal the quality of what they are selling.

There has also been a great deal written on the question of whether people might be more willing to trust one another if they deal with each other repeatedly, so that cooperation today takes place in the hope of inducing cooperation in the future. This literature has concluded that repeated interaction can indeed help to build trust if it is reasonably frequent (that is, provided the future matters enough relative to the present), if individuals can observe reliably enough how others have behaved, and if the cost of forgoing the cooperation of others is high enough relative to the rewards of cheating.[10] Interestingly, some uncertainty about people's character and motives can actually help (in the right circumstances). Even unscrupulous people have an incentive to behave well if they want to make others believe that they are not really unscrupulous after all. They have an incentive, in other words, to "build a reputation," even if this reputation is created rather than intrinsic to their character.[11] By contrast, those who are known for certain to be untrustworthy have no such incentive. We now have a clearer understanding of when competition for customers can encourage trustworthy behavior through the need for reputation, and when formal regulation is likely to be needed.[12]

This research has drawn attention to the importance of the expectations of others for inducing trustworthy behavior. In short, cultures of trust and distrust can come to be self-reinforcing.[13] Such ideas have been explored both theoretically and empirically in recent years, and a large literature on "social capital" has tried to explain the political and economic performance of whole societies in terms of the presence or absence of cultures of trust.[14]

Work analyzing survey evidence as well as experimental findings has established that human motivation differs systematically from the simple calculating self-interest that has been the dominant working hypothesis of most research in economics. First, experiments by Ernst Fehr and others have shown clearly that reciprocity can be a powerful influence on

behavior even when people do not expect to deal with each other in the future.[15] Secondly, careful comparative analysis of families with stepparents and biological parents has shown that people behave systematically less selfishly toward those with whom they share close genetic ties.[16] Such research attempts to control carefully for other variables in order to isolate the effect of individuals' motivations, but other studies look at variability of behavior between societies, in which individual motivations and expectations about the likely behavior of others play roles that are difficult to distinguish. There seems to be a good deal of variation between societies in the extent to which they succeed in inducing a willingness to trust in the reliability of others.[17] This underscores the way in which societies can take on a character that emerges from innumerable individual interactions, without any individual having intended that result.[18] Books that apply this "big picture" theme—the emergence of order—to understanding the process of economic development include (obviously) Adam Smith's *The Wealth of Nations* but also recent works by Eric Beinhocker, William Bernstein, and Ronald Findlay and Kevin O'Rourke.[19]

Prologue to Part III

Economists of the seventeenth and eighteenth centuries, like moralists of the ancient world, were fond of drawing parallels between human societies and the colonies of social insects such as ants and bees. Mandeville's *Fable of the Bees* was in a tradition stretching back to Aesop, carried on by his contemporaries such as La Fontaine in the fable of the grasshopper and the ant, and inspiring the likes of Woody Allen even today. In fact, those parallels are misleading: modern human societies are not like colonies of ants, bees, or termites. As we have seen, human societies involve the interactions of unrelated strangers instead of close relatives. Although the earlier belief that there were essentially no peaceful interactions among unrelated individuals of the same social insect species has now given way to a more complex picture, in which, for instance, colonies founded by unrelated queens may coexist,[1] social insects provide us with no parallel to the day-to-day interactions of strangers in human life.

Nevertheless, the social insects hold a different lesson for us, for they provide striking examples of complex systems behaving in ways that are no part of the intention (or even the awareness) of any of their participants. Here is a description of the way termites build a nest:

> When they start to build a nest, termites modify their local environment by making little mud balls and placing them on the substrate; each mud ball is impregnated with a minute quantity of a particular pheromone. Termites deposit their mud balls probabilistically, initially at random. However, the probability of depositing a mud ball at a given location increases with the sensed presence of other mud balls and the sensed concentration of pheromone. The first few random placements increase the other termites' probability of putting their loads at the same place. By this blind and random game little columns are formed; the pheromone drifting across from neighbouring columns causes the tops of the columns to be built with a bias towards the neighbouring columns, and eventually the tops meet to form arches, the basic building units.[2]

Termites are not architects, in other words, for all that their handiwork may look like architecture. They are merely breeze-sniffing mud carters. Architecture emerges from the combination of all their separate endeavors. Over two centuries ago, Adam Smith had a similarly unelevated view of the motivations of merchants, and a nevertheless upbeat assessment of what they might achieve in combination:

> As every individual, therefore, endeavours as much as he can both to employ his capital in the support of domestic industry, and so to direct that industry that its produce may be of the greatest value, every individual necessarily labours to render the annual revenue of the society as great as he can. He generally, indeed, neither intends to promote the public interest, nor knows how much he is promoting it. By preferring the support of domestic to that of foreign industry, he intends only his own security; and by directing that industry in such a manner as its produce may be of the greatest value, he intends only his own gain, and he is in this, as in many other cases, led by an invisible hand to promote an end which was no part of his intention. Nor is it always the worse for the society that it was no part of it. By pursuing his own interest he frequently promotes that of the society more effectually than when he really intends to promote it. I have never known much good done by those who affected to trade for the public good. It is an affectation, indeed, not very common among merchants, and very few words need be employed in dissuading them from it.[3]

Although many writers and politicians in later times have tried to recruit Adam Smith as a drumbeater for various right-wing causes, he certainly did not think the unintended social consequences of private greed were invariably beneficial. He famously inveighed against cabals of merchants whose main purpose in meeting together was to raise prices to the detriment of the public. Emma Rothschild has even suggested that his use of the metaphor of the "invisible hand" was a sardonic echo of the "bloody and invisible hand" apostrophized by Shakespeare's Macbeth to cover up the crimes he is about to commit.[4] But although we shall never know what Smith would have thought of modern political alignments, we can be sure that he was fascinated by society's capacity to display patterns that had never been consciously designed by any of its members. Some of these patterns might provoke admiration, some might provoke alarm. Smith constantly cautions his readers against thinking we can use our admiration or disapproval for someone's *motives* as a touchstone for deciding whether their actions in society should be encouraged or controlled.

Part II of this book asked how cooperation among strangers is possible in human society—both how it may have come about and on what psychological and institutional foundations its credibility rests. Part III now looks at some of the wider consequences of the human behavior described in part II, often drawing on historical accounts of the results of human interactions. Chapter 10 looks at cities, which have been the crucible of prosperity and creativity in society as well as sinks of pollution, violence, and disease—often all of these things simultaneously. Great cities are never consciously designed in their entirety, but reflect a mysterious tango between conscious planning and happenstance, with myriad unplanned interactions between individual city dwellers. These interactions are known to economists as "externalities," and are the key to understanding that elusive spark that differentiates great cities from the rest. But externalities, especially those of pollution and disease, are a major challenge to our capacity for cooperation. Cities have often overcome their own pollution by collective action, usually with the result that the pollution is exported to the surrounding countryside. But the world as a whole cannot do so, for it has no surrounding countryside. It must find ways to care for its own environment by accounting properly for the costs imposed on that environment by the mass of human activity of which no one is in overall charge. Chapter 11 looks at one particular kind of environmental problem, the use of water, as an example of both the challenges faced by humanity and the way in which our response to such challenges has historically evolved. Successful responses have typically involved creating property rights—allocations of responsibility—in which priorities are ranked by systems of prices, yet it is mysterious how prices can come to embody all the complex information they would need to play this role. Chapter 12 therefore looks at price systems and how they evolve through a process of interaction in markets. Though their participants do not intend this, markets can often extract and summarize information about what their buyers and sellers believe and want, information that tells us something very important about how to manage resources in a world of scarcity.

Yet many important interactions between human beings are not mediated by markets at all, taking place instead in institutions whose component activities are more consciously coordinated, notably in firms. Chapter 12 asks what explains the growth and character of the modern firm and what are the relative roles of markets and firms in the division of labor. Firms have flourished to a considerable extent as vehicles for the propagation of knowledge, but also as mechanisms for its control. So

chapter 13 considers how the growth of knowledge in society has arisen as another manifestation of unplanned interaction between strangers—a division of labor between generations, in effect. Finally, chapter 14 looks at those excluded from many of the benefits of modern society: the poor and the sick, notably the mentally ill and depressed. Is the division of labor partly to blame, and if so could greater conscious coordination improve their lot? This forms a natural bridge to part IV, which will consider the nature of collective action—planned responses to the more alarming unplanned consequences of exchange between strangers.