

## Economics of Social Capital\*

PARTHA DASGUPTA

*Frank Ramsey Professor of Economics, University of Cambridge, Cambridge, UK*

*The literature on the idea of 'social capital' is now enormous. Offering an alternative to impersonal markets and coercive states, the communitarian institutions built around social capital have looked attractive to scholars in the humanities and social sciences. The literature in consequence has a warm glow to it. In this article, I first study the various contexts in which the promises people make to one another are credible and then suggest that the accumulation of social capital is a possible route to creating such a context. I offer a tight definition of social capital – namely, interpersonal networks – so as not to prejudge its ability to enhance human well-being. The links between the microfoundations of social capital and the macroeconomic performance of economies are then studied. I also show that economic theory not only identifies circumstances in which communitarian institutions can function well, but that it also uncovers a dark side, namely, their capacity to permit one group to exploit another within long-term relationships.*

I felt greatly honoured on receiving the invitation to deliver the R.C. Mills Memorial Lecture at this conference. Now that I am actually about to deliver it, I feel even more honoured. You will appreciate that the invitation raised a problem for me: given my predilections, what could I possibly say that would have interested Professor Mills? But I think I have solved that problem. Someone who was so innovative in nurturing the institutions that have enabled the economics

department at the University of Sydney to become so distinguished would have undoubtedly wanted to know whether modern economics is able to illuminate the concept of social capital.

### *1 Definitions?*

The idea of social capital sits awkwardly in contemporary economic thinking. Although it has a powerful, intuitive appeal, social capital has proven hard to track as an economic good. Among other things, it is fiendishly difficult to measure; not because of a recognised paucity of data, but because we do not quite know what we should be measuring. Comprising different types of relationships and engagements, the components of social capital are many and varied and, in many instances, intangible.

In an early definition, social capital was identified with those "... features of social organisation, such as trust, norms and networks that can improve the efficiency of society by facilitating coordinated actions" (Putnam *et al.*, 1993, p. 167). As a characterisation this appears beguiling, but it suffers from a weakness: it encourages us to amalgamate strikingly different

\* This is an expanded version of the R.C. Mills Lecture, delivered at the Annual Conference of Australian Economists, held at the University of Sydney, September 2004. I am extremely grateful to Jeff Sheen, not only for inviting me to give the lecture, but also for encouraging me to speak on the subject of social capital. Many of the ideas developed here arose from problems discussed in Dasgupta (2000a). Over the years, I have benefited from discussions with Kenneth Arrow, Geoff Harcourt, Dale Jorgenson, Karl-Göran Mäler, Sheila Ogilvie, Robert Putnam, Hamid Sabourian, Ismail Serageldin and Robert Solow.

*Correspondence:* Partha Dasgupta, Frank Ramsey Professor of Economics, University of Cambridge, Cambridge, UK. Email: partha.dasgupta@econ.cam.ac.uk

objects, namely (and in that order), beliefs, behavioural rules and such forms of capital assets as interpersonal links (or 'networks'), without offering reasons as to why such an inclusive definition would prove useful for our understanding of the social world.<sup>1</sup> A number of authors have subsequently defined social capital even more inclusively, where even attitudes towards others make their appearance: "Social capital generally refers to trust, concern for one's associates, a willingness to live by the norms of one's community and to punish those who do not" (Bowles and Gintis, 2002, p. F419).

In developing the *economics* of what we today call social capital, some authors focused on a more primitive concept, 'trust' (Dasgupta, 1988). Others have studied those components of social organisation (e.g. rotating savings and credit associations, irrigation management systems, credit arrangements, civic associations, mutual insurance arrangements and the better types of marriages) that make 'social capital' a productive asset (Levi, 1988; Udry, 1990; Besley *et al.*, 1993; Besley and Coate 1995; Ostrom, 1996; Grootaert and van Bastelaer, 2002). Case studies of the management of local common-property resources in poor countries (e.g. fisheries, ponds and tanks, forests, grazing lands and threshing grounds) have offered further insights into the character of those communitarian institutions that enable mutually beneficial courses of action to be undertaken by interested parties (Jodha, 1986; Ostrom, 1990; Dasgupta and Mäler, 1991; Bromley *et al.*, 1992; Baland and Platteau, 1996). Yet others have considered a broader sense of the notion, by including extended kinship, lobbying organisations and such hierarchical relationships as those associated with patronage (e.g. the Hindu *jajmani* system and the Sicilian Mafia) and street gangs, so that dense networks do not inevitably result in overall economic betterment, at least not in the long run (Gambetta, 1993). Moreover, both theory and evidence caution us that communitarian relationships can involve allocations where some of the parties are *worse off* than they would have been if they had not been locked into the relationships, meaning that even though no overt coercion would be visible, such relationships may be exploitative (Beteille, 1983; Dasgupta, 2000a,b; Ogilvie, 2003). One can even argue that the theory in question makes precise the sense in which a relationship *can* be exploitative. In all those accounts, the engagements that rely on

social capital occur somewhere between the individual and the State: they are conducted within informal institutions. Indeed, social capital is frequently identified with the workings of civil society (Putnam *et al.*, 1993; Putnam 2000).

For some time now, it has seemed to me that in thinking about social capital, the most fruitful first step is not to ask what the object might be, but to ask instead a fundamental question facing *any* group of people who have agreed on a joint course of action: *under what contexts can the members be sanguine that the promises they have made to one another are credible?* I show below that answering the question leads us to a tight and useable notion of social capital. The analysis that follows will also remove some of the warm glow that currently surrounds the concept.

## II Trust and Credibility

The fundamental problem facing people who would like to transact with one another concerns *trust*. Imagine a group of people who have discovered a joint course of action that would lead to a mutually beneficial outcome. Imagine that they have agreed to co-operate and share the resulting benefits in a specified manner. If the parties do not trust one another, what could have been mutually beneficial transactions will not take place.<sup>2</sup> But what grounds could they have for trusting one another to do what they have undertaken to do? They would have grounds if promises were *credible*. So a general question arises: under what circumstances are promises credible? Five come to mind.

### (i) Mutual Affection

Promises would be credible if the parties care about one another sufficiently. Innumerable transactions take place only because the people involved care about one another and rationally believe that they care about one another (i.e. each knows that the others know that they care about one another, each knows that the others know that each knows that they care about one another and so on) and thus trust one another to carry out their obligations. Economists model the situation as one where group members have interdependent utilities. The household best exemplifies institutions based on care and affection. As monitoring costs within the household are low (a group of people who cohabit are able to observe and to get to know one another), the institution harbours fewer problems of moral hazard and adverse selection than many other

<sup>1</sup> See also Putnam (2000, p. 19), who writes: "... social capital refers to connections among individuals – social networks and the norms of reciprocity and trustworthiness that arise from them".

<sup>2</sup> Even the famous 'hold-up problem' in the theory of incomplete contracts is an interesting, subtle illustration of this general problem of cooperation. See Hart and Holmstrom (1987).

institutions. However, being few in number, members of a household, as a group, are unable to engage in those enterprises that require large numbers of people of varied talents and locations.

(ii) *Pro-social Disposition*

Promises would be credible if it was common knowledge that those making the promises were trustworthy, or that they reciprocated by keeping their promise if others displayed trust in them.<sup>3</sup> Evolutionary psychologists have argued that, because of selection pressures that operated among our hunter-gatherer Pleistocene ancestors, we are adapted to have a general disposition to reciprocate. Others have argued that such a disposition is to a greater or lesser extent formed through communal living, role modelling, education and receiving rewards and punishments; and that the process begins at the earliest stages of our lives.<sup>4</sup>

For our purposes here, we do not have to choose between the two theories; either would do. In any event, they are not mutually exclusive. Thus, evolutionary psychologists have argued that our capacity to have feelings such as shame, affection, anger, elation, reciprocity, benevolence and jealousy has emerged under selection pressure. No doubt culture helps to shape preferences and expectations (thus, behaviour), which are known to differ widely across societies. But cultural coordinates enable us to identify the locus of points on which shame, affection, anger, elation, reciprocity, benevolence and jealousy are put to work; they do not displace the centrality of those feelings in the human makeup (section III). The thought I am exploring here is that, as adults, we not only have a disposition for such behaviour as paying our dues, helping others at some cost to ourselves and returning a favour; we also practise such norms as those which prescribe that we punish people who have hurt us intentionally; and even such higher-order-norms as shunning people who break agreements, on occasion frowning on those who socialise with people who have broken agreements and so on. By internalising specific norms, a person enables the springs of her actions to include them. She therefore feels shame or guilt in violating the norm, and this prevents her from doing so,

<sup>3</sup> The new behavioural economics emphasises this aspect of human character. See, for example, Rabin (1993) and Fehr and Fischbacher (2002).

<sup>4</sup> See, for example, Hinde and Groebel (1991), which contains accounts of what is currently known of the development processes through which people from their infancy acquire pro-social dispositions; for example, by learning to distinguish accidental effects from intentional effects of others' actions.

or at the very least it puts a break on her, unless other considerations are found by her to be overriding. In short, her upbringing ensures that she has a disposition to obey the norm, be it moral or social. When she does violate it, neither guilt nor shame would typically be absent, but frequently the act will have been rationalised by her. For such a person, making a promise is a commitment and it is essential for her that others recognise it to be so.

Often enough, the disposition to be honest would be towards members of some particular group (clan, neighbours or ethnic group), not others. This amounts to group loyalty. One may have been raised to be suspicious of people from other groups, one may have even been encouraged to dupe such others if and when the occasion arose. Society as a whole wastes resources when the disposition for honesty is restricted to particular groups.

In the world as we know it, the disposition to be trustworthy at both the personal and impersonal spheres exists in varying degrees. When we refrain from breaking the law, it is not always because of a fear of being caught. When an employee in an unorganised sector works overtime, it may simply be a gesture of benevolence, helping out an employer in unexpected need. Recent work in behavioural economics has re-affirmed that benevolence is not alien to human nature. In contrast, if say, relative to the gravity of the misdemeanour the pecuniary benefits from malfeasance were high, some transgression could be expected to occur. Punishment assumes its role as a deterrence because of the latter fact.

(iii) *The Need for Incentives to Keep Promises*

The promises the parties have made to one another to keep to their agreement would be credible if they could devise an institution in which keeping promises would be in the interest of each party, if everyone else were to keep them. The problem therefore is to devise an institution in which keeping to the agreement is an *equilibrium strategy*. Recall that a strategy is a sequence of conditional actions. It involves counterfactuals. Strategies assume the forms, "I shall choose X if you choose Y", or "I shall do P if Q happens" and so on. If promises are to be credible, it must be in the interest of those making promises to carry them out if and when the relevant occasions arise.<sup>5</sup> It would follow that the concept we need to track is that of *equilibrium beliefs*, by which I mean a set of beliefs about one another, one for each party, such that it would be

<sup>5</sup> In short, in talking of equilibrium strategies, I mean *sub-game perfect* equilibrium strategies.

rational for each party to hold their belief if everyone else were to hold their respective beliefs.

Societies everywhere have designed solutions to the credibility problem, but in different ways. What all solutions have in common, however, is their insistence that those failing to comply with agreements without cause will suffer punishment.

Broadly speaking, there are three types of situation where parties to an agreement could expect everyone to keep to their words.<sup>6</sup> Each gives rise to a set of institutions that capitalise on its particular features. (In practice, of course, the types would be expected to shade into one another.) Let us study them.

(iv) *External Enforcement*

It could be that the agreement is translated into an explicit contract and enforced by an established structure of power and authority; that is, an *external enforcer*.

By an external enforcer I imagine here, for simplicity, the State. (There can, of course, be other external enforcement agencies; e.g. tribal chieftains, warlords etc.) Consider that the rules governing transactions in the formal market place are embodied in the law. So markets are supported by a legal structure. Firms, for example, are legal entities. Even when you go to a supermarket, your purchases (paid in cash or by card) involve the law, which provides protection for both parties (the grocer, in case the cash is counterfeit or the card is void; the purchaser, in case the product turns out on inspection to be substandard). The law is enforced by the coercive power of the State. Transactions involve legal contracts backed by an external enforcer, namely, the State. It is because you and the supermarket owner are confident that the State has the ability and willingness to enforce contracts that you and the owner of the supermarket are willing to transact.

What is the basis of that confidence? After all, the contemporary world has shown that there are States and there are States. Simply to invoke an external enforcer for solving the credibility problem will not do; for why should the parties trust the State to carry out its tasks in an honest manner? A possible answer is that the government worries about its reputation. So, for example, a free and inquisitive press in a democracy helps to sober the government into believing that

<sup>6</sup> Of course, none may be potent in a particular context, in which case people would find themselves in a hole they cannot easily get out of, and what could have been mutually beneficial agreements will not take place. The behaviour reported in the Mezzogiorno by Banfield (1958) is an illustration of this possibility.

incompetence or malfeasance would mean an end to its rule, come the next election. Knowing that they worry, the parties trust them to enforce agreements. Even if senior members of the ruling party are getting on in years and therefore do not care much about what happens in the future, younger members would worry that the party's reputation would suffer if the government were not to behave.<sup>7</sup>

The above argument involves a system of interlocking beliefs about one another's abilities and intentions. Consider that millions of households in many parts of the world trust their government (more or less!) to enforce contracts, because they know that government leaders know that not to enforce contracts efficiently would mean being thrown out of office. In their turn, each side of a contract trusts the other not to renege (again, more or less!), because each knows that the other knows that the government can be trusted to enforce contracts; and so on. Trust is maintained by the threat of punishment (a fine, a jail term, dismissal or whatever) for anyone who breaks a contract. We are in the realm of equilibrium beliefs, held together by their own bootstraps.

Unfortunately, cooperation is not the only possible outcome. Non-cooperation can also be held together by its own bootstrap. At a non-cooperative equilibrium, the parties do not trust one another to keep their promises, because the external enforcer cannot be trusted to enforce agreements. To ask whether cooperation or non-cooperation would prevail is to ask which system of beliefs is adopted by the parties about one another's intentions. Social systems have multiple equilibria.

(v) *Reputation as Capital Asset*

Political parties are not the only entities that view reputation as a capital asset. Individuals and firms view it that way too. Consider someone who does not care what his reputation will be after death. Even he would care to build a reputation for honest dealing if he could cash in that reputation at the time of retirement. Brand names are an instance of such cases. The person or persons who own the brand name no doubt change over time, but the name itself remains. People can have a strategic reason for creating a reputation for honesty because of life after retirement. Consider a firm whose dishonest behaviour has been exposed. Suppose that customers deal only with firms that have an unsullied reputation. On retirement, the owner of the dishonest firm would find no buyer. Knowing this in advance, the owner may well wish to maintain the firm's reputation

<sup>7</sup> Przeworski (1991) has explored this argument.

for honesty. If the owner cared sufficiently about his quality of life after retirement, honesty would then be an equilibrium strategy, just as boycotting ill-reputed firms would be a corresponding equilibrium strategy for customers.<sup>8</sup>

Of course, even in situations where reputation can be a capital asset, there is an equilibrium where reputation is not maintained. It cannot be repeated often enough, social systems possess multiple equilibria.

The formal analysis of reputation as capital asset is similar to one involving parties who expect to face transaction opportunities repeatedly in the future. I turn to a study of such situations.

(vi) *Mutual Enforcement in Long-Term Relationships*

Suppose the group of people in question expect to face similar transaction opportunities in each period over an indefinite future. Imagine that the parties cannot depend on the law of contracts because the nearest courts are far from their residence. There may even be no lawyers in sight. In rural parts of sub-Saharan Africa, for example, much economic life is shaped outside a formal legal system. But even though no external enforcer may be available, people there do transact. Credit involves saying, "I lend to you now with your promise that you will repay me" and so on. But why should the parties be sanguine that the agreements will not turn sour on account of malfeasance?

They would be sanguine if agreements were mutually enforced. The basic idea is this: a credible threat by members of a community that stiff sanctions would be imposed on anyone who broke an agreement could deter everyone from breaking it. The problem then is to make the threat credible. The solution to the credibility problem in this case is achieved by recourse to social norms of behaviour.

By a *social norm*, we mean a rule of behaviour (or strategy) that is followed by members of a community. For a rule of behaviour to be a social norm, it must be in the interest of everyone to act in accordance with the rule if all others were to act in accordance with it. Social norms are equilibrium rules of behaviour.

To see how social norms work, imagine that the private gain to a party from breaking the agreement unilaterally during a period is less than the losses he would suffer if all other parties were to punish it in specific ways. Inflicting a punishment could involve refusing to engage in any transactions with the erring party in the following period, shunning it in other ways for suitable numbers of periods and so

on. Call a party *conformist*, if it cooperates with parties that are conformists but punishes those that are non-conformist. This sounds circular, but it is not, because the social norm requires all parties to start the process by keeping their agreement. It would then be possible for any party in any period to determine which party is conformist and which party is not. For example, if ever a party were to break the original agreement, it would be judged to be non-conformist; so, the norm would require all parties to punish the non-conformist. Moreover, the norm would require that punishment be inflicted not only on those in violation of the original agreement (first-order violation); but also on those who fail to punish those in violation of the agreement (second-order violation); on those who fail to punish those who fail to punish those in violation of the agreement (third-order violation); and so on, indefinitely. This infinite chain makes the threat of punishment for errant behaviour credible because, if all others were to conform to the norm, it would not be worth any party's while to violate the norm. Keeping one's agreement would then be mutually enforcing.

All traditional societies appear to have sanctions in place for first-order violations. That sanctions against higher-order violations have not been documented much may be because they are not needed to be built into social norms if it is commonly recognised that people feel a strong emotional urge to punish those who have broken agreements. Anger facilitates cooperation by making the threat of retaliation credible.<sup>9</sup>

Even when cooperation is a possible equilibrium, non-cooperation is an equilibrium too. If each party were to believe that all others would break the agreement from the start, then each party would break the agreement from the start. Notice that a failure to cooperate could be due simply to a collection of unfortunate, self-confirming beliefs, nothing else. We usually reserve the term 'society' to denote a collective that has managed to equilibrate at a mutually beneficial

<sup>8</sup> A formal analysis of reputation as capital asset is to be found in Kreps (1990).

<sup>9</sup> On a riverboat ride in Kakadu National Park a few days before this conference, my wife and I were informed by the guide, a young aborigine, that his tribe traditionally practiced a form of punishment that involved spearing the thigh muscle of the errant party. When I asked him what would happen if the party obliged to spear an errant party were to balk at doing so, the young man's reply was that he in turn would have been speared. When I asked him what would happen if the person obliged to spear the latter miscreant were to balk, he replied that he too would have been speared! I asked him if the chain he was describing would go on indefinitely. Our guide said he did not know what I meant by 'indefinitely', but as far as he knew, there was no end to the chain.

outcome, whether by using reputation as an enabling capital asset (as in the previous two subsections) or by relying on social norms (as in this subsection).

### III Culture as Beliefs

You can see where I am heading. Agreements would be kept only if parties expect agreements to be kept. Mutual expectations about 'reputation' and 'norms of behaviour' would seem to require an underlying 'thing', something that would permit the coordination of those optimistic beliefs. But what is that 'thing'? Could it be culture? I now argue that pointing to culture as an explanatory device will not do, because culture itself should be explained.

#### (i) Basics

In any situation where incentives are required for cooperation (section II(iii)–(vi)), non-cooperation is also a possible outcome.<sup>10</sup> Which state of affairs prevails depends on mutual beliefs. The theory I am using here does not *explain* those beliefs; what it does is to identify those that can be rationally held. Rational beliefs are not belied by the unfolding of evidence. As they are self-confirming, rational beliefs offer an anchor for our analysis. Because rational beliefs are not unique, they offer just the kind of flexible anchor we need in order to make sense of societal differences.

In his famous work on the influence of culture on economic development, Weber (1930) took a community's culture to be its shared values and dispositions, not just beliefs. Studies as widely cast as Weber's cannot easily be summarised, but the causal mechanism Weber himself would seem to have favoured in his work on Protestant ethic and the spirit of capitalism leads from religion, through political culture, to institutions and, so, to economic performance.

Using culture to explain economics has not been popular among social scientists in the post-war period. But there has been a recent revival. The most ambitious appeal to culture to understand differences in economic performance since Weber has been Landes (1998), who asks why is it that since the middle of the sixteenth century, countries in northern Europe managed to race ahead of those several others elsewhere seemingly better placed at that time. No doubt, technological progress and its rapid diffusion among populations was the key to that success, but the progress itself needs an explanation. The one Landes offers is

distinctive, because it gives importance to the evolution (or a lack of it) of different types of attitudes and beliefs in various regions of the world. Landes argues that these differences gave rise to institutional differences (with feedback to attitudes and beliefs), which help to explain why some countries became winners, though others enjoyed a brief period of success before losing to the winners and yet others merely suffered from atrophy.

Landes offered a historical narrative. An alternative strand of enquiry makes use, when available, of statistical evidence. The two strands complement each other. Putnam *et al.* (1993), Knack and Keefer (1997) and La Porta *et al.* (1997) have studied cross-sectional data and discovered positive links between *civic* culture (civic engagements, trust) and economic growth, whereas Granato *et al.* (1996) have studied the cross-sectional data and found positive links between *personal motivation* (the desire to advance oneself economically) and economic growth.

The statistical findings should not be given a causal interpretation. The motivation to advance oneself would be expected to depend on one's expectations (i.e. beliefs) regarding the chance that hard work pays off. Parents would be expected to instil personal ambition in their children only if they were sanguine that such ambition would not be thwarted by the social order. And women would not rise beyond their station if they (rationally!) feared retaliation against them for their temerity (Ogilvie, 2003). Thus, even an attitude can be a determined rather than a determining factor. When it is the former, an observed statistical link between culture and economic progress should be interpreted at most as an equilibrium relationship between two endogenous variables. I am using 'culture' to denote differences in the beliefs people hold about one another. Culture in this view is a coordinating device.<sup>11</sup>

Let us apply the above line of thinking to two contemporary phenomena: the presence of cultural stereotypes and tax compliance.

#### (ii) Cultural Stereotypes

Beliefs can play an even more complex role than the one discussed so far. Economists have shown how cultural stereotypes can persist even when there are no intrinsic differences among groups. Needless to say, such stereotypes usually result in overall economic losses.<sup>12</sup>

<sup>10</sup> There can be many more equilibria, characterised by partial compliance. For expositional ease, I mostly restrict the discussion to two extreme equilibria, those that are characterised by non-compliance and full compliance, respectively.

<sup>11</sup> Greif (1994) has pursued this line of enquiry.

<sup>12</sup> The key contributions are Arrow (1973), Starrett (1976), and Coate and Loury (1993). The example in the text is taken from the Coate–Loury paper.

Imagine that to be qualified to do a demanding (but personally rewarding) job requires investment and that investment costs differ among people, dependent as the costs are on a person's intrinsic ability. Imagine that individuals' intrinsic abilities have been drawn from the same genetic urn: there are no group differences, only individual differences. Assume now that innate ability cannot be observed by employers, to an extent that even if one has made the investment and is thus qualified for the demanding job, employers are unable *ex ante* to judge this with unerring accuracy. If, however, employers harbour negative stereotypes against a particular group's ability, they are likely to use a stiffer criterion for assigning workers of that group to the difficult, but personally more rewarding job. Among workers belonging to that group, this practice would lower the expected return on the investment that makes them suitable for the more rewarding job. This means that less number of them would make the investment. This in turn means that there would be fewer of them suitable for the rewarding job, which in turn could confirm the cultural stereotype and justify the use of the stiffer criterion by employers. In other words, it is possible for people's beliefs about group differences to be confirmed by the consequences of the actions members of those groups take in response to the practice people follow in response to those beliefs. This is once again an instance of one equilibrium outcome out of possibly several, because, if employers did not hold negative cultural stereotypes against any group, there would not be such a differentiated outcome among groups. Discrimination occurs and persists because of a self-fulfilling system of prejudicial beliefs.

### (iii) Civic Virtues

Although quantitative estimates are sparse, civic virtues would appear to differ enormously across societies. In poor countries, where the State is often viewed by communities as an alien fixture and the public realm an unfamiliar social space, the temptation to free-ride on such State benefits as there are must be particularly strong. Even in a 'well-ordered' society, free-riding would not be uncommon: separation of the private and public spheres of life is not an easy matter. Living off the State can become a way of life.

Political scientists have puzzled over the fact that, in some countries, taxpayers comply far more frequently than would be expected if compliance rates in other countries were used as a basis of comparison. Paying taxes is voluntary, in that people choose to comply in situations where they are not directly coerced. But it is only 'quasivoluntary' (Levi, 1988), in that those

who do not comply are subject to coercion if they are caught. One way to interpret differences in compliance across countries is to suppose that people are willing to pay their dues if: (i) the government can be expected to keep to its side of the bargain on transfers and public expenditure; and (ii) others pay their dues. Taxpayers are viewed on this interpretation as people who are willing to cooperate in a good cause if a sufficiently large number of others cooperate as well, but not otherwise. The hypothesis is that most people are civic minded when, and only when, most others are civic minded.

There is evidence obtained by psychologists (not behavioural psychologists!) that people do not merely display reciprocity (section II(ii)), they have *feelings* about reciprocity. To quote Levi (1988, p. 53), nobody likes being taken for a sucker. Our propensity to have such feelings is itself an outcome of selection pressure over the long haul of time. Findings such as these have been deployed by economists in modelling the attitudes of citizens to work on the one hand and to the volume of taxes and the character of public transfers on the other (Lindbeck, 1997; Lindbeck *et al.*, 1999). Imagine that a person's desire to live off the State increases with the proportion of those who live off the State because, say, there is little stigma or shame when the proportion is large, but a good deal when the proportion is small. Citizens vote on levels of taxes and transfers and then choose in the light of the outcome of the votes whether to work. As the two sets of decisions are taken in a sequential manner, the model is not easy to analyse, but it has been found that, with some additional structure, quantitative conclusions can be reached (Lindbeck *et al.*, 1999). The model is attractive because it treats the degree of compliance (more generally, the degree of civic cooperation) as something to be explained; civic behaviour is not regarded as part of the explanation. The model admits more than one equilibrium pattern of behaviour, each characterised by a particular degree of compliance. Being equilibria, compliance rates – whether high or low – are held together by their own bootstraps, involving the now-familiar circular chains of reasoning. Where compliance rates are high, it is because most people reciprocate by behaving in a civic-minded way, when most others are behaving in a civic-minded way. Conversely, where compliance rates are low, it is because most people reciprocate by behaving in an opportunistic way, when most others are behaving opportunistically and so on.

### (iv) Culture Versus Explanatory Variables

In each of the two examples, equilibrium beliefs could be the consequence of historical accidents,

rather than deliberate agreement. So it can be that societies that are identical in their innate characteristics (i.e. fundamentals) display very different civic behaviour. Similarly, it can be that people in one society harbour cultural stereotypes even though people in another society possessing the same fundamentals do not harbour them. Culture is not an explanatory variable in either example – it is endogenous in both. Moreover, as our five-way classification in section II suggested and the model of quasivoluntary behaviour illuminated, you do not need to know someone, even at some steps removed, to form beliefs (even rational beliefs) about their intended behaviour. Social capital, in the sense of interpersonal networks, is certainly necessary if mutually beneficial outcomes are to be identified and the associated agreements reached, but you do not need to know each and every fellow citizen to arrive at rational beliefs, at a statistical level, about their intended behaviour. Trust is the key to cooperation, what scholars have meant by 'social capital' is merely one of the means to creating trust.

Analysis of equilibrium beliefs in such models, as those in the pair of examples, is frequently a short hand for understanding pathways by which beliefs evolve over time. History matters, if only because historical experiences affect contemporary beliefs.<sup>13</sup> The idea, more broadly, is to explain contemporary cultural differences (differences in rational beliefs) in terms of differences in primitives, such as our material needs, the large-scale ecological landscape, the shared knowledge base and historical accidents. Cultural differences would be correlated with differences in economic performance; they would not be the cause of them.

The models of cultural stereotypes and civic cooperation suggest also that different types of variables should be expected to change at different speeds – some slow, some others not-so-slow, yet others fast. Imagine now that certain types of (cultural) beliefs are slow to adapt to changing external circumstances. Since slow variables are to all intents and purposes fixed in the short run, it would not be unreasonable to

regard them as parameters for short-run analyses. This is the approximation social scientists make when they offer cultural explanations for economic performance, for example, the success of Japan in the post-war era (Hayami, 1997).

Matters are different in the long run. Individual motivation and beliefs are influenced by values and the practice of norms, and they in turn are influenced by the products of society, such as institutions, artefacts and technologies (Wildavsky, 1987). Moreover, any process that ties individual motivations and beliefs to values and norms and thereby to the choices made, and back again, would be expected to be path-dependent. There is little evidence though that trade and imitation may not lead to convergence in those spheres of culture that have a sizeable effect on economic performance. It is also possible that the *effect* of a particular component of a people's culture changes over time even when the culture itself is not changing. The various components of culture are in different degrees complementary to other factors of production. So it is possible for a particular component to lie dormant for decades, even centuries, only to become a potent force when external circumstances are 'right'. By the same token, this same component could become ineffective, even dysfunctional, when external circumstances change again. This is why there is no logical flaw in such claims as that Japan's remarkable economic success in the post-war period has been due in part to some aspects of the nation's culture, even though those same aspects did not have potency in earlier centuries and may in future even prove to be dysfunctional.

And finally, the models of cultural stereotypes and civic cooperation offer the sobering thought that, under slowly changing circumstances, the extent to which people harbour cultural stereotypes, or the degree to which people are civic-minded can alter imperceptively over a long period of time, until a moment is reached when society transforms itself rapidly from one state of affairs (e.g. a society where citizens are civic minded) to another, very different, state (e.g. a society where citizens are not civic minded). The rapid transformation is a transition from an equilibrium compliance rate in one basin of attraction to that in another.<sup>14</sup>

<sup>13</sup> Binmore and Dasgupta (1986) offer simple examples of what game theorists call 'eductive' and 'evolutive' analyses of social phenomena. In the former, the algorithm on the basis of which equilibrium beliefs are attained is built into the agents' reasoning processes (as in analytical game theory; Fudenberg and Maskin, 1986). In the latter, the algorithm is run in real time, and selection pressure determines which types of behaviour survive (as in Sethi and Somanathan, 1996). The two types of analyses are not at logger-heads; they operate over different time scales and are therefore pertinent to different aspects of behaviour.

<sup>14</sup> In sociology, the phenomenon is called 'tipping'. See Schelling (1978), who used it to explain rapid transformations in the urban landscape in the USA, namely, middle-class whites escaping inner cities for suburbia in the 1960s. Pathways leading to the tipping phenomenon have been used also to characterise the recent fall in birth rates in parts of the poor world (Dasgupta, 2000b).



#### (v) *Defining Social Capital*

The literature on social capital has tended to focus on interpersonal networks that are of positive value both to the members and to society at large (Ostrom, 1990; Putnam *et al.*, 1993; Putnam 2000). Those scholars studying street gangs and crime syndicates have noted, however, that interpersonal networks can be of negative social worth even if they are of positive worth to their members (Gambetta, 1993). Later, we will confirm that networks can be ruinous not only for society at large, but also for some of their own members.

In what follows, therefore, I take social capital to mean *interpersonal networks*, nothing more. The advantage of such a lean notion is that it does not pre-judge the asset's quality. Just as a building can remain unused and a wetland can be misused, so can a network remain inactive or be put to use in socially destructive ways. There is nothing good or bad about interpersonal networks; other things being equal, it is the *use* to which a network is put by members, that determines its quality.

#### IV *Creating Networks*

So far, I have assumed that people are able to interact with one another without having to search for others with whom to interact. The interpersonal networks (networks for short) have been taken to be in place. But people are known to create networks. Moreover, searching for others with whom to form networks involves resources (e.g. time). So, we need to study pathways by which networks get formed and the reasons why they get formed.

One may think of networks as systems of communication channels for protecting and promoting interpersonal relationships. Interpersonal relationships are a more complex notion than networks, as they are the outcomes of a system of mutual beliefs. But networks cover a wide terrain. They include as tightly woven a unit as a nuclear family and one as extensive as a voluntary organisation. We are born into certain networks and enter new ones. So, networks are themselves connected to one another. Network connections can also be expressed in terms of channels, although a decision to establish channels which link networks could be a collective one.

An elementary channel connects a pair of individuals directly. However, one can establish indirect links. Person A builds an elementary channel, connecting her to person B, person C builds an elementary channel connecting him to B and so on. A is then connected to C, albeit once removed. Indeed, C's motive for establishing an elementary channel with B could be because of his desire to be linked to A and so on.

To establish a channel involves costs, as it does to maintain it. In some contexts, they would be called 'transaction costs'. The desire to join a network on someone's part could be because of a shared value.<sup>15</sup>

But as we noted in previous sections, networks also play a role in enabling coalitions to form, to coordinate and to act, matters central to Putnam *et al.*'s (1993) view of civic engagement. Generally speaking, the decision to invest in a channel could be because it would contribute directly to one's well-being (investing in friendship) or it could be because it makes economic sense (joining a guild), or it could be because of both (entering marriage). On an occasion, the time involved is not a cost at all, as the act of trying to create a channel can itself be something that adds grace to one's life. Arranging and sharing a meal; giving a personal, decorative expression to one's immediate environment; being able to confide one's inner world to chosen others – these are deeply felt needs. We all experience these needs and try to act on them.<sup>16</sup> Many of the consequences of joining a network and continuing one's membership are unanticipated. The immediate motivation could be direct pleasure (enjoyment in relating to someone or being a member of a congenial group), its economic benefits an unanticipated side-effect (the 'old-boy' network). But the direction could go the other way (joining a firm and subsequently making friends among colleagues). Regardless of the motivation, expenditure in a channel involves a resource allocation problem, with all its attendant difficulties.<sup>17</sup>

The clause 'personal relationships' in the notion of networks is central. It involves trust without recourse to an external enforcer of agreements (section II(v) and (vi)).<sup>18</sup> There is also the suggestion that engaging in civic cooperation leads to a heightened disposition to cooperate (section II(i) and (ii)). It amounts to forming personal beliefs about others and one's own tastes through sampling experiences. But if social engagement fosters trust and cooperation, there would be positive feedback between civic engagement and

<sup>15</sup> Fukuyama (1997, Lecture 2) takes this to be the defining characteristic: "A network is a group of individual agents that share *informal* norms or values beyond those necessary for market transactions".

<sup>16</sup> Douglas and Isherwood (1979) and Goody (1998) contain accounts of why and how is it that even 'consumption' is a social engagement.

<sup>17</sup> In a fundamental paper, Bala and Goyal (2000) have modelled network formation as an equilibrium of a game in which people establishing the networks bear the cost of installation.

<sup>18</sup> Compare Putnam *et al.* (1993, p. 171): "Social trust in complex modern settings can arise from two related sources – norms of reciprocity and networks of civic engagement".

a disposition to be so engaged. The synergy would be tempered by the fact that the private cost of additional engagements (time) would rise with increasing engagements.<sup>19</sup>

As elsewhere in resource allocation theory, it helps to think first of networks in equilibrium and to then study their dynamics. We may take it that each person has available to him a set of channels from which he can choose. Some would have been inherited (the decision problem concerning these would be whether to maintain them and, if so, at what level of activity), others he would have to create. Imagine that for any configuration of channels that others select, there is an optimal set of channels for each individual. An equilibrium network of channels is then a feasible network possessing the property that each party's choice of channels in the network is optimal for him, given that others establish their respective channels in the network in question.

Equilibrium networks can be expected to contain strategically placed individuals. They are the fortunate people, having inherited and/or having made the most valuable connections, in a literal sense. There would be others with connections of not much economic worth, even if their emotional worth were high.

#### V Network Externalities

Installing channels is a way to create trust. Plausibly, someone's knowledge of someone else's character declines with the number of elementary channels separating them, as in perhaps knowing very little personally about a friend of a friend of a friend, knowing rather more about a friend of a friend and knowing even more about a friend.<sup>20</sup> This creates the necessary tension between the benefits and costs of establishing elementary channels.

##### (i) Weak and Strong Ties

But one can be misled by this chain-postulate into thinking that weak ties are not valuable. In fact, they can be very valuable. In a famous study based on interviews with professional and technical workers in

a town outside Cambridge, MA, Granovetter (1973, 1974) showed that more than half had found their jobs through a personal connection. Surprisingly, the majority of personal connections were not close friends, they were mere acquaintances.

Granovetter himself noted that the latter finding should have been expected. The reason weak ties are especially useful in the search for jobs is that they cover a greater range of links than strong ties. Weak ties connect one to a variety of people and so to a wide information base. However, among *rural* populations in poor countries, there are not so many weak ties, ties are mostly intense. This narrows possibilities. But it creates an avenue for migration. One enterprising member of the community moves to the city, perhaps supported by those with whom he has strong ties at home while he searches for work. He is followed by others in a chain-like fashion, as information is sent home of job prospects. Migrant workers may even recommend village relations to their bosses, because employing them would reduce moral hazard and adverse selection problems for the bosses. This would explain the still largely anecdotal evidence that city mills often employ disproportionate numbers of workers from the same village. The emotional costs of adaptation to new surroundings would also be lower for later migrants, with the implication that migration in response to new opportunities in the city should be expected to be slow to begin with but would pick up strength as costs decline (Carrington *et al.*, 1996). Formal evidence of chain migration, though sparse, does exist. Caldwell (1969) has confirmed its occurrence in sub-Saharan Africa and Banerjee (1983) has provided evidence from an Indian sample. Chain migration from village to town has been observed among children in Karnataka, India, by Iversen (2002) in his study of peer-group emulation as a determining factor in the supply of child labour.

##### (ii) Inherited Ties

Wintrobe (1995) postulates that parents create and invest in channels and pass them on to their children, in return for security in old age. This probably has had force in poor countries, where capital markets are largely unavailable to rural households. But there would seem to be more in our desire to transfer capital assets to the young. One type of capital we give our offspring in abundance is the kind which falls under the term 'cultural values', values we cherish. We make such transfers not only because we think it is good for our children, but also because we desire to see our values survive. Investing in channels and passing them on to children is a way of preserving those values.

<sup>19</sup> Putnam *et al.* (1993, pp. 86–91) discuss this influence. They even suggest (p. 90) that "taking part in a choral society or a bird-watching club can teach self-discipline and an appreciation for the joys of successful collaboration". Seabright (1997) reports empirical evidence of cooperation begetting further cooperation. Recall the observation by Hirschman (1984) that trust is a moral good (it grows with use and decays if unused).

<sup>20</sup> Compare this account with Putnam *et al.* (1993, pp. 168–169): "Mutual trust is lent. Social networks allow trust to become transitive and spread: I trust you, because I trust her and she assures me that she trusts you".

Wintrobe (1995) also asks why networks frequently operate along ethnic lines and why they are multipurpose and dense, unlike specialised 'professional' networks. In the answer, he observes that exit from, and entry into, ethnic networks are impossible, and that the threat of sanctions by the group prevents children from reneging on the implicit contract to work within it.

But there probably are additional forces at work. It should not be surprising that the channels people bequeath their children in traditional societies frequently amount to ethnic networks (who else is there with whom one can form connections?). As Posner (1980) observes in the African context, village and kinship networks are a means of reducing problems of moral hazard and adverse selection, because monitoring one another's activities is not costly within the village and because membership of the kin-group is based on birth. However, although it is true that exit from one's ethnicity is literally impossible, children do have a choice of not using the ethnic channels they may have inherited. So Wintrobe's thesis needs to be extended if we are to explain why those particular networks are so active – their mere denseness would probably not suffice. The way to extend the account is to observe first that investment in channels is *irreversible*: one cannot costlessly redirect channels once they have been established (such investments are inevitably specific to the relationships in question). Moreover, if trust begets trust, the cost of maintaining a channel would decline with repeated use (witness that we often take our closest friends and relatives for granted). So, using a channel gives rise to an externality over time, much as in 'learning by doing' in the field of technology-use. The benefits from creating new channels are therefore low if one has inherited a rich network of relationships. This is another way of saying that the cost of not using inherited channels is high. Outside opportunities have to be especially good before one severs inherited links. It explains why we maintain so many of the channels we have inherited from our family and kinship, and why norms of conduct pass down the generations. We are, so to speak, locked-in from birth.

### (iii) Multiple Equilibria Again

The establishment and maintenance of channels create externalities not only across time, but also among contemporaries. If the externalities are positive, as in the case of making friends (or becoming literate and numerate as a prelude to enjoying advanced communication links), there would typically be an undersupply. Diamond (1982) famously showed this in the context of people seeking those others with whom

they would be able to exchange goods they have produced. Since one may run into people who have not got appropriate goods to exchange, search is costly. When someone with goods searches more intensively, she benefits because she is more likely to find someone with whom to trade. But she also benefits those others who possess goods that are appropriate for exchanges with her, because they are more likely to run into *her*. Simulations suggest that such externalities can have powerful effects. Diamond's purpose in constructing the model was to show how an economy could find itself in a depression if transactions involve search. People would produce little if they thought that they had to wait a long while before being able to sell (maintaining inventories is costly). It could even be a self-fulfilling thought. If so, equilibrium production and search would both be less than efficient.

There can also be negative externalities in the creation of channels, such as those within groups that are hostile to one another. One would expect an oversupply of them (they are often neighbourhood 'arms' races; Gambetta, 1993). Be they positive or negative, externalities give rise to collective inefficiency. Positive externalities point to an argument for public subsidy, negative ones for investment in such institutions as those whose presence would lower the externalities ('taxing' the corresponding activities would be another possibility). Local authorities frequently apply this argument when establishing youth centres, social clubs and the like.

### (iv) Contagion Models

There are types of influence that are able to travel great distances, for example, via radio and television, newspaper and the internet. They would be expected to push society in the direction of greater homogeneity. Individual projects and purposes would become more similar across regions. Of course, local influences can have this effect too, as in simple models of 'contagion'. Whether contagions spread or are geographically contained appears to be sensitive to model specification. The models are nevertheless united in one thing: they all tell us that channels of communication create twin pressures, one leading to clusters of attitudes and behaviour (Glaeser *et al.*, 1996; Eshel *et al.*, 1998), the other to homogeneity (Ellison, 1993). These pressures work on different, criss-crossing spheres of our lives. Both in turn interact with markets.

The study of locally interacting systems is of obvious importance, if we are to understand networks. Such systems tell us that elementary channels are not public goods. The creation of a channel by someone gives rise to externalities (those who are connected to the channel are affected), but they are *confined*

externalities (presumably, not everyone is connected to the channel). Likewise, the creation of trust gives rise to externalities, but they too are confined externalities. Moreover, the externalities are not anonymous, they are personalised. Names matter. In this sense also they differ from public goods.<sup>21</sup>

#### *VI Networks and Human Capital*

In his pioneering work, Coleman (1988) saw social capital as an *input* in the production of human capital. In his view, social capital is an aggregate of interpersonal networks. Establishing networks involves time and effort. Much of the effort is pleasurable, some not. Even so, just as academics are paid for what they mostly like doing anyway (as a return on investment in their education), networking would be expected to pay dividends, even when maintaining networks is a pleasurable activity.

Burt (1992) has found among business firms in the US that, controlling for age, education and experience, employees enjoying strategic positions in networks are more highly compensated than those who are not. His findings confirm that some of the returns from investment in network creation are captured by the investor. However, because of network externalities, not all the returns can be captured by the investor: when A and B establish a channel linking them, the investment improves both A's and B's earnings, but it also improves the earnings of C, who was already connected to B.

The findings of Burt and his colleagues imply that memberships in networks are a component of 'human capital'. If firms pay employees on the basis of what they contribute to profitability, they would look not only at the conventional human capital employees bring with them (e.g. health, education, experience, personality), but also the personal contacts they possess. It would be informative to untangle networks from the rest of human capital. This could reveal the extent to which returns from network investment are captured by the investor. But measurement problems abound. They may be insurmountable, because of the pervasive externalities to which they give rise.

#### *VII Horizontal Versus Vertical Networks*

Putnam *et al.* (1993, p. 174) observe a critical difference between horizontal and vertical networks:

A vertical network, no matter how dense and no matter how important to its participants, cannot sus-

tain social trust and cooperation. Vertical flows of information are often less reliable than horizontal flows, in part because the subordinate husbands information as a hedge against exploitation. More important, sanctions that support norms of reciprocity against the threat of opportunism are less likely to be imposed upwards and less likely to be acceded to, if imposed. Only a bold or foolhardy subordinate lacking ties of solidarity with peers, would seek to punish a superior.

There is a third reason:

Imagine a network of people engaged in long-term economic relationships, where relationships are maintained by observing social norms (e.g. norms of reciprocity; section II(vi)). Suppose new economic opportunities arise outside the enclave, say, because markets have developed. Horizontal networks are more likely to consist of members who are similarly placed. If one of the parties discovers better economic opportunities outside the enclave, it is likely that the others too will discover better economic opportunities. Both parties would then wish to re-negotiate their relationship.

Vertical (or hierarchical) networks are different. Even if the subordinates (e.g. the landless labourers) find a better economic opportunity in the emerging markets, it is possible that the superiors (i.e. the landlords, creditors) do not; in which case the former would wish to re-negotiate, but the latter would not. It is no doubt tempting to invoke the Coase-argument (Coase, 1960) that the subordinates would be able to compensate the superiors and thus break the traditional arrangement. But this would require the subordinates to be able to capitalise his future earnings, something typically not possible for people who are subordinates in rural economies in poor countries. Nor is a promise to pay by instalments an appealing avenue open to a subordinate. He would have to provide collateral. As this could mean his family being left behind, the workers could understandably find it too costly to move.

#### *VIII Networks and Markets*

Networks are personal. Members of networks must have names, personalities and attributes. Networks are exclusive and not inclusive, otherwise they would not be networks. The terms of trade within a network would be expected to differ from those which prevail across them. An outsider's word would not be as good as an insider's word: names matter.

Networks give rise to 'communitarian' institutions. In contrast, markets (at least in their ideal form) involve 'anonymous' exchanges (witness the oft-used phrase: "my money is as good as yours"). To be sure, the distinction between named and anonymous

<sup>21</sup> For a fine account of the general theory of locally interacting socioeconomic systems, see Blume and Durlauf (2001).

exchanges is not sharp and even in a sophisticated market (modern banking), reputation matters (credit rating of the borrower). But the distinction is real. The key point that follows is that the links between markets and communitarian institutions are riddled with externalities. Transactions in one institution have effects that spill over to the other without being accounted for. Externalities introduce a wedge between private and social costs and between private and social benefits. We observe below that some externalities are of a kind that reflects synergism between the two institutions, whereas others reflect antagonism between them.

All societies rely on a mix of impersonal markets and communitarian institutions. The mix shifts through changing circumstances, as people find ways to circumvent difficulties in realising mutually beneficial transactions. It pays to study those features of goods and services that influence the mix in question, and the hazards that lie in wait while the mix changes as a consequence of the individual and collective choices that are made.

#### *(i) Complementarities*

Networks and markets often complement one another. Production and exchange via networks in one commodity can be of vital importance to the functioning of the market in another. As has been long noted by economists, for example, exchanges within the firm are based on a different type of relationship from those in the market place between firms. The classification in section II was in part prompted by such differences.

But complementarities between networks and markets can be a good deal more subtle. Powell (1990) and Powell and Brantley (1992) have found that researchers in rival firms in such a competitive environment as the one that prevails in the biotechnology industry share certain kinds of information among themselves, even though the scientists maintain secrecy over other matters. The balance between disclosure and secrecy is a delicate one; but in any given state of play, a common understanding would seem to prevail on the kinds of information members of a network of scientists are expected to disclose, if asked, and the kinds one is expected not even to seek from others. In such an environment, non-cooperation would be costly to the individual scientist: if he refused to share information, or was discovered to have misled others by giving false information about his own findings, he would be denied access to information others share. There is also evidence that sharing research findings among scientists in rival firms is not clandestine practice. Management not only are aware of the practice, they positively encourage their scientists to

join the prevailing network. Well-connected scientists are especially valued. The geographical clustering of firms in research-based industries (e.g. Silicon Valley, California; the Golden Triangle in North Carolina; Silicon Fen around Cambridge, England) is a consequence of the need for such networks. Networks can even be the means by which markets get established (long distance trade in earlier times). In some cases they are necessary if markets are to function at all.<sup>22</sup>

#### *(ii) Crowding Out*

Where networks and markets are substitutes, they are antagonistic. In an oft-quoted passage, Arrow (1974, p. 33) expressed the view that organisations are a means of achieving the benefits of collective action in situations where the price system fails. This formulation, if interpreted literally, gets the historical chronology backward, but it has an important contemporary resonance: when markets displace communitarian institutions in the production of goods and services, there are people who suffer unless counter-measures are undertaken by collective means.

Arrow's observation also has a converse: certain kinds of network can prevent markets from functioning well (Arnott and Stiglitz, 1991). Networks can even prevent markets from coming into existence. In such situations, networks are a hindrance and not a help to economic development. They may have served a purpose once, but they are now dysfunctional.

To illustrate, consider the strong kinship ties that are prevalent in traditional societies. Such ties reflect a communal spirit absent from modern urban life and strike an emotional chord among Occidental scholars (Apfell Marglin and Marglin, 1990). But there is a functional side to kinship ties: the obligation of members of a kinship to share their good fortune with others in the group offers a way to pool individual risks. The lowlands of sub-Saharan Africa, for example, are in large measure semiarid, where people face large climatic risks. In contrast, people in the highlands enjoy more reliable rainfall. Lineage groups are powerful in the lowlands. They are less powerful in the highlands, where even private ownership of land is not uncommon (e.g. the Kikuyu in Kenya; Bates, 1990).

However, there is a bad side to the coin in kinship obligations. They dilute personal incentives to invest for prosperity. Even if the social return on investment in an activity is high, the private return can be low: because of kinship obligations, the investor

<sup>22</sup> Even here the role of networks can be expected to diminish, as it becomes easier and easier to transmit and access information in the market place.

would not be able to appropriate the returns.<sup>23</sup> Insurance markets are superior to communitarian insurance systems, because the former, covering a wider terrain of people, are able to pool more risks. However, mutual insurance among members of a community (e.g. household, kinship, village) can be expected to be less fraught with problems of moral hazard and adverse selection than markets. This means that if we view kinship obligations over insurance and credit, respectively, as risk-sharing arrangements and intertemporal consumption-smoothing devices, they are to the good; but they are not *all* to the good, because their presence renders as low the private benefits people would enjoy from transacting in insurance and credit markets, even when the collective benefits are high.

It is possible also to show that the more dissimilar the transactors are, the greater are the potential gains from transaction. This means that, to the extent communitarian institutions are a dense network of engagements, they are like economic enclaves. But if the institutions act as enclaves, they retard economic development. For example, social impediments to the mobility of labour imply that 'talents' are not able to find their ideal locations. This can act as a drag on economic development. The same point can be made about credit, if credit is based on kinship. More generally, resources that should ideally flow across enclaves do not do so. Society then suffers from an inefficient allocation of resources.

#### *IX Microbehaviour and Macroperformance*

We should now ask how network activities translate into the macroperformance of economies.

If the market for labour and skills works reasonably well, wages and salaries would in part consist of the additional revenue employees make for their employers by virtue of the 'contacts' they possess (Burt, 1992). This means that to the extent the worth of contacts is reflected in wages and salaries, social capital is a component of human capital, which in turn means that it can be thought of as a factor of production. It should be noted though that in poor countries, where labour markets can malfunction badly, or can even be non-existent, attributing returns to the various factors of production is especially problematic. But even if we were to leave that problem aside, we know from our earlier discussion that networks give rise to externalities. This makes the translation from microbehaviour to macroperformance an especially difficult subject.

<sup>23</sup> Platteau and Hayami (1998) have stressed this feature of life in the lowlands of sub-Saharan Africa. They were concerned to account for differences between its economic performance and that of East Asia since the 1960s.

To illustrate, consider a simple formulation of economywide production possibilities. Let individuals be indexed by  $j$  ( $j = 1, 2, \dots$ ). Let  $K$  denote the economy's stock of physical capital and  $L_j$  the labour-hours put in by person  $j$ . I do not specify the prevailing system of property rights to physical capital, nor do I describe labour relations, because, to do so would be to beg the questions being discussed here. But it is as well to keep in mind that in a well-developed market economy,  $K$  would be dispersed private property, in others  $K$  would be in great measure publicly owned, in yet others much would be communally owned and so on. It is also worth remembering that in market economies labour is wage based, that in subsistence economies 'family labour' best approximates the character of labour relations, and that labour cooperatives are not unknown in certain parts of the world and so on.

Let  $h_j$  be the human capital of person  $j$  (years of schooling, health). His effective labour input is then  $h_j L_j$ .  $h_j$  is what one may call 'traditional human capital'; that is, for the moment we leave aside the networks to which  $j$  belongs. For notational ease, it helps to interpret physical capital as 'manufactured' capital, comprising such items as factories and buildings, roads and bridges, machines and cables and so on. In short, I ignore natural capital here.

Human capital is embodied in workers. Given the economy's knowledge base and institutions (the latter I take here to be the engagements brought about by the interpersonal networks), human capital in conjunction with physical capital produces an all-purpose output,  $Y$ , which we may call gross national product (GNP). Each of the aggregate indices requires for its construction prices, the multitude of components that make up the aggregate. In industrial market economies, the required prices are typically market prices. When externalities are pervasive, the construction of such indices poses special problems. Let us therefore assume the problems of aggregation by imagining the economy to possess a single good  $Y$ . Problems nevertheless remain in measuring the pathways that link microbehaviour to macroperformance. Let us study them.

#### *(i) Scale Versus Change*

Write  $H = \sum_j h_j L_j$ .  $H$  is aggregate human capital. Now suppose that output possibilities are given by the relationship,

$$Y = AF(K, H), \quad (A > 0), \quad (1)$$

where  $F$  is the economy's aggregate production function.  $F$  is non-negative and is assumed to be an increasing function of both  $K$  and  $H$ .<sup>24</sup>

<sup>24</sup> For notational simplicity, I have suppressed time subscripts from  $Y, A, K, H, h_j$  and  $L_j$ .

In equation 1  $A$  is the total factor productivity. It is a combined index of institutional capabilities (including the prevailing system of property rights) and publicly shared knowledge. A macroeconomy characterised by the production function  $F$  would produce more if, other things the same,  $A$  were larger (i.e. if publicly shared knowledge were greater or institutional capabilities higher). Of course, the economy would produce more also if, other things being the same,  $K$ ,  $h_j$  or  $L_j$  was larger. In short, technological possibilities for transforming the services of physical and human capital into output, when embedded in the prevailing institutional structure of the economy, account for equation 1.

Consider now a scenario where civic cooperation increases in the community: the economy moves from a bad equilibrium system of mutual beliefs to a good one. The increase would make possible a more efficient allocation of resources in production. The question arises: would the increase in cooperation appear as a heightened value of  $A$ , or would it appear as an increase in  $H$ , or as increases in both?<sup>25</sup>

The answer lies in the extent to which network externalities are like public goods. If the externalities are confined to small groups (i.e. small groups are capable of undertaking cooperative actions on their own – with little effect on others – and do take such actions in the good equilibrium), the improvements in question would be reflected mainly through the  $h_j$ s of those in the groups engaged in increased cooperation. However, if the externalities are economy wide (as in the case of an increase in quasivoluntary compliance in the economy as a whole owing to an altered set of beliefs, even about members of society one does not personally know), the improvements would be reflected mainly through  $A$ . Either way, the directional changes in macroperformance (though not the magnitude of the changes) would be the same. Other things being the same, an increase in  $A$  or in some of the  $h_j$ s – brought about by whichever of the mechanisms we have considered – would mean an increase in GNP, an increase in wages, salaries and profits, and possibly an increase in investment in both physical and human capital. The latter would result in a faster rate of growth in output and consumption, and, if a constant proportion of income were spent on health, a more rapid improvement in health as well.<sup>26</sup>

<sup>25</sup> As is well known, it would not be possible to separate the two influences if the production function has the Cobb–Douglas form,  $AF(K, H) = AK^aH^b$ , where  $a$  and  $b > 0$ . In the text, I assume that the production function is not ‘Cobb–Douglas’.

<sup>26</sup> In the text, I am assuming implicitly that wage rates, salary rates, and profit rates are monotonically increasing

## (ii) Interpreting Cross-Section Findings

Let us now connect the above macroeconomic account to the findings from less aggregated data. In his analysis of statistics from the 20 administrative regions of Italy, Putnam *et al.* (1993) found civic tradition to be a strong predictor of contemporary economic indicators. He showed that indices of civic engagement in the early years of this century were highly correlated with employment, income and infant survival in the early 1970s. Putnam also found that regional differences in civic engagement can be traced back several centuries and that, controlling for civic traditions, indices of industrialisation and public health have no impact on current civic engagement. As he put it, the causal link appears to be from civics to economics and not the other way round. How do his findings square with the formulation in equation 1?<sup>27</sup>

The same sort of question can be asked of even less aggregated data. For example, Narayan and Pritchett (1999) have analysed statistics on household expenditure and social engagements in a sample of some 50 villages in Tanzania, to discover that households in villages where there is greater participation in village-level social organisations on average enjoy greater income per head. The authors have also provided statistical reasons for concluding that greater communitarian engagements result in higher household expenditure rather than the other way round.

To analyse these findings in terms of our macroeconomic formulation, consider two autarkic communities, labelled by  $i$  ( $= 1, 2$ ). I simplify by assuming that members of a community are identical.<sup>28</sup> Denote the human capital per person in community  $i$  by  $h_i$ . By  $h_i$ , I now mean not only the traditional forms of human capital (health and education), but also network capital. I denote by  $L_i$  the number of hours worked by someone in  $i$ , by  $N_i$  the size of  $i$ 's population and by  $K_i$  the total stock of physical assets in  $i$ . Aggregate output,  $Y_i$ , is

$$Y_i = A_i F(K_i, N_i h_i L_i). \quad (2)$$

Improvements in civic cooperation are reflected in increases in  $A$  or  $h$ , or both. It follows that if civic cooperation were greater among people in community

functions of the marginal products of  $L_j$ ,  $h_j$  and  $K$ , respectively. In a perfectly competitive world, the former three quantities would equal the latter three, respectively.

<sup>27</sup> Putnam stressed the importance of civic engagement for making government accountable and responsible.

<sup>28</sup> This is a privilege theorists are able to enjoy to good advantage. By assuming that potentially different entities are identical, we are able to avoid having to ‘control for differences’ in these same entities. The assumption permits us to better understand statistical correlations within multivariate relationships.

1 than in community 2, we would have  $A_1 > A_2$  or  $h_1 > h_2$ , or both. Imagine now that the two communities have the same population size, possess identical amounts of physical capital and work the same number of hours. Gross national product in community 1 would be greater than GNP in community 2 (i.e.  $Y_1 > Y_2$ ). More generally, an observer would discover that, controlling for differences in  $K$  and  $L$ , there is a positive association between a community's cooperative culture (be it total factor productivity,  $A_i$ , or human capital,  $h_i$ ) and its mean household income ( $Y_i/N$ ). This is one way to interpret the finding reported in Narayan and Pritchett (1999).

Consider now a different thought-experiment. Imagine that in the year 1900, the two communities had been identical in all aspects but for their cooperative culture, of which community 1 had more (i.e. in 1900,  $A_1 > A_2$  or  $h_1 > h_2$ , or both). Imagine next that, since 1900, both  $A_i$  and  $h_i$  have remained constant. Suppose next that people in both the places have followed a simple saving rule: a constant fraction  $s_K$  ( $> 0$ ) of aggregate output has been invested each year in accumulating physical capital. (For the moment I imagine that net investment in human capital in both the communities is nil.)<sup>29</sup> In order to make the comparison between the communities simple, imagine finally that the communities have remained identical in their demographic features. It is then obvious that in the year 1970, community 1 would be richer than community 2 in terms of output, wages and salaries, profits, consumption and wealth.

Notice that we have not had to invoke possible increases in total factor productivity ( $A_i$ ) or human capital ( $h_i$ ) to explain why a cooperative culture is beneficial. In fact, I have deliberately assumed that neither  $A_i$  nor  $h_i$  changes. It is the *scale* of total factor productivity and human capital that has done all the work in our analysis of the empirical finding; we have not had to invoke secular improvements in them to explain why a more cooperative society would be expected to perform better economically.<sup>30</sup>

<sup>29</sup> It can be argued that the extent to which people save for their future is itself an influence of social capital: people would save more if they trusted their institutions to protect their savings. I abstract from such effects, because to include them would merely re-inforce the argument I am about to offer in the text.

<sup>30</sup> For a different perspective from the one I am advocating here, see Solow (1995), who suggested that if social capital is a potent force in economic development, it should find itself reflected in growth in total factor productivity. In the text, I have shown that there needs to be no growth in the  $A_i$ s for social capital to influence the economic performance.

### (iii) Network Inefficiencies

As the communities in our thought-experiment are both autarkic, there is no flow of physical capital from one to the other. This is an economic distortion for the combined communities: the rates of return on investment in physical capital in the two places remain unequal. The source of the distortion is the enclave nature of the two communities, occasioned in our example by an absence of markets linking them. There would be gains to be enjoyed, if physical capital could flow from community 2 to community 1.

Autarky is an extreme assumption, but it is not a misleading assumption. What the model points to is that, to the extent social capital is exclusive, it inhibits the flow of resources; in this case a movement of physical capital from one place to the other.<sup>31</sup> Put another way, if markets do not function well, capital does not move from community 2 to community 1 to the extent it ideally should. When social networks within each community block the growth of markets, their presence inhibits economic progress.

### X Microbehaviour Again: Dark Matters

Social capital was defined as networks of people. I now want to consider the dark side of social capital.

#### (i) Standard Weaknesses of Social Capital

Two potential weaknesses of resource allocation mechanisms built on social capital are easy enough to identify:

1. **Exclusivity.** We have already noted that networks are exclusive, not inclusive. This means that 'anonymity', the hallmark of competitive markets, is absent from the operations of networks. When market enthusiasts proclaim that one person's money is as good as any other person's in the market place, it is anonymity they invoke. In allocation mechanisms governed by networks, however, 'names' matter. Transactions are personalised. This, as has been noted, implies inefficiencies; resources are unable to move to their most productive uses.
2. **Inequalities.** The benefits of cooperation are frequently captured by the more powerful within the network. McKean (1992), for example, has discovered that the local elite (usually wealthier households) capture a disproportionate share of the benefits of common property resources, such as coastal fisheries and forest products. However, empirical work has for the most part only uncovered

<sup>31</sup> A similar argument can be advanced as regards labour mobility and credit.



inequalities in the distribution of benefits of co-operative behaviour. Such findings are consistent with the possibility that all who cooperate benefit. I believe, the reason why social capital continues to radiate a warm glow in the literature is that the examples that have motivated thinking on the subject have been coordination games and the Prisoners' Dilemma.

I began this lecture by considering a group of people who have discovered a *mutually beneficial* course of actions and have agreed to cooperate by following that course. We have identified circumstances where the parties would trust one another to do what they are required to do under the terms of their agreement. Our premise so far has been that social capital benefits all members of the network. I now want to explore the idea that long-term relationships can be *bad* for some members, that there are circumstances where some members of a network could be worse off being part of the long-term relationship than they would have been if there had been no long-term relationship.

#### (ii) *Exploitation Within Networks*

That there can be exploitation in long-term relationships should not be doubted. In Indian villages, access to local common-property resources is often restricted to the privileged (e.g. caste Hindus), who are also among the more prosperous landowners. The outcasts (euphemistically called members of 'schedule castes') are among the poorest of the poor. Rampant inequities exist too in patron-client relationships in agrarian societies.

Inequity per se is not evidence of exploitation. But inequities in, say, patron-client relationships are known to take such forms as to make it likely that the 'client' is worse off in consequence of the relationship than he would have been in its absence. Moreover, Ogilvie (2003) has observed striking differences between the life chances of women in the seventeenth-century Germany (embedded in dense networks) and the life chances of women in the seventeenth-century England (not so embedded in dense networks): English women were better off. It is a suggestive finding. Among contemporary societies, there are many where women remain socially inferior beings, prevented from inheriting assets, obtaining education and entering choice occupations, all of which excludes them from credit, saving and insurance markets. But such people would appear to accept the restrictions in their lives as a matter of course, without visible or audible complaint. Why?

Below I construct an example to show that *people can be worse off in a long-term relationship than they*

*would be if the relationship had not been entered into.* "Say something new", I can hear you remark; "Why not simply point to bad marriages"? But people do not enter marriages expecting them to be bad. Marriages go sour because circumstances change in particular ways, because the partners discover aspects of their character they had not recognised before, or because they were forced into a bad marriage against their will or desire. The example below is not about such situations. It involves an indefinite repetition of an *unchanging* game (section II(vi)).

#### (iii) *An Example*

The accompanying table is the payoff matrix of a symmetric, two-person game in which each of the parties has three available strategies. We begin by imagining that the game is to be played only once. The strategies person 1 faces are  $\alpha_1$ ,  $\beta_1$  and  $\gamma_1$ ; those that person 2 faces are  $\alpha_2$ ,  $\beta_2$  and  $\gamma_2$ .  $(\beta_1, \beta_2)$  is the unique Nash equilibrium of the game, yielding the payoff pair (3, 3). However, both parties would be better off choosing  $(\alpha_1, \alpha_2)$ : the payoffs would be (4, 4). We should interpret  $(\beta_1, \beta_2)$  as being the strategies the players would choose when they act independent of each other. It can be thought of as the exit options of the two.

Recall the notion of a player's min-max value in a game. It is the highest payoff a player can guarantee for herself, meaning that she can guarantee it for herself even if the other party is malevolent.<sup>32</sup> It is easily confirmed that the min-max value for individual 1 in our one-shot game is 1 (strategies supporting it are the pair  $(\beta_1, \gamma_2)$ ) and the min-max value for individual 2 is 1 (strategies supporting it are the pair  $(\gamma_1, \beta_2)$ ). The payoff pair in the former case is (1, 0), whereas the payoff pair in the latter case is (0, 1).

Note that the game is not a Prisoners' Dilemma. The hallmark of a Prisoners' Dilemma is that each player has a dominant strategy. But playing one's dominant strategy yields the min-max payoff. In a Prisoners' Dilemma, Nash equilibrium payoffs are min-max payoffs. In the game being considered here, min-max values (1 for each party) are less than payoffs at the Nash equilibrium (3 for each party).

Now imagine that the parties expect the game to be repeated indefinitely (section II(vi)). Call each play of the game as a *stage game*. I want to show that a long-term relationship between the two parties could involve 1 exploiting 2. Imagine that each party discounts their future payoffs at a very, very low rate (to

<sup>32</sup> For completeness, I define min-max values in Appendix I.

TABLE 1  
*Stage Game*

Person 1	Person 2		
	$\alpha_2$	$\beta_2$	$\gamma_2$
$\alpha_1$	4, 4	2, 2	0, 7
$\beta_1$	2, 2	3, 3	1, 0
$\gamma_1$	7, 0	0, 1	0, 0

be made precise below). Suppose the 'agreement' between the two is that in every even period, they will play for the payoff pair (3, 3) – that is, they will select ( $\beta_1, \beta_2$ ) – and in every odd period, they will play for the payoff pair (7, 0) – that is, they will select ( $\gamma_1, \alpha_2$ ). If they play accordingly, player 1 would receive (approximately) on average  $(7 + 3)/2 = 5$ , whereas player 2 would receive (approximately) on an average  $(3 + 0)/2 = 1.5$ . But in the absence of the agreement, each would enjoy the Nash equilibrium payoff of the stage game, namely, 3. Thus, if they play according to the 'agreement', 2 would be worse off. This is the sense in which 1 exploits 2 in their long-term relationship (see Table 1).

The question arises as to how it would be possible for the agreement to be supported as an equilibrium outcome of repeated plays. The point is to choose the social norm cunningly. In section II(vi), we noted how an appropriately chosen set of sanctions on non-conformists can sustain cooperation. In the present example, consider the norm that says that if someone's actions in any period made him/her a non-conformist, the other party would impose a sanction on her, by pushing her to her min-max value for a sufficiently large number of periods. The rest of the argument follows directly from our discussion in section II(vi).

### *XI Morals*

The recent literature on social capital has a warm glow about it. That relationships matter for a person's well-being is no doubt a trite observation; but people writing on social capital have claimed more. They have claimed that social capital is an economically productive asset, a source of much that is good about economic and political relationships.

However, the original literature claimed less. Some regarded social capital as an input in the production of human capital (Coleman, 1988), whereas others regarded it as the sort of civic engagement that helps to discipline public officials (Putnam *et al.*, 1993). The subsequent literature has gone far beyond those mod-

est claims. Among development economists, social capital has been interpreted as communitarian relationships. In countries where the law does not function well, where officials regard the public sphere to be their private domain, where impersonal markets are often absent, communitarian relationships are what keep people alive, if not well; hence, their attraction for many contemporary development economists. But we need to bear counterfactuals in mind. It could be that communitarian relationships prevent impersonal transactions from taking place. Moreover, personal obligations inherited from the past can prevent public officials from acting dispassionately. What appears as corruption in the North could well be social obligation in the South. Similarly, one man's civic association in the North is another man's special interest group.

In this paper, I have suggested that social capital is best seen as interpersonal networks, nothing more; and that we should assess the quality of that capital by studying what networks are engaged in. Some would be found to be progressive, others reactionary and yet others violent. Determining the right interplay between interpersonal networks and the impersonal public institutions remains the central problem of the social sciences.

### REFERENCES

- Apffel Marglin, F. and Marglin, S.A. (eds) (1990), *Dominating Knowledge: Development, Culture and Resistance*, Clarendon Press, Oxford.
- Arnett, R. and Stiglitz, J.E. (1991), 'Moral Hazard and Nonmarket Institutions: Dysfunctional Crowding Out or Peer Review?', *American Economic Review*, **81**, 179–90.
- Arrow, K.J. (1973), 'The Theory of Discrimination', in Ashenfelter, O. and Rees, A. (eds), *Discrimination in Labor Markets*, Princeton University Press, Princeton, NJ.
- Arrow, K.J. (1974), *The Limits of Organization*, W.W. Norton, New York.
- Bala, V. and Goyal, S. (2000), 'A Non-Cooperative Model of Network Formation', *Econometrica*, **68**, 1181–229.
- Baland, J.M. and Platteau, J.P. (1996), *Halting Degradation of Natural Resources: Is There a Role for Rural Communities?* Clarendon Press, Oxford.
- Banerjee, B. (1983), 'Social Networks in the Migration Process: Empirical Evidence on Chain Migration in India', *Journal of Developing Areas*, **17**, 185–96.
- Banfield, E. (1958), *The Moral Basis of a Backward Society*, Free Press, Chicago.
- Bates, R. (1990), 'Capital, Kinship and Conflict: The Structuring Influence of Capital in Kinship Societies', *Canadian Journal of African Studies*, **24**, 151–64.

- Besley, T. and Coate, S. (1995), 'Group Lending, Repayment Incentives and Social Collateral', *Journal of Development Economics*, **46**, 1–18.
- Besley, T., Coate, S. and Loury, G. (1993), 'The Economics of Rotating Savings and Credit Associations', *American Economic Review*, **82**, 792–810.
- Beteille, A. (ed) (1983), *Equality and Inequality: Theory and Practice*, Oxford University Press, Delhi.
- Binmore, K. and Dasgupta, P. (1986), 'Game Theory: A Survey', in Binmore, K. and Dasgupta, P. (eds), *Economic Organizations as Games*, Basil Blackwell, Oxford.
- Blume, L. and Durlauf, S.N. (2001), 'The Interactions-Based Approach to Socioeconomic Behavior', in Durlauf, S.N. and Young, H.P. (eds), *Social Dynamics*, MIT Press, Cambridge, MA.
- Bowles, S. and Gintis, H. (2002), 'Social Capital and Community Governance', *Economic Journal*, **112**, F419–36 (Features).
- Bromley, D.W. et al. (eds) (1992), *Making the Commons Work: Theory, Practice and Policy*, ICS Press, San Francisco.
- Burt, R.S. (1992), *Structural Holes: The Social Structure of Competition*, Harvard University Press, Cambridge, MA.
- Caldwell, J.C. (1969), *African Rural–Urban Migration*, Australian National University, Canberra.
- Carrington, W.J., Detragiache, E. and Vishwanath, T. (1996), 'Migration and Endogenous Moving Costs', *American Economic Review*, **86**, 909–30.
- Coase, R.H. (1960), 'The Problem of Social Cost', *Journal of Law and Economics*, **3**, 1–44.
- Coate, S. and Loury, G.C. (1993), 'Will Affirmative-Action Policies Eliminate Negative Stereotypes?', *American Economic Review*, **83**, 1220–40.
- Coleman, J.S. (1988), 'Social Capital in the Creation of Human Capital', *American Journal of Sociology*, **94**, 95–120.
- Dasgupta, P. (1988), 'Trust as a Commodity', in Gambetta, D. (ed), *Trust: Making and Breaking Cooperative Relations*, Basil Blackwell, Oxford.
- Dasgupta, P. (2000a), 'Economic Progress and the Idea of Social Capital', in Dasgupta, P. and Serageldin, I. (eds), *Social Capital: A Multifaceted Perspective*, World Bank, Washington, DC.
- Dasgupta, P. (2000b), 'Population, Resources, and Poverty: An Exploration of Reproductive and Environmental Externalities', *Population and Development Review*, **26**, 643–89.
- Dasgupta, P. and Mäler, K.-G. (1991), 'The Environment and Emerging Development Issues', *Proceedings of the Annual World Bank Conference on Development Economics, 1990*, World Bank, Washington, DC.
- Diamond, P. (1982), 'Aggregate Demand Management in Search Equilibrium', *Journal of Political Economy*, **90**, 881–94.
- Douglas, M. and Isherwood, B.C. (1979), *The World of Goods*, Basic Books, New York.
- Ellison, G. (1993), 'Learning, Local Interaction, and Coordination', *Econometrica*, **61**, 1047–72.
- Eshel, I., Samuelson, L. and Shaked, A. (1998), 'Altruists, Egoists, and Hooligans in a Local Interaction Model', *American Economic Review*, **88**, 157–79.
- Fehr, E. and Fischbacher, U. (2002), 'Why Social Preferences Matter: The Impact of Non-selfish Motives on Competition, Cooperation and Incentives', *Economic Journal*, **112**, C1–33.
- Fudenberg, D. and Maskin, E. (1986), 'The Folk Theorem in Repeated Games with Discounting or with Incomplete Information', *Econometrica*, **54**, 533–56.
- Fukuyama, F. (1997), *Social Capital*, Tanner Lectures, Brasenose College, Oxford; Mimeo, Institute of Public Policy, George Mason University.
- Gambetta, D. (1993), *The Mafia: A Ruinous Rationality*, Harvard University Press, Cambridge, MA.
- Glaeser, E., Sacerdote, B. and Scheinkman, J. (1996), 'Crime and Social Interactions', *Quarterly Journal of Economics*, **111**, 507–48.
- Goody, J. (1998), *Food and Love: A Cultural History of East and West*, Verso, London.
- Granato, J., Inglehart, R. and Leblang, D. (1996), 'The Effect of Cultural Values on Economic Development: Theory, Hypotheses, and Some Empirical Tests', *American Journal of Political Science*, **40**, 607–31.
- Granovetter, M.S. (1973), 'The Strength of Weak Ties', *American Journal of Sociology*, **78**, 1360–80.
- Granovetter, M.S. (1974), *Getting a Job: A Study of Contacts and Careers*, University of Chicago Press, Chicago.
- Greif, A. (1994), 'Cultural Beliefs and the Organization of Society: A Historical and Theoretical Reflection on Collectivist and Individualist Societies', *Journal of Political Economy*, **102**, 912–50.
- Grootaert, C. and van Bastelaer, T. (eds) (2002), *The Role of Social Capital in Development: An Empirical Assessment*, Cambridge University Press, Cambridge, UK.
- Hart, O. and Holmstrom, B. (1987), 'The Theory of Contracts', in Bewley, T. (ed), *Advances in Economic Theory*, Cambridge University Press, New York.
- Hayami, Y. (1997), *Development Economics: From the Poverty to the Wealth of Nations*, Clarendon Press, Oxford.
- Hinde, R.A. and Groebel, J. (eds) (1991), *Cooperation and Prosocial Behaviour*, Cambridge University Press, Cambridge.
- Hirschman, A. (1984), 'Against Parsimony: Three Easy Ways of Complicating Some Categories of Economic Discourse', *American Economic Review*, **74**, 88–96 (Papers and Proceedings).
- Iversen, V. (2002), 'Autonomy in Child Labour Migrants', *World Development*, **30**, 817–33.
- Jodha, N.S. (1986), 'Common Property Resources and the Rural Poor', *Economic and Political Weekly*, **21**, 1169–81.
- Knack, S. and Keefer, P. (1997), 'Does Social Capital Have an Economic Payoff: A Cross Country Investigation', *Quarterly Journal of Economics*, **112**, 1251–88.
- Kreps, D. (1990), 'Corporate Culture and Economic Theory', in Alt, J.E. and Shepsle, K.A. (eds), *Perspectives on*

- Positive Political Economy*, Cambridge University Press, New York.
- Landes, D. (1998), *The Wealth and Poverty of Nations: Why Some are So Rich and Some So Poor*, W.W. Norton, New York.
- La Porta, R., Lopez-de-Silanes, F., Schleifer, A. and Vishny, R. (1997), 'Trust in Large Organizations', *American Economic Review*, **87**, 333–8 (Papers and Proceedings).
- Levi, M. (1988), *Of Rule and Revenue*, University of California Press, Berkeley, CA.
- Lindbeck, A. (1997), 'Incentives and Social Norms in Household Behaviour', *American Economic Review*, **87**, 370–7 (Papers and Proceedings).
- Lindbeck, A., Nyberg, S. and Weibull, J.W. (1999), 'Social Norms and Economic Incentives in the Welfare State', *Quarterly Journal of Economics*, **114**, 1–36.
- McKean, M. (1992), 'Success on the Commons: A Comparative Examination of Institutions for Common Property Resource Management', *Journal of Theoretical Politics*, **4**, 256–68.
- Narayan, D. and Pritchett, L. (1999), 'Cents and Sociability: Household Income and Social Capital in Rural Tanzania', *Economic Development and Cultural Change*, **47**, 871–89.
- Ogilvie, S. (2003), *A Bitter Living: Women, Markets, and Social Capital in Early Modern Germany*, Oxford University Press, Oxford.
- Ostrom, E. (1990), *Governing the Commons: The Evolution of Institutions for Collective Action*, Cambridge University Press, Cambridge.
- Ostrom, E. (1996), 'Incentives, Rules of the Game, and Development', *Proceedings of the Annual World Bank Conference on Development Economics, 1995*, World Bank, Washington, DC.
- Platteau, J.-P. and Hayami, Y. (1998), 'Resource Endowments and Agricultural Development: Africa Versus Asia', in Hayami, Y. and Aoki, M. (eds), *The Institutional Foundations of East Asian Economic Development*, MacMillan, London.
- Posner, R.A. (1980), 'A Theory of Primitive Society, with Special Reference to Law', *Journal of Law and Economics*, **23**, 1–53.
- Powell, W. (1990), 'Neither Market nor Hierarchy: Network Forms of Organization', *Research in Organizational Behaviour*, **12**, 295–336.
- Powell, W. and Brantley, P. (1992), 'Competitive Cooperation in Biotechnology: Learning Through Networks?', in Nohria, N. and Eccles, R. (eds), *Networks and Organizations*, Harvard University Press, Cambridge, MA.
- Przeworski, A. (1991), *Democracy and the Market*, Cambridge University, Cambridge.
- Putnam, R.D., Leonardi, R. and Nanetti, R.Y. (1993), *Making Democracy Work: Civic Traditions in Modern Italy*, Princeton University Press, Princeton, NJ.
- Putnam, R.D. (2000), *Bowling Alone: The Collapse and Revival of American Community*, Simon and Schuster, New York.
- Rabin, M. (1993), 'Incorporating Fairness into Game Theory and Economics', *American Economic Review*, **83**, 1281–302.
- Schelling, T. (1978), *Micromotives and Macrobehaviour*, W.W. Norton, New York.
- Seabright, P. (1997), 'Is Cooperation Habit-Forming?', in Dasgupta, P. and Mäler, K.-G. (eds), *The Environment and Emerging Development Issues*, Vol. II, Clarendon Press, Oxford.
- Sethi, R. and Somanathan, E. (1996), 'The Evolution of Social Norms in Common Property Resource Use', *American Economic Review*, **86**, 766–88.
- Solow, R.M. (1995), 'But Verify', *The New Republic*, September 11, 36–9; Review of F. Fukuyama, *Trust: The Social Virtues and the Creation of Prosperity*, Free Press, New York, 1995.
- Starrett, D. (1976), 'Social Institutions, Imperfect Information, and the Distribution of Income', *Quarterly Journal of Economics*, **90**, 261–84.
- Udry, C. (1990), 'Credit Markets in Northern Nigeria: Credit as Insurance in a Rural Economy', *World Bank Economic Review*, **4**, 251–270.
- Weber, M. (1930), *The Protestant Ethic and the Spirit of Capitalism*, George Allen and Unwin, London.
- Wildavsky, A. (1987), 'Choosing Preferences by Constructing Institutions: A Cultural Theory of Preference Formation', *American Political Science Review*, **81**, 3–21.
- Wintrobe, R. (1995), 'Some Economics of Ethnic Capital Formation and Conflict', in Breton, A., Galeotti, G., Salmon, P. and Wintrobe, R. (eds), *Nationalism and Rationality*, Cambridge University Press, Cambridge.

#### APPENDIX I

Let  $S_1$  and  $S_2$  be the set of strategies available to individuals 1 and 2, respectively, in the stage game of a repeated game. Strategies themselves are denoted by  $s_1$  and  $s_2$  for the two individuals. The payoff function for 1 is denoted by  $U_1(s_1, s_2)$ , for 2 it is denoted by  $U_2(s_1, s_2)$ . Recall that a pair of strategies  $(\underline{s}_1, \underline{s}_2)$  is an equilibrium of the stage game, if:

$$U_1(\underline{s}_1, \underline{s}_2) \geq U_1(s_2, \underline{s}_2) \quad \text{for all } s_1 \in S_1$$

and

$$U_2(\underline{s}_1, \underline{s}_2) \geq U_2(\underline{s}_2, s_2) \quad \text{for all } s_2 \in S_2.$$

The min–max values for individuals 1 and 2, which we write as  $U_1^*$  and  $U_2^*$ , respectively, are defined as:

$$U_1^* = \left[ \min_{s_2 \in S_2} \max_{s_1 \in S_1} U_1(s_1, s_2) \right]$$

$$U_2^* = \left[ \min_{s_1 \in S_1} \max_{s_2 \in S_2} U_2(s_1, s_2) \right].$$