Understanding social capital: learning from the analysis and experience of participation

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All forms of capital represent assets of various kinds yielding streams of benefit. The "income stream" that flows from social capital is analyzed here as mutually beneficial collective action. The analysis delineates two main categories of social capital: structural (roles, rules, precedents, and procedures), and cognitive (norms, values, attitudes, and beliefs). A continuum of social capital is presented in terms of people's orientation toward positive-sum outcomes and toward positive interdependence of utility functions.

A case study from Sri Lanka shows how the two forms of social capital can produce substantial material benefits. Farmer organizations established under a donor project in the early 1980s produced unexpected and otherwise unobtainable rice production results in an acutely water-short season (1997) when government engineers had figured that no rice could or should be grown. By effective cooperation and by equitable sharing of scarce water, farmers achieved a better than normal crop, worth some $20 million.

The concept of *social capital* has received impressively rapid acceptance within the community of development professionals, but it remains an elusive construct. The surge of enthusiasm reminds us of how "participation" gained much acceptance in development theory and practice during the 1970s but for many people remained abstract, more a matter of preference (or rejection) than of empirical study and application.

Concern with both of these concepts, social capital and participation, has had similar impetus. Much real-world experience had already shown that initiatives that did not take account of the human dimensions of development, including such factors as values, norms, culture, motivation, and solidarity, would be less successful than expected and intended. Indeed, it is not uncommon for development efforts ignoring these to turn into outright failures.

Development agencies in conjunction with a growing number of social scientists are trying to understand what social capital is and how it

can be promoted reliably and in cost-effective ways for the sake of economic and social development. At present, social capital is more amorphous than participation, but it is also more intriguing because, if successfully understood, it offers the prospect of our being able to invest in it and thereby to create streams of benefit that justify the expenditure involved.

There is still debate whether social capital should be considered as a form of capital: whether it must be the result of some investment, (in other words, some foregone consumption); whether it must be purposefully created or can occur naturally; whether investments once created will endure or must be expected to depreciate; whether social capital should have benefits across multiple domains or will be activity-specific; and so forth.

Such questions are worth considering because they will sharpen our understanding of social capital. But they will not produce conclusive answers because social capital will not necessarily be identical with physical capital. While processes of social and physical capital formation may be analogous, they need not be exactly the same. The challenge of comprehending social capital will not be met by taking the analogy too literally. However, we should explore similarities for whatever insights these can produce.

All forms of capital can be understood as *assets* of various kinds, however they were created. Assets are things that yield streams of benefit that make future productive processes more efficient, more effective, more innovative, or simply expanded. Social capital is an accumulation of various types of social, psychological, cultural, cognitive, institutional, and related assets that increase the amount (or probability) of mutually beneficial cooperative behavior. This is behavior that is productive for others as well as for one's self. It benefits others and not just one's self, following from the Latin origins of the word "social," as discussed below.

Discussions in the literature remain inconclusive because they are based mostly on *examples* of what qualifies as social capital, rather than on some *specification* of what constitutes it. There is need for more rigorous analysis, not just description, to make theoretical and practical progress of the kind that followed from such treatment of "participation" (Cohen and Uphoff 1980). That framework is still probably the most widely used one for dealing with issues of participation in development. Something similar is needed for "social capital."

What constitutes social capital cannot be settled simply by offering a definition since definitions, while needed, offer no solution. Two hundred years ago, we could hardly have discovered what constituted physical capital simply by agreeing on how to define it. Cumulative empirical work guided by analytically coherent concepts will be needed to produce a robust understanding of a phenomenon as complex as social

capital. Various definitions have been offered—see review by Serageldin and Grootaert (1997), which appears as chapter 2 in this book— but these have been more asserted than validated. We need to focus on components, relationships and results that can be evaluated in real-world development experience. Social capital needs to be addressed in terms of (a) what its constituent *elements* are, (b) what the *connections* are that exist among these, and (c) what *consequences* can be attributed to these elements and their interaction. The Biblical exhortation, "By their fruits ye shall know them," is highly relevant here.

Such a process of discovery requires subordinate conceptualization, in which the phenomena of interest are *disaggregated* in ways that lead to some tenable explanations and that indicate relationships that can be *demonstrated* in field investigations. A number of core ideas linked with social capital are worth exploring—civic culture, propensity for cooperation, collective action, mutual benefit, reduced transaction costs, solidarity, positive-sum outcomes. However, dealing with these terms by themselves represents a piecemeal exploration of associated factors rather than a systematic treatment of the subject.

Throughout the literature, two different but related categories of things are included under the rubric of social capital. Making a clear distinction between them while keeping their connection always in mind will produce some important insights into the operation of social capital as well as into its formation. This chapter first presents a conceptualization of social capital that integrates what is already known about the subject and points the way to more coherent and cumulative research. This presentation is then made more concrete by considering how social capital was created and manifested when improving irrigation management through farmer participation in Sri Lanka. The analytical framework has already been applied and demonstrated in an extensive quantified analysis of collective action for watershed conservation and development in the Indian state of Rajasthan (Krishna and Uphoff 1999).

Understanding social capital as capital

To the standard three categories of capital in economic analysis—physical (human-made), natural, and human—is now being added a fourth, social (Serageldin 1996). These four categories are rather abstract, but each encompasses diverse sets of real things, best understood as assets. Physical capital, for example, includes highway networks, communication satellites, factories, tools, vehicles, houses, money, stocks, bonds, and other financial instruments.

What is needed for analytical purposes is not a listing of all the things that fall under different categories of capital, but rather some coherent categorization of the various factors so that we can make sense out of their heterogeneity. There are already some accepted dis-

tinctions made for the first three categories. It makes a big difference when dealing with physical capital, for example, whether one is dealing with fixed assets or fungible assets, with real property or financial instruments. Human resources are commonly categorized into skilled versus unskilled workers, or into manual versus mental labor, though this is a crude classification.

Consider how primitive our understanding and use of natural resources would be if we did not make any distinction between renewable and nonrenewable resources, lumping together forests, petroleum, fisheries, minerals, soil, and genes as if they were all basically the same. We need to remember, however, that these different categories of capital as well as subcategories are analytical rather than real. What exist are the things that are being categorized, not the categories into which they are grouped. However, making systematic and defensible distinctions among them is the most basic step toward making progress in theory and in practice.

Social capital can be understood most usefully by distinguishing two interrelated categories of phenomena: (a) **structural**, and (b) **cognitive**. These categories are as fundamental for understanding social capital, I would propose, as the distinction made between renewable and nonrenewable resources is for natural forms of capital.

The structural category is associated with various forms of social organization, particularly *roles, rules, precedents* and *procedures* as well as a wide variety of *networks* that contribute to cooperation, and specifically to mutually beneficial collective action (MBCA), which is the stream of benefits that results from social capital.

The cognitive category derives from mental processes and resulting ideas, reinforced by culture and ideology, specifically norms, values, attitudes, and beliefs that contribute cooperative behavior and MBCA.

The elements of social organization in the first category of assets *facilitate* MBCA, in particular by lowering transaction costs, having already established patterns of interaction that make productive outcomes from cooperation more predictable and beneficial. Ideas in the second category *predispose* people toward MBCA, in part because once they are widely shared they make cooperation more likely. Norms, values, attitudes, and beliefs that constitute cognitive social capital are ones that rationalize cooperative behavior and make it respectable. While it is possible in the abstract to have structural forms of social capital without cognitive ones, and vice versa, in practice, it is unlikely and difficult for either to persist without the other.

These two domains of social capital are intrinsically connected because although networks together with roles, rules, precedents, and procedures can have observable lives of their own, ultimately they all come from cognitive processes. Structural social capital assets are extrinsic and observable, while cognitive social capital assets are not. But both

the social structural and cognitive realms are linked in practice (and in social science theory) by the subjective behavioral phenomena known as **expectations.**

Roles are created by expectations, and at the same time they create expectations, on the part both of (a) those persons who occupy (act according to) established and accepted roles, and (b) those persons with whom these role incumbents interact. One can say that roles and rules are objective because they are reinforced by sanctions and by incentives; but these latter sources of influence themselves depend for their effectiveness on mutual expectations, which means that objective factors have inextricable subjective underpinnings. Supporting the operation of roles and rules are procedures and precedents as secondary forms of structural social capital as discussed in an annex to this chapter.[1] Roles and their accompanying rules, precedents and procedures can be either formal or informal.

It should be pointed out, however, that norms, values, attitudes, and beliefs by creating expectations about how people *should* act, by implication create expectations about how people *will* act—for example, whether they will be cooperative or not, whether they will be generous or ungenerous. Thus what are subjective impetuses have definitely objective consequences.

Networks, which are patterns of social exchange and interaction that persist over time, are widely regarded as important manifestations of social capital, whether they are formal or informal. As forms of social organization, they represent structural social capital according to the categories given above. Most discussions of networks emphasize that they are held together by mutual expectations of benefit. But they are crucially sustained by expectations (that is, by norms) of reciprocity. This shows that there is an essential cognitive dimension to networks that derives from mental processes, and not just from what is exchanged.

To put the matter simply, structural forms of social capital are observable and externalized in contrast to cognitive forms. These are invisible because they are interior, within the mind, though when they are spoken of they become somewhat external. Both concurrently affect the *behavior* of persons, individually and in smaller or larger groups. Roles, rules precedents and procedures within various social structures, as well as norms and values along with their associated attitudes and beliefs, are the *mechanisms* by which social capital is built up and accumulated, stored, modified, expressed, and perpetuated, as discussed below.

Formal or informal organization with its roles, rules, precedents, and procedures, paralleled by formal or informal networks of interaction, together with norms, values, attitudes, and beliefs that are shared within a population, can have energizing and reinforcing effects, though they can also diminish depending on how people assess their results and benefits.[2] These phenomena can all be invested in to establish or increase

their scope and effect; and all can depreciate in terms of the streams of benefit that they produce. Structural and cognitive phenomena that are conducive to mutually beneficial collective action are specific things that can be identified and invested in, even if they are mental more than material, giving reality to the abstract concept of social capital.

This conceptualization is consistent with ideas about social capital proposed by Coleman (1988) and Putnam, Leonardi, and Nanetti (1993). Indeed, it derived from their and others' writing on the subject. Both Coleman and Putnam include structural and cognitive elements in their definitions and analysis, but they approach social capital more descriptively than analytically. By organizing the factors that constitute social capital into two basic categories that can be made concrete and that can be studied, the formulation offered here presents social capital in terms that should be more amenable to theoretical progress as well as to measurement and evaluation.[3]

When Serageldin and Grootaert (1997) compared Coleman's and Putnam's views of social capital, they suggested that the first author more than the second "captures social **structure** at large as well as the ensemble of **norms** governing interpersonal behavior" (p. 13, emphasis added; a revised version of this article appears as chapter 2 in this volume). However, this is a matter of degree, and the differences between the two views are not great. A third view of social capital following from the work of North (1990) and Olson (1982) is characterized by Serageldin and Grootaert as treating social capital as deriving from "the social and political environment that enables **norms** to develop and shapes social **structure**" (1997, p. 13, emphasis added). We see that all three views contain the same elements and refer repeatedly to aspects of social structure and to normative (cognitive) influences, but without placing these factors into a theoretically explicit or rigorous framework.

In the literature, social capital is generally understood as having some *combination* of role-based or rule-based (structural) and mental or attitudinal (cognitive) origins. As noted already, these are related and interactive, to be sure, but they are distinguishable. Table 1 below presents in contrasting ways the main terms associated with social capital in the literature. It delineates the *complementary* factors that together produce the variety and range of assets that contribute to social capital phenomena.

These two categories of social capital are highly interdependent, as each form contributes to the other. Both affect behavior through the mechanism of expectations. Both kinds of phenomena are conditioned by experience and are reinforced by culture, *Zeitgeist* and other influences.

Both structural and cognitive forms of social capital are ultimately mental. Shared values, norms and expectations are part and parcel of all social structural arrangements. Roles and rules that are written down may appear objective, but even material influences such as the

TABLE 1: COMPLEMENTARY CATEGORIES OF SOCIAL CAPITAL

	Structural	*Cognitive*
Sources and manifestations	Roles and rules Networks and other interpersonal relationships Procedures and precedents	Norms Values Attitudes Beliefs
Domains	Social organization	Civic culture
Dynamic factors	Horizontal linkages Vertical linkages	Trust, solidarity, cooperation, generosity
Common elements	Expectations that lead to cooperative behavior, which produces mutual benefits	

Source: Author.

sanctions that are exercised by role incumbents and invoked according to rules depend for their effectiveness ultimately on cognitive processes.[4] Whether sanctions are invoked, and indeed whether they are considered sufficient to cause compliance, will be determined in the realm of thought, not simply by the nature or magnitude of what is being threatened.

At the same time, it would be wrong to say that all aspects of social capital are "only thoughts." This would miss the important fact that once ideas and purposes have been crystallized into roles, rules, networks, and other established relationships intended to catalyze certain kinds of action, the probability of such action and predictable outcomes increases by several orders of magnitude.

Social structure thus has objectified consequences even if it originates from and depends on subjective values and evaluations. Thus, it is useful to distinguish between structural and cognitive elements of social capital even though they are related and reinforcing. Not to make this distinction reduces explanatory power and also our understanding of how social capital comes into being and is sustained.

What is "social" about social capital?

Concepts can evolve and change beyond their original meaning. But usually our understanding of something can be improved by knowing its derivation. The etymology of the word "social" should help us understand what is meant by social capital, and how it differs from other forms of capital.

The word "social" is one of the most widely and broadly used adjectives in the English language, attached to things as diverse as energy,

diseases, and marketing. It is linked to the noun "society," which comes from the Latin word *socius*, which denotes "friend or comrade."[5] This indicates that what is "social" originally derived from the phenomenon of *friendship*, implying some personal attachment, cooperation, solidarity, mutual respect, and sense of common interest.

Elsewhere I have suggested that friendship can be analyzed in fairly rigorous terms using concepts from economics and game theory and drawing on the concept of utility function (Uphoff 1996, pp. 341–45, 365–67, 378–81). If people are **strangers** to one another, they are indifferent to each other's well-being. Analytically, this means that they have *independent* utility functions. They do not care whether others are better off or not and are indifferent whether their own actions help or harm others. This is the standard assumption made in most economic analysis. It was originally made to simplify analysis, but now it is often assumed to be a true description of human nature, consistent with the idea of *homo economicus* as an individual, self-interested utility maximizer.

Friends, by contrast, are persons whose utility functions are positively *inter*dependent, which means that they attach some value to each other's well-being. They consider themselves better off when their friends are wealthier, happier, more secure, or more respected. And finally, **enemies** are persons whose utility functions are *negatively* interdependent. Enemies derive satisfaction from their foes' misfortune and even seek to increase this for their own benefit.

As with most things, we should think in terms of *degree*, not just of kind, going beyond simple classifications. Nobody knows what minimum extent of positive interdependence is needed for society to exist or for social relations to persist. However, I would suggest that the defining characteristic for the meaning of "social" is there being *some degree of mutuality, some degree of common identity, some degree of cooperation for mutual, not just personal, benefit.* Cooperation is desirable and collective action is undertaken not just for one's own sake—that is, as purely self-interested action—but because others can benefit from it in addition to one's self.[6]

To use the language of game theory, relationships among friends are *positive-sum* because the sum total of satisfactions increases whenever anything benefits either or both of them without significantly harming the other. Friends take delight in each others' good fortune.[7] By contrast, if people are enemies, any gains have *negative*-sum effects because benefits that accrue to anyone will reduce the happiness and sense of security of all their adversaries. In between, in a world of strangers, whether or not the gains of one person represent the loss of another (a zero-sum relationship) will depend on how those gains are created. It is acceptable for strangers to gain benefit at others' expense.

Whether people are friends, enemies, or strangers can be strongly influenced by history or early socialization. This helps determine *which*

persons will be regarded as friends. In the final analysis, however, friendship is a matter of individual choice. Persons can choose to value others' well-being or not. Even in recent situations as tragic and violent as those in Bosnia, Rwanda, and Kosovo, we saw many examples of persons who chose and demonstrated the path of friendship even as the institutions and culture embodying centuries of social capital accumulation were being destroyed around them.

Persons can, and often do, decide to be indifferent toward others' advancement, or even to be antagonistic toward this and to try to prevent it. When there are "social" relationships, people are, at least to some extent, *invested* in each other—that is, they attach at least some value to others' welfare, not being indifferent to this. This metaphor of investment, which is easily understood intuitively, is not a coincidental use of metaphor. It points the way toward a concrete understanding of what is involved in the creation and functioning of social capital.

It may be difficult to see this relationship partly because of our reductionist tendencies to classify things as being *either* this *or* that—considering people and relationships as being either entirely selfish or generous, for example. This conceptual predilection distracts us from discerning and assessing matters of *degree* and *directions* of change. Societies and social relationships—quite like Rome—are not built in a day, though they can be destroyed almost that fast. The realm of what is "social" is extremely complex and manifests itself along a continuum from minimal to maximal "society," with friendship, solidarity, mutuality, reciprocity, and related phenomena being manifested as matters of degree.

If people are living together, that is, not in a constant state of war and conflict, there must be some minimum of tolerance and willingness to live and let live, though there can be much exploitation and little mutual regard. The minimum condition for social capital is described in the left-hand column of table 2, which represents little interpersonal attachment and cooperation. The extreme condition, such as Turnbull (1972) described among the Ik people, is hard to imagine, let alone find. So the left-hand column is an ideal (sic) type, contrasting with the similarly rare situation of maximum social capital described in the right-hand column. Even the very benign society of the Ituri pygmies documented by Turnbull (1961) did not fully attain this level of solidarity.

Most situations are between these two extremes, somewhere along a continuum between the two middle columns in table 2. If people are not totally indifferent to each other's well-being, their society is in the range of the second column. Motivation can be highly instrumental and self-serving, with cooperation only for the sake of—and only to the extent of—personal benefit. But cooperation can create positive-sum benefits for others as well as one's self (Axelrod 1984), which can move social relationships toward, if not beyond, the third column.

TABLE 2: THE SOCIAL CAPITAL CONTINUUM

Minimum social capital	*Elementary social capital*	*Substantial social capital*	*Maximum social capital*
No interest in others' welfare; seek self-interest maximization at others' expense	Interest primarily in own welfare; cooperation occurs only to the extent that it serves one's own advantage	Commitment to common enterprises; cooperation occurs to a greater extent when it is beneficial also for others	Commitment to others' welfare; cooperation is not limited to seeking one's own advantage; concern for public good
Values:			
Self-aggrandizement respected	*Efficiency* of cooperation	*Effectiveness* of cooperation	*Altruism* regarded as something good in itself
Issues:			
Selfishness—how can this be kept from being socially quite destructive?	*Transaction costs*—how can these be reduced to increase people's respective net benefits?	*Collective action*—how can cooperation (that is, pooling of resources) succeed and be sustained?	*Self-sacrifice*—how far should this be taken: for example, patriotism? religious zealotry?
Strategy:			
Autonomy	Tactical cooperation	Strategic cooperation	Merger or submergence of individual interests
Mutual benefits:			
Not considered	Instrumental	Institutionalized	Transcendent
Options:			
Exit whenever dissatisfied	*Voice*, try to improve terms of exchange	*Voice*, try to improve overall productivity	*Loyalty*; acceptance of results if good for all in total

Game theory: *Zero-sum*; but if competition is unconstrained, choices will have negative-sum results	*Zero-sum*; exchanges that are intended to maximize own benefits can have positive-sum results	*Positive-sum*; aim is to maximize own **and** others' interests to mutual advantage	*Positive-sum*; aim is to maximize common interests with own interests subordinated
Utility functions: *Interdependent*, with weight given only to own utilities	*Independent*, with own utilities being advanced through cooperation	Positively *interdependent*, with some weight given to others' benefit	Positively *interdependent*, with more weight assigned to others' benefits than to one's own benefits

Source: Author.

The relationships in the fourth column can be summarized in the motto of the *Three Musketeers*: "All for one, and one for all." (Recall the statement of Massachusetts Colony governor John Winthrop cited in note 7.) Such solidarity is seldom observed because it demands self-sacrifice beyond what most persons are willing to accept and sustain, however many benefits it might confer. Setting aside this most intense form of "society," there are many degrees of positive interdependence of utility functions in between the left- and right-hand columns. These represent extreme situations that can frame research and policy issues but are of less practical interest and importance than the two middle columns.[8]

Some modicum of social capital is present in the second column but even more in the third. There are some *a priori* reasons for thinking that the third would be a more productive and robust situation of cooperation and collective action, because outcomes are valued and appreciated by many persons, not just by those who contribute to them. But this situation may also be more difficult to establish and maintain, and it can be subject to its own sources of weakness.

As this is a continuum, all real situations should be seen as representing matters of *degree* rather than just of kind. One can hypothesize, for example, that to the extent some values and elements associated with the fourth column are present in the third situation, that is, if some persons are fully committed to collective well-being and are willing to make sacrifices for this, it will be more durable.

This is not a purely imagined proposition. Some of the elements of so-called "traditional" communities are associated with the more normatively interdependent and intense kinds of relationships suggested by the right-hand column such as expressed in family and kinship. The solidarity that is the essence of social relationships is usually seen most strongly in small numbers of people—families, clubs, groups, communities—although smallness is no guarantee of solidarity. Solidarity is a subjective creation, a matter of choice, and it can be observed also in large groups, even whole nations, if people identify intensely enough with each other's welfare.[9]

Social relations create value through *reciprocity*, which is closely related to *trust* (Fukuyama 1995). Many things that we want and need cannot be created simply by our own efforts. The positive effects of competition, which sets individuals (or groups) against each other, are most beneficially realized within larger frameworks of cooperation.[10] While reciprocal exchanges can be undertaken purely on a self-interested basis, their longevity and stability, and hence their productivity, will be greater to the extent that trust and confidence underlie them (Frank 1992).

While one can have the forms (structure) of society without solidarity (norms), the power and durability of social connections is greater to the extent that people are "invested" in each other, a summary state-

ment about social capital. Social and political as well as economic relations are all more productive when people relate to each other not as strangers, and certainly not as enemies, but to some extent as friends. This reflects and reinforces trust, which in all accounts of social capital is recognized as the essential "glue" for society.

People need not be intimate acquaintances to value others' well-being, or at least not be indifferent to this. Such an orientation is the most basic requirement for "society." The values, attitudes, social structures and relationships that reinforce and reward such psychological "investment in each other" are basically what is meant when we talk about social capital. Purely self-interested cooperation represents a form or degree of social capital, but this is the weakest sort. It is not very stable because it is liable to dissolve whenever individuals think that they have put more into a role, a reciprocal relationship, an institution or a shared belief than they have gotten out of it, directly and in the short run.

Investing in social capital

The concept of social capital is attractive to governments and development agencies in part because it could enable decision-makers to make investments that increase the efficiency and probability of success for development initiatives. If social capital is amenable to being created, it would not just explain differences in success between projects or between communities. It could contribute to success.

The understanding of social capital proposed here is consistent with an investment approach, although social capital appears more akin to natural than to physical (human-made) capital, being largely inherited from generation to generation. Structural and cognitive forms of social capital can be built up over time, though they cannot be "seeded" as simply and directly as a forest can be planted, for example. With both kinds of investment there is need for whatever is planted to "take root." Reforestation efforts can have more control over the soil, water, and nutrient conditions than social capital investors can influence the motivations and evaluations of people. The roles, rules, norms, and values that constitute social capital are not like a mineral deposit created eons ago as a fixed stock; rather there is an accretionary dynamic, more like that observed with the process of soil creation as various processes contribute to the buildup of this kind of asset. Fortunately, the building up of roles and norms need not be so slow as with soil, and networks can be established fairly quickly. Unfortunately however, social relationships and values—much like soil—can *erode* both faster and more easily than is true in the process of their formation.

Much of the creation of social organization—roles, rules, procedures, precedents, relationships—is unplanned and purposive only in small ways. Its role as social capital is mostly a by-product. These various

elements of social organization aggregate into networks and associations that establish patterns for people to act together in mutually beneficial ways. How beneficial they are, and to what extent the benefits are equitably shared, will certainly vary. Organization that is purely coercive or exploitative is essentially redistributive, rather than productive; since it does not contribute to mutual benefit, it is not considered here under the rubric of social capital.

The values, norms, attitudes, and beliefs that qualify as social capital are built up over time, but can be diminished and even destroyed in fairly short order. Much as with other forms of capital, accumulation occurs usually with some expenditure, though net expenditure can be fairly small if the benefits are evident and attractive. What has been accumulated can be lost subsequently through a variety of uses or misuses.

In previous work on the subject of social organization, it was concluded that there are four basic, ubiquitous activities of organization: decision-making, resource mobilization and management, communication, and conflict resolution.[11] These four activities, or functions, are essential for mutually beneficial collective action, lowering transaction costs and increasing the probability that individual efforts in concert with others' will be efficacious.

Without roles and rules for decision-making and resource mobilization, collective action becomes more difficult and thus less likely. Facilitating communication among persons, as well as resolving any conflicts that may arise among them, is likewise needed for getting and keeping people together to accomplish things that are beyond the capability of individuals who are seeking just their own well-being. These four kinds of activities can be carried out formally or informally, and they apply for any level of social organization or between levels of organization.[12]

Creating social capital requires more than just introducing roles, since it is the *acceptance* of roles that patterns people's behavior in predictable and productive ways. A role exists when there are shared and mutual expectations about what any person in a certain role should and will do under various conditions. These expectations need to be shared by both role incumbents and those persons who interact with that role. Social organization is less costly and often more effective in cases in which cooperation is motivated by norms, values, beliefs, and attitudes that create reinforcing expectations, rather than the organizers having to gain cooperation through material incentives or coercive actions. While such incentives and actions may be involved in any complex set of social relations, if they are all that produces intended behavior, this is a very expensive way to achieve results.

Establishing rules and procedures is only a first step toward creating structural social capital. Gaining and maintaining their acceptance, with a significant if not total degree of voluntary compliance,

is what makes them beneficial, by establishing both greater predictability and productivity from people's interaction. Social networks likewise represent established patterns of communication and cooperation that reduce transaction costs and thus make collective action of various sorts more feasible and profitable.

All forms of structural social capital are influenced by prior experience since precedents affect expectations about how future behavior will be rewarded, materially or nonmaterially. Enforcement and reinforcement of rules and procedures require certain expenditure of resources. These produce payoffs, penalties, or both, that make future outcomes more predictable and more beneficial. There may need to be training, which entails present cost, to make people explicitly aware of the expectations that are supposed to govern their behavior.

Interpersonal relationships that aggregate into social networks, large or small, need to be sustained by the contributions that people make to each other's welfare. The net reward over time to participants in social networks can be substantial, but achieving these benefits requires a willingness to make some sacrifices at least in the short run. More than other forms of social capital, networks clearly require investment (of time, money, information, and prestige) that can yield a benefit flow (of employment, income, sociability, knowledge, and other payoffs).

Investment in cognitive social capital is less obvious, but it clearly can involve costs. The articulation of norms and values, attitudes, and beliefs does not entail much cost, but living up to them can. Principles such as solidarity, trust and honesty will evoke little support and have little effect unless there is some confidence that others will also uphold them. This means that people must make some sacrifices to demonstrate that these norms or values are alive and well, reflecting appreciation that these values are good for individuals and for society at large. In cases in which these values are honored more in the breach than the observance, at least some individuals may nevertheless make personal sacrifices to affirm them and elevate them in public consciousness.

While such explanations of the social capital formation process are still fairly sketchy, the outlines of a theory for explaining such formation, as well as social disinvestment and decapitalization, should be reasonably clear from this analysis. Certain reinforcing kinds of behavior, especially by persons who are in positions of leadership and authority or who occupy high social status, can support structural and cognitive forms of social capital—while negative behavior can diminish others' commitment to them.

Of most relevance are norms, values, attitudes, and beliefs that support mutually beneficial collective action, through which people may be seeking their own benefit but are also interested in and willing to contribute to the benefits of others. Cooperation that is entirely contingent on one's own benefit, without regard to the welfare of others, may

reflect some minimum of social capital, compared with having norms, values, attitudes, and beliefs that work against even this much cooperation. But it is a limited and brittle kind of cooperation. Most understandings of social capital entail some element of generosity toward others, not being motivated only by self-interested considerations.

Social capital is more likely to be beneficial and durable when it involves more than purely instrumental, self-serving considerations. Social capital based on *"mixed-motive" cooperation* is more productive and sustainable because it operates in a positive-sum manner. To the extent that people's thinking is based on positively interdependent utility functions—valuing others' well-being *in addition to* their own—economic, social, and political relationships will become more fruitful and long-lasting than if these are entered into only on the basis of narrow self-interest. More resources can be mobilized and put into joint ventures than will be the case if narrower calculations of individual self-interest prevail.

The roles, institutions, values, and relationships covered by Coleman's and North's definitions can be considered as social capital. But something is lost or at least foregone if our understanding of the productive potential of this construct is restricted to a self-centered vision of how and why people work together. Hirschman's interest in social energy (1984) is supported by my own observations in Sri Lanka (Uphoff 1996) and by many instructive experiences in other countries (Krishna, Uphoff, and Esman 1997). Social capital that derives from animating norms and personal relationships can accomplish much more than what the minimalist version of social capital will.

People do not operate only on the basis of self-interest *or* altruism. Generally they combine the two in a both-and way, since self-interest and altruism can coexist in people's minds and motivations. To the extent that people value others' well-being, a valid preference, they derive satisfaction from altruistic behavior even when it costs them something. Social capital arises from the human capacity to think and act generously and cooperatively. If there were not this disposition, we would see little of the phenomena associated with social capital.

Is it irrational for persons to perform voluntary community service, to accept unpaid leadership responsibilities, or to make efforts to maintain social peace and harmony around them? This depends on what people value. Norms and roles that make such behavior acceptable, even expected, are likely to contribute to higher levels of societal well-being as more efforts go into activities that benefit more persons than the individual making them. If the persons making these expenditures value such outcomes, they do not consider these activities only as a cost.

Alternatively, norms that promote only the individual pursuit of self-interest are likely to lead to the neglect and even undermining of social institutions that, once established and maintained, produce streams of

benefits that enhance the welfare of many. Adopting a purely competitive stance toward others—and accepting zero-sum or, worse, negative-sum outcomes as the norm—can make such outcomes into the norm. In the absence of social capital, other resources are likely to become less productive for lack of trust, commitment, ingenuity, cooperation, reliability and other qualities that humans can either display or suppress.[13]

That structural forms of social capital are conceived and maintained for a variety of instrumental and normative considerations should be clear. The same applies for cognitive forms of social capital, ideas that predispose people toward—and support them in—cooperative behavior or collective action. Real-life situations are almost always a combination of both, though for analytical purposes, one can distinguish instrumental from normative ideas. These can be differentiated as follows, recognizing that actual motivations tend to be composite:

- Instrumental ideas are routines and repertoires that create an *effective* culture, with shared confidence in the methods and feasibility of cooperative or collective undertakings. These are reinforced through efficiency and efficacy in the performance of such undertakings.

- Normative ideas include values, norms, attitudes, and beliefs that create an *affective* culture, with feelings of trust and solidarity that encourage cooperative or collective undertakings. These are reinforced through ideas about legitimacy, altruism, duty, and ethical behavior.

These can be compared analytically as follows in table 3. Both categories contribute to mobilizing and sustaining cooperative behavior.

Having made this distinction, it is important to reiterate that the motivations that undergird social capital are most likely to be, and to be beneficially, mixed, drawing on some combination of both instrumental and normative considerations.

Sources and magnitudes of benefit from social capital: analysis of a case from Sri Lanka

This discussion has been general, intended to provide concepts and principles that apply everywhere. Interest in social capital has arisen because development practitioners and researchers have observed associations between desirable developmental outcomes and the existence of social roles and networks or of certain kinds of values and norms. There are starting to be some systematic and quantified studies of such relationships, such as that by Narayan and Pritchett (1996), but they are still rather few.

TABLE 3: CONTRASTING MODES OF COGNITION AFFECTING SOCIAL CAPITAL

Instrumental cognition	*Normative cognition*
Shared technical, organizational and operational *knowledge* that makes cooperative behavior and collective action *effective*, over and above what could be achieved through individual action.	Shared *thinking* about positive-sum relations and mutual benefits that makes cooperative behavior and collective action *attractive*, over and above its individual and instrumental value.
Answers questions of: *HOW to work together?* Traditions, inertia, and habit create common expectations and role repertoires that lead to synchronization and cooperation.	Provides answers for the question: *WHY work together?* Trust, solidarity and related values, norms, attitudes, and beliefs create presumptions that people should and will work together.
Expectations that others *WILL* cooperate create pressures to cooperate from outside one's self. Reinforcement comes from the benefits of cooperation and collective action for one's self.	Expectations about why one *SHOULD* cooperate create pressures to cooperate from inside one's self. Reinforcement comes through self-respect and satisfaction from others' benefit in addition to one's own.

Source: Author.

My most extensive and intensive experience with a development project was in Sri Lanka, where the United States Agency for International Development (USAID) engaged Cornell's Rural Development Committee to work with the Agrarian Research and Training Institute (ARTI) to improve the efficiency of water management in the Gal Oya irrigation system through the introduction and operation of farmer organizations. When we started in 1980, there was no concept of social capital to inform or guide our work, and "participation" was the operative concept. We can see now, however, that our efforts created and benefited from social capital, both through establishment of water user associations and by mobilizing and reinforcing certain value orientations of cooperation and generosity that were available within the culture but were at that time not influencing behavior in the area.

Gal Oya was said by engineers and officials to be the most deteriorated and disorganized irrigation system in the country. Yet it became one of the most efficient and cooperatively managed systems, even fairly quickly, once approached with an effective plan for engaging farmers in joint system management. The efficiency of water use was doubled within two years, even before the planned physical rehabilitation was completed, through the introduction of "social infrastructure." Fairly conservative benefit-cost calculations indicated about a 50 percent rate of return on this investment in social infrastructure, similar to the rate

calculated for similar investment in the Philippines, some of it by the World Bank (Uphoff 1986, pp. 27–30).

Perhaps most significant, a postproject evaluation commissioned by the International Irrigation Management Institute, four years after project completion, calculated that the production of rice per unit of irrigation water issued had increased by about 300 percent (Wijayaratna and Uphoff 1997, p. 178). While not all of this increase can be attributed to social capital, probably at least half was due to creating new roles and social relationships and to activating certain norms and attitudes—respectively, structural and cognitive forms of social capital. That social organization is a more important determinant of the higher productivity than are changes in physical structures has been shown through quantitative analysis (Amarasinghe, Sakthivadivel, and Murray-Rust 1997).

The social structures created for decision-making, resource mobilization and management, communication, and conflict resolution were a network of farmer organizations, beginning with small, informal groups (10–20 members) at field channel level. Each of these groups was headed by a Farmer-Representative (FR), chosen by consensus and serving on an unpaid basis. All of the FRs for field channels drawing water from a given distributary canal formed a distributary canal organization (DCO), which had, eventually, formal-legal status. FRs also met regularly in larger area councils, and they selected from among themselves in these councils trusted FRs to serve on a joint project management committee with engineers and other officials.

Participatory irrigation management along these lines became national policy by an act of the cabinet in 1988 (Brewer 1994), and this structure of organization became a model for all of the major irrigation schemes in Sri Lanka (those with command areas over 80 hectares). Project committees have a management committee with a farmer majority and usually a farmer chairman. Probably few other irrigation systems have organizational structures as effective and efficient as Gal Oya, but then there was less investment made in creating social capital in other schemes.

The method of investment used was to recruit, train, and deploy young persons called Institutional Organizers (IOs) as "catalysts" for collective action and formation of organizations. IOs lived in the farming communities, got to know farmers and their families on a personal basis, and encouraged problem-solving efforts, beginning quite informally. The strategy was to "work first, organize later" so as to demonstrate the benefits achievable through MBCA. This created a *demand* for local organization, rather than begin by creating a *supply* of organization for which there was no clearly felt need. This strategy has been documented in Uphoff (1996).

The creation of the role of Farmer-Representative had a dramatic transforming effect within the farming communities, manifested in more effi-

cient and wider water distribution (Uphoff 1996, pp. 335–36 and throughout). Already within six weeks after the IOs began their work, in a water-short year when the main reservoir was only one-quarter full, farmers on 90 percent of the field channels were engaging in some combination of (a) voluntary collective cleaning of channels (some of which had not been maintained for 10 and even 20 years), (b) rotating water deliveries among users along the channel (so that tail-enders got their fair share, previously impossible), and (a) saving any water that had been issued but was not absolutely needed by farmers along a channel, donating any surplus to more needy farmers downstream. About one-sixth of authorized supply was given up in this way, with, in some cases, Sinhalese farmers giving up water to help Tamil farmers cultivating in tail-end areas.

This rapid mobilization of collective action where it had been absent before was as much a surprise to Cornell and ARTI as it was to the engineers, officials, and farmers themselves. Given the serious water scarcity, it had been anticipated that there would be more conflict rather than more cooperation. Actually, the next year's dry season began with the reservoir even lower (only one-fifth full), yet the pattern of increased cooperation continued, producing tangible benefits equitably distributed.

The FR roles created a structure of organization that reached from the field channel up to project level and was able to produce decisions, mobilize resources, facilitate communication, and resolve conflicts. It did this in ways that farmers and officials had not been able to accomplish before—and was very much appreciated. One area council chairman told me proudly, "There used to be lots of fights among farmers here over water, even murders. You can check the records of the police if you don't believe me. Now there are no more [violent conflicts]" (Uphoff 1996, p. 10). Roles that could facilitate the four activities listed above raised both the feasibility and efficacy of mutually beneficial collective action.

As or maybe more important were the norms of fairness and equity that existed in the traditional culture, heavily influenced by Buddhism, which the organizers could appeal to. Such norms were being honored more in the breach than the observance in Gal Oya, where disputes, water stealing and breaking structures were common. However, once these norms were articulated publicly and were proposed as criteria for irrigation management behavior, they were readily accepted among farmers. Their existence in the collective consciousness of Gal Oya settlers was an important form of social capital that the program could call upon to get more equitable water distribution, which contributed concurrently to greater efficiency in water use.

Specifically with regard to mobilizing resources to rehabilitate and maintain the channels, there was a tradition known as *shramadana*, which can be found also in India, Nepal, and other South Asian countries. This

custom obliges people to participate in voluntary group labor to produce some community good, such as clearing a road, building a temple, or repainting or reroofing a school. Persons who contribute their labor to *shramadana* activities are believed to acquire spiritual "merit" that will benefit them in the present or in the future.

Little *shramadana* was being done when our program started in 1981, for irrigation or other purposes. Gal Oya was a settlement scheme, to which households from all over the country had been relocated in the 1950s. The usual local leadership roles that could have mobilized local labor for public benefit, including the common roles of village headman and temple priest, were either missing or weak. Structural social capital was weak, but there was some significant, even if latent, cognitive social capital to draw on.

Suggestions that farmers get together to clean clogged canals or dig new channels were easily understood and quickly taken up, given the favorable attitudes in people's minds toward this kind of collective action, sanctioned by traditional beliefs (see references to *shramadana* in Uphoff 1996). There were associated roles that people could bring into being quickly because of the level of trust the institution enjoyed—someone to collect money for refreshments, someone to assign work duties. It became quite clear to us in the field that we could not have gotten such rapid and widespread response from Gal Oya farmers without this custom already existing in people's cognitive repertoire of acceptable, indeed socially approved, behavior.

The discovery of the importance of positively interdependent utility functions was likewise quite empirical. None of my training as a social scientist prepared me for the extent of cooperation, even some examples of self-sacrificing behavior, that we observed in a place that officials had characterized as the most conflictive irrigation scheme in the country.[14]

To be sure, farmers benefited personally from their cooperation, which increased the available water supply by reducing losses and raising the efficiency of use. But they almost always indicated, when asked about the outpouring of cooperation, that part of their motivation was to help others less fortunate than themselves, once the plight of others was made a public issue, and once the organizational means (structural social capital) were in place to make generous actions effective.

By resurrecting dormant values that supported fairness and altruism, which farmers had in mind even if these were not being expressed in practice, organizers and then farmer-representatives made participation in *shramadana* a new norm. The practice came to be taken for granted as contributing labor to clean channels became normal, rather than deviant behavior. Sharing water and saving it to assist others when possible also became the norm.

When farmers were asked to explain the dramatically changed and improved management system, I expected to hear from them an enu-

meration of incentives and benefits. But the most frequent response was that with the new structure of organization, and the interaction it produced among farmers, they came to realize others' needs for water and this made them think about the effect of their (wasteful) actions on others. They began taking others' interests into account, rather than simply looking out for themselves. They also took satisfaction in demonstrating to engineers and officials that farmers could indeed be responsible and capable individuals. The language of friendship, among farmers and between farmers and engineers, became common, whereas before the words were of indifference or even antagonism.[15] To what extent this renewed concern for others was bolstered by the increases in production and other benefits, I cannot say. That more generous and cooperative behavior benefited individuals and their neighbors certainly made it more attractive and sustainable.

The cooperative water management practices were, in economic terminology, Pareto-optimal. By distributing water more carefully and efficiently, there could be gainers without anyone losing crop yields. There were some costs involved as this new, more intensive management system required some expenditure of time and labor. But this was compensated for in various ways, many material but some nonmaterial; many benefits were individual but some were collective.[16] Once channels were free of weeds, silt and rocks, and when each farmer got the full flow in turn for a specified period of time, seepage and conveyance losses were greatly reduced. This increased the supply of what was normally considered a scarce resource, and when turns were taken, irrigating one's field could be accomplished satisfactorily in a matter of hours rather than unsatisfactorily in a matter of days.

This required trust, which also had been in exceedingly short supply before. For the previous 30 years since the Gal Oya system began operation, it had been known mostly for conflict. Zero-sum competition for water had resulted in breakage of structures and chaotic water deliveries that produced negative-sum outcomes—almost everyone became worse off. Engineers—partly because they lacked the means, and also because they invested little effort in management—seldom adhered to the calendar of water deliveries that was announced before the start of the season. Water was supposed to run down distributary canals for a period of five days, and then was to be diverted to an alternate canal, following five-days-on, five-days-off rotation. In fact, water might be received for four days and then not for six, or entire turns could be missed.

Thus it was quite an accomplishment to get farmers to rotate water among themselves when there was not a reliable schedule for delivery. There is some objective evidence that we activated the attitude of trust, not just the general values of cooperation and generosity. During the first year, about one-fifth of the field channels in the pilot area changed their rotation plan during the season; all of these changes were from

head-end-first rotations to tail-end-first, on the grounds that this would assure greater equity as well as efficiency. Given the unpredictability of water deliveries from the main system, this was most remarkable, because head-end farmers were putting their own crops at risk (although there was an understanding that if alterations in the distribution schedule were likely to shortchange head-end farmers, they would be given priority for available water).

My own explanation for what happened is not that values were changed but rather that values that existed within the culture and within the local population were activated and made more salient by the opportunities for MBCA that the IOs helped farmers fashion. There was too little time to "change" values, and besides, the IOs had not been instructed to attempt this. Instead, they initiated a participatory process of problem identification and solution through group efforts. There was cognitive social capital which was latent—lying fallow, so to speak—that could be capitalized upon, once other-regarding local leadership was mobilized to take initiative and alter the normative climate (ethos) in the communities, with supportive social structures.

More could be said about this experience with the purposeful creation of social capital, both structural and cognitive, but this would require another chapter. The experience is documented and analyzed in explanatory terms in Uphoff (1996). Cornell's and ARTI's involvement in Gal Oya ended in 1985, so the farmer organizations there have been largely on their own for more than a dozen years. They are still operating effectively (Wijayaratna and Uphoff 1997), though not always perfectly. There have been some disappointments and shortfalls, as there are in any human institution. They could have been kept and made more effective with some continuing support. Just as the "hardware" of irrigation systems needs some maintenance investments, so does the "software" of farmer organization require some ongoing investment in operation and maintenance (O&M).

That the social capital of these organizations has remained effective both structurally and cognitively can be seen from their performance during the 1997 dry season, when the water level in the main reservoir was so low that the Irrigation Department refused to authorize cultivating rice on the 65,000 acres of the Left Bank area of Gal Oya. It said that it could provide just 60,000 acre-feet of water and authorized planting only of other field crops (not rice) on 15,000 acres (Uphoff and Wijayaratna 1999).

Farmers through their organizations objected to this preemptive curtailment of cultivation. One of their leaders who was fairly educated collected data showing that there should be some inflow to the reservoir during the dry season from groundwater already in the catchment area. He also pointed out that no consideration had been given to whatever rain was likely to fall during the season even if it was not very

much. He and other farmers were convinced that through their organizations they could manage whatever water became available more efficiently than the engineers estimated. Finally, they got the government members of the project management committee to agree to the cultivation of a larger area and with rice if farmers wished—though without any promises of additional water being issued from the reservoir.

Rather than trying to decide which farmers would be allocated the limited supply of water, the organizations decided to share equally whatever supply was available. (This meant that Sinhalese farmers at the head of the Left Bank system willingly shared with Tamil farmers at the tail, water that they could have monopolized because of locational advantage.) Farmers correctly predicted that there would be additional supply in the reservoir, and almost 100,000 acre-feet of water were issued; they were fortunate to have slightly better than average rainfall during the season, which added 24 inches of supply to fields. They cultivated almost 65,000 acres of rice, where it had been thought there was only enough water for 15,000 acres of other field crops, and got a better than average yield (85 to 95 bushels per acre).

The total water supply available at field level during the season was about 3.5 acre-feet, far less than the 5 to 5.5 acre-feet usually required during a dry season. (Before farmer organizations were introduced, the amount used in Gal Oya had been 8 to 9 acre-feet.) The roles, rules, procedures, and precedents that farmers could draw on thus were materially very productive, being essential for production of $20 million worth of rice where none would have been grown otherwise. The norm of equity, which became very strong among the Gal Oya farmers once they formed organizations, was also part of this productive "formula" because without it, water would not have been distributed throughout the whole Left Bank.

Governments are unfortunately still often reluctant to make investments in social capital, even though its benefits can be demonstrated. They prefer to put money and personnel into more tangible physical assets. At least the policy environment for participatory irrigation management is strongly supportive in Sri Lanka now, and few engineers would like to return to the status quo ante, before farmer organizations shared responsibility in system management.

The World Bank has had some difficulty in investing in social capital. In 1983, a Bank design team passed up an opportunity to establish farmer organizations, utilizing the IO and FR roles that we offered to introduce, in its Major Irrigation Rehabilitation Project. The team leader characterized such investment as "gold-plating," even though we showed him data demonstrating a 50 percent rate of return on the first two years of social infrastructure investment in Gal Oya. As it turned out, the project became bogged down without farmer organizations in the irrigation schemes it was rehabilitating, and subsequently it took some of our best

IOs from Gal Oya to try to "retrofit" organizations into systems that it had already physically rehabilitated. This was much less beneficial than if organizations had been put in place at the start of the project, involving farmers in the planning and implementation, not just postrehabilitation operations.

Even though by the 1990s, participatory development was strongly endorsed by the World Bank at the policy level, such thinking had not "trickled down" to the operational level. When the Bank started up a National Irrigation Rehabilitation Project in 1990, it included IOs in the design (because the Government of Sri Lanka insisted on this). But then in its hurry to start up the implementation, it started physical rehabilitation before IOs had even been recruited, let alone trained and placed in the field.[17]

Experience within the irrigation sector in Sri Lanka points out dramatically the productive potentials of structural and cognitive forms of social capital for achieving some tangible material benefits for farmers and for utilizing both physical and natural assets more efficiently. The payoffs go beyond increased production and greater water use efficiency. They include saving labor and gaining sleep. Farmers also stressed improvements in their quality of life, stating that their communities now had *ekemutekama* (a spirit of unity), which is highly valued in traditional Sinhalese culture as it is in most communities around the world.

The organizational skills that were mobilized and improved in Gal Oya were extended into other beneficial activities such as crop protection (the use of chemical pesticides was cut by one-quarter just through coordination of planting schedules to reduce staggering of crops) and savings and loan operations (to circumvent the usurious operations of private moneylenders who charged as much as 25 percent interest per month). One can see from many examples of local social organization around the world that when such capacities are developed, members utilize them for solving a broader range of problems than they tackle initially (Uphoff, Esman, and Krishna 1998, pp. 207–209). What is not known so far is the extent of fungibility of social capital, either in structural or cognitive terms. Understanding this will be one of the most useful and challenging areas of research on social capital.

The Gal Oya experience is not unique. In Krishna, Uphoff, and Esman (1997), there are many impressive examples of the creation and utilization of structural and cognitive forms of social capital. The study of social capital is just beginning, however. We need to employ concepts always in a consistent manner, with categories that are mutually exclusive and at the same time, when taken together, collectively inclusive. These are the minimal requirements for rigor. Thus far in the literature there has been little effort to meet them. With such a pretheoretical foundation, we need empirical work that moves the study of social capital beyond descriptive treatments.

Annex: terminology and conceptualization of social capital

I. Structural forms of social capital: ROLES, RULES, PROCEDURES and PRECEDENTS as well as NETWORKS that facilitate mutually beneficial collective action (MBCA) by lowering transaction costs, coordinating efforts, creating expectations, making certain outcomes more probable, providing assurance about how others will act, and so on.

A. Primary forms: Though these have cognitive origins, they are relatively objective and observable:

1. Specific ROLES, both formal and informal, and RULES, explicit and implicit, that support the four basic functions and activities required for collective action:

    a. Decision-making (planning, evaluation, and so on); [Goal attainment]
    b. Resource mobilization and management; [Adaptation]
    c. Communication and coordination; and [Integration]
    d. Conflict resolution. [Pattern maintenance]

2. SOCIAL RELATIONSHIPS more generally—broad and specific patterns of exchange and cooperation that involve both material and nonmaterial goods and that facilitate MBCA on a regular or as-needed basis. These are often described, and can be analyzed, in terms of NETWORKS (network analysis).

B. Secondary forms: These are largely cognitive, though they pertain to be objective, observable relationships:

1. PROCEDURES: Agreed and understood processes or routines for carrying out the above activities and functions, through roles and rules in ways that make these roles and rules widely understood and accepted.

2. PRECEDENTS: Previous actions and outcomes that establish the validity and value of roles, rules, and procedures. Precedents increase the likelihood that people will act in certain ways and that such action will be accepted and effective.

A good example of a **structural** form of social capital is *sanctions*, which reinforce and regularize agreements and dispositions for collective ac-

tion. Sanctions are produced by persons acting in the four kinds of roles listed above. They are specified by rules and are carried out according to procedures and precedents. They make cooperation more likely because others' behavior is more predictable, and they accordingly make cooperation more widespread and beneficial.

II. Cognitive forms of social capital: NORMS, VALUES, ATTITUDES, and BELIEFS that create and reinforce positive interdependence of utility functions and that support mutually beneficial collective action (MBCA).

A. Primary forms:

1. Orientations toward OTHERS—how one should think about and act toward others:

   a. TRUST and RECIPROCATION—MEANS of relating to others:
      - *Norm* of reciprocation;
      - *Value* in being trustworthy;
      - *Attitude* of trust; and
      - *Belief* that others will reciprocate.

      These make cooperation and generosity *efficacious*. One can assume that others will act in a friendly, reliable way; will keep agreements, but will also act in a beneficent way even without explicit agreements. An area in which more analysis and evaluation needs to be done concerns "specific" versus "generalized" norms and behaviors of reciprocity. The first set is more intense while the latter set is broader. Both represent forms of social capital but with different effects.

   b. SOLIDARITY—ENDS of relating to others:
      - *Norm* of helping others, of "standing together," of incurring costs for benefit of some larger group, beyond immediate family or kin;
      - *Value* of maintaining solidarity among persons within larger group;
      - *Attitude* of benevolence and loyalty toward all within a larger group; and
      - *Belief* that others will uphold norm of solidarity and be willing to make some sacrifices to help others.

      These make cooperation and generosity *desirable*. One can assume that others will act in a friendly, reliable way and will be willing to make some sacrifices for the "greater good" of larger group.

2. Orientations toward ACTION—how one should be disposed to act:
   a. COOPERATION—MEANS of action with others:
      - *Norm* of cooperation, working together, rather than separately;
      - *Value* of being cooperative, working with others for common good;
      - *Attitude* of cooperation, being willing to oblige, accommodate, accept tasks and assignments for common good; and
      - *Belief* that others will similarly be cooperative and that cooperation will be accordingly successful.

      These create expectation that others will cooperate and make this action *efficacious*. They predispose people to seek joint solutions to problems rather than think cooperation will not occur or not be successful, making individual action preferred.

   b. GENEROSITY—ENDS of action toward others:
      - *Norm* of altruistic behavior, contributing to others' well-being in addition to one's own;
      - *Value* of acting generously, recognizing that this (if reciprocated) will be beneficial for one's self, but at the same time taking satisfaction in others' well-being;
      - *Attitude* that being generous is good, natural, beneficial, and that generous actions will be good for everyone, including self;
      - *Belief* that others will act generously and will not take advantage of one's own generosity beyond some reasonable limit.

      These create the expectation that "virtue will be rewarded," later if not right away. These also establish *inter*dependent utility functions that produce positive-sum satisfactions. As means, TRUST and COOPERATION are interactive and interdependent and mutually reinforcing, much as are SOLIDARITY and GENEROSITY as ends.

B. Secondary forms: Numerous norms, values, attitudes, and beliefs correspond with and reinforce these primary normative orientations, for example, honesty, egalitarianism, fairness, participation, democratic governance, and concern for the future (for example, the next generation). Little systematic analysis has been done on these as secondary forms of cognitive social capital because they have, thus far, been treated mostly descriptively, lumped together with trust and reciprocity, solidarity, cooperation, and generosity.

These primary forms of cognitive social capital listed here are the basic normative orientations that produce mutually beneficial collective action—the "income stream" that comes from social capital. These other, more specific normative orientations such as honesty are important, but they are better understood as secondary forms of social capital.

Notes

1. This analysis has been developed jointly by Anirudh Krishna and myself. It has been operationalized in Krishna and Uphoff (1999), in which we analyzed the results of a study of 64 villages participating in a World Bank–Government of India watershed conservation program, with interviews of almost 2,400 villagers. The index of social capital that we constructed at both community and individual levels using factor analysis turned out to provide surprisingly strong explanatory power for mutually beneficial collective action, much stronger than can be obtained from usual explanations found in the literature such as relative need (Wade 1994), stratification, or modernization.

2. There may be a useful analogy here with batteries that can store electrical current. Once charged up, they yield a continuing stream of power, though they can also be run down if not recharged. Roles once established and ideas once accepted work much like this. They can be maintained, almost indefinitely, as long as some recharge is provided, matching the draw-down of current. In the social realm, successful performance that matches normative and empirical expectations has the effect of recharging both roles and ideas. Indeed, ideas, because they are not subject to the law of conservation of matter, can be sustained with extremely low levels of input and reinforcement.

3. Both Coleman and Putnam have performed a great service by putting social capital on the agenda for social scientists and development practitioners. But both have inclined more toward descriptive than explanatory treatments of the subject. Coleman considers social capital to be, for example, "a variety of different entities, with two elements in common: they all consist of some [any?] aspect of social structure, and they facilitate certain actions of actors—whether personal or corporate actors—within the structure" (1988, p. S98). This abstract formulation leaves out norms, which Coleman considers important in most of his other discussions of social capital.

Putnam includes both structural and cognitive aspects of social capital in his definition: "social capital consists of social networks

('networks of civic engagement') and associated norms that have an effect on the productivity of the community" (see Serageldin and Grootaert 1997, p. 12; see chapter 2 in this book for an updated version). But he makes no consistent distinction between these two kinds of social capital, for example, suggesting that trust, norms and networks are "all elements of social organization that improve the efficiency of society by facilitating coordinated actions" (Putnam, Leonardi, and Nanetti 1993, p. 172). Such wording, which equates social capital with social organization, has the effect of subsuming all cognitive factors under structural considerations.

Coleman's and Putnam's writings on the subject are not incorrect, only unsystematic. Approaching complex subjects more in descriptive than in analytical terms is unfortunately fairly common in the social science literature. For a similar critique, and analytical resolution, concerning the treatment of "power" in the literature, see Uphoff (1989).

4. Authority and legitimacy are intrinsically intertwined with one another. The first is a structural, role-based phenomenon, codified in laws and statutes and exercised via formal organizations, yet authority can rarely be sustained unless it is regarded as legitimate by a sufficient number of persons according to prevailing norms, beliefs, and attitudes (Uphoff 1989; Ilchman and Uphoff 1997, pp. 73–86). Both cognitive and structural elements are thus essential and almost inextricable for the process of governance.

5. This derivation applies similarly for the French word *social* and, not coincidentally, for the German equivalent, *gesellschaftlich*, which comes from the word *Gesell*, which likewise means friend or comrade.

6. This explication argues against a long and strong tradition in sociology that stems from the work of Emile Durkheim. He contrasted *Gemeinschaft* (community) with *Gesellschaft* (society), considering the first to have more "organic" links and the latter to consist of more "mechanical" connections. That there had been in Europe at the time Durkheim wrote an increase in the latter and a decline in the former is not contested. However, the original meaning of *Gesellschaft* is no less grounded in the dynamics of friendship, personal attachment, and reciprocity than is *Gemeinschaft*, which means to have things in common.

7. One of the strongest descriptions of what it means to have positively interdependent utility functions was offered by John Winthrop, first governor of the Massachusetts Bay Colony when he spoke to the Puritans as they set off to establish a new society in North America in 1630: "We must delight in each other, make others' conditions our own, rejoyce together, mourn together, labor and suffer together, always having be-

fore our eyes our community as members of the same body" (cited in Bellah 1985, p. 28).

8. This continuum was developed with similar terminology in Uphoff (1996, pp. 341–45).

9. This factor of group size has been analyzed by Mancur Olson (1965). He gives logical reasons why collective action should be observed less often in larger groups, pointing to the greater difficulty in detecting and deterring free riding, which undermines people's willingness to contribute to the creation of a public good. He is, however, assuming independent utility functions, as if all members or contributors are strangers who attach no value to others' benefits from collective action. I would suggest that the phenomenon of greater amount and durability of collective action observable with smaller groups is *not* only attributable to the greater possibilities for observing and controlling shirking, as Olson suggests. It can be ascribed also (or even more) to people in smaller groups being more "invested" in one another.

10. Adam Smith, who has given us the most powerful arguments in favor of competition, argued this in *The Theory of Moral Sentiments* 17 years before he published *An Inquiry into the Wealth of Nations* (1776). See discussion of these issues in Ormerod (1994).

11. A working group of the Cornell Rural Development Committee undertook with USAID assistance in 1984 to analyze and assess farmer participation in irrigation management. After reviewing many analyses by others (Uphoff 1986, pp. 165–67), we concluded that there are four categories of activities that are necessarily performed by all water user associations or officials and technicians (Uphoff 1986, pp. 10–11, 40, 46–53). These are actually common to all forms of social organization.

12. After identifying these four activities of organization, we realized that they are practically the same as the "pattern variables" that Talcott Parsons had previously delineated (1951) as the four basic functions necessary for the operation and preservation of social organization of any kind: goal attainment, adaptation, integration, and pattern maintenance. Our categories are less abstract than those of Parsons, but they are essentially the same.

13. Leibenstein (1965, 1976) offered some instructive ideas on how productivity can be raised by such means beyond what the efficient allocation and employment of land, labor, and capital can explain. His concept of "x-efficiency" unfortunately never gained much support within the discipline of economics, but see Weiermair and Perlman (1990). All

students of social capital would benefit from reviewing Leibenstein's ideas about "x-efficiency."

14. The senior deputy director of irrigation for water management told us before the project started that if we could make progress [with participatory management] in Gal Oya, we could make progress anywhere in Sri Lanka. The top civil servant in the district told our organizers before they began work in the field, having said that farmers in Gal Oya were very uncooperative and prone to conflict, "If you can bring even ten or fifteen farmers in Gal Oya to work together, that will be a big achievement" (Uphoff 1996, p. 6). These words were supposed to be encouraging, but organizers knew that they were supposed to get ten to fifteen *thousand* farmers organized in the next four years, making their nominal odds against success about a thousand to one. This same official within four years said in a magazine interview: "Before there were farmer organizations, out of every ten farmers I talked with, eight had problems getting water. Now I hear practically no complaints about irrigation distribution." *Desatiya*, No. 15, October 1984, p. 19 (own translation from Sinhala).

15. A summary assessment in this regard came from the chairman of the UB1 (Uhana Branch distributary canal no. 1) distributary canal organization in July 1985, who said that before the program started in 1981, referring to relations between farmers and engineers, "We were like snake and mongoose," not suggesting which was which. He added that they now worked together as friends (Uphoff 1996, p. 204).

16. One reason frequently given for satisfaction and cooperation with the new system was that "we can now sleep at night." Farmers did not need to stay in their fields all night, to protect their meager supply of water, or to steal water from others, when water was distributed to all according to an agreed-upon schedule in proportion to their fields' needs.

17. When I visited some irrigation schemes being rehabilitated under NIRP (National Irrigation Rehabilitation Project) in 1994 (as a member of a CGIAR/TAC [Consultative Group on International Agricultural Research/Technical Advisory Group] external review team for the International Irrigation Management Institute), the project manager on one scheme we visited complained about the problems he was having owing to lack of farmer participation. This could have been predicted, because the project design was not serious about structural forms of social capital, and was oblivious to cognitive forms.

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