

Social Capital and Institutional Adaptation to Climate Change

RCC working paper 2

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1. Introduction

As an emergent property of social systems, adaptive capacity is continually being reshaped through the dynamics of social relationships. Social capital offers a lens through which to study the role of social networks and norms in the production of adaptive capacity. The aim of this paper is to open a discussion on adaptive capacity as seen from the perspective of social capital.

Social capital focuses attention on collective action – asking questions about the distribution and actions of networks and groups, of their internal dynamics and interaction with the contextualising socioenvironment. Within a social capital framework the analysis of risk and adaptation can move away from a purely top-down focus on formal organisational capacity and cross-cut this with an acknowledgement of the importance of informal social networks and reciprocity in the final directing of flows of information and policy enactment within communities and organisations. As part of this perspective social capital offers a way to get past static conceptions of administrative scale and sector and indicates the importance of social networks acting across boundaries for enabling adaptation. Moreover, the interdisciplinary heritage of social capital provides an opportunity to develop a common framework with which to view adaptive capacity to climate change as one amongst a range of external and internal threats felt by social actors (be they individuals, groups or organisations) and so to be a tool for examining adaptive capacity to multiple stressors such as economic globalisation and climate change.

The application of social capital needs to recognise its contested and messy nature. Contestation is partly a product of the multidisciplinary use of social capital, but it also reflects the contrasting epistemology of its origins (ranging from rational choice theory to social constructionism) and perhaps the relative youthfulness of the concept which has yet to acquire a common meaning. Theoretical and methodological diversity limit generalisation in findings but allow a broad scope for application. The breadth of application extends further when one considers not only those works that use social capital explicitly but associated work that have also used networks, trust or reciprocity as central concepts.

This paper starts off by reviewing existing work on mitigation and adaptation to climate change and indicating the opportunities that a social capital perspective can make. The work of the three principal originators of social capital (Bourdieu, Coleman and Putnam) are then discussed and critiqued. The novelty and the contested nature of social capital means that there are still grey areas and these are identified as warnings and areas for further study. The application of social capital to adaptation is then explored.

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2. Towards a Social Capital Framework

2.1 The Social Capital Debate

2.1.1 Origins of the Debate

This section shows the contrasting positions of three dominant authors in the field who have set the boundaries for much subsequent debate. The work of Bourdieu, Coleman and Putnam is reviewed in many other places, the aim here is to show the diversity of origins and so to trace some of the messiness of social capital as a conceptual tool.

Bourdieu (1984) used the concept of social capital as part of a theory of social stratification, based on the elaboration of different forms of capital from a realist epistemology. Cultural and economic capital were foremost in Bourdieu's analysis, and seen as being used instrumentally by bourgeois and elite groups to distance themselves from other social classes. Social capital was introduced to demarcate those social ties that were used by elite groups to reproduce their privileged status. Whilst being theoretically formative across the social sciences, Bourdieu offers only sparse empirical evidence for social capital. In contrast, Coleman (1990) introduced social capital as an explanatory variable in an empirical analysis, in this case of educational attainment in USA. Although writing after Bourdieu, Coleman comes to the term social capital independently, and from a rational choice perspective. Coleman's use of social capital extends beyond elite groups and moves the debate from a concern with social capital as a private asset to social capital as a public good. Where Bourdieu sees social capital as a good consciously maintained by individuals (and whose meaning and power for social division is socially constructed), Coleman conceives of social capital as a largely unintentional outcome of social processes and interaction. In his explanations of educational attainment Coleman has been criticised for stressing the influence of close ties of kinship and place (what have become termed bonding ties) whilst neglecting weaker and more distant – but potentially important – associations (or bridging ties) (Portes, 1998).

Putnam (1993), has utilised social capital to help explain uneven geographies of civic tradition and active citizenship. In his initial discussions of social capital Putnam cited Coleman, and in this tradition Putnam used social capital in the sense of a public good to describe dense social ties bound together by place and interest. Putnam's first use of social capital was as part of an explanation of differences in institutional performance, governance and economic development in Italy. Later, working on popular civic engagement in the USA, Putnam introduced what has become the most frequently used definition of social capital: 'features of social life – networks, norms and trust – that enable participants to act together more effectively to pursue shared objectives' (1995: 664-65). The definition offers a coherent set of elements which fall inside the definition of social capital, and which has become widely accepted. More controversial are the relationships between these elements and social processes and context. In searching for the directions of causal processes that influence social capital outcomes, research has pointed to trust as a determinant of networks, networks as a nursery for social norms and trust, the determining influence of social-historical context on the use of networks, norms and trust (Putnam, 1993), and the importance of networks, norms and trust in shaping development status. The non-linear quality of social capital that these circular arguments highlight suggests that insights from New

Institutional theory and more established sociological traditions such as structuration theory that acknowledge the cross-cutting forces of agency and structure could be used to build up the theory of social capital.

Just as social capital has rapidly grown to prominence in the social sciences, so it has come to be a highly visible element in a wide range of social policy including economic development, health, education, regeneration, community development and social exclusion and poverty alleviation (Woolcock, 1998). The World Bank has described social capital as the ‘missing link’ in development (Harriss and Renzio, 1997). In the UK, New Labour’s Third Way ideas draw on social capital (Giddens, 2000). This is perhaps surprising given Putnam’s (1993) view that social capital accrues over centuries, so that building social capital is largely beyond the reach of short-term policy interventions. Social capital is a deceptively simple concept, but the closer one gets to it the more slippery it seems to be. His contradiction perhaps lies at the heart of its being a commonplace term in policy despite being contested in academic debates.

2.1.2 A Theoretical Backbone: Key Metaphors and Concepts in Social Capital

This section presents two components of the mainstream, contemporary literature on social capital. The first discussion on types of social capital and the second on trust and reciprocity are complimentary, both informing one another in giving texture to the third dimension of social capital: accounts of networked social relationships that form the most visible component of social capital. These distinct components of social capital are close to those of Nahapiet and Ghoshal (1998) who describe three dimensions of social capital. The relational dimension (personal relationships), the cognitive dimension (social norms, trust and reciprocity) and the structural dimension (the overall patterns of connections between actors). No component is without its conceptual grey areas, and each set of ideas continue to be re-evaluated as part of the evolving theoretical body of social capital. However, they do offer a core set of ideas around which to apply social capital to questions of climate change adaptation.

Bonding, Bridging and Linking Types of Social Capital

The interpersonal relationships that give form to social capital and are a site and outcome of reciprocity can be categorised in bonding, bridging and linking types. Bonding ties are shared between individuals with socioeconomic characteristics in common and typified by ethnic or religious groups. Bridging ties are used to describe less dense social networks, often of associations between people with shared interests or goals but contrasting social backgrounds. Linking ties, like bridging ties cross group boundaries but in this case signify a vertical relationship for example between social classes (Putnam, 2000; Woolcock and Naryan, 2000).

The balance between bridging, bonding and linking capital points to a society’s orientation towards social fragmentation, cooperation or hierarchy. Strong bonding ties are associated more with survival than development. They accrue when individuals withdraw from maintaining associations with the wider society and turn to close-nit groups. This reduces the exposure of group members to perceived external risks, but also tends to reinforce views that other groups and the wider society cannot be trusted in social or economic exchange, leading to a fragmentation of society, slowing down the flow of information and undermining collective action. Olson (1982) argued that societies characterised by bonding capital exhibit interest group

politics, lobbying and cartel economics. Putnam (1993) argued that a society rich in bridging capital enables social collaboration through its wide array of loose associations. These act as a network for the communication of a participant's reputation, creating an incentive for trustworthiness and reciprocity. In studies of networking by managers, Burt (1997, 1998) has shown that strong communal ties can prevent different groups coming together for a common cause. He argues that whilst individuals with large networks will have more social capital, how one is positioned within an organisation's fields of formal and informal relationship can be just as important. When gaps appear in the communication channels between different parts of an organisation 'structural holes' open. Individuals able to network to bridge these holes will have utilised social ties effectively and so have more social capital. Women managers who tend to have more bonding than bridging capital than men may feel this as a form of institutionalised sexism blocking access to influential colleagues, information and promotion.

Societies rich in linking capital benefit from active pathways for facilitating the transfer of goods and information up and down the social hierarchy, but are liable to have difficulties in maintaining social trust and cooperation. In unequal patron-client relationships clients have the opportunity to leverage resources from the hierarchy. But this is at the cost of limited scope to impose sanctions on patrons opening up relationships to exploitation and dependency. The hierarchical relations underpinning linking capital are as useful for top-down social control as they are for delivering social development.

Existing networks of social capital can act as a cultural memory, as the embodiment of past successes at collaboration or of descents into fragmentation and dependency. This can provide a ready template for future cooperation, but also a barrier to interventions that require a reconfiguring of social capital ties and networks. If building developmentally positive stocks of social capital requires the reordering of an individual's social ties, this will always be set against the stickiness of established links embedded as they are in history and habit. To be policy relevant mechanisms are needed for effecting change in months rather than years – a considerable challenge if such changes are to be sustained.

The bonding/bridging/linking triplet has become a mainstay of social capital. But the apparent clarity it offers to analyses of social relationships needs to be seen against the detail that can be obscured. Not all bonding ties can be described as 'strong' and neither are bridging ties necessarily 'weak'. The capacity of individuals to change the orientation and complexion of their social ties gives social capital a dynamic quality Leonard and Onyx (2003).

Trust and Reciprocity

Trust is a long standing theme of sociological research that has been revisited through social capital although antecedents are seldom acknowledged. An exception is Schuller, Baron and Field (2000) who draw on the industrial sociologist Fox (1974). Despite the difficulties of empirical observation, and a lack of pre-existing data on trust (questions on trust have not routinely been incorporated into national census), trust has become a common element in disaggregated national comparisons of social capital. Fukuyama (1995, 26) defined trust as:

‘the expectation that arises within a community of regular, honest and cooperative behaviour, based on commonly shared norms on the part of other members of that community. Those norms can be about deep ‘value’ questions like the nature of God or justice, but they also encompass secular norms like professional standards and codes of behaviour’.

Famously, Fukuyama (1995) used trust as the key variable in explaining inequalities in national economic development - Japan, Germany and the USA were found to be high trust societies. Trust, it was argued, reduces transaction costs and so facilitates business. Elsewhere trust has been a component of national accounts of social capital (Putnam, 1996; Hall, 1999). At the local level, trust has been incorporated in quantitative analysis of social capital. Such studies predominantly employ surrogate measures for trust, for example: Uslaner and Conley (2003), use respondents statements on cultural identity and group membership as proxies for trust to explain variations in cultural assimilation amongst the Chinese community in America. Ethnographic studies of trust in social capital networks are able to provide a closer reading of respondents’ understanding and use of trust. Leonard and Onyx (2003: 202) have demonstrated that because most people are at the ‘intersection of multiple social categories’ the bonding/bridging dichotomy is too simple. Thus trustful ties may be formed between people in the same school but of different ethnicities. They argue that it is only when these overlapping connections fail that the fractionalisation of communities and organisations into isolated sub-communities takes place.

The link between trust and bonding and bridging capitals is explored by Uslaner (2002). Here, people are separated in generalized and particularised trusters. Generalized trusters are willing to trust strangers, have wide social ties and are more often engaged in volunteering and civic activities that build bridging capital. Particularised trusters place faith only in people in close social groups. They do not trust ‘others’ and feel little in common with them even if they are not opposed to other groups. Particularised trusters exercise bonding capital, they may form civic associations but these will be restricted in their goals and tend not contribute to bridging capital. Giddens (1990) further notes that some people will be recognised as trustworthy because of their role or position in society and that this is a different form of trust to that which comes about from long-term interaction of the type identified by Fukuyama (1995). Giddens (1990: 83) argues that this second form of trust is built on formal credential and reputation but that also:

‘in some circumstances, trust in abstract systems does not presuppose any encounters at all with the individuals or groups who are in some way responsible... The nature of modern systems is deeply bound up in with the mechanisms of trust in abstract systems, especially in expert systems’.

The success that e-communities have had in mobilising public action from the Zapatista or anti-globalization protesters to ‘those people in NYC who like to meet up’ shows the significance trust as embodied in abstract systems.

In his most recent writing, Putnam (2000) has shifted emphasis from trust to reciprocity, acknowledging that people may have trust but remain socially inactive. Trust reinforces norms of generalised reciprocity, but reciprocity is a social attribute through which trust is enacted in interpersonal transfers of information or resources.

The extent to which trust, reciprocity or indeed various kinds of networks are empirically observable and so analytically useful remains at the heart of technical and methodological critiques of social capital. Reciprocity can be differentiated into balanced and generalised forms. Balanced reciprocity takes place between two individuals who, perhaps routinely, exchange gifts of an equal value (friends or neighbours exchanging holiday gifts). General reciprocity is less direct, an individual might help another without expecting anything in return but rather in the knowledge that a third party will be predisposed towards extending help knowing the reputation of the first individual for generosity and helpfulness. General reciprocity relies on the propagation of reputation and the threat of its withdrawal as a social sanction against free riding behaviour (Putnam, 1993). The Russian system of *blatt* is just such an informal system of social capital where participants with a good reputation and a wide array of social contacts are able to circumvent cumbersome formal procedures for accessing goods and information (Rose, 2000).

2.1.3. The Critique of Social Capital

Before beginning to examine adaptation through a social capital lens we need to be clear about the limits and challenges in adopting social capital. The ambiguities in social capital theory identified above are part and parcel of this critique and will be focused on here. The extent of contestation around the notion of social capital have led some to decry its use, Fine (2001) goes so far as to argue that the vagueness of the concept and its messy but increasing application represent a threat to social theory and its colonisation by economics. The literature on social capital is amorphous. As Johnston and Percy-Smith (2002: 332) have argued 'it lacks the level of minimal agreement about the meaning of key operational concept to sustain meaningful debate'. But it is this lack of agreement that prevents an easy critique of the concept. To move towards the rejection or coherent application of social capital the boundaries of its usefulness need to be made clear. If, as Portes (1998) has argued it is to avoid becoming a cure all robbed of any distinct meaning, individual projects have to be careful in the definition, operationalization and measurement of the concept (Adam and Rončević, 2003).

In a critical review of social capital, Schuller, Baron and Field (2001) place emphasis on the methodological challenges to social capital. Methodological diversity, appropriate in reflecting the context dependent qualities of social capital, have proven a barrier not only to aggregating upwards in scale but also in the accumulation of knowledge and building of theory across studies. In a critique of Putnam's approach to social capital, Mohan and Mohan (2002) offer some comments of more general relevance. First, there is a tendency to claim too much for social capital. This works out in methods and analysis where assumed relationships between indicators of associational life are interpreted as determinants of beneficial collective and individual outcomes through what can appear to be an analytical 'black box' of social capital. The mechanisms through which membership in mundane associations, such as coral societies, translates into deeper forms of civic engagement can be inadequately drawn. Related to this is a lack of recognition that people will participate in associations for a variety of reasons, including individual advancement so that membership itself is not a sufficient indicator of a social good. Thirdly, in emphasizing the beneficial effects of social capital for communities, Putnam neglected the possibility for 'perverse social capital' (Rubio, 1997) where social

capital can lead to the formation of groups or networks that undermine social development (e.g. the Mafia). Alternatively, where firm bonding ties lead to strong group cohesion set against weak bridging ties between groups, this could lead to fragmentation and civic competition.

2.2 Adding Some Flesh: Opportunities for Refining Social Capital

This section introduces ten ambiguities of social capital that remain to be fully explored. The role of this section is to anticipate problematic areas in the application of social capital in adaptation to climate change, and to point towards questions of general theoretical significance for social capital that could be usefully addressed within the scope of adaptation to climate change research.

i. Social Capital Lies Beneath and Between Formalised Social Organisation

A distinction needs to be made between social capital (informal networked relationships built on norms of trust and reciprocity) and formally organised groups in civil society or part of an encompassing organisational structure. Formal organisations may often be an outcome of and seedbed for social capital, and trust or reciprocity between colleagues can enable formal relationships to function well. But the two levels of relationship – the formalised and the informal need to be kept analytically distinct. Social capital talks to the textures of social interaction that lie below the surface of formalised social organisation. However, because of difficulties in identifying and measuring social capital, the quality and quantity of formal organisations have often been used as a proxy indicator of social capital. Most commonly, civil society organisations are used to indicate social capital. Whilst this may be an accessible entry point to studies of social capital, without other contextualising data it can lead to an incomplete and potentially inaccurate picture of social capital. It says little about who is excluded from and who potentially controls or resists such surface level expressions of social capital, nor does it unearth the tensions of compatibilities between the formal and informal. Some elements of social capital derive their very strength from making external observation difficult. The tension between invisibility as a condition for social capital, and the opportunities that could be gained from surfacing and up-scaling adaptive innovations coming from or made within networks using social capital offers fertile ground for investigations of social capital in adaptation.

Over time, elements of social capital may become formalised within communities and organisations and so graduate away from the category of social capital. This might be felt as a process of institutionalisation, where informal habits, relationships and networks become recognised as useful (or threatening) and so gain formal status. Formal status tends to reduce the independence but increase the transparency of elements that had once been part of social capital. Thus an informal support network might become transformed into a formal discussion group in an organisation, or an informal interest network might register as a formal charity or lobby group. Examining the place of social capital in organisations or communities seeking to adapt to future climate change directs work towards the informal relationships that cross-cut and may eventually become part of formalised organisational structures.

ii. Social Capital is Both a Public Good and a Private Asset

Because social capital is held in networked relationships and reproduced through norms of trust and reciprocity in society (or sub-groups thereof) it is most commonly interpreted from the sociological literature as a public good or asset (Dasgupta, 2003). But this over-simplifies the dynamics of social capital and is perhaps a product of the difficulties of generating policy friendly data from individual level studies (Durlauf, 2002). At a theoretical level it is argued that because social capital is a relational good, it cannot be commanded by an individual acting alone. However, individuals can enter into or leave relationships that change their entitlements to social goods as their claims on social capital change. Entering or leaving particular social relationships and networks will vary in difficulty for each individual, but individuals can legitimately be seen as having the agency to potentially form their own portfolios of social capital and not be constrained absolutely by the social structures in which they are situated. Thus the capacity of individuals to command social capital as a private asset is constrained by the institutional architecture of society.

Adger (2003) uses the language of bonding and networking forms of social capital to distinguish between the public and private faces of social capital and acknowledges that there are likely to be conflicts in interest between public and private uses of social capital. Work on collective action has examined the motivation of individuals in joining groups and the role of groups in controlling individual behaviour (Ostrom, 2000). This work could be usefully extended by contrasting private and public gains and losses from particular types of social capital. Whilst it would be in the public interest and long-term individual advantage to build collective social organisations, it is not always advantageous for individuals to contribute toward this process, similarly research on participatory development is replete with examples of collective action providing disproportionate benefit to individuals above the public good (for example: Desai, 1995).

iii. Individuals play multiple roles and use different networks

The formal relationships and roles of individuals in organisations and communities are cross-cut by informal networks. At times individuals will find themselves playing formal and informal roles that come into conflict (for example in corruption). In extreme cases the informal rules and networks dominate the formal (as in institutionalised corruption or racism). Elsewhere the formal and informal can reinforce each other (as when networks are used to identify job opportunities in market economies).

iv. Social Capital has Latent and Active States

Fukuyama interprets social capital as an 'informal norm that promotes cooperation between two or more individuals' (2001: 7). He goes further to argue that individuals can hold a latent capacity for social capital that only becomes actualised once trustful relationships are entered into. Whilst Fukuyama's reduction of social capital to trust has been criticised the recognition of social capital's latent and active states is useful. This observation once again focuses research questions on the interplay between individual agency and structural forces or institutional architecture in the (re)production of social capital.

v. The Constructability or Path Dependence of Social Capital

The possibility that policy interventions can construct positive social capital is a fundamental assumption of many policy makers. But the evidence in support of this

claim remains clouded. Both supporters and objectors to this view agree that the creation and destruction of social capital is marked by virtuous and vicious circles with trust, norms and networks of civil engagement being built up with use and lost with disuse. At one extreme, Putnam (1993) argues that social capital accrues through history, and its qualities and quantity for any one society are dependent upon the historical development path taken. This is a view supported by empirical studies of civil society and collective action, which observe that voluntary cooperation is more likely in communities with inherited stocks of social capital. The opposing view holds that social capital can be fostered through external interventions that change the social rules and incentives in society and that can result in a wakening of latent social capital. The latter view suggests that individuals and societies can hold social capital in potentia, which in the right social conditions can be brought forward and used for collective advancement (Fukuyama, 2001).

The recent period of participatory development has been criticised for stimulating the creation of superficial and potentially exclusionary forms of social capital. The aim of much of the work conducted in this world-wide agenda has been to encourage local participation in discrete development projects. International development has seen an exponential increase in the number of registered civil society organisations in countries where such groups can obtain funding for development projects. For some this has been seen as the beginnings of democratisation with increased citizen participation in development. But more critical work shows the opportunistic nature of many involved in these new civil society organisations, which can act to generate large revenues for their leaders. Such rapidly formed groups are unlikely to have deep roots in social capital (apart from the networks used by leaders to access funding) and may even increase social exclusion as development support does not reach its intended targets. This need not be the case, but it does highlight both the capacity for well placed individuals to build up their own social capital for private gain when new opportunities arise, and also the difficulty for policy makers seeking to facilitate the building of social capital more generally.

People can shift from one type of social capital to another. During and following periods of political violence from civil conflict to life under a violent political regime, bridging ties between social groups tend to be eroded as individuals retreat into closer nit familial, neighbourhood, race or religion groups. The amount of pressure that affects such changes again indicates the resilience of established social capital networks outside such extreme contexts.

vi. Power

Like earlier studies on community in the 1970s, social capital has been labelled as conservative. The argument is that through acknowledging the particularity of place or context both community studies and social capital divert analysis from larger, structural concerns for example of class subordination. The policy argument from this is that to resolve social inequalities class action is required, local action within particular communities or organisations may resolve specific problems but this in itself will contribute to spatial inequalities as not all communities and organisations have equal access to or are equally able to utilise their stocks of social capital.

To accuse social capital of forgetting power is a simplification, rather power is re-cast as relational rather than structural. Power as a situated or relational concept has

received attention from a number of theoretical orientations. The argument made in this paper is that social capital, notwithstanding its flaws, offers a conceptual tool for focussing on networked power relations which speaks the language of policy makers. It offers a perspective for the analysis of power as enacted through relational and networked space. To do this work on social capital that privileges the national-scale analysis of socio-political systems where quantitative assessment of (usually indirect) indicator variables of social engagement with political process, such as the number of registered non-governmental organisations, newspaper readership or voting propensity, needs to be backed up by micro- and cross- scale analysis of the anthropology of social capital. Much more often we need to move beyond the mapping of surface indicators of social capital – unequal socio-spatial distributions of community cohesion or informal and formal networks of interest - to look at the institutional architecture (formal rules, social norms and interpersonal relationships) that give shape to and in turn are shaped by networks of social relations.

The messiness and relational quality of society that social capital opens up is also a strength. Social capital allows (and indeed forces) a rejection of linear causation and a recognition of the complexity of social systems. In doing so there are echoes of Giddens' theory of structuration, that sought to overcome the tensions between actor, system and structure in social theory. By drawing analytical attention to the relationships between actors social capital also offers connections with Foucauldian arguments of power as relational; held and felt in interactions between individuals rather than emanating from actors.

vii. Social Capital is Context Dependent

There has been little success in searches for general rules regarding the distribution of different types of social capital. It has been suggested that urban communities tend to have strong bridging but weaker bonding capital, whereas rural communities more typically have strong bridging but weaker bonding capital. Similar differences are reported from gender analysis with women being associated with bonding and men with bridging or linking capital (Woolcock, 2002). But generalization is difficult and perhaps the most common rule of social capital is that its character is dependent not only on history but also on social context.

viii. Social Capital for Some is Social Control and Exclusion for Others

Bonding capital in particular, but also linking capital and to a lesser extent bridging capital can all be used to further social control and exclusion, as well as social development (Putzel, 1997; Pelling, 1998). The advantages that social networks or reciprocity give to some members of society can be used for private or group gain to the detriment of other social groups or the wider society. Highly visible examples are youth gangs, racist community associations, business cartels or international drugs organisations but this can also work out through 'old boys networks', institutionalised racism or sexism. This kind of capital has been termed negative social capital. Whilst not being classified as negative, inequalities in the distribution and use of social capital contribute to uneven development and the relative underdevelopment of uneven distribution of risk. Szreter (1998) argues for assessments to move from accounting for the quantity to examining the quality of social capital in society.

ix. Scale: A barrier and a bridge for social capital

Scaling-up measures of local social capital into disaggregated national measures of social capital has proven problematic. The predominant approach follows Putnam (1993) and uses proxy variables such as group membership and number of registered civil society organisations or indirect measures of engagement in public life such as newspaper readership and voting rates. These measures are able only to capture a part of the social capital picture and can produce misleading statistics – civil society activity need not indicate citizen participation in decision-making, newspaper readership might not indicate a knowledgeable and engaged citizenry.

Whilst scaling-up measures of social capital is difficult, social capital offers a useful window onto the operation of scaled decision-making in organisations and communities. Because social capital draws attention to the operation of power and flow of resources and information in networks it is possible to use linking social capital to follow networks that cross boundaries of administrative and political scale. This opens questions like – can informal social relationships of linking capital be used to lobby for policy change or to build coalitions for support; or working down the decision-making hierarchy, can linking capital be used to experiment and informally test the water for policy innovations?

x. The Boundaries of Social Capital

There is an assumption amongst theories of social capital that it is a quantifiable asset. But difficulties in measurement have led to the use of proxy indicators. This has produced a degree of circularity in empirical work. Social capital is defined by a range of indirect characteristics whose measurement is then taken to determine how much social capital is present. The most popular choice of indirect measures are civil society group registration or membership. This approach has the danger that an outcome of social capital is taken as its proxy measure. This approach blunts our potential understanding of social capital in two ways. First it does not allow any close scrutiny of the qualitative nature of social capital. Second, because it relies on assumed relationships to explore causal processes the analytical power of studies in explaining how civic associations arise from or foster social capital are undermined.

The boundaries of social capital are also unclear in theory. Bourdieu (1997) included both the groups of which individuals are members and the benefits that accrue from group membership as social capital. Bourdieu also argued that the amount of social capital held by an individual is in part determined by volume of other capitals (economic, cultural and symbolic) held, and that capitals could be instrumentally converted one into another. Cultural capital (knowledge and actions conveying social status and membership) backed up by economic capital can be invested and converted into new or stronger bonds of social capital. Empirical work has since shown a good amount of evidence that the quality, if not the quantity of social capital held by an individual is in good part explained by socio-economic status (Pelling, 2002). Putnam explains group membership in terms of social norms of trust and reciprocity. But Putnam does not explain how trustworthy individuals will be able to identify each other. How is membership policed? In organisational learning the policing of membership is joined by questions of the extent to which information flowing through networks is critically policed – networks will not be indiscriminate in the information and knowledge they channel to members, how information is filtered through networks is likely to be significant for their use in facilitating adaptation to stressors,

and more so in rapid climate change where change is counter intuitive and early adaptations may appear counter productive if viewed using established criteria.

3. Social Capital as a Lens for Examining Adaptive Capacity to Climate Change

Social capital can shine light on generic and specific adaptive capacity. This section begins by highlighting the areas where social capital has been seen to impact on public policy generally. It then uses Wildavsky's framework on resilience to examine the contribution social capital could make to adaptive capacity. Finally it uses a social capital lens to map current work on adaptive capacity and point towards some areas for new work.

5.1 Generic Adaptive Capacity and Social Capital

In a general sense social capital has been shown to have relevance for facilitating a range of public policy areas:

- *Economic growth.* Through facilitating the flow of information and reducing transaction costs.
- *Labour markets.* Personal contacts can be effective in job searches.
- *Educational attainment.* Parent to parent and parent to school links encourage a culture of learning.
- *Better health.* Wider social relationships may foster psychological health, and provide a personal support network.
- *Lower levels of crime.* Less self-interest lowers crime. Provides sanctions against transgressors of accepted norms – often precursors of crime 'rudeness'. Young males are not bonded to their parents or their own family and this is one explanation for male youth delinquency and anti-social behaviour.
- *Governance.* Makes citizens more community-oriented, enables routes for lobbying government, bureaucrats and politicians more likely to cooperate.

Of these policy connections, the most fundamental is governance. Social capital can enhance governance through:

1. *Facilitating the exchange of information and ideas:* enhancing the quality and quantity of dissemination, improving transparency, accountability and credibility, overcoming information asymmetries and providing for informal monitoring and enforcement of contracts.
2. *Improving coordination and cooperation:* resolving collective action problems, managing conflict, managing common pool resources, improving organizational performance and providing the glue for public, private and civic partnerships.

Typologies of adaptation (and the associated notion of coping) to natural disaster and climate change risk have been offered in the literature (e.g Blaikie et al, 2003). The aim of this section is not to categorise a range of adaptive strategies, but rather to look below directed strategies to the types of social organisation that can offer capacity and scope for adaptation. The concept of resiliency is useful in this regard. Resiliency is thought of as a characteristic of systems that offers flexibility and scope for adaptation whilst maintaining certain core functions (for example, access to basic needs and social stability).

5.2 Resiliency and Social Capital

The notion of resiliency also responds to the need for policy makers to make decisions in a context of uncertainty. Climate change makes it increasingly unwise to base development planning and risk management decisions on extrapolating experience from the past. But removing the link with past experience can introduce intolerable levels of uncertainty into planning. This in turn can lead to reluctance amongst decision-makers to undertake pro-active adaptive climate change and disaster risk planning. One response to uncertainty has been a search for fundamental organizing principles that can be used to enhance the resiliency of society in the face of multiple, unknowable future shocks and stress. Resiliency has been discussed within ecological theory, systems analysis and disasters studies (Tobin, 1999). In an analysis of policy responses to the uncertainty of climate change, Barnett (2001, drawing on Wildavsky, 1988) identifies six principles of resilient systems:

- Systems are maintained by feedbacks between component parts, which signal changes and can enable learning. Resilience is enhanced when feedbacks are transmitted effectively.
- External shocks are mitigated by diversifying resource requirements and their means of delivery. Failures to source or distribute a resource can then be compensated for by alternatives.
- The faster the movement of resources through a system the more resources will be available at any given time to help come with perturbation.
- Overly hierarchical systems are less flexible and hence less able to cope with surprise and adjust behaviour. Top heavy systems will be less resilient.
- A system which has a capacity in excess of its needs can draw on this capacity in times of need, and so is more resilient.
- A degree of overlapping function in a system permits the system to change by allowing vital functions to continue while formerly redundant elements take on new functions.

Thinking through social capital and adaptive capacity in terms of resiliency highlights the importance of informal social norms and networks of civic engagement in providing an enabling environment for responding to climate change risks as they manifest at the local level. The discussion below sets out contributions of social relationships to resiliency in terms of social capital.

Feedback for learning

Bridging and linking capital provide a framework for information flow and feedback between elements of the social system (High and Pelling, 2004). The adaptation of individual elements of a system reflects its capacity for social learning and overall adaptive capacity. Both formalised and informal social relationships provide complimentary vehicles for information transfer, with social institutions and individual human capital acting to filter useful information. At times formal organizationally defined networks and informal social networks may send conflicting information. The capacity of one to police the quality of information received from the other network is a critical capacity for sustainability (Shaw, 1997). Social systems where informal networks are repressed have been shown to exhibit high vulnerability. Control of the media by the state in China has been linked to failures in adaptation and subsequent avoidable deaths associated with famine, the spread of the SARS

epidemic and HIV/AIDS. Both are needed for a system to reach its optimum level of adaptiveness.

Diversified inputs

Rayner and Malone (2000, 2001) argues that the principal contribution of social capital to adaptive potential and long term socioenvironmental sustainability is through the contribution of trust in bridging ties. Multiple and overlapping social networks provide a structure for complex strategy switching, enabling responsiveness to changing external conditions. This claim is supported by Pelling's (1998) observation that bridging ties in civil society offer an alternative pathway to access resources amongst at risk grassroots actors who have been marginalised from the market through poverty and from political networks through exclusionary political regimes. Scott's (1985) moral economy has similarly identified social ties and claims on reciprocity as the route for diversifying the source of basic needs amongst resource poor farmers in Asia. International social capital and rural-urban networks can provide access to remittances that allow resources and information to flow into and out of places and communities at risk. International remittances have been a major source of finance and foreign currency in recovery from disaster (Pelling et al, 2002).

Rapid flow of resources

Informal social networks are often the most efficient vehicle for the transmission of information and resources in disaster preparedness, response and reconstruction. Social networks can also be a mechanism for vulnerable or impacted individuals to speedily access resources thus providing stability as well as diversity in adaptation. Local social capital, expressed through neighbourliness or more formalised community organisation play critical roles in evacuation and emergency response and recovery. The importance of local social capital is even more so in cases where following disaster, emergency services are overstretched or communication infrastructure is damaged resulting in the isolation of communities. In these cases the status of local social capital can determine the timelines as well as the appropriateness of assistance received (Pelling, 2002).

Horizontal governance

Horizontal governance allows decision-making responsibility and skills to be spread. In times of emergency, leadership is resilient to losses and close to those at risk. Bridging ties that facilitate horizontal governance bind different social groups together building solidarity and cohesion whilst allowing diversity. The creative tension between social diversity and trust can act as a reservoir for new thinking and adaptation (Rayner and Malone, 2000). Horizontal forms of governance bring decision-makers close to grassroots actors, this has been shown to improve the responsiveness and accountability of decision-makers (Robinson et al, 2000). Horizontal governance that incorporates representation from local organizations as well as government policy directives (or in within private organizations, from interest groups like trades unions or consumer groups as well as stockholders) will reduce the transactions costs of accessing local knowledge. Greater access to local knowledge, and greater transparency in decision-making to local actors is likely to increase the place-time sensitivity of adaptation set within a framework of extra-local development priorities.

Excess capacity

As a public good, the quality and quantity of social capital has been shown to respond to crisis (conflict papers). As a private asset individuals can, to varying degrees, change the direction and strength of their social ties as external demands evolve. The quality of social capital to act as a vehicle for responsiveness is based on the possibility that each individual is limited in her command over social capital by constraining factors (such as lacking the time, energy, money or skills needed to extend or re-direct social ties), but that the key resource of social capital – society – is available. At any one time individuals will be limited in the social ties they choose to maintain, changing circumstances will lead to the opening and closing of relationships as latent (or excess) social capital is developed (Fukuyama, 1995). The rapid spread of microcredit schemes, which are based on each participant's reputation for trustworthiness, amongst at risk communities is an example of the potential that exists for building security from developing latent social capital. This description of social capital as having excess capacity is more appropriate for describing social systems than individual cases, where constraining factors can effectively limit or even exclude individuals from social networks of any kind leading to social isolation and increased risk.

Overlapping function

Overlapping function as a private good can be seen in the possibility that social relationships have multiple uses. Friends or neighbours can also be guards, carers or lenders at times of stress or shock. Informal networks and relationships will more likely to accept alternative roles than formalised organizational structures where change incurs higher transactions costs. Where formal and informal networks act in parallel individuals may be able to adapt their function informally whilst maintaining their formal position. This characteristic is experienced negatively as corruption or favouritism. The potential for positive adaptation outcomes as a result of subverting formal network roles has been explored in the literature through the comparison of balanced and generalized reciprocity. Social systems exhibiting generalized reciprocity as a social norm are indicated by individuals maintaining wide networks of loose associations. Wide friendship networks allow favours to be asked when they are needed with no personal reciprocity required. Favours are extended only to those individuals with a reputation for having helped others.

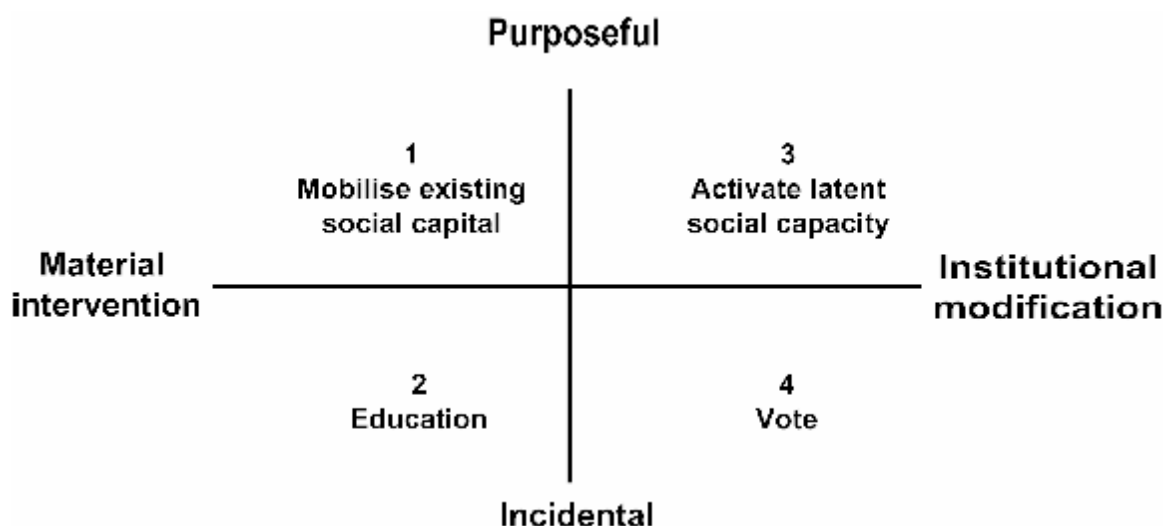
Using social capital to examine resiliency flags a number of research questions and areas for policy development. Most fundamentally it problematises the dominant approach to development that places overriding priority on the development of economic capacity in society and through pro poverty policy the enhancement of individual economic assets. Work on social capital suggests that such an approach misses the importance of social relations and norms in shaping the ability to adapt and cope with environmental change.

5.3 Using Social Capital to Place Research and Policy on Adaptation to Climate Change

The potential offered by social capital for exploring the institutional qualities of adaptive capacity has only been partially met by empirical research. Figure 1 presents a simple mapping of adaptive capacity to climate change as seen through social capital to help differentiate between the different roles played by social capital. Adaptive capacity is broken down along two continuous axes. The vertical axis distinguishes between interventions that are purposeful – that is directed specifically

at climate change, and incidental – that is interventions directed at background stresses but which have an impact on vulnerability to climate change for example by affecting socio-economic status. The horizontal axis distinguishes between material interventions – actions that use social capital to understand directed actions that seek to alter living conditions; and institutional modifications – interventions that aim at changing the balance of power and structures or institutions for decision-making that shape the capacity of an actor to make material interventions.

Figure 1: Mapping adaptive capacity through social capital



The bisection of the axes in Figure 1 creates four realms of social action. 1: Where social capital is used to generate material interventions directed at reducing vulnerability to climate change; for example, using collective action to raise the level of river embankments. 2: Where social capital is used to generate material interventions that respond to background stress; for example, investing in children’s education to enhance their human and social capital to increase familial resiliency to future socio-economic risk. 3: Where social capital is used to generate institutional modifications that respond to climate change stress; for example, an individual building their social capital with the aim that this may generate enhanced resources for future material interventions. Which latent social assets are activated will depend on each actor, their position in social life and psychological characteristics. External political forces will also act as a constraint. 4: Where social capital is used to generate institutional modification that responds to background stress; for example, by taking part in broad procedures and processes of collective decision-making with the aim of participating in change, such as voting in local or national elections. These four realms are not mutually exclusive, so that two or more can be undertaken by the same action; nor are the realms independent, so that action in one realm can impact on simultaneous, future (or the realisation of) past investments and actions in other realms.

Figure 2: The expanding worldview of adaptive theory

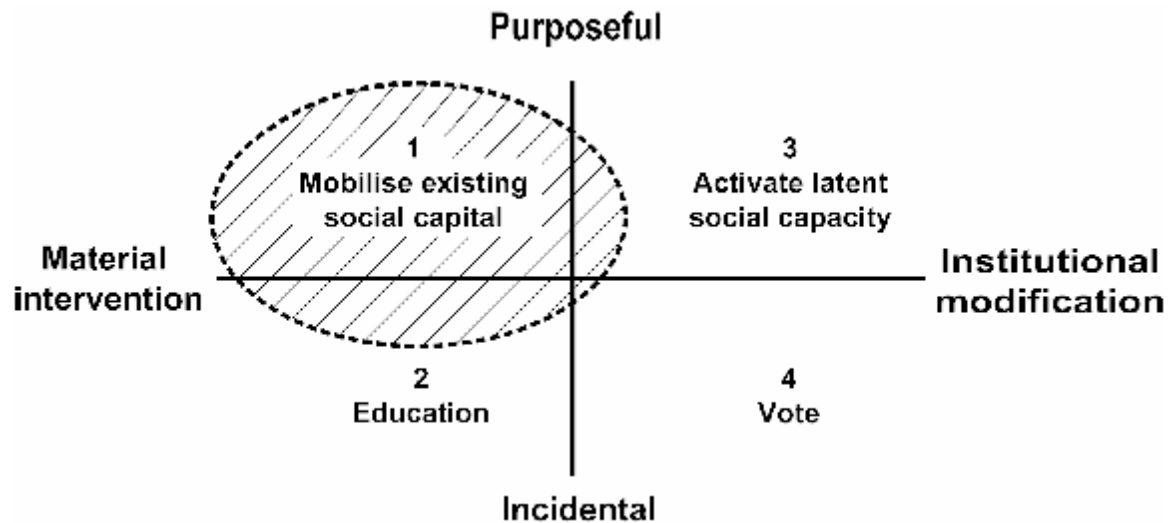


Figure 2 maps the contours of current research on adaptive capacity that incorporates a social capital perspective onto Figure 1. The largest amount of work is associated with the first realm of purposeful, material intervention. This makes good sense it is the realm most likely to result in fast and identifiable returns on interventions to enhance adaptive capacity. But this provides only a partial view of the changes in social systems that interventions in adaptive capacity can make, and also fails to recognise important ways in which individuals and collectives move to adapt, or gaps where greater movement might be possible. The field is moving rapidly, but there remains much opportunity for research and policy development across these realms and in their interactions. This figure compliments the observation made earlier in this paper that social capital studies are in danger of focussing overly on the outcomes of social capital – formal organisations, and possibly making dangerous assumptions about social behaviour that has led to these outcomes. There is scope for refining research on both the breadth and depth of research on social capital in adaptation to climate change.

6. Applications of Social Capital for Adaptation Research

This section looks in more detail at the ways in which social capital has been and in the future might be usefully applied to adaptation. It does so by making connections with the literature on grassroots adaptation in developing countries and social learning and change in organisations.

Work on grassroots adaptation has drawn on the geographical and development studies literature on social capital. Work is often empirically rich and reflecting this context is seen to be important in explaining spatial inequalities in risk and adaptation (for reviews see Woolcock, 1998 and Mohan and Mohan, 2002). A wealth of case study evidence exists discussing the varied influences of individual status, community structure or organisational and institutional context in the reproduction of social capital. Studies have also used social capital to unpack the relationships between government and civil society as part of a broader study of participation or partnerships in development (McIlwaine, 1998). Grassroots adaptation is referred to below as adaptation undertaken in communities of place.

Examining the role of social capital in organizations can draw on the organisational management literature. The possibility that social capital could play a role in explaining business competitiveness and sustainability was first studied in the mid 1990s (Adler and Kwon, 2002). Amongst a range of attributes ascribed to social capital a number are of direct relevance to adaptive capacity within organisations more generally. Melé (2003) associates social capital with facilitating the exchange of resources and information between units, innovation in products and management practice, and inter-firm learning. Adaptation in organisations is referred to below as adaptation undertaken in communities of practice.

6.1: Social Capital as a Tool for Understanding Adaptive Behaviour in Communities of Place.

The small amount of academic research on adaptation to climate change that explicitly uses social capital has drawn principally on the international development literature. It has adopted a local scale of analysis measuring social capital at the neighbourhood scale built from the accounts of individual respondents. The significance of social capital as a resource that shapes local adaptive capacity is seen from the perspective of the framework of livelihood sustainability. Here social capital is one of a range of forms of capital - economic, human, natural and physical – which together shape the resources an individual and by extension a community can command in responding to risk from climate change related stress or shocks. Social capital stands out from the other forms of capital because it operates at the collective as well as the individual level (as a simultaneous private and public good) and because it is a potential source of resilience to shock or stress amongst individuals and communities whose adaptive options might otherwise be severely constrained by economic poverty and political marginalisation (Pelling, 1997).

Within this literature on social capital, most discussion is on the pressures that lead to changes in the quality and quantity of formal and informal networks, and so to the building up or breaking down of access to external resources or capacity to mobilise internal community resources for adaptation. The interplay between structural-political forces and local social capital has produced some useful comparative work. Adger (1999; 2000) has shown that the modernisation and liberalisation process in Vietnam have led to increased inequality in local capacities to mitigate sea-flooding. But that these same processes have opened the political space needed for the rekindling of traditional street associations that in their turn are a source of informal resources and coping capacity. Through this case study Adger (2003: 10) is able to argue that ‘social capital has both public and private elements. The private elements are observed through the emergence of credit and exchange networks while the public elements are bound up in the perceptions of trust between individuals that they will have resources to call on in times of crisis’. In a comparison of three Caribbean political-economies, Pelling (2003) examines the challenges to social capital formation and maintenance in regimes undergoing transition towards democracy from military authoritarianism (the Dominican Republic and Guyana) and contrasts this to a crisis in maintaining social capital within a rapidly modernising, democratic state (Barbados). These contextual analyses allow the negative and positive sides of social capital for adaptive capacity to come out and the interplay between the private and public use of social capital to provide textured accounts that reveal the role of power

in shaping inequalities in command over social capital that shape the distribution of adaptive capacity. These studies also use a historical perspective that pulls out the dynamic and static elements of local social capital as individuals and communities reinvent local institutions of governance within the broader system of coevolving socioenvironment. This can point to opportunities for building social capital to enhance adaptive capacity in particular time-place contexts.

Pelling (2002, 2003) distinguishes between informal and formalised social capital. The former can be found in neighbourliness, friendship or kin group support, the latter in officially recognised civic associations. It is argued that methodological challenges have led the majority of work to focus on formalised social capital. Organisations that can easily be targeted by external donor agencies or accounted for in surveys of organisational capacity. This misses the deeper layers of social capital that underlie its formalised expressions and has important policy implications. Communities rich in informal networking, trust and reciprocity but averse to building up formal organisations (perhaps because of a history of political repression) will incorrectly be cast as having little social capital. The challenge is how to build up rich stocks of informal social capital into forms that can most efficiently and equitably be partnered by external actors to more strategically enhance adaptation to climate change risk. This is made more difficult by the observation that it is those individuals with access to economic, political and physical capital that also command the greatest stocks of local social capital, so that the rapid and uncritical targeting of social capital by external organisations is open to deepen local inequalities in risk along lines of age, gender, ethnicity, cast or class.

Work to date has demonstrated the relevance of social capital to shaping adaptive capacity. Its further understanding and use in policy points towards two distinct but related research agendas. First there is a need for a deeper and more ethnographically informed engagement with the place of social capital in individual and communal development. This is a need in the wider literature on social capital as the preceding sections of this paper have shown, but for social capital to be used with confidence in informing policy for building adaptation to climate change it is important that the ambiguous and at times conflicting views and meanings attached to social capital are addressed. Secondly, social capital has already begun to form part of aggregated collective or national level assessments of adaptive capacity, or vulnerability to disaster. This work has been undertaken by development agencies and draws on experience from livelihood asset assessments. But there is a danger here that indicators for social capital do not offer the precision that is assumed. Measuring the number of registered civic associations can only capture a small and partial view of social capital. We are a long way from generating indicators that can bring out the informal side of social capital, and the underlying tendencies towards different kinds of social relationship that each community possesses. Developing generalisable indicators of social capital to move from context specific case studies to meaningful aggregate analysis is a challenge that has also yet to be overcome.

5.2 Social Capital as a Tool for Understanding Adaptive Behaviour in Communities of Practice.

Communities of practice cross cut the formal (or 'canonical') organisational structures of firms, bureaucracies or voluntary agencies, at a larger scale they can be found

within interest communities such as economic sectors or global social movements. In the organisational literature the informal ties and relationships that make up social capital networks within communities of practice have been dubbed 'shadow systems' by Shaw (1997). She comments that the informal networks of relationships that permeate organisational contexts are recognised in the organisational literature, but tend to be constructed as a source of resistance to legitimate change effort - they are something to be understood and perhaps dealt with, rather than embraced. For international development social capital is seen as a potential resource, from the management perspective as a threat to order.

Wenger (1999, 2000) offers an empirically informed framework for assessing communities of practice. For Wenger, these are loci of association that form around what people do – their practices. In this concept, constellations of communities of practice share many features with Shaw's shadow systems, both are composed of networks built from interpersonal relationships that have not been formalised within the canonical organisational framework, both Shaw and Wenger are also concerned with the performative qualities of networks, by their agency. Wenger's use of social capital is more explicit than Shaw. He but provides a more detailed picture of how networks arise and how individuals enter and leave particular communities of practice. Participation in non-canonical networks (communities of practice)

Wenger (2000) offers a typology for communities of practice based around three elements: engagement (what and how much individuals do together), imagination (the strength of a shared mental image of the bounds and qualities of the network) and alignment (the extent to which individuals act within the rules of the network). Networks are held together by their members shared imagination, norms of mutuality and codes of communication. There are similarities here to Bourdieu's use of cultural capital, which can be felt through Wenger's shared imagination and codes of communication. But Wenger, is useful in adding a dialectical and coevolving quality to the relationship between networked communities of practice and the wider world of members and potential-members. Communities of practice (Bourdieu's social capital) evolve as the community takes on new ideas and aims in response to new membership, but this stimulates changes in the codes of communication and imagination of membership (Bourdieu's cultural capital), which in turn changes what networks (social capital) do and how things are done.

Wenger describes the boundaries of communities of practice as fluid (in contrast to the fixed boundaries of organizational units) allowing linkages between communities of practice. With his interest in social learning, Weber differentiates between the learning within communities which tends to lead to convergence of competence and experience, and learning across boundaries which provides an opportunity for reconfigurations of competence and experience, and the potential for creative learning as well as tension and misunderstanding. As Wenger (2000: 234) argues:

'In social learning systems, the value of communities and their boundaries are complementary. Deep expertise depends on a convergence between experience and competence, but innovative learning requires their divergence... The learning and innovation potential of a social learning system lies in its configuration of strong core practices and active boundary processes'.

It is this tension that determines the capacity of an organisation to adapt to new risks and opportunities. Adaptation is facilitated by objects straddling boundaries such as people acting as brokers or artefacts including terms, tools or representations.

Codes of communication and imagination are important in giving identity to communities of practice. Identity promotes a sense of belonging which is symbolised by acts and behaviour. But we are members of multiple groups and excluded from many others: 'we define ourselves... by the communities we do not belong to as well as by the ones we do. These relationships change. We move from community to community' (Wenger, 2000: 239). Multimembership of groups offers a second mechanism for the transfer of knowledge and practice and the enabling of social learning. Identity, as well as being multifaceted, has the potential to link individuals through group membership across scale through the local networks of global interest communities. But multimembership is a dynamic characteristic of social beings. Individuals will differ between themselves and over time in the diversity of groups they identify with. As individual's identity changes so their profile of group membership will change potentially altering the associational make up of society.

Lesser and Prusak (2000) argue that social capital within organizations is linked with an organization's ability to manage its knowledge resources, and that communities of practice are the primary vehicle for building social capital within organizations. They build on a framework proposed by Nahapiet and Ghoshal (1997) that presents social capital as having three dimensions: structural (the network), relational (shared norms that form codes of communication and enable trust) and cognitive (common identity of the network). Empirical work by Tsai and Ghoshal (1998) found that social interaction within the network breeds reputations of trust, and that trustworthiness was associated with more exchanges of resources. This in turn was found to contribute to product innovations, a possible indicator of adaptive capacity. Similarly, Bouty (2000) found that capacity for legitimate information exchange between firms leading to innovation was built on mutuality and trust between the research and development scientists working for different companies, although here scientists had to balance the short-term gain from exploiting information gained through informal interactions against the longer-term benefits accruing from upholding a reputation for trustworthiness. The potential for social capital inside organisations to be used for personal gain has also been discussed in the context of career mobility (Seibert et al, 2001), and the pay of senior executives (Belliveau et al, 1996). Once again tension between actor and organisation is enacted through the informal network.

The management theorists discussed above see social capital as a vehicle for learning and subsequent innovation. But cause and effect in between learning - social capital - adaptation is neither linear nor simple. Indeed, Falk and Harrison (1998) argue that it is social learning that forms social capital, and which in turn supports social and economic change. This is a problem of separating the term social capital from the processes that build it. In their empirical study, Falk and Harrison (1998:19) describe the learning process as 'the interactions between people and groups of people which lead to a change of some kind to the perceived outcome of the collective activity'. In describing this process of building social capital, they suggest the term 'community learning' is synonymous with 'capacity building'. Capacity is an outcome of the amount of learning that goes on in a community. For this project's interest in

adaptation to climate change, community or social learning is seen as a component of adaptive capacity.

6. Conclusion

Social capital has provides a perspective to begin opening the black box of interpersonal and informal relationships in adaptation. This points to two parallel worlds of policy enactment, the formal and the informal realms. Rather than being ignored and cast as externalities of the decision-making process or seen only as negatives – corruption, foot-dragging etc to be controlled through third party regulation. This offers new opportunities for understanding the process of adaptation and for policy interventions to incorporate informal relationships in their world-view.

Perhaps the biggest leap of all that an acknowledgement of social capital points towards is the possibility that not all social relationships can or should be managed. Allowing innovation and policy shaping to unfold as it is worked out through informal networks and social norms might enhance the flexibility of policy enactment and its relevance to local contexts in specific times. Social capital and related work offer a theoretical way into understanding the world of interpersonal relationships. The question is whether sufficient clarity is offered for policy makers and managers to feel comfortable with their reality, whilst having the confidence to allow enough concealment for relationships to continue in the informal space that separates them from formalised roles and relationships.

This said there remain challenges that limit the explanatory power of social capital. Perhaps most important is the lack of clarity over whether social capital is a dependent, independent or intermediary variable. The extent to whether social capital is a product or organising principal behind social structures or individual acts of agency. This is an important concern in using social capital as an indicator of vulnerability and as a focus for policy attention to enhance adaptive capacity. For policy makers attempting to build social capital questions remain on the relative efficiency and equity outcomes of top-down and bottom-up strategies (Williams, 2003). Top-down strategies suggest social capital is an outcome of society-state relations and existing civic associations, bottom-up strategies stress the importance of social norms.

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ADDITIONAL NOTES AND BACKGROUND

Social capital as a tool for mapping adaptation

By seeing actors as networked, social capital provides an opportunity for bridging the agency-structure divide and moving towards a relational understanding of power and the shaping of social life. But social capital is not alone as a theoretical device that has been used to try and bridge the actor-structure dualism (Murdoch, 1997). This section acknowledges the potential of two alternative theoretical frameworks – structuration theory and actor-network theory. It does so by offering a brief outline of each theoretical literature. The usefulness of this section is in providing a critical comparison with social capital.

Structuration theory

Structuration theory as worked out by Giddens (198X) has many similarities with contemporary debates on the application of complexity theory to organisational management. Giddens sought to overcome a dualistic and eventually circular debate in social theory that played off the analytical power of actor and structure centred analysis (paralleled by individualist/market and collective/state centred political ideologies). Instead, he argued that the actions of social actors were simultaneously constrained by and made to constitute the social structures that in their turn shaped social action in social systems. Social structures are a medium for the evolution and reproduction of social action and so can be thought of as a site of social capital. Mohan and Mohan (2002: 196) observe that ‘social capital might be seen as part of these continually reproduced media in so far as it is generated by an unending sequence of human actions’.

Actor-network theory

The origins of ANT lie in the sociology of science. In geography most interest has come from researchers concerned with the re-imagining of nature-society relations into a hybrid socionature (Castree and MacMillan, 2001). ANT in this tradition is not only interested in overcoming the binary of actor/structure but also of society/nature. To this end ANT challenges both dualisms. Actor status is extended beyond humans to include all material elements in a network - machines, animals, texts, money, architecture and so on can all be incorporated (Law, 1992). Moreover, actors are seen as embodied networks; the meaning, values and power ascribed to individual actors comes from their relationships with other actors linked in networks and in which each individual is the focal point. Thus, and echoing structuration theory: ‘agency is a relational effect generated by... interacting components whose activity is constituted in the networks of which they form a part (Whatmore, 1999: 28). These two innovations of ANT offer fertile potential for examining climate change adaptation and mitigation. In particular the treatment of scale by ANT as relational not static (see Murdoch, 1997), opens new avenues for tracing the flow of information and authority between actors in networks across spatial scales.

Climate Change Research and Prospects for Social Capital

In this section climate change research is divided into work that focuses on mitigation and adaptation. The mitigation agenda is more established with important contributions from International Relations and the social construction of science. It is argued that social capital can open new avenues for integrated research in this field of

study. Despite adaptation having received less attention than mitigation within climate change as a whole, work on adaptive capacity has already imported social capital from neighbouring research and policy communities. This provides a useful baseline from which to expand the scope and precision of social capital work within adaptation research and policy. Two areas where social capital has already been applied – in case study based accounts of communal adaptive capacity and in work seeking to identify indicators for aggregate analysis of social capital – are noted. A third area; examining the social capital within organisations and policy regimes is introduced.

Mitigation

Within social science, research on mitigation has been led by the politics of climate change negotiation, which in turn has predominantly drawn from orthodox theory within International Relations. This has been appropriate for a focus on the activities of states, but has been less successful in considering also the influence of global civil society and private sector actors in the formation of a global regime for climate change mitigation (Jordan and O’Riordan XXXX). Much of this work is concerned with the specifics of particular conferences or events from different actors perspectives (for examples see the journals *Climate Policy*, *Mitigation and Adaptation Strategies for Global Change* or *Climatic Change*).

Levy and Egan’s (2003) use of a neo-Gramscian theoretical framework to shape an analysis of corporate strategy in the face of climate change negotiations. As with the bulk of work on mitigation the work is concerned with national and international actors. They argue that processes of negotiation, alliance formation and compromise work out through the contested social relationships and norms of corporations, non-governmental organisations, government, scientific and public opinion that can variously lead to the reproduction or reformulation of international and national political-economic regimes. The argument is that coalitions of power constantly seek to position themselves to stabilise, modify or replace a historical block or established hegemony from which the rules of economic and political life are directed. In the case of Levy and Egan’s (2003) field research – hegemony was felt and challenged through the trajectory of international climate change policy.

In explaining the pathways through which stabilisation or change in hegemony were outcomes Levy and Egan (2003) identify three fields of force:

‘One force is the economic system of production, taxation, and sales, with its associated distribution of costs and benefits to various groups. The second is the organizational capacity, individually and in association, of the companies, government agencies, industry associations, and elements of civil society. The third is the discursive structure of culture, ideology, and symbolism that guides behaviour and lends legitimacy to particular organizations, practices and distributions of resources’ (Levy and Egan, 2003: 810).

It is the recognition of the significance of the second and third fields of organisational capacity and social norms that could be taken further by work with a social capital perspective. These correspond to the socio-economic context, organisational structures and institutional architecture that interact with individual agency in organisational learning theory. Agency and structure are linked by presenting

organisational fields as fragmented, overlapping and in a constant state of flux. These conditions allow institutional entrepreneurs to ‘escape the rules, routines, and norms of institutional fields’ and so affect change. Because institutions are nested, change at one level has the potential to trigger cascades of change elsewhere. Structure is felt in the constraints that history place on institutional and organisational evolution, but the complexity and unintended outcomes of unfolding socio-economic relations means that progress remains indeterminate with scope for individual strategy and innovation.

Social capital could also contribute to research which seeks to expose the processes of social reproduction and interaction that lead to the normalisation of social values underlying positions held and storylines put forward by actors in climate change science and policy negotiations (Hajer, 1995). Saurin (2001) sees the global environmental crisis in terms of moral dilemmas of value and valuation. Critically, he argues that morals are an outcome of received knowledge and community:

‘Thus, if we want to uncover the nature and production of environmental crisis it is incumbent upon us to examine the kinds of community – and hence forms of moral reasoning that in turn produce environmental harm (as well as concepts of harm). These communities are not ones of infinitely varied imaginations but are formed out of definite and historically limited social relations’ (Saurin, 2001: 70)

The power of social norms to influence climate change mitigation discourse is given empirical grounding by the work of Agarwal and Narain (1991) and Demeritt (2001). Demeritt’s (2001) analysis of the climate modelling community uncovers more broadly the tacit social and epistemic orientations that are entrained within the practice and communication of climate change science. He argues for an awareness of political power acting through normalised values and procedures within the internal dynamics of research on global climate change.

Thus global climate change mitigation has been approached from two directions that could both be informed by social capital but which have yet to engage directly with this theoretical and empirical orientation.

Adaptation

Within the geographical literature social capital has been used in a multitude of contexts to help describe or explain spatial inequalities in development. A wealth of case study evidence exists discussing the varied influences of individual status, community structure or organisational and institutional context in the reproduction of social capital. However, developing generalisable indicators of social capital to move from context specific case studies to meaningful aggregate analysis is a challenge that has yet to be overcome. Studies have also used social capital to unpack organisational performance and specifically the relationships between government and civil society as part of a broader study of participation or partnerships in development (XXX McIlwaine? Mercer – political geography?). There is a lack of studies that go beneath this to use social capital to map networked relationships and their related norms of trust and reciprocity within organisations. This is perhaps because of a focus on formal expressions of social capital and a neglect of the influence of informal networks on policy.

Work on adaptation to climate change that explicitly uses social capital has drawn on the international development literature. It has adopted a more local scale and applied the multi-capital perspectives of livelihood sustainability to profile the economic, human, social, physical assets commanded by individuals or communities at risk from climate change related stress or shocks. This literature has identified social capital as a critical asset, especially so for actors who adapt despite being constrained by economic poverty and political marginalisation but who can utilise social resources to undertake collective action (Pelling, Adger).

The importance of social capital as a tool for explaining why and how adaptation has emerged at collective levels in studies of international development suggests it could be a useful theoretical device for tracking adaptation within organisations. The flexibility of social capital means that it can be applied to formal and informal social relationships and can make distinctions about the intensity and direction of those relationships. It focuses attention on networks but these need to be given depth by understanding links between social norms, interpersonal-relationships and the surfacing of networks that result.

Institutions

As well as the formally constituted institutions in a society which constrain or enable particular activities, there are a host of socially constructed informal traditions, practices and norms which are every bit as much the 'rules of the game' (North, 1990) as any laws, regulations or contractual obligations. The existence and importance of these informal institutions is well established within the institutional literature (Lowndes, 1996; Ostrom, 1999), but there is considerable uncertainty and variety of opinion on how they come into existence, how they change, on the nature of the relationship between formal and informal institutions and their interaction with social capital (North, 2001; Williamson, 2000).

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