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Groundwater governance and social capital

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ABSTRACT

This paper argues that positive social capital underpins the key factors identified by Ostrom (1990) in self-governance systems. The paper discusses the different types of social capital from a social network perspective and empirically analyses social capital in the context of two neighboring aquifers in central Spain. It examines the type of institutional arrangements that foster or hinder the creation of social capital by discussing in turn, bonding and bridging social capital with particular reference to water user groups, taken as classic collective management institutions, illustrating also the role leaders play as linking social capital and catalysts (or obstacles) in the creation and blending of different types of social capital. It concludes that social capital is differentially embedded in social networks and that careful institutional design can help foster strong 'positive' social capital, which in turn favors self-governance in groundwater. It also stresses the dynamic nature of social capital through time and its productive aspect in terms of incentivizing social learning and collective action in groundwater management.

1. Introduction

Social capital is increasingly recognized as key to both successes and failures in natural resource management. It is a concept that has proved difficult to define in terms of reaching an agreed definition, and even more problematic in terms of its measurement. Yet this paper argues that social capital is fundamental to understand first order dilemmas in institutional analysis. When in the early 1990s Ostrom (1990, 1992) identified factors in natural resource management that may lead to mutually beneficial collective action (MBCA), it was difficult to explain why in some cases these factors exist and in others these are absent. Ostrom (2000, p. 4) herself explains: 'In the currently accepted theory of collective action the temptation to free ride – to receive benefits without paying the costs – prevents individuals from voluntarily contributing to joint efforts without selective benefits. The real challenge lies in first order dilemmas i.e. overcoming the temptation to free ride'.

Second and third order dilemmas refer to rules developed and their enforcement through monitoring and sanctioning and are easily identified. It is however much harder to explain how first order dilemmas are addressed e.g. why individuals such as farmers start to act together, avoiding free riding and rent-seeking behavior to solve the tragedy of the commons. How do individuals succeed in their effort to self-govern? This paper argues that social capital is key to this effort by looking at a classic common pool resource: groundwater.

The main hypothesis and focus of this paper is that the proximate causes of social capital lie in social connections between and across social networks (Grafton, 2005), inherently and intimately connected to institutional arrangements, and increasingly to the path dependence created by different organizational designs (Ebbinghaus, 2005). This paper will aim to show how institutional arrangements can incentivize or hinder the creation of social capital, in our case focused on and reflected in collective action to manage natural resources, in this case groundwater. Furthermore, there are arguments that social capital is actually embedded in participatory structures (Pretty and Ward, 2001), arranged as networks, which can help stabilize relationships (Murphy, 2006), reducing transaction costs. Social networks have featured highly on the 'good governance agenda', and this paper argues that in the 'good enough governance' agenda (Grindle, 2007), social capital should be one of the priorities for action. This paper will aim to provide evidence that robust social networks are underpinned by strong *and* positive social capital.

The paper is structured in the following way: the first section reviews the literature on social capital and defines and characterizes what aspects and types of social capital are used in this paper. The second section introduces the case study areas and methodologies used, while the third section analyzes the different types of social capital. The final section briefly considers whether social capital in the case study areas was translated into collective action to manage groundwater resources towards reducing abstractions

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to a rate in accordance with available resources as defined by the European Water Framework Directive on good ecological status (CEC, 2000).

2. Social capital and institutional arrangements

Social capital is increasingly acknowledged as a theoretical construct (Van der Gaag and Snijders, 2005). This carries substantial implications for the analysis of collective action in natural resource management. This is because social capital is neither directly observable nor directly measurable. The most basic defining characteristic of social capital is as a relational resource, with social relations as the basic building blocks (SCIG, 2000). Hence social capital refers to 'the feature of social organizations such as networks, norms and social trust that facilitate coordination and cooperation for mutual benefit' (Putman, 1995, p. 67).

Social capital is now accepted as having at least three aspects: trust and trustworthiness, civic engagement and cooperation, and social networks (Grafton, 2005). This paper will only focus on the last aspect, the analysis of social networks as causal factors in the development of social capital, divided into three categories; bonding, bridging and linking social capital, and a particular interest on the analysis of social capital as a 'resource to action' (Winter, 2000), i.e. as an explanatory factor for collective action.

As stated earlier, social capital can be mobilized by groups for positive (or negative) public policy outcomes. For example, social interaction can promote trust and cooperation to curtail or restrict intensive groundwater use with a view to long term management of groundwater resources; or on the other hand, it can be mobilized for rent seeking and/or to maximize utility in the short term, with potential high negative externalities as in the case study discussed below involving damage to groundwater dependent wetlands and river base flows.

The burgeoning literature on social capital increasingly points to the inherently dynamic nature of social capital, and its characteristics as both a 'stock' of capital that can be accumulated and, at certain points, a 'flow' of capital that can be utilized, e.g. for the collective management of natural resources. However, there is also increased recognition of the limits of social capital, in particular how it addresses issues related to power and exclusion (Bebbington et al., 2004; Fine, 2001, 2010). Questions have also been raised on the causality chain, i.e. whether social capital is a dependent variable, perceived as an outcome, where trust and cooperation are deliverables and goals in themselves, or whether it is an independent variable (the social network perspective), which instead studies how social capital can facilitate collective action. There have been criticisms on the lack of clear causality as a general problem for analyses of social networks (Borgatti and Foster, 2003; Lin, 2001) including for social capital research. This circularity of reasoning is hindered by the identification of similar elements as determinants and consequences (Portes, 1998; Portes and Landolt, 1996). Yet according to Waldstrøm and Svendsen (2008, p. 1503) the solution to the problem of causality adopted in this paper "lies in the understanding of the actual and potential parts of social capital, since this opens the clarification of the direct and derived benefits from social capital". That is, accept that networks can be studied as both explanatory and outcome variables (Bodin and Crona, 2009). This paper will adopt a sequential analysis which first analyzes how institutional arrangements have facilitated (or hindered) the creation of certain types of social capital, and second, analyzes to what extent this is translated into effective groundwater management (i.e. show whether there is a correlation between the existence of social capital and community based resource management).

In the last 10–15 years there has been increased agreement in the literature on the main types of social capital; namely bonding, bridging and linking social capital (Woolcock, 2001). Bonding social capital facilitates group identification through shared values and norms, and refers to social capital generated by members of a relatively homogenous group. It has been defined by Woodhouse (2006), as essential for individuals and groups to 'get by', and it is normally embedded in the relationships between people, who tend to know each other well and therefore have 'strong ties' to other people in their community or collectivity. Normally this relates therefore to trusting and cooperative relationships between members of a group who have a shared social identity, and have intra-community ties, stimulating generalized reciprocity (e.g. in norms of behavior) and social cohesiveness. By contrast, bridging social capital refers to social capital generated and shared through interconnections. It is much more scattered and wide ranging, and according to Woodhouse (2006), it is necessary to 'get ahead', bolstered by the strength of 'weak ties' (Granovetter, 1973). It facilitates the interaction between diverse groups, which are often not homogeneous. In fact it is this social diversity and heterogeneity which triggers innovation, by increasing exposure to a wider range of information and resources. Bridging social capital is increasingly acknowledged to be the creative, constructive part of social capital (Svendsen and Svendsen, 2004), developing links and ties between people that are not alike (Szreter and Woolcock, 2004).

Thus bridging social capital is generated and shared through interconnections, and in particular to inter community ties, which provide access to new information and resources. It places particular emphasis on external linkages governing the relationship between different types of organizations (Pretty and Ward, 2001). The literature (e.g. Svendsen and Svendsen, 2004) argues that it is bridging social capital which is the productive aspect of social capital. Here, higher level authorities can play an important strategic role in legitimizing collective institutions like Water User Associations (Lopez-Gunn and Martinez-Cortina, 2006). Different authors have identified that the state itself might play a key role in social capital construction (Evans, 1996; Skocpol, 1996; Warner, 2001), and where strong lateral ties between individuals and organizations can help produce more egalitarian and robust democratic structures, which indicates a balance between autonomy and yet established linkages. In a multilevel context higher level authorities are fundamental to "crowding in" or "crowding out" initiatives to self-organize (Ostrom, 2000).

Meanwhile linking social capital refers to broader relations, normally vertically between individuals or groups that are in formal power or authority (e.g. financial or political) (Woolcock, 2001). According to Evans (1995) this is crucial because these links allow people access to resources, ideas and information from those in power. According to Sabatini (2009) this will enable group members to 'scale up' micro-level social capital and social action to a politically – and an economically effective – level. Therefore it can bridge the informal power aspects of bonding social capital (trust, reciprocity) with social networks, towards institutionalized formal power (Szreter and Woolcock, 2004).

3. Case study area and methodology

The paper will analyze social capital in two specific geographical contexts: two neighboring aquifers located in a central region in Spain (see Fig. 1 and Table 1) and their respective Groundwater User Associations (see Table 2). Both aquifers are some of the largest in Western Europe, and have similarities and differences, in terms of water use with intensive water use from the mid 1970s.

The Western Mancha aquifer occupies an area of 5500 km^2, with an estimated renewable extraction ranging between 300 Mm^3/yr to the more conservative 260 Mm^3/yr in the Guadiana River Basin Plan (CHG, 1998). It is estimated that 3000 Mm^3 have