Community Effects on Individual Pro-Environmental Action: Social Capital and Environmental Sustainability in the United States:

By

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A Thesis

Submitted to
Lunds Universitet
in partial fulfillment of the requirements
for the degree of

MASTER OF SCIENCE

Lund University Center for Sustainability Studies

May 2008

ABSTRACT

This thesis uses the concept of social capital to explore the potential for individuals and communities to drive environmental sustainability in an American context. Links between the community structure and culture described by social capital and environmental sustainability are investigated by looking at social capital's capacity to foster environmental agents. My research progressed through several stages. In Part I, I explored social capital at the collective U.S. state level, finding that it is correlated with both environmental sustainability and pro-environmental actions. However, based on these findings, I modified the conception of social capital I had adopted to focus on the individual level. Thus, in Part II, I theorized about how social capital works at the individual level and proposed conditions under which it works best for environmental sustainability. I then conducted interviews to test these hypotheses. The interviews suggested first and foremost a further modification of my conception of social capital to distinguish between *micro* and *macro* social capital at the individual level. My interviews also provided support for: (1) the hypothesis that social capital and pro-environmental action are correlated at the individual level; (2) the idea that in high amounts, social capital works by instilling pro-environmental values and decision-making processes in individuals; (3) the idea that in low amounts, social capital works by aligning self-interest with the collective interest; and (4) the hypothesis that a norm of engagement is important for an individual's social capital to be translated into pro-environmental action. All of these findings suggest the potential importance of community structure and culture in the fostering of agents who may be critical to a transition to a more environmentally sustainable world, as well as many new avenues for further research. However, they also demonstrate some of the inadequacies of the social capital theory for explaining the effect of communities on individual environmentally-significant action.

KEY WORDS: Sustainability; social capital; pro-environmental behavior; norms; networks

ACKNOWLEDGEMENTS

So many people have supported me during this research and writing process. First, I owe special thanks to my supervisor, Turaj Faran, for always helping me to see the forest for the trees in this work and for all his helpful and challenging suggestions throughout the process. I would also like to thank my family and friends for all the times you listened, offered encouragements and ideas, and broke bread with me - all welcome reminders of the true power of social capital!

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1. INTRODUCTION: Sustainability, Agency, and the Potential of Social Capital

1.1. Sustainability

If there is a consensus about anything among scientists and environmentalists, it is that we must figure out how to create more sustainable societies – and soon – in the face of growing concerns that we are surpassing the biophysical limits of our planet. *Sustainability* encompasses a vision for our own time and of the future; however, it is a concept fraught with disagreements. In this thesis, I will not endorse the view that sustainability in the U.S. requires economic growth, adopting instead a "strong" sustainability and development-as-"qualitative improvement" (Costanza and Daly 1992) view. I will focus on environmental sustainability and assume that sustainability is about intergenerational and international equity of living standards and freedoms.

Arguably the most famous conception of sustainability lies in the Brundtland Commission's (WCED 1987: 43) statement that *sustainable development* is "development that meets the needs of the present without compromising the ability of future generations to meet their own needs." The Brundtland definition really describes a certain kind of *development*. Since neo-liberal economic theories became dominant in the 1990s, development has meant economic growth, and is prescribed for all countries (Greig et al. 2007: 102-4). However, many have argued that what is really needed for a developed country like the U.S. to reach sustainability is less material throughput – less resource use, less consumption – not more economic growth. Goodland and Daly (1996), for example, point out that developing countries and future generations simply cannot sustain the "patterns of economic development" now prevalent in the developed world without "liquidating the natural capital[1] on which future economic activity depends." A similar idea is echoed in metrics such as the Ecological Footprint, which suggests that it would take at least six planets to support every human living an average American lifestyle (Redefining Progress n.d).

It is commonly assumed that there are two main "forms" of sustainability: "weak" and "strong." In "weak" sustainability, natural capital and manufactured capital are considered substitutable so long as "the *total value* of the two forms of capital remain constant over time," (Harris 2001: 4-5[2]). In "strong" sustainability, there is a greater emphasis on the precautionary principle[3] (Carter 2001: 200) and natural capital is considered complementary to, not interchangeable with, manufactured capital (Harris 2001: 5). Solow (1991), who posits that sustainability is "an obligation to conduct ourselves so that we leave the future the option or the capacity to be as well off as we are," holds an essentially "weak" sustainability conception (Harris 2001: 4). He is concerned with the intergenerational equity of a GDP/capita measure of welfare (7). In contrast, Costanza and Daly (1992) are

[1] "Natural capital" corresponds to "environmental functions" beyond just land (Harris 2001: 4). It is beyond the scope of this research to fully treat the relationship between natural, manufactured, human, and social capital.
[2] Emphasis in original.
[3] The precautionary principle is "the principle that the lack of scientific certainty shall not be used as a reason for postponing measures to prevent environmental degradation," (Carter 2001: 6).

proponents of "strong" sustainability, arguing for "development" as "qualitative improvement…without growth in the throughput of resources."

Sen (2004) proposes that the conception of sustainability as concerned with welfare in GDP/capita is insufficient because "seeing people in terms only of their needs may give us a rather meager view of humanity." He rightly points out that one can have a high standard of living in material terms and yet lack important freedoms. Thus he proposes that sustainability should be about intergenerational living standards *and* "sustainable freedoms." A focus on opportunities and freedoms, rather than specific benchmarks of "living standards" is important for two reasons. First, as Anand and Sen (2000) point out, "we do not know what the tastes and preferences of future generations will be…[so] we can talk of sustainability only in terms of conserving a capacity to produce well-being" which lies mainly in freedoms. Second, as Sen (2004) writes, "our reason for valuing particular opportunities need not always lie in their contribution to our living standards" – they can also be based in our values. This draws attention both to the importance that our values not be imposed on future generations and the necessity for participatory processes as a part of making sustainability *sustainable* – that means, not only ends, matter. Finally, Anand and Sen (2000) make a solid case for why this "universalist ethic" of living standards and freedoms must also be about equity between people now. Thus here I will adopt a view of sustainability as intergenerational and international equity, recognizing the importance of a fair share of living standards and the protection of freedoms across both time and space; however, I will also adopt a "strong" sustainability viewpoint that is not necessarily required by Sen's arguments.

There is a general consensus that there are three aspects or "spheres" of sustainability: economic, social, and environmental. I will focus on environmental sustainability, primarily because I believe environmental limits are the core of the sustainability debates. However, my research will slide into the realm where the social and environmental spheres meet. These interactions have only rarely been explored (Lehtonen 2004). It seems clear that environmental sustainability cannot be imagined in isolation from the people and communities who, as agents, both contribute to unsustainability and could hold the keys to blazing alternative paths forward.

1.2. The Need for Individual Action to Move toward Sustainability

In this thesis, I will argue that a focus on individual agency (individuals acting alone *and* together) is needed for any viable path toward sustainability. Too often, the potential of individual action to affect environmental sustainability is thought to be limited to individuals' ability to make more responsible choices in terms of habits and purchases within the current economic and political structures. However, the interaction between agents and these structures – and the question of which drives history and social change – is an age-old debate. Beginning with this debate, I will take the view that agents make the structures that then constrain and enable agency, and that for this reason a focus on empowering agents is crucial to any path to sustainability. Thus, I will propose that the conception of agency should be expanded to include the ability of individuals to change

structures. Finally, I will argue that a focus on agency is important to fulfilling the particular view of sustainability – including sustainable freedoms – which I have adopted. Throughout, I will assume ordinary Americans can be the agents of change toward sustainability; it is left to a different kind of study to suggest which subgroups of American society are best placed to make these changes.

I will begin this discussion by placing my focus on individual action into the debates over agency and structure. The question of whether agents or structures determine the course of history has long puzzled social theorists; approaches to sustainability can also be split along this continuum. At one extreme, Adam Smith is a strict structuralist. He believed that since it was in human nature to act in one's self-interest, the structure of a market economy would cause these actions to benefit the collective interest automatically (Callinicos 1999: 20). In that vein, technocentrists and free market environmentalists believe that as long as we leave the market alone, sustainability will be achieved automatically through technological innovations (Carter 2001: 73; 63, 209). At the other extreme, in the dominant reading of his work, Max Weber believed in the "primacy of agency over structures" in that he saw structures "simply as the unintended consequences of individual action," (Callinicos 2004: 4). At its extreme, those who believe in this primacy of agency might consider the path to sustainability to lie entirely in the hands of individuals, who would be thought free to choose whatever path forward they desire. It seems clear, though, that the real theoretical problem lies in how to integrate agents and structure. Anthony Giddens has proposed one way, suggesting that we consider that structure both "constrains" and "enables" the agency of individuals, who do not act completely independently from structures but who do have some freedom to act (Callinicos 1999: 54). For sustainability, this might mean that we should consider that individuals have some power, but that their choices and actions have limits and are often pushed in certain directions by the political and economic structures around them. There are several possible ways to view the rather circular interaction between agency and structure. I will take the view that agents can and do make the structures that then constrain and enable their action. Thus I am arguing that agency is central to reaching sustainability both because of its power by itself (individuals choosing among options within the current structures) and because of the potential for agents to change structures.

In expanding the potential of agents to include both green consumerism/habits and the ability to change structures, I propose there are three types of actions through which an individual can benefit the environment. *Personal Choice Actions* will refer to purchases and habits. *Reform Actions* will refer to actions that seek to "manage capitalism in order to temper its crises" in a Keynesian sense (Raskin et al. 2002). *Revolutionary Actions* will refer to actions that seek to radically, but not necessarily violently, transform economic and political structures. These three action categories will be used throughout my investigation.

To explain the potential of these different actions to push society toward sustainability, Andrew Dobson's conception of *ecological citizenship* is a useful starting point. Dobson considers ecological citizens to act in pro-

environmental ways because they believe it is the "right" thing to do (2003: 129). The duties of an ecological citizen are based on justice rather than on charity because these citizens realize the role they are obligated to play toward sustainability as a matter of justice (2003: 28). Because the primary virtue of ecological citizenship is justice toward other people, it is a fundamentally anthropocentric notion[4] (2003: 111). Dobson believes that changes initiated by ecological citizens (such as driving less) are essentially more "sticky" changes than those imposed from above by lawmakers. This is because these changes will not be subject to the "political vagaries of fashion, experiment, and the direction of the political wind that happens to be blowing at the time," (2003: 3). Thus ecological citizens, who would reduce drive less because they believe it is "right," are more likely to "stick" to structural changes, to respond favorably to them, and to make changes on their own. This is an argument both of effectiveness of changes made through laws and regulations and of the legitimacy of such changes. It might also be expanded to the "stickiness" of more radical changes supported by agents rather than imposed by leaders from above. However, I do not think that Dobson pushes this argument far enough in several ways, as he briefly acknowledges in his last chapter (2005: 211). He stops short of imagining that ecological citizens might *drive* structural change by demanding *Reforms* or through *Revolutionary Actions*. His view is also fundamentally individualistic, imagining agents free-floating without the community or solidarity that might help them to drive these changes through collective actions. In this way, the potential for changes from individual actions increases dramatically if we imagine that agents can perform *Reform* and *Revolutionary Actions - together*.

Finally, a focus on agency to reach sustainability is required by Sen's freedoms approach to sustainability, which I have adopted. Sen (2004), writing about the potential of Dobson's ecological citizenship for sustainability, suggests that "effective citizenship is part and parcel of what we should try to sustain," (2004). It can be argued that changes stemming from agency rather than imposed from above are a more *sustainable means* to reaching sustainability because they may be more likely to preserve certain freedoms. We might be able to reach a sustainable world in terms of living standards without sustaining freedoms, but Sen believes that path to sustainability would not be as preferable as one that kept those freedoms intact. Sen considers that participatory deliberations and social choice are crucial for sustainability because the *means* of getting to a sustainable end (with regard to living standards) matter. He writes, "if environmental objectives are pursued by means of procedures that intrude into people's private lives, the consequent loss of freedom must count as an immediate loss," and because it is an immediate loss of freedoms, he would consider it unsustainable *right now*.

Even though it is possible that the aim of individual actions may be to change structures, I thus believe it is important to begin any pathway to sustainability with the goal of empowering agents. A proper view of agency sees it not only as choosing among alternatives within the structure but also as the way to change structure. Yet this

[4] The focus of Dobson's theory on anthropocentrism highlights one of the limitations of his view of citizenship, since there is no room for biospherically-motivated sustainable actions within it.

discussion of the centrality of individual action only pushes the question of how to reach sustainability back one step, because an agent-centered view of social change does not occur automatically: *If individual action is so crucial to sustainability, how does agency of this sort arise?* Agency might arise, for example, through social movements centered on economic class, gender, culture, or a sense of justice. In this thesis, I propose one possibility among several is that the nature of communities could facilitate this agency.

1.3. The Potential of Social Capital: Can it Facilitate Pro-Environmental Action?

I will explore the question of what kind of community might facilitate pro-environmental action using the concept of *social capital*, a community structure and culture that is thought to produce many benefits for both communities and individuals. As it is commonly understood, social capital refers to social networks, community norms, and trust (e.g. Putnam 2000: 19). Research conducted in the U.S. suggests that "people who are able to draw on others for support are healthier than those who cannot; they are also happier and wealthier; their children do better in school, and their communities suffer less from anti-social behavior," (Field 2003: 45). High social capital levels are correlated with "economic development, effective political institutions, low crime rates, and lower incidences of other social problems such as teen pregnancy and delinquency," (Brehm and Rahm 1997). Economically, individuals with higher stocks of social capital are considered more likely to be able to find jobs and prosper, while societies with higher social capital are thought to have higher economic performances (Field 2003: 50). In the field of education, individual students have been shown to have higher test scores when their state's (Sander and Minicucci 2007), school's (Field 2003: 23), parents' (Putnam 2000: 299), and their own (Field 2003: 46) social capital levels are high. High levels of social capital at the state level are correlated with lower rates of murders and violent crimes (Sander and Minicucci 2007). Social capital is also thought to be "associated with effective governance and a healthy participatory democracy," (Sander and Minicucci 2007). It seems likely that social capital may have a causal role for many of these benefits. One of the main questions this thesis seeks to explore is whether we can add "environmental sustainability" to this sizable list of benefits thought to be produced by high levels of social capital. Since social capital is thought to allow communities to "resolve collective problems more easily" (Putnam 2000: 288) and environmental sustainability is clearly a challenge requiring community cooperation, social capital could be potentially quite powerful in fostering pro-environmental actions. Portney (2005), for example, argues for the potential that social capital and sustainability are linked:

> *When Putnam (1995, 2000) argues that we are now "bowling alone," and when the National Commission on Civic Renewal (1998) calls us 'a nation of spectators,' they are making the argument that the loss of opportunities for people to interact with each other has undermined the creation of shared values and understandings...As the institutions and organizations of civil society have declined, so the argument goes, there is no longer any social or political mechanism to mitigate the rampant individualism that contributes to unsustainability.*

1.3.1. How Social Capital Produces these (Non-Environmental) Benefits

There are four main ways that high social capital is thought to bring about the plethora of non-environmental benefits that are noted in the social capital literature, all of which we might expect to be important for producing environmental sustainability as well. First, social capital benefits communities through the diffusion and mobilization of resources and information made possible by social networks (Putnam 2000: 289). Second, social networks enforce shared norms through positive and negative sanctions that make cooperation in collective endeavors more attractive (Field 2003: 24). Third, social trust is thought to make cooperation less risky, so that "everyday business and social interactions are less costly," (2000: 288). In communities where there is no need to pay an outsider to uphold agreements, there is no need to resort to "coercive solutions" to community problems (Brehm and Rahn 1997). Finally, social capital is thought to create more cooperative and civically-minded citizens (Wakefield and Poland 2005; Wakefield et al. 2007).

1.4. Conceptualizing Social Capital

Social capital is a difficult and much-debated concept; I will adopt a view of it based in the work of Robert Putnam, but modified in two key ways. Putnam is one of social capital's foremost scholars, responsible for re-energizing the social capital debate particularly through his books (1993, 2000). He asserts that "the core idea of social capital theory is that social networks have value"; he defines social capital as the "connections among individuals – social networks and the norms of reciprocity and trustworthiness that arise from them," (2000: 18-19). In essence, Putnam is saying that the relationship among social networks, norms, and trust is causal: dense social networks *produce* norms and trust. Putnam's is not the only way to conceive of social capital, but the list of alternatives is too long to recount here (e.g. see Field 2003). As a starting point, I will adopt Putnam's view of social capital as a collective, public good[5] (Putnam 1993: 170). However, in light of criticisms from other scholars, I propose to modify Putnam's famous description of social capital in two main ways: by broadening his conception of "norms" and by considering social capital a two-dimensional, continuous phenomenon.

First, I propose to expand Putnam's view of social norms. Social norms in general are the "nonlegal rules or obligations" that individuals follow because they are enforced by social sanctions or internalized feelings of guilt (Carlson 2001). In his later work (2000), Putnam narrows his vision of the norms that are part of social capital to the norm of reciprocity[6] alone. I do not see a good reason to limit social capital to this norm, and so following Putnam's earlier work (1993: 171) as well as the work of other pre-eminent social capital scholars like Coleman (Field 2003: 21), I will include many different kinds of norms under the rubric of social capital.

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[5] In Putnam's view, social capital is a public good because it is "not the private property of any of the persons who benefit from it," (1993: 170). This means that it provides benefits to individuals in a community irrespective of whether or not they have personally contributed to its creation (Putnam 2000: 20). Therefore, there is a temptation for individuals to free-ride: to not participate in social capital building in the hopes that they will still reap its benefits.

[6] A generalized norm of reciprocity is the idea that "I'll do this for you without expecting anything specific back from you, in the confident expectation that someone else will do something for me down the road," (Putnam 2000: 21).

Second, rather than Putnam's *causal* definition of social capital, I think a clearer and more useful conception is found in the idea that social capital is the intersection of two "dimensions" of social interaction. Fahmy (2006) notes that social capital theorists often distinguish between two "dimensions" of social capital: "structure" ("social networks and support") and "culture" ("trust, norms and values"). Social capital, then, is not just the presence of links between people, but a certain kind of link. However, I propose one change to Fahmy's distinction. I suggest that trust should sometimes be considered an aspect of structure and sometimes of culture, depending on whether it is "thick" or "thin" trust. According to Putnam (1997: 171), "thick" trust refers to trust in a particular person, based on past experiences with him or her; I contend that in this case it is about structure, since it is essentially specifying the strength of a tie between individuals. "Thin" or "social" trust ("social trust" will be used hereafter, as it is the more common term), is generalized trust in individuals one may not personally know. In this case, I suggest that social trust should be a component of the cultural dimension along with norms.

Further, I propose that social capital should be considered a continuous phenomenon along these two dimensions. Other proponents of the two-dimensional social capital idea (e.g. Paxton 1999) have not necessarily considered social capital continuous in this way; however, this idea is in line with Putnam, who refers to varying "amounts" of social capital (e.g. 2000: 293). I have used one of Paxton's (1999) charts as inspiration to develop my conception of social capital in **Table 1**. It is clear from this table that cultural aspects of social capital cannot exist in isolation from structural aspects. For example, the social networks themselves must transmit norms through socialization processes and enforce them through social sanctions. In sum, my interpretation of Putnam's (2001) findings is that as a community's number of ties, strength of ties, social norms and social trust increase, a community's benefits from social capital increase. However, in real communities I expect there to be thresholds above which increases in social capital will not produce more benefits.

Table 1. ***Proposed formulation of collective social capital***. Using strengths from several theories (see text), I propose that social capital exists along a continuum where structure and culture intersect. Structural aspects in a community include number of ties and their strength ("thick" trust). Cultural aspects include the strength of shared norms and the degree of social (or "thin") trust among community members.

		Cultural Dimension: Strength of Norms, Amount of "Social" Trust		
		High	**Low**	**None**
Structural Dimension: Number of Ties, Degree of "Thick" Trust	**High**	High Social Capital ⟷ Low Social Capital		No Social Capital
	Low			
	None	No Social Capital		

1.5. Direction of Investigation to Come

In this thesis, I will explore the ability of communities to facilitate environmental agency among their citizens by using the concept of social capital. One of my main questions is, can we add *environmental sustainability* to the list of benefits that accrue to communities with higher levels of social capital? I will explore

this by asking four sub-questions. First, is there a correlation between high social capital and environmental sustainability? Second, is there a correlation between high social capital and pro-environmental actions? If so, how does social capital facilitate this action? And finally, what *types* of social capital are best for facilitating these actions and thus for moving American communities toward environmental sustainability?

I will approach these questions using several different research methods and in two parts, to tailor my methodology to the particular sub-question I am exploring. In **Part I**, I will start from Putnam's conception of social capital as a *collective* phenomenon and explore its correlation with environmental sustainability (**Chapter 2**) and pro-environmental actions (**Chapter 3**) at the U.S. state level. The two chapters in **Part I** will be deductive, positivistic, and quantitative. As a result of the findings of this section, I will change course in **Part II** to explore *individual* social capital first through theories and research that has already been done (**Chapter 4**) and then through my own interviews (**Chapter 5**). I will explore the latter three sub-questions in **Part II**, and the research methods used in **Chapter 5** in particular will be broadly exploratory, interpretive, and qualitative.

PART I: *Collective* Social Capital

2. Collective Social Capital and Environmental Sustainability

If social capital does facilitate environmental sustainability by fostering pro-environmental action among individuals, one would expect that communities with high social capital are more environmentally sustainable. Here I will explore empirical evidence of this correlation, which has not been studied at the collective level in the U.S. The majority of studies linking social capital and sustainability have instead tended to do so in the context of natural resource management (e.g. Katz 2000) or public participation in environmental policies (e.g. Rydin and Holman 2004), and in developing countries (according to Wakefield et al. 2007). Therefore, my first hypothesis is:

Hypothesis 1: Social capital and environmental sustainability are correlated at the collective U.S. state level.

2.1. Methods

This research stage and the next (**Chapter 3**) employ a broadly deductive, positivistic, quantitative analysis of secondary state-level data. These analyses will follow Putnam's (2000) methodology for deciphering connections between social capital and non-environmental benefits (education, safety, etc.), but will be more statistically simple than his analysis. This is because it was not necessary to be as rigorous as Putnam to reach the conclusions this analysis will point toward.

In his analyses, Putnam plotted various measures of non-environmental benefits against a unit of measure called the Social Capital Index, for the lower 48 U.S. states[7]. Putnam developed the Social Capital Index (available from Caiazza and Putnam 2002) as an aggregate of "fourteen indicators of formal and informal community networks and social trust" split into five categories (Putnam 2000: 291). Those categories are: (1) "community organizational life" (ex. % of population involved in different clubs); (2) "engagement in public affairs" (ex. % of population who voted in the last election); (3) "community volunteerism" (ex. average times people volunteered per year); (4) "informal sociability" (ex. average home entertainings per year); and (5) "social trust" (ex. % of population who agree that "Most people can be trusted"). Several researchers have faulted his methodology as confusing aspects and outcomes of social capital (e.g. Paxton 1999). However, Putnam defends his choice by arguing that these aspects and outcomes are "sufficiently intercorrelated that they appear to tap a single underlying dimension," (2000: 291). I would argue this may be the only way to measure norms: for example, a community "norm of participation" may be adequately reflected only in measures of the participation itself. However, it is important to keep in mind that the Index as formulated is not a strict measure of networks, norms, and trust alone. However, there does not appear to be a better measure of social capital available.

Instead of plotting the Social Capital Index against measures of education, safety, etc., I will begin in this

[7] Data for Alaska (AK) and Hawaii (HI) were not available in Putnam's analysis.

chapter by plotting it against an aggregate measure of state environmental sustainability, Forbes' Green State Score (Wingfield and Marcus 2007). To calculate this score, Wingfield and Marcus "ranked each state in six equally weighted categories: carbon footprint, air quality, water quality, hazardous waste management, policy initiatives and energy consumption." No other aggregate measure of U.S. state environmental sustainability is publicly available. A simple correlation measure (the coefficient of determination, R^2) will be used to determine the strength of the relationship, ranging from no correlation, to small, medium, or large (see **Appendix A** for more details). The main departure from Putnam's methodology is that Putnam runs a correlation analysis and then uses a multivariate regression analysis to determine that the effect seen is from social capital and not from a third variable (such as income or education) (2000: 487).

2.2. Results

As can be seen in **Figure 1**, the relationship between overall state environmental sustainability and the Social Capital Index is medium in strength. A relationship can clearly be deciphered just by looking at the graph, where the best-fit line is sketched in black.

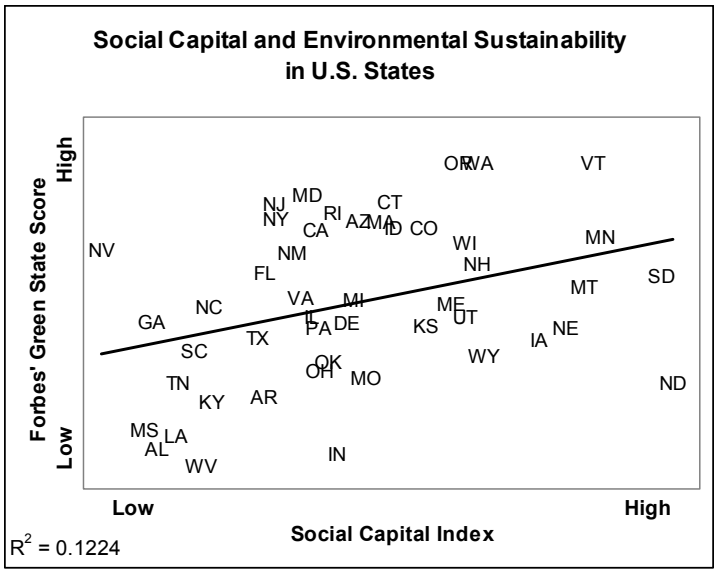

Figure 1. ***States with higher social capital appear to be more environmentally sustainable.*** I plotted the U.S. states' Social Capital Index against Forbes' Green State Index. States are abbreviated in standard postal form; the best-fit line has also been plotted, which has an R^2 value indicating 12 % of the variation in the Green State Score can be attributed to the states' social capital; this suggests a correlation medium in strength.

2.3. Discussion and Conclusions

The results suggest that states with higher social capital are more likely to score higher in this measure of environmental sustainability, which supports my hypothesis. However, closer consideration suggests this finding does not indicate very much about the relationship between social capital and environmental agency. How, for example, can we sort out the effects of individuals vs. industries in these states? How can we sort out the effects of agents demanding legislative reform vs. the effects of a few progressive politicians? This could explain why California (CA), known for progressive legislation and has relatively high environmental sustainability but only medium amounts of social capital. Even if it was known that social capital fostered environmental agents, how could we know what was going on in a place like North Dakota (ND), with the highest social capital in the union, yet an abysmal environmental score? Clearly, questions of agency and mechanisms cannot be answered through data on environmental sustainability, which is why I will now turn to data on pro-environmental behaviors.

3. Collective Social Capital and Environmentally-Significant Behaviors

Since the relationship between social capital and pro-environmental actions by individuals is obscured by looking at measures of environmental sustainability itself, I will now consider measures of the environmental behaviors themselves at the state level. I expect findings similar in consistency and explanatory power to Putnam's (2000) when he investigated social capital's relationship to non-environmental community benefits:

Hypothesis 2: Social capital and individual pro-environmental actions are correlated at the U.S. state level.

3.1. Methods

My methods to analyze the relationship between collective social capital and pro-environmental actions are the same overall as for looking at environmental sustainability (**Chapter 2**). Here, a correlation analysis will be performed with the Social Capital Index against various indicators of environmental behavior at the state level. Pro-environmental behavioral data will be drawn from publicly-available sources. I have chosen indicators from the three categories of action proposed in **Chapter 1**. For *Personal Choice Actions*, there are two subcategories: purchases (buying energy-efficient light bulbs and owning cars) and habits (biking/walking to work and residential emissions of CO_2). For *Reform Actions,* there are indicators of action to change laws (the environmental score of state Congressional members, letter-writing to support an environmental bill, and membership in the Audubon Society, an American conservation NGO). For *Potentially Revolutionary Actions*, there is one indicator of alternative ways of living (Intentional Communities[8]) and two indicators of alternative food arrangements (CSAs[9] and Farmers' Markets). Where necessary, indicators have been converted to per capita numbers. It should be noted that the data come from different sources with different dates; this is also an issue within the Social Capital Index itself. Nonetheless, the results of this simple analysis are enough to point my research in a very specific direction.

3.2. Results

The strengths of the correlations between social capital and these measures of environmentally-significant behaviors at the state level are summarized in **Table 2**. The relationships include four large, seven medium, one small, and one behavior with zero correlation to social capital. The strength of the relationships does not show a pattern across behaviors. In addition, there are two relationships that stand out because they indicate that with higher levels of social capital, states experience *less* environmentally-sustainable behaviors in at least two categories (indicated as "anti-environment" in **Table 2**): residential CO_2 emitted/capita and cars owned/capita.

[8] An Intentional Community is "an inclusive term for ecovillages, cohousing, residential land trusts, communes, student co-ops, urban housing cooperatives, alternative communities, and other projects where people strive together with a common vision," (Fellowship for Intentional Community 2008). In this way, it would be expected that these communities would be associated with high social capital at least within the communities.

[9] A CSA, or Community Supported Agriculture, is a subscription local farm produce service, "a partnership of mutual commitment between a farm and a community of supporters which provides a direct link between the production and consumption of food," (LocalHarvest, Inc. 2008).

Table 2. ***Correlations between the Social Capital Index and environmental behaviors at the state level.*** Measures of three categories of environmental actions were analyzed against the social capital level (by the author); the table shows the strength of each relationship. "Anti-environment" in the Correlation Strength column is a reminder that a correlation between social capital and this variable indicates that with higher social capital there is more *anti*-environmental action.

Category	Behavior (date of data)[source/notes]	Correlation Strength
Personal Choice	Compact Fluorescent Light bulbs bought/capita (2007)[10]	No correlation
	Bike share of work trips (2002)[11]	Medium
	Residential CO_2 emitted/capita (2004)[12]	Medium; anti-environment
	% Workers who walked to work (2005)[13]	Large
	Cars owned/capita (2003)[14]	Large; anti-environment
Reform	Environmental score of state's Congressional members (House; Senate) (2007)[15]	Small; Medium
	Letters written to Congress supporting an endangered species bill/capita (2008)[16]	Medium
	Audubon Members/capita (2007)[17]	Large
Potentially *Revolutionary*	Intentional communities/capita (2008)[18]	Medium
	CSAs/capita (2008)[19]	Medium
	Farmers Markets/capita (2008)[20]	Large

3.3. Discussion

Overall, the results supported **Hypothesis 2**; however, the large degree of variability and the two anti-environmental behaviors suggest that the relationship of social capital with pro-environmental behaviors may not be the same as the relationship Putnam found to other community benefits. Some of the variability in my results could be due to third variables. For example, when the top ten coldest states are eliminated from the data, the biking relationship becomes much stronger. In this way, social capital may be an important, but insufficient, factor in sustainable behaviors. Structural factors could also be important; for example, the availability of "green" products and public transit is not uniform across the U.S. An outside variable like income may have an important effect, perhaps by increasing individuals' capability to buy pricier pro-environmental products. However, simply eliminating the effect of a variable like income from the data (as Putnam attempted to do with his regressions) may confuse the problem further. For example, it is possible that social capital and environmental agency are linked via

[10] Searches on 18Seconds.org (2007) show the number of Compact Fluorescent Light bulbs bought in 2007.
[11] Based on Pucher and Buehler's (2006) data, which was based on (publicly unavailable) 2002 U.S. census data.
[12] Based on state CO_2 emissions for the residential sector, in million metric tons (EIA 2004).
[13] Data from U.S. Census Bureau (2005).
[14] Based on state figures of "motor vehicles per licensed drivers" from FWHA (2003).
[15] Based on the League of Conservation Voters' ranking of U.S. Congressional members in the House of Representatives and Senate, based on their votes on key 2007 environmental bills (Bayard et al. 2008).
[16] Based on the Audubon Society's records of letters sent to Congress supporting a bill "to increase the penalty for the deliberate killing of a protected species," (Tennefoss, personal communication 12 Mar. 2008).
[17] Based on Audubon Society membership counts per state in 2007 (Vullis 2007).
[18] Based on intentional communities listed on the Fellowship for Intentional Community's (2008) website.
[19] Based on Community Supported Agriculture (CSA) arrangements listed on LocalHarvest, Inc.'s (2008) website.
[20] Based on the number of Farmers' Markets listed on LocalHarvest, Inc.'s (2008) website.

post-materialism, whereby environmentalism is a concern individuals can only have once they have met other basic needs (Stern 2000). Similar arguments can be made for education.

However, I do not think that the two anti-environmental behaviors can be explained simply by invoking the effects of wealth or education. Putnam writes that "social capital…can be directed toward malevolent, antisocial purposes, just like any other form of capital," (2000: 22). One interpretation of Putnam's assertion is that the nature of the social capital itself matters – that social capital can come in different "types." To illustrate this idea, let us turn to the ownership rates – still at the state level – of two specific types of cars: gas-guzzling SUVs (data from U.S. Census Bureau 2002) and gas-efficient hybrids (data from R.L. Polk & Co. 2003). Both of these cars are expensive, and both can be status symbols in the U.S. Therefore, even if social capital increases individuals' purchasing power, the nature of the norms in a community could matter greatly in determining whether the individuals in the community choose the pro- (hybrid) or anti- (SUV) environmental product. Let us assume that the top quartile of states in terms of social capital have the most powerful community norms. In fact fully three-quarters of these high-social capital states show higher-than-average rates of SUV ownership yet lower-than-average rates of hybrid car ownership. I propose that it is worth considering that this is due to norms.

The bottom line, however, is that it is not possible to understand what is truly going on – and how social capital produces pro- or anti-environmental actions – at the state level. It may be that the state level is simply not the scale at which social capital operates coherently. An individual may live in a state with low social capital but his or her community or neighborhood may have high social capital. It may be that social capital's effect on environmental agency is easy to see at the city, neighborhood, or even family level. However, collective social capital data of this sort is not available in a form amenable to analysis. Furthermore, picking individuals at random within a given area with known social capital levels may not tell us much about their own social connections: their neighborhood may have high social capital, but if they are not "linked into" those social networks, there is no guarantee that they will experience an effect of collective social capital on their actions. Therefore, I propose that Putnam's focus on collective social capital is insufficient to understanding social capital's impact on agency relevant to sustainability and I will instead consider social capital at the individual level in **Part II**. Although Putnam focused on social capital at the collective level, the work of other researchers suggests that social capital *can* also be considered at the individual level (e.g. De Groot and Tadepally 2006).

3.4. Conclusions

My hypothesis that social capital and individual pro-environmental actions at the U.S. state level are correlated was fairly well-supported by these results. However, the results suggest that at the collective level, it is not possible to understand the mechanisms through which social capital works or to account for the handful of anti-environmental actions that were also found to be correlated with social capital. For these reasons, analysis will be done at the individual level in **Part II**.

PART II: *Individual* Social Capital

4. Theorizing about Individual Social Capital and Environmental Action

It seems likely that if high social capital and pro-environmental actions are correlated at the collective level, as suggested in **Chapter 3**, that they are also correlated at the individual level, but is this true? How should we think about social capital at the individual level – how might it facilitate individual pro-environmental actions? And in light of the finding that, at least at the collective level, some anti-environmental behaviors are also correlated with high social capital, what are the best "types" of social capital for the environment? Although few studies address these questions directly, in this chapter I will explore these questions theoretically using what literature does exist to hypothesize answers that can then be tested through interviews in **Chapter 5**.

4.1. Are Social Capital and Pro-Environmental Action Correlated at the Individual Level?

Unlike the collective level, which showed a dearth of studies exploring this correlation, at the individual level there are a handful of studies that suggest such a correlation. However, I would argue that the most relevant of these do not adequately or consistently treat this relationship, so that it remains unknown whether there is a correlation or not. Several studies have suggested that pieces of what I have considered social capital – for example, participation in environmental NGOs (Olli et al. 2001) or "the role of friends, relatives and other influential individuals" (Barr and Gilg 2006) – are important to individuals' environmentally-significant behavior. However, they represent only pieces of the puzzle rather than a coherent view of social capital.

Two studies come close to looking at the correlation between social capital and pro-environmental action at the individual level, but they are not consistent in their definition of social capital. Lubell et al. (2007) looked at influences on "global warming activism" and purported to take into account the effect of social capital on an individual's actions. However, they measured an individual's social capital as the level of "civic engagement" in their entire county, which I would argue is a much narrower conception of social capital than the one I have adopted; it also does not measure an individual's social capital but rather assumes their social capital is the same as that of the collective. They did, however, find that individuals were more likely to engage in global warming activism if they participated in "political discussion networks," which, I would argue, is part of social capital (they considered it a separate variable). Wakefield et al. (2006) actually did try to measure an individual's social capital and compare it to their pro-environmental actions. However, I do not think they took a consistent view of social capital in their research, since they did not consider it to be a factor in an individual's attitudes or values about the environment, and considered it to consist mostly in social trust and "a sense of civic responsibility," rather than also having a network component. In addition, neither study explored how social capital might facilitate action.

In combination with the collective-level results in **Chapter 3**, these limited studies suggest that social capital and pro-environmental behavior are correlated at the individual level. Due to the lack of adequate or consistent treatment of this question, I will turn to in-depth interviews to shed some light on whether social capital

and pro-environmental behavior are also correlated at the individual level in **Chapter 5**, hypothesizing:

Hypothesis 3: Social capital and pro-environmental action are correlated at the individual level.

4.2. How Might Social Capital Facilitate Pro-Environmental Action at the Individual Level?

In this section, I will assume that there is a correlation between social capital and pro-environmental action at the individual level and explore *how* social capital might impact individual behavior. Compared to the lack of studies looking at a correlation between social capital and pro-environmental behavior at the individual level, there are even fewer studies that have explored *how* social capital might impact environmentally-significant behavior at the individual level. This finding in my review of the literature is supported by other researchers. For example, Wakefield et al. (2007) observe a lack of research showing how social capital may influence environmental activism and Seyfang (2006) notes a lack of understanding of how individuals become "ecological citizens."

To investigate this question, I will develop two alternative explanations for why individuals act pro-environmentally: two *paths* to pro-environmental action. These paths suggest four generic ways that pro-environmental action can be facilitated. Applying what is known about how social capital works in other settings and from findings gleaned from environmental behavior studies, I will propose that social capital could facilitate pro-environmental action through any of these mechanisms.

4.2.1. Two *Paths* to Pro-Environmental Action

A fundamental question in environmental psychology is why people do or do not act in environmentally sustainable ways. In developing my explanation[21] for the conditions under which individuals do act pro-environmentally, I will start by assuming that individuals with access to enough information about the state of the environment would see what scientists see: that their action is crucial to averting environmental disasters that would harm us all. Clearly, it is in the collective interest for individuals to act to avert these disasters, and prior to the 1960s, the dominant assumption was that if a group of individuals had a common interest, it was only rational that they would each act to favor this interest (Ostrom 1990: 5). However, as Ostrom (1990: 5-6) writes, in 1965 Mancur Olson cast doubt on this view by arguing that having a common interest was not enough to guarantee individual action to further it. In fact, Olson proposed that the "logic of collective action" is such that "'unless the number of individuals is quite small, or unless there is coercion or some other special device to make individuals act in their common interest, *rational, self-interested individuals will not act to achieve their common or group interests*,'" (quoted in Ostrom 1990: 6[22]). In cases where an individual cannot be excluded from the benefit produced by the collective action, the most rational thing to do to further one's self-interest is to free-ride: to not

[21] There are a plethora of models available to describe environmental behavior. My model shares some of the assumptions of the Theory of Planned Behavior (TPB) and the Value-Belief-Norm (VBN) model. It is beyond the scope of this study to adequately treat these models or the others available; however, Stern (2000) and Jackson (2005) offer excellent summaries.
[22] Emphasis in the original.

participate in the collective action in the hope that one will benefit from the actions of others (Ostrom 1990: 6). It is simply more beneficial for one's self-interest to not bear the costs of an action if one can benefit whether one participates or not. However, if everyone chooses to free-ride, these common benefits will not be achieved. The Prisoner's Dilemma, the Provision of Public Goods, and the Tragedy of the Commons are three of the most famous instances of these conflicts between short-term self-interest and the collective interest (Kollock 1998).

The logic of collective action is a central problem for environmental issues because so many of them involve just such conflicts between self-interest and collective interest. For example, an individual may know that it is in the common interest to bike to work instead of driving in order to produce the collective benefit of clean air. But the most economically rational self-interested[23] thing to do is to drive to work, hoping to benefit from the clean air the rest of the community produces by biking, yet not having to bear the cost of a longer (biked) commute. Yet if everyone chooses the option of driving, as is common in many American cities, the collective benefit of clean air will not be produced. Therefore even if individuals understand the need for action to avert collective environmental disasters, there is no guarantee that they will act because this "logic of collective action" puts their short-term self-interest at odds with the collective interests.

Given that individuals must act in favor of the collective interest for environmental issues to move toward sustainability, but that the logic of collective action will produce the temptation to free-ride instead of participating in this action, I propose that there are really two paths to pro-environmental action. These two paths are based on the assumption that there are two ways to escape the free-riding temptation:

Path 1: *Self-Interest.* *Individuals are expected to act pro-environmentally when their self-interest corresponds with the collective interest.* Since acting selfishly is the motivation behind free-riding, I assume that all that is needed to push some individuals toward acting in the collective interest is to make it the most instrumentally rational[24] thing for them to do for themselves. Thus in this path, it is not even necessary that the individual be informed about environmental issues, unless by being informed it somehow helps align self-interest and collective interest.

Path 2: *Valuing the Collective.* *Individuals are expected to act pro-environmentally if they can be convinced to make decisions based on valuing the collective interest rather than out of self-interest.* Individuals in this path are persuaded – perhaps early in life – to make decisions out of value rationality. However, I propose that a second condition is also necessary in order for this path to end in pro-environmental action: the individual must also be well-informed enough about environmental issues to know which actions are best to support their values.

I propose that there is an additional condition that is necessary in both pathways for action: the individual must be *able* to act in the interest of the collective. As a simple example, let us imagine two individuals, Y and Z,

[23] This example is a simplification: obviously there may be other costs and benefits involved.
[24] The decision-making process of weighing the costs and benefits to one's self-interest is a classic example of instrumental rationality; it contrasts with value rationality, based on ends rather than means (Callinicos 1999:160)

both choosing whether to bike or drive their cars to work, where biking would be in the collective interest. Assume that individual Y makes choices about commuting out of self-interest and individual Z makes them out of collective interest. It is possible to imagine that Y views it as in his self-interest to bike in light of rising gas prices, and so intends to make that choice. Z may choose to bike because she both knows that biking is better for air quality *and* she values the collective interest enough to make that choice regardless of short-term personal gains or losses. However, neither Y nor Z will be able to bike to work if there are no bike lanes in their towns or if they do not know how to ride a bike. Thus in many ways this final condition is one both of structures and abilities.

Generically, then, I contend that there are four main ways that pro-environmental action may be facilitated, summarized in **Table 3**. This table suggests that there are four mechanisms (a, b, c, d) that can facilitate pro-environmental action, each by meeting one of the conditions outlined above.

Table 3. ***Summary of generic ways to facilitate individual pro-environmental action.*** Assuming two paths an individual can pass through to act pro-environmentally (see text), I hypothesize that there are four generic ways that pro-environmental action can be facilitated; each way meets one of the conditions proposed as necessary for moving along one of the two paths. I will suggest that these four generic ways to facilitate action correspond to four possible mechanisms through which social capital can facilitate pro-environmental action. (Note that way (d) appears twice, and out of order, because it applies to both paths.)

Path to Pro-Environmental Action	Conditions Necessary for Action in this Path	Generic Ways to meet this Condition
Path 1: Self-Interest	The action is in the individual's self-interest	**(a)** Aligning Self-Interest with Collective Interest
	The individual is able to act	**(d)** Enabling Action
Path 2: Valuing the Collective	The individual values collective over short-term self-interest	**(b)** Instilling Pro-Environmental Values
	The individual is informed about the need for action	**(c)** Informing of Collective Need
	The individual is able to act	**(d)** Enabling Action

4.2.2. Proposed Social Capital Mechanisms for Facilitating Individual Pro-Environmental Action

I propose that if social capital is responsible for facilitating pro-environmental action, it is most likely by helping individuals meet one or more of the conditions proposed above along one of these two paths, i.e., through one of the four mechanisms (a, b, c, d) proposed generically. Studies from both the social capital and environmental behavior literatures (examined below) suggest that all four mechanisms are plausible ways that social capital may facilitate action. However, these studies suggest that distinguishing between several components of social capital is useful in exploring these mechanisms. Each component falls into one of the two dimensions (structural and cultural) of social capital adopted in **Chapter 1**. **Table 4** summarizes these components and notes which I expect to be the strongest influence on each of the four mechanisms, as will be explored further within each mechanism.

Table 4. ***Summary of the primary components involved in each proposed mechanism.*** In this table, I indicate my analysis of which components of social capital's structural and cultural dimensions are strongest within each proposed mechanism through which social capital may facilitate pro-environmental action.

Proposed Mechanisms through which Social Capital Facilitates Action	**Structural Components of Social Capital**			**Cultural Components of Social Capital**		
	Information Diffusion	Resource Flow	Associations	Sanctions	Socialization	Social Trust
(a) Aligning Self-Interest with Collective-Interest	✓	✓	✓	✓		✓
(b) Instilling Pro-Environmental Values					✓	
(c) Informing of the Collective Need	✓					
(d) Enabling Action	✓	✓	✓			

(a) ***Aligning Self-Interest with Collective Interest*** **(Path 1: Self-Interest)**

In the first path to pro-environmental action, I assume that when individuals are making decisions about what environmental action to take, they are weighing the personal costs and benefits of those actions. Thus this in this mechanism, social capital facilitates pro-environmental action by changing the personal costs or benefits of that action to align self-interest with collective interest. Research on social capital in non-environmental settings suggests that social capital can do this through networks (information diffusion, resource flow, and associations), social trust, or norms (sanctions). I propose that there are three sub-mechanisms within this larger mechanism that could each help facilitate pro-environmental action.

First, social capital can align self- and collective-interest by reducing the costs of pro-environmental behavior, particularly through the following four ways:

● **Information Diffusion.** In social capital theory, it is thought that an individual with a large social network is more likely to have access to important information that reduces the costs of collective action. Studies suggest that the diffusion of information along social networks can reduce the costs in time, energy, and money for individuals to find out how to act pro-environmentally (Rydin and Holman 2004), particularly through the effects of seeing models of good behavior (Larsen et al. 2004).

● **Resource Flow.** Social capital theorists propose that that an individual with a large social network is more likely to have access to financial, physical, social, and psychological resources through their contacts (e.g. Putnam 2000: 312). Although evidence for this effect on environmental actions seems to be lacking, I see no reason why this component of social capital might not also facilitate environmental actions.

● **Associations.** In social capital theory, it is thought that associations (i.e., formal networks) instill habits and skills to facilitate individual action for the collective. Putnam saw this component as crucial to social capital's role in making communities more democratic (2000: 338). In the environmental behavior literature, Lubell (2002) found that an individual's "civic skills" learned in such associations can reduce the

costs of acting pro-environmentally, providing support for the importance of such associations.

● **Social Trust.** Social capital theorists propose that social networks that are marked by high levels of trust lower the costs of "monitoring others" (Pretty 2003) and the risk that others will free-ride (Putnam 1993: 172) in collective action situations. It is thought that many individuals decline to cooperate because they are afraid of being taken advantage of for not free-riding when others do (Kollock 1998). Some environmental behavior studies have shown that the belief that others are contributing to environmental collective action increases the likelihood that an individual will contribute themselves (Carlson 2001).

The second two sub-mechanisms are both related to community norms that social networks enforce through sanctions. Sanctions are positive or negative pressures on individuals that may push them to behave more in line with the community's norms[25] (Wakefield and Poland 2005). These sanctions impose penalties on free-riders and benefit cooperators (Field 2003: 24). In this way, sanctions can change an individual's cost-benefit analysis of action by making free-riding more costly and cooperation more beneficial if a community's norm is pro-environmental. I will assume that pro-environmental norms are most likely to prevail in communities because environmental sustainability is in the community's collective interest, thus it is more likely that sanctions will favor the environment. Collective pressure in the form of these sanctions should be expected to make action in favor of the collective more attractive rather than less. The effect of social norms on environmental behavior has probably been most studied in relation to recycling norms. Barr and Gilg (2006), for example, write that in some communities, recycling has a positive social reinforcement because it signals "social normality" while not recycling can be akin to "owning a car that looks 'out of place.'" However, I found at least a few other instances of norms and environmental behavior being linked. Lubell et al. (2007) found that climate change discussion networks can increase the benefits of action on climate change, perhaps by "providing citizens with positive reinforcements from their friends and family." In essence, these sanctions make free-riding more costly and increase the return on participation in collective action.

(b) *Instilling Pro-Environmental Values* (Path 2: Valuing the Collective)

This second mechanism proposes that social capital instills pro-environmental values in individuals. There is, in fact, a strong case to be made that this mechanism could be a powerful one. To explain why I expect social capital to instill pro-environmental values in individuals, I will begin in the power of social capital to instill *pro-social values*. Individuals motivated by pro-social values by definition tend to favor actions that are good for the collective interest (DeLamater and Myer 2007: 562). Not surprisingly, as De Cremer and Van Lange (2001) explain, studies suggest that individuals motivated by pro-social values rather than self-interest are more likely to cooperate in collective action dilemmas. Social capital is thought to instill pro-social values in a number of ways,

[25] There are really two kinds of norms relevant here: *descriptive norms*, which refer to "what is commonly done," and *injunctive norms,* which refer to "what is commonly approved or disapproved," (Kallgren et al. 2000). I expect both kinds of norms are important to environmentally-significant behavior.

which I consider to all be, essentially, *socialization processes*, including through "role modeling" and "communal living," (Dasgupta 2000: 339). For example, active participation in a large social network is thought to "widen our awareness of the many ways in which our fates are linked" (Putnam 2000: 289), giving individuals with higher social capital a greater "concern for the generalized other" (340). Social capital is also thought to instill several related values, including "civic virtue" (Boix and Posner 1998); a sense of duty (Paxton 2002); and empathy for others (Putnam 2000: 288). There are clearly plenty of researchers who believe that social capital, via these socialization processes, can facilitate action on behalf of the collective interest by instilling pro-social values. Socialization processes are expected to favor pro-social values because those values favor the collective interest, and the collective (at various scales) is the entity doing the socializing.

I propose that we should expect that social capital will also facilitate action on behalf of the collective interest by instilling pro-environmental values in individuals. This is because pro-environmental values should be considered a specific type of pro-social value, a view that is backed up by several environmental behavior researchers (e.g. Lee and Holden 1999). This makes sense since valuing environmental sustainability is clearly in line with valuing the collective interest. However, the environmental behavior literature suggests one major caveat to this line of reasoning. In many environmental behavior models, concerns are not limited to self vs. collective. Instead, there are three categories of concern: egoism (concern for self), altruism (pro-social concern), and biospherism (concern for the natural world) (Stern 2000). I propose that it is possible that social capital, in addition to instilling a value in environmental sustainability out of altruism, might also instill a value in it out of biospherism; however, few studies have explored this question. Studies have suggested that environmentalists are likely to be more egalitarian-minded (Ellis and Thompson 1997), pro-social (Van Lange et al. 1998), and biospheric (Barr and Gilg 2006) than non-environmentalists, so it is likely that if social capital could instill any of these three "pro-other" values that it would have an impact on behavior.

I also propose that we distinguish between two related sub-mechanisms: instilling values and instilling value-based decision-making processes. In this way, social capital could facilitate pro-environmental action by instilling values specific to carrying out those actions *or* by instilling a way of approaching decisions that is based on value-rationality. Just as it is logical that socialization processes driven by a community should favor pro-environmental values, it is only logical that decision-making processes that place special weight on collective interest as a value should prevail. However, it does not appear that the possibility that social capital could instill specific decision-making processes has been studied.

(c) *Informing of the Collective Need* (Path 2: Valuing the Collective)

I propose that social capital also can aid in informing individuals who already have pro-environmental values about the need for action in favor of the collective interest so they will know which action is the best one. Social capital can facilitate the spread of this information to individuals via their social networks. The idea that

social capital can diffuse information about community needs and issues (Sander and Minicucci 2007) is one of the core reasons why it is thought to facilitate collective action. As a relational and social phenomenon, social capital should be expected to spread information that is objectively best for the collective – that is, the spread of scientific environmental information should diffuse along social networks well.

(d) *Enabling Action* (Path 1: Self-Interest *or* Path 2: Valuing the Collective)

I propose this final mechanism as important for either path to pro-environmental behavior primarily because individual ability matters for actions to be carried out. I suggest that the main ways that social capital can enable pro-environmental action is through network components like information diffusion, resource flows, and associations and that they would act in similar ways to how they acted to reduce the costs of cooperating in the self-interested path (mechanism **(a)**). Individuals with larger social networks and stronger links should hear about information that aids them in action and reduces the costs of action; they should have access to resources to enable action; and they should gain skills to make certain actions easier or even possible.

Dominant Path and Mechanisms?

It is clear that there is some support that social capital may facilitate pro-environmental action through any of these four mechanisms; for this reason I expect to see evidence of all four in the interviews. However, it is not clear which of these two paths and their mechanisms may be most responsible for the likely correlation between individual social capital and pro-environmental behavior. In addition, no study has distinguished between the three types of action proposed in my thesis (*Personal Choice*, *Reform*, *Revolution*), which means that it is unknown if high social capital could impact an individual's likelihood to perform one over the other. For these reasons, the interviews in **Chapter 5** will explore these paths and mechanisms, hypothesizing:

Hypothesis 4: There are two main paths to pro-environmental action: Self-Interest and Valuing the Collective.
Hypothesis 5: There are four mechanisms through which individual social capital can facilitate pro-environmental action: (a) Aligning Self-Interest with Collective Interest; (b) Instilling Pro-Environmental Values; (c) Informing of the Collective Interest; and (d) Enabling Action.

4.3. What Types of Social Capital are best for Environmental Sustainability?

In **Chapter 3**, I suggested that in a community with high social capital, the type of norm prevalent could determine whether that community would be full of hybrid car or SUV drivers. I suggested that this could be because a community's social capital can come in different "types," and that some might be better for fostering pro-environmental citizens than others. However, I also argued that the collective level is not the best scale for exploring the way social capital affects individuals' environmental actions. Thus to explore what "types" of social capital are best for environmental sustainability, I will assume that at the individual level, social capital can also come in different "types." I will explore this question beginning with social capital's "dark side."

4.3.1. The "Dark Side" of Social Capital

Social capital theorists frequently hedge their cataloging of social capital's benefits by mentioning that it also has a "dark side" or, as Dasgupta (2000) writes, "*the character of social capital matters immensely.*"[26] In our context, Pretty (2003) writes that "some associations may act as obstacles to the emergence of sustainability, encouraging conformity, perpetuating inequity, and allowing certain individuals to shape their institutions to suit only themselves." I contend that these "dark side" "obstacles" running counter to sustainability suggest that two types of social capital are important: the nature of the norms prevalent and the structure of the social network.

First, one aspect of social capital's "dark side" supports the idea that the nature of the norms of an individual's social network matters. Amy Gutman (quoted in Chambers and Kopstein 2001) provides a vivid illustration: "'Among its members, the KKK may cultivate solidarity and trust, reduce the incentives for opportunism, and develop some 'I's' into a 'we,'" but "the associational premises of these solidaristic ties are hatred, degradation, and denigration of fellow citizens and fellow human beings.'" Thus the nature of the norms in an individual's network may determine whether that network endorses environmentalism or consumerism, for example, and thus whether sanctions and socialization push individuals in it to act pro- or anti-environmentally.

The second aspect of the "dark side" suggests that the nature of social network structures matters. Many social capital theorists warn that building social capital is "*by nature* exclusionary," leading to conformity, suppression of dissenting voices and social hierarchies (e.g. Wakefield and Poland 2005). Although part of these dangers have to do with norms, I think they are more to do with network structures that are homogeneous, inward-looking, and exclusive, all of which are thought to be characteristics of the *bonding* type of social capital (Putnam 2000: 22; Rydin and Holman 2004). Bonding social capital is thought to be "good for undergirding specific reciprocity and mobilizing solidarity," (Putnam 2000: 22). Furthermore, Rydin and Holman (2004) warn of the danger that very bonded groups may hurt themselves in the long run by resisting change and lacking connections with other groups who have new ideas. However, bonding social capital is thought to be a precursor to the other major type of social capital: *bridging* social capital (Larsen et al. 2004; Putnam 2000: 22). Bridging social capital is about groups being linked to one another and about diversity of views and individuals within the group (Pretty 2003). Many social capital theorists (e.g. Putnam 1996) seem to hold a lot of hope for the power of bridging social capital to ward off this second way social capital can have a "dark side." Thus it may be hypothesized that if an individual's social capital is bridging, they may be more likely to avoid this "dark side."

4.3.2. Social Capital as Conditionally Good for Environmental Sustainability

These two parts of social capital's "dark side" suggest that there may be conditions under which social capital is more likely to facilitate pro- rather than anti-environmental actions, and that these conditions may be found in the type of an individual's social capital, particularly in the nature of his or her social network's norms

[26] Emphasis in original.

and structures. I propose that there are two cases in which an individual's social capital could facilitate anti-environmental action in individuals. In each case, high social capital in a community may either encourage anti-environmental actions or simply *not facilitate* pro-environmental ones. Because of the other, non-environmental outcomes of social capital, even the absence of this pro-environmental facilitation could be bad for the environment. For example, it is clear from other studies (e.g. Putnam 2000: 321) that high social capital can make an individual better-off financially. In the absence of a push for social capital to make this individual also act more pro-environmentally, and particularly in the U.S. where the norm is often to spend money on expensive status-gaining items (Schor 1992: 122-5), this extra income from higher social capital could be used to hurt the environment, for example by buying gas guzzling vehicles or larger houses. The first case where this anti-environmental action is a possibility is cultural – that a community has a norm of not engaging with environmental issues, while the second is structural – that there could be blocks to information within the social network.

Case 1. A Norm of Non-Engagement with Environmental Issues. Clearly if an individual's social network has anti-environmental norms (ex. "driving is cool") or if it lacks norms pertaining to environmental issues, this could encourage anti-environmental behavior. Even though it is irrational from the point of view of long-term collective interest, I propose that just because an individual has strongly internalized their networks' norms, it does not mean that those norms pertain to the environment. I propose that so long as an individual's network is unengaged with environmental issues – so long as they do not discuss them – then anti-environmental norms can emerge. Without these sorts of norms, there is no pressure from sanctions to follow them and few socialization processes to instill pro-environmental values. Therefore, I propose the following condition is necessary for an individual's social capital to translate into pro-environmental action:

Hypothesis 6: Social capital will facilitate pro-environmental action among individuals so long as their social network is engaged in discussing environmental issues, i.e., there is a Norm of Engagement with such issues.

Case 2. Structural Blocks to Information Diffusion. Just because social networks facilitate the flow of information, there is no guarantee that scientific information will flow freely within those networks. Let us imagine an individual with high social capital in terms of a rich social network marked by high levels of social trust and strong community norms. However, let us assume that there is very high bonding social capital in that network, so that there are few ties to other networks. Under these conditions, it is possible that scientific information about the state of the environment simply will not reach this individual, despite his or her high social capital. This structural state is not in the long-term collective interest, but it is possible to imagine that for group solidarity or survival in the short-term this strategy of having few ties to other groups could be rational.

There are two related aspects of network structure that are particularly important here. Bridging social capital is thought to be better at spreading information than bonding (Larsen et al. 2004), so it may be a better

structure for avoiding this case. However, it seems like there might also be a danger in highly bridged groups of losing the solidarity that may make action of the radical sort necessary to meet the challenge of sustainability difficult. Thus there may be an inherent tension here between bonding and bridging social capital types that has implications for collective action. The other network structural distinction is between "weak ties"[27] (i.e. between acquaintances) and "strong ties" (i.e. between individuals who know, and trust, one another well) (Granovetter 1973). Weak ties are often associated with bridging social capital to link different groups, while strongly bonded groups may be marked by mostly strong and few weak ties. Therefore, I propose the following second condition is necessary for an individual's social capital to translate into pro-environmental action:

Hypothesis 7: Social capital will facilitate pro-environmental action among individuals so long as information flows freely in their social network, i.e. they have some weak ties and bridging social capital.

These two hypotheses about conditions under which an individual's social capital is good for environmental sustainability suggest that a norm of engagement, weak ties, and bridging social capital are all types of social capital best for the environmental, which will be tested further through interviews in **Chapter 5**.

4.4. Conclusions

This chapter was the first of two research stages for exploring social capital at the individual level. First I presented evidence to support the hypothesis that social capital and pro-environmental actions are correlated at the individual level. Then I theorized about two paths individuals may follow to act pro-environmentally and divided these into four mechanisms through which I proposed that social capital facilitates pro-environmental action. Finally, I hypothesized two conditions under which social capital should translate into pro-environmental action, which suggest types of social capital that are best for environmental sustainability.

[27] "Weak ties" and "strong ties" are terms made popular by Granovetter (1973); the term "weak" is not meant, either here or in the original meaning, to imply ties that are negative or unimportant. Granovetter considered a tie's strength to be a factor of "the amount of time, the emotional intensity, the intimacy…, and the reciprocal services which characterize the tie," so a "weak" tie can be thought of as marked by lesser degree of each of these factors compared to a "strong" tie.

5. Testing Individual-Level Hypotheses through Interviews

There are three main goals for this final stage of research, which involved in-depth interviews. First, I will test the correlation between social capital and pro-environmental action at the individual level. Second, I will test the two paths to pro-environmental action and their four hypothesized mechanisms linking social capital and individual pro-environmental action, particularly looking for which path and mechanism(s) may be dominant. Finally, I will explore the two conditions hypothesized to best foster pro- rather than anti-environmental action, which suggest certain types of social capital are best for the environment.

5.1. Methods

In this research stage, I used an interpretive research strategy (according to Bryman's 2004: 13 definition), a comparative research design (Bryman 2004: 56), and the method of interviews. At the individual level, I anticipated that relational aspects of environmental actions would not be accurately shown through surveys, for example, because I expected that the influences on an individual's environmental decision-making processes are in part subconscious. I assumed that the least biased way to approach my research questions was by having the interviewees informally walk me through their environmental decision-making processes in interviews. In this way, the results are based on my interpretation of their literal words and by "reading between the lines" of their descriptions. This approach was important even for the seemingly-more-straightforward question of a social capital/environmental action correlation, since there is no accepted measure of individual social capital.

Interviews. The interviews were semi-structured, exploratory, and recorded. Informed consent was obtained at the beginning and care was taken to ensure confidentiality. Interviews lasted one to two hours, began with a *Questionnaire* (**Appendix C**), and then ranged in a flexible manner through the topics in the *Interview Guide* (**Appendix B**). I began the interviews by asking two important questions, the answers to which I used to frame the rest of the interview: (1) "what are environmental issues, to you – what falls into that category?" and (2) "can you tell me about ways environmental concerns affect your daily life?" In this way, I hoped to reduce the extent that my own environmental concerns would bias the interviewees, by using their own perceptions and words to form further questions. I avoided leading questions to increase reliability (Kvale 2006: 236), trying to explore my topics through themes that emerged from the subjects' own stories.

Study Site. Interviews took place in Chapel Hill, North Carolina (NC) and the surrounding countryside, in locations convenient for the interviewees. According to Putnam's analysis (Caiazza and Putnam 2002), NC as a whole was ranked 41st out of the 50 U.S. states for its low social capital levels. Choosing a state with very low social capital is was one way to test my hypothesis in **Chapter 3** that state-level social capital may not indicate an individual's personal level of social capital. Subjects were chosen all within one community to limit the impact of outside variables related to location or local culture and so the community-wide social capital would be held constant (although their relationship to this collective social capital is hypothesized to vary). The community as a

whole, from my own observations and those of the interviewees, is thought to have higher-than-average environmental involvement compared to the rest of NC.

Interview Subjects. Sampling was done to theoretical saturation using the snowball method. I interviewed a total of six individuals because this was enough to provide a high variation in social capital levels (from very low – which could serve as a control - to very high) as well as a variation in degree of environmental action (from somewhat higher-than-average American actions to extremely active). After reaching this theoretical saturation, I chose not to complete additional interviews in favor of studying these six intensively (after Kvale 2006: 102). I intentionally chose subjects with higher degrees of environmental action than typical Americans because I am looking at ways social capital facilitates pro-environmental action rather than also including how social capital might be linked to anti-environmental actions. I initially contacted several people who I knew were interested at least somewhat in environmental issues, and asked them to put me in contact with individuals they knew. The subjects were four women and two men, ranging in age from 23 to 81 and in income from <$25,000/year to >$100,000/year[28]. Two potential biases are that the subjects came mostly from middle-class families and they all had high levels of education (bachelor's degree or higher). In this way, the findings may be generalizable to other situations where economic class and education are not crucial factors.

Analysis. Although my purpose was to "test" my hypotheses, my results are not meant as statistically significant proof and were more exploratory in nature. The method of analysis used to approach the three questions differed. First, the relationship between individual amounts of social capital and degree of environmental action was assessed. To evaluate individual amounts of social capital, interviewees were given a questionnaire (**Appendix C**) asking about their levels of social capital. The questionnaire mirrored some questions from Putnam's measures of social capital (2000: 291, 45, 61, 70, 81, 84, 97, 124); a few of these questions were modified slightly; and some of the questions I created (particularly questions 8 and the first part of 9). I formulated scales for "how often" and "level of agreement with statements" based on tips from Bryman (2004: 153, 155). The questionnaire was piloted on a friend and then modified for clarity. I also assessed social capital based on information from the interviews. In this way, several different measures of social capital amounts were found, and were weighted relative to one another as "Low," "Medium," and "High."

To evaluate degree of environmental action, the interviewees were asked about environmental actions they performed. Degree of action was classified relative to the other subjects as "Low," "Medium," or "High" based on how many different behaviors individuals performed regularly and whether their behaviors branched out from *Personal Choices* into *Reform* or *Revolutionary* actions. *Personal Choice Actions* were relatively straightforward. I interpreted an individual's action as *Reform* or *Revolutionary* based on my impression of the impact the subject hoped to make through it (based on how they told me they thought environmental issues ought to be solved).

[28] Per capita income averages $33,636 in North Carolina (U.S. Bureau of Economic Analysis 2007).

To approach the latter two questions (dominant paths/mechanisms and social capital types/conditions), the interviews were transcribed, coded, and condensed. Classification of the interviews into codes was based in part on what the subjects told me literally, but much more on the impressions I got from "reading between the lines" of what they told me. In this way, the results are my interpretation and relatively holistic. Codes were drawn from the hypothesized mechanisms and conditions in **Chapter 4** and from key concepts about social capital types such as *bridging*, *bonding*, *groups*, *trust*, *norms*, etc. For each piece of data that was classified into different codes, the next step was to condense the meaning (Kvale 1996: 192) for further analysis. From these coded and condensed pieces of data, dominant mechanisms and themes could emerge.

5.2. Results

5.2.1. Is there a Correlation between Individual Social Capital and Pro-Environmental Action?

TESTING: Hypothesis 3: Social capital and pro-environmental action are correlated at the individual level.

The main challenge in investigating this correlation lies in determining how much social capital each individual has, which I approached through several techniques. First, in **Table 5**, I explored three ways of looking at social capital: Participation in various groups (a Putnamesque conception); Number of Ties in the individual's network, and the Strength of those Ties. Already, however, the results suggest a few inconsistencies. In particular, how much Overall Social Capital can subject C have when he has High Participation and Ties Strength, but a Low Number of Ties? This problem only became larger when I tried to consider the strength of norms of each individual's network, because there is a fundamental problem of scale.

Table 5. ***Interview results: Three preliminary ways of conceptualizing social capital.*** This table summarizes my interpretation of each interview subject's social capital, seen in three ways. First, through the amount each participates in their community; second, through the number of ties in their social network, and third, through the strength of those ties. As the table indicates, subject C has an unclear amount of overall social capital as analyzed through these methods.

Interviewees:	***A***	***B***	***C***	***D***	***E***	***F***
Participation	Low	High	High	Medium	High	Low
Number of Ties	Low	High	Low	Medium	High	Medium
Strength of Ties	Low	High	High	High	High	Medium
Overall Social Capital:	Clearly Low	High	**Unclear**	Med-High?	Clearly High	Med-Low?

To resolve this scale problem, I propose that individuals can have two different types of social capital: *micro* or *macro*. This distinction is lacking in the research I have seen about individual social capital. Over and over in the interviews, the subjects spoke of the influences of their families and close friends (micro social capital) versus their communities (macro social capital) as distinct. Interviewee C is an example of how distinct these can be; he spoke of being very influenced by his socially-isolated family and did not seem to have been influenced by the wider community at all. I would argue that his micro social capital (particularly the strength of his ties to his

parents and siblings) was extremely high. However, his macro social capital was extremely low – with few strong connections to friends, neighbors, or just individuals outside his closed circle, he does not seem to have internalized many macro values at all.

Assuming this distinction, the results suggest that micro social capital is most important to environmental action, as illustrated in **Table 6**, which shows that the interviewees' micro social capital is very strongly correlated with Degree of Environmental Action, while the macro social capital shows no pattern. In particular, the two subjects (F and A) with the lowest micro social capital have the lowest degrees of pro-environmental action. However, I propose that this does not mean that the macro social capital has no impact on environmental action; however, it may mean that the impact of the macro is contingent on the micro.

Table 6. ***Interview results: Micro social capital corresponds with degree of environmental action.*** This table summarizes my interpretation of the interviewees' overall degree of environmental action, micro social capital and macro social capital. Arranged in order of descending degree of environmental action, it is clear that micro social capital is more clearly linked with environmental action than macro.

Interviewees:	**C**	**E**	**D**	**B**	**F**	**A**
Degree of Environmental Action	Very High	High	Medium	Medium	Low	Low
Micro Social Capital	**High**	**High**	**High**	**Medium**	**Medium**	**Low**
Macro Social Capital	Low	High	Medium	High	Low	Very Low

In **Table 7** (below), the relationship between specific actions and the two levels of social capital is summarized. There is not enough variation in *Personal Choice Actions* to guess if it is correlated with any actions (and perhaps it simply is not); however, subject A, with the lowest micro social capital, performed these actions in the lowest amount. For *Reform* and *Revolutionary Actions*, the two individuals with the lowest micro social capital performed these actions the least.

Table 7. ***Interview results: Micro/macro social capital and three kinds of actions.*** This table, arranged in order of descending micro social capital, suggests which kinds of pro-environmental actions (*Personal Choice*, *Reform*, *Revolutionary*) are associated with different amounts of social capital (see text).

Interviewees:	**C**	**E**	**D**	**B**	**F**	**A**
Micro Social Capital	High	High	High	Medium	Medium	Low
Macro Social Capital	Low	High	Medium	High	Low	Very Low
Personal Choice Actions	High	Medium	Medium	Medium	Medium	Low
Reform Actions	High	High	Medium	Medium	NA	Low
Revolutionary Actions	High	Low	Medium	NA	NA	NA

5.2.2. Which Path and Mechanisms are Dominant?

TESTING: Hypothesis 4: There are two main paths to pro-environmental action: Self-Interest (Path 1) and Valuing the Collective (Path 2).

TESTING: Hypothesis 5: There are four mechanisms through which individual social capital can facilitate pro-environmental action; they are summarized with Sub-Mechanisms and Important Components below:			
	Proposed Mechanisms	**Sub-Mechanisms**	**Important Components**
	(a) Aligning Self-Interest with Collective-Interest (Path 1)	**(a_1)** Reducing the Costs of Pro-Environmental Action	Information Diffusion, Resource Flow, Associations, Social Trust
		(a_2) Increasing the Costs of Free-Riding	Sanctions
		(a_3) Increasing the Benefits of Pro-Environmental Action	
	(b) Instilling Pro-Environmental Values (Path 2)	**(b_1)** Instilling Values-Based Decision-Making	Socialization
		(b_2) Instilling Specific Pro-Environmental Values	
	(c) Informing of the Collective Interest (Path 2)	NA	Information Diffusion
	(d) Enabling Action (Both Paths)	NA	Information Diffusion, Resource Flow, Associations

Table 8 summarizes each interviewee's main path to their pro-environmental behavior as well as the main mechanisms in operation. As this table indicates, there was a surprisingly clean break between the four individuals with medium-high levels of social capital, who tended to follow a Valuing the Collective path, and the two individuals (A and F) with the lowest social capital levels, who followed either the Self-Interest or a mix of both to their environmental actions. The Valuing the Collective path was thus associated with *Reforming* and *Revolutionary Actions*, while the *Self-Interest Path* was associated with *Personal Choice Actions*.

Table 8. ***Summary of all interview results.*** Arranged in order of descending micro social capital, my interpretation of the subjects' environmental actions, dominant paths, and dominant mechanisms are summarized. See text for analysis.

Interviewee:		***C***	***E***	***D***	***B***	***F***	***A***
Micro Social Capital		High	High	High	Medium	Medium	Low
Macro Social Capital		Low	High	Medium	High	Low	Very Low
Envir. Actions	***Personal Choice***	High	Medium	Medium	Medium	Medium	Low
	Reform	High	High	Medium	Medium	NA	Low
	Revolutionary	High	Low	Medium	NA	NA	NA
Dominant Path (1) or (2)		(2) Valuing Collective	(2) Valuing Collective	(2) Valuing Collective	(2) Valuing Collective	(1) Self-Interest	(1 and 2) A Mix
Dominant Mechanisms **(a)** *Aligning Self-Interest with Collective-Interest* **(b)** *Instilling Pro-Environmental Values* **(c)** *Informing of Collective Interest* **(d)** *Enabling Action*		(b_1) Family changed decision-making	(b_1) Community & family changed decision-making	(b_1) Friends' norms changed decision-making	(b_1) University norms instilled prosocial values	(a_1) Family's norms lowered costs	(d) Information Diffusion enabled action
			(b_2) Community & family instilled values		(b_1) University changed decision-making		(a_1) Information Diffusion lowered costs
		(b_2) Family instilled values	(d) Information Diffusion enabled action	(d) Friends' norms enabled action	(b_2)Family instilled pro-environmental values	(a_1) Spread of information lowered costs	(a_3) Friends' norms increased benefits

Not surprisingly, the split in paths according to social capital levels was mirrored by a split between those four interviewees with higher social capital and the two with lower with regard to the dominant mechanisms. In the four subjects with higher amounts of social capital, the dominant mechanism was overwhelmingly mechanism (b): Instilling Pro-Environmental Values. In the two low-social capital interviewees, social capital still had a role to play in facilitating their pro-environmental actions. However, this role was centered mostly on mechanism (a): Aligning Self-Interest with Collective-Interest. Mechanism (d): Enabling Action, which could act for either path to pro-environmental behavior, was found to be important for three of the interviewees, and did not seem to be related to social capital amount. Finally, a small amount of evidence was found to support mechanism (c) whereby social capital Informed of the Collective Interest to facilitate action based on values. The following is a summary of the ways these mechanisms seemed to work in the interviewees:

(b) Social Capital Instilled Pro-Environmental Values. The first sub-mechanism (b_1), that social capital instills value-based decision-making, was the most common way that social capital facilitated pro-environmental action among Valuing the Collective individuals. All four of the medium to high-level social capital subjects seemed to have experienced this shift, and they explained (often indirectly) how the norms of their social networks

changed their decision-making processes. Subject B, for example, explained how the norms of her university instilled in her the idea that she had "control over" environmental choices, that she had "options" and should "educate" herself about them before making "conscious" decisions. Interviewee E spoke of the norms in the community of monks with whom he had lived that emphasized decision-making based on an ethic of not wasting anything. Subject C spoke of the isolation of his family in his youth, where his family had a huge influence on him and taught him, I would argue, to make his decisions based on ethics alone, without any thought to social costs or benefits. Interviewee D expressed how the counter-cultural norms of the 1960s when she grew up, as reinforced by her network of friends, instilled in her an approach to making decisions based on rebellion, anti-materialism, and not conforming to mainstream American values.

Social capital also facilitated action through the second sub-mechanism (b_2), by instilling specifically pro-social and pro-biospheric values. Interviewee B, for example, attended a small college which focused on building a "sense of community," which, she said, instilled in her the prosocial "mindset that…we are all working together and…what one person does affects everybody else." Further, she said, the norms of the college gave her a "unifying feeling - you weren't just an individual." Interviewee C explained how his family's norms of discussing environmental issues and bringing him to environmental NGO meetings instilled in him the idea that the environment is an important ethical issue.

(a) Aligning Self-Interest with Collective-Interest. The dominant way social capital facilitated pro-environmental action was by making it in the individuals' short-term self-interest to act in the collective interest. The most common way it did this was by reducing the costs of pro-environmental action (a_1). This mechanism worked in these interviewees in particular through the flow of information (including information about models) and through skills learned from family or community norms. Interviewee A explained that going to friends' homes and "seeing that they don't have a nice lawn" and that "the trappings that we see in suburban life are not important" there "gives me permission to do it;" in this way, models of this behavior could both tell her how to be more environmental and reduce some of the psychological costs of doing something out of the ordinary. Interviewee F, motivated to conserve energy for financial reasons, was able to draw on the skills she learned as a child growing up in a conservation-oriented family to reduce the costs of her own choices.

Some support was found for the idea that social capital can increase the benefits of action (a_3) through positive psychological or social sanctions associated with that action. Interviewee A expressed pride from having an ecologically-friendly "green house" that was featured in newspapers and shown off to friends. Interviewee F expressed her desire to own a hybrid car, which she considered a "status symbol"; it is possible, then, that some of the elevated costs of the vehicle may be offset by social or psychological benefits to status.

Little support, however, was found for the idea that social capital would work by increasing the costs of free-riding through negative sanctions (a_2). In addition, little support was found for the role of resource flow,

associations, or trust in facilitating action through this whole mechanism.

(d) Enabling Action. For two subjects (E and F) who were searching for new ways to act on their pro-environmental values, information gleaned from their social network could enable their action. Norms were also found to be important for enabling action on individuals' relevant values, an unexpected finding. For Interviewee D, for example, her interactions with a community of committed homesteaders in a "back to the land" movement gave her habits and skills she could use later in life when trying to expand her own practice of living more sustainably. Little role was found for the flow of resources, associations, or trust in this mechanism.

(c) Informing of Collective Interest. For Interviewees E and A, the spread of information along their social networks not only enabled action but also activated the values they held about the environment because they heard about issues they had previously known little about. However, this mechanism was not found to be particularly strong.

5.2.3. What Types of Social Capital are best for Environmental Sustainability?

In **Chapter 4**, I proposed two conditions necessary for an individual's social capital to translate into pro-environmental action, which suggested that norms of engagement, strength of ties, and bridging vs. bonding are the best social capital types for environmental sustainability.

TESTING: Hypothesis 6: Social capital will facilitate pro-environmental action so long as their social network is engaged in discussing environmental issues.	
	Type of Social Capital Hypothesized to be best for Environment: Norm of Engagement

In terms of a Norm of Engagement, I found different results at the macro and micro levels. At the macro-level, I found two distinct trends. On one hand, among the two interviewees with high macro-level social capital (E and B), only subject B seemed to have experienced a macro-level norm of engagement with environmental issues, in the form of her University community's discussions about environmental issues. Subject E's macro-level social capital was engaged with issues of waste in a non-environmental sense, which also affected him. On the other hand, I would argue that there is evidence to suggest that all the interviewees felt a macro-level norm of *dis*engagement with environmental issues, but it was expressed either through weak ties or experienced as a "felt" culture of reluctance to discuss environmental issues. Three of the interviewees professed that they avoided talking to people about environmental issues in ways that could be interpreted as "preaching" (E), "judging" (C), or "imposing" ones views on others (F). I got the impression from these three subjects that they did not discuss environmental issues with anyone who did not already partly agree with them. Interviewee C especially said he felt like he made "people slightly uncomfortable" when he expressed his views and that his social network as a result was made up almost solely of people with similar views to his own. Neither interviewees A nor B expressed reluctance to discuss their views, but professed that the way they discussed them was centered around either

informing others of options they "might be interested in" (A) or saying their views in a "joking" manner (B). Interviewee D seemed to be the only one to wear her views on her sleeve, but she expressed being ostracized by her neighbors for being different.

At the micro level, the degree to which the subjects seemed to feel a norm of engagement with environmental issues varied, with a large contrast between those who had high micro social capital (C, E, D) and those with medium to low micro social capital (F, A, B). All of the higher-social capital subjects seemed to have at least one micro-level group to which they belonged that discussed environmental issues. Subject C surrounded himself with a tiny circle of strongly-linked family and friends with whom he could discuss environmental values. Interviewee E was a member of a Recycling Committee that discussed these issues. Subject D had a community of friends who were highly committed to environmental issues and whom she actively asked for more information. In contrast, Subjects F, A, and B all had access to similar micro-level groups who seemed to be discussing environmental issues, but these individuals' lower social capital at the micro level reflected that they did not seem to be active members or discussers of those groups.

With regard to specific environmental actions, I found that the three subjects with high micro-level engagement with environmental issues (C, E, D) were the only individuals who engaged in all three actions (*Personal Choice*, *Reform* and *Revolutionary*). The one subject (B) who experienced a macro-level norm of engagement with these issues performed two types of action (*Personal Choice* and *Reform*). Finally, the two individuals with the lowest amounts of social capital at both scales either only performed *Personal Choice Actions* (F) or performed *Personal Choice* and *Reform Actions*, but in small amounts (A).

TESTING: Hypothesis 7: Social capital will facilitate pro-environmental action among individuals so long as information flows freely in their social network.	
	Types of Social Capital Hypothesized to be best for Environment: Weak ties, bridging social capital

To explore the importance that information flow freely throughout an individual's social network, **Table 9** summarizes the importance of weak vs. strong ties and bridging vs. bonding social capital for the diffusion of environmental information for each interviewee. The first thing these findings suggest is that weak ties and bridging social capital do not always coincide. This can be seen in Interviewee A, whose weak ties are most important for spreading environmental information, but whose weak ties tend to be from homogeneous individuals more akin to bonding social capital than bridging – an unusual hybrid of weakly bonding social capital. I have included an additional row in this table, Non-Social Capital Sources of information, because for four of the interviewees (C, D, E, F), their own research in terms of reading, watching television, etc. were more important sources of environmental information than their social networks. Other than the fact that all three individuals (C, E, D) who had high social capital *and* were seeking out environmental information from non-social capital sources

were the only three performing *Revolutionary Actions*, there is no discernable pattern to strong vs. weak ties and bonding vs. bridging social capital and environmental action (degree or type).

Table 9. ***Interview results: Interviewees' sources of environmental information.*** Arranged in order of descending micro social capital, the subjects' most important sources of environmental information are indicated (see text).

	Interviewees					
Most Important Sources of Information	**C**	**E**	**D**	**B**	**F**	**A**
Weak Ties		✓				✓
Bridging Social Capital		✓		✓		
Non-Social Capital Sources	✓	✓	✓		✓	

Importance of Weak vs. Strong Ties. Two of the subjects (A and E) seemed to get a lot of their information about environmental issues and what they could do to help through weak links. However, I would argue that only for subject A, who had very low social capital (made up almost entirely of weak ties), was this information really important for her environmental action. For subject E, the information he found through his weak links facilitated his action on environmental issues, but was perhaps unnecessary, since his active searching for this information on his own may have resulted in the same environmental actions (but perhaps it would have taken longer). There is also a difference here between actively using ties as E was and passively receiving information from them as A was. For four interviewees (B, C, D F), strong ties were much more important sources of environmental information than weak ties.

Bridging vs. Bonding Social Capital. Only two of the interviewees (B and E) had much bridging social capital, which I have interpreted here as using links to diverse people or groups as sources of environmental information. For subject E, again, I think his diverse network of connections was useful to him in finding out about environmental issues, but that it was more how he used his network – actively mining it for information – that was important, rather than the structure itself. For subject B, in contrast, her bridging social capital may have been influential in her hearing about environmental issues, but access to information did not seem to be a very important aspect of her environmental decision-making process.

5.3. Discussion

5.3.1. Is there a Correlation between Individual Social Capital and Pro-Environmental Action?

The results strongly support the idea that social capital and pro-environmental action are correlated at the individual level – at least at the micro level. The findings that there were individuals with a range of social capital amounts in one community, and that individuals had high social capital within the very low-social capital state of North Carolina supports my decision in **Chapter 3** to shift my analysis to the individual level. That *Reform* and *Revolutionary Actions* were performed the least by the interviewees with the lowest micro social capital suggests that these sorts of actions may benefit the most from the motivation provided by social capital.

5.3.2. How does Individual Social Capital Facilitate Pro-Environmental Action?

My hypothesis that there are two paths to pro-environmental action and four mechanisms linking social capital to this action was supported overall. Most of the actions and processes described by the interviewees fell into one category or the other and these categories were, on the whole, useful in analysis. The results suggest that individuals with higher social capital tend to act pro-environmentally because they value the collective interest rather than out of self-interest. If it were found that this relationship is representative of larger U.S. populations, it would suggest that social networks and norms are particularly important for instilling pro-environmental values and decision-making processes. However, these six subjects arguably represent a higher-than-average environmental commitment, so it is possible that these findings simply suggest that those who are most active in environmental issues tend to do so based on values and principled decision-making processes. On the other hand, the findings also suggest there is a role for social capital to play in making action less difficult and more enticing even for decisions based on Self-Interest, as seen particularly in Subjects F and A.

The findings also suggest that social capital facilitates pro-environmental action primarily by instilling pro-environmental decision-making processes and values in individuals. In particular, a micro-level (or macro-level, for subject B) norm of participation, engagement, conscientiousness, a questioning of mainstream values, and valuing ethics over costs and benefits are particularly important values that socialization processes seem to be able to instill in individuals with high social capital. Social capital also seems to have a role to play in Aligning Self-Interest with Collective Interest. The emphasis on these two mechanisms in particular suggests social capital works through socialization processes, information diffusion, and (positive) sanctions in particular.

However, does this mean that social capital never facilitates pro-environmental action via information diffusion, negative sanctions, resource flow, associations, and trust? I suggest that further research may turn up roles for these components of social capital as well for several reasons. First, my sample was not a random sample of average Americans. One difference is that my sample had a higher-than-average commitment to environmental action. The results that the two lowest-action and lowest-social capital interviewees (F and A) were more impacted by social sanctions and information diffusion suggest that at the margins – when social capital or environmental commitment are low – these components and others may have a larger impact. The sample was also better-educated and better-off financially than average Americans, and I hypothesize that for individuals with less education and less financial resources, these components may be more important. Finally, it is possible that the nature of this study as exploratory and the efforts not to ask leading questions may have meant that these components were missed in the interviews. A study planned to examine these components in detail may need to ask different questions and rely more on observations.

5.3.3. What Types of Social Capital are best for Facilitating Pro-Environmental Action?

I explored four "types" of social capital for facilitating pro-environmental action: micro vs. macro, a norm

of engagement, weak vs. strong ties, and bonding vs. bridging social capital:

● **Micro vs. Macro Social Capital.** The results suggest that micro-level social capital is the most important for instilling the kinds of values that lead to pro-environmental action. However, the results do not suggest that macro-level social capital is wholly unimportant. I propose that the case of Interviewee B suggests that macro-level social capital is still important in instilling pro-environmental values. Subject B is the only case among the interviewees where macro social capital was higher than micro social capital. From the interview, I suggest that the mechanisms acting on B are on the whole different from the mechanisms acting on the other five interviewees because she was strongly influenced by community social capital. For her, the mechanisms linking social capital to the instilling of pro-environmental values are acting at the macro-level rather than at the micro-level as they are for the other three higher-social capitalists. Her micro social capital may nonetheless have been important for laying the foundations for the macro social capital to influence her pro-environmental behavior. However, without her macro social capital, I would argue that she may have been less environmentally active, acting more like interviewee F, then (who mirrored her in micro social capital but had much lower macro and lower environmental involvement). For this reason, I think there is a strong case to be made for the possibility that high micro social capital is in some cases sufficient for pro-environmental action, but macro social capital can sometimes bump an individual's action up another level.

● **Norm of Engagement.** The results support my hypothesis that a norm of discussing environmental issues is important to facilitating pro-environmental action. I propose that for a lot of Americans, this subset I interviewed being no different in this respect, there is a *Norm of Non-Interference*, transmitted subtly through social networks. Even though several of the interviewees were acting pro-environmentally out of a conviction that it is the most "right" and "ethical" way to live, they showed a marked reluctance to communicate their conviction to others. I suggest that this is because it is often frowned upon in American (and other) culture to try to convince someone to do what your values tell you is right, and there is a norm that everyone should be free to do what they want in their own homes, yards, and lives. Those interviewees actively participating in at least one social network that was engaged in discussing environmental issues absorbed pro-environmental values. At the very least, having a Norm of Discussing Environmental Issues in some social sphere could help overcome this reluctance to discuss lifestyle-related values. If communities are going to move toward sustainability, there is a need to broach subjects like values and impacts that seem to make many individuals uncomfortable because *the broaching itself* is abnormal and frowned upon. Adherence to the *Norm of Non-Interference* seems to suggest that environmental agency is just another issue one may or may not be interested in, rather than a matter of justice requiring urgent action as part of being a moral person.

● **Weak Ties and Bridging Social Capital.** My hypothesis that weak ties and bridging social capital are crucial to social capital being translated into pro-environmental action was only weakly supported. The results

suggest that these social capital types may only be important if individuals are not very environmentally active, so that they do not have very much information about environmental issues. In this group, the subjects were simply too educated about environmental issues to be stopped by a lack of weak ties or bridging social capital. I hypothesize that among individuals with less income and education, these social capital types may increase in importance. Further research could investigate is needed for a fuller understanding.

5.3.4. Reflections on the Interviews

In any interview, issues of interviewer bias and interpretation are important. There are several factors that may have biased my results in favor of my hypotheses. In the first interview (A), I told the subject that I was studying social influences on environmental behavior. During the interview, I felt like subject A was trying to tie her experiences to social influences, which I thought could be a source of bias. At one point in the interview, she said, "I don't think [peer influence] makes a difference to me. I hate to tell you that because I think that you think in your study that it's really important…" However, since my approach was more interpretive than positivistic, in that I made categorizations and assumptions based more on the "spirit" than the literal words of the interview (after Kvale 2006: 211), my findings actually did not support her statement. My impression from the rest of her interview was that she actually was influenced by her social network, but she did not think about it that way.

As a result of this experience in the first interview, I told the subsequent interviewees that I was studying "motivations for environmental behaviors" (not stressing social influence). However, I still think some of them may have inflated their degree of environmental concern or actions out of a subconscious desire to please me. In issues of environmental actions, which rest on personal values and have certain connotations (both good and bad), the subject's impression of what my own values were no doubt had some effect. I was careful to be sympathetic to any decision the interviewee claimed to have made, and not to inject my own views into the conversation. I also tried to couch questions that could have seemed judgmental (ex. to get at the reasons why they do not act environmentally) as issues of outside barriers that they saw preventing them, so they would be less hesitant to share their decision-making processes. As part of the environmental culture in the U.S., I am sure that there are ways that I may have communicated my values (for example, the way I dress and the water bottle I use are both symbols of my commitment for many people) that may have had an impact. On the other hand, this may have made some of the more committed environmentalists more willing to share personal stories. It would be interesting to conduct interviews like these with the "trappings" of environmentalism and compare with interviews with the "trappings" of more mainstream lifestyles.

In all of these ways, Bryman's (2004: 500) presentation of the view that the researcher is "part and parcel of the construction of knowledge" rings true. Although my interpretation of the results supported some of my hypotheses, it is possible that other interpretations might also shed light on these questions; in this way, I support the idea that my interpretation is not the "one correct" way to view things (after Kvale 2006: 211). Interviews of a

different structure, with a different interviewer, or looked at through a different lens might have yielded different results. However, I do not believe these issues were so strongly tilted in any one direction as to really diminish the implications of my results, which on the whole I believe are relatively solid.

I contend that my findings are a generalization of "what may be" (Kvale 2006: 234) in the sense that given high levels of education, decent incomes, and a larger community relatively supportive of environmentalism, social capital should act in the ways I have proposed. This is, in some ways, an ideal case – but one that is not unique to Chapel Hill. Indeed, to move our communities down the path toward sustainability in the U.S., this type of community with these types of individuals will have to become more common. In this way, my findings suggest a possible role for social capital in helping this process along.

5.4. Conclusions

It seems clear that social capital influences some people's environmentally-significant behavior. I found that high, particularly micro-level, individual social capital levels were associated with more environmental actions, particularly *Reforming* and *Revolutionary Actions*, while lower levels may be more associated with fewer actions and a focus on *Personal Choices*. I also found that the dominant way that social capital facilitated pro-environmental action was through a Valuing the Collective path, and by Instilling Pro-Environmental Values and decision-making through socialization processes. A role for other mechanisms and components of social capital is hypothesized to be important at the margins, an area ripe for further study.

From my findings, I propose that certain types of social capital are best for facilitating pro-environmental action, but that some types require further study before conclusions can be made about them. In particular, I found that micro-level social capital and norms of engagement are important for this facilitation. However, I think macro-level social capital still has a role to play, at least for certain individuals. I found only weak support for the idea that weak ties and bridging social capital are important for action, but propose that this should be studied further. More research, particularly "at the margins" (lower income, lower education, lower environmental action, lower social capital) may provide further clues to these questions as well as possibly suggesting threshold amounts of income, education, and social capital that are significant.

6. BROADER IMPLICATIONS AND CONCLUSIONS

Many theorists and activists are grappling with the question of *how* to create more sustainable societies. There is clearly great potential for individual agency to act as a driving force toward sustainability. My research supports the idea that the community structure and culture described by social capital may be an important way to facilitate such agency in the face of structural barriers to change. In summarizing my results, I will first consider the implications of my research for how to use social capital in environmental or sustainability studies and for the U.S. environmental movement; then I will discuss some of the biggest limitations of the social capital concept and directions for further research suggested by my study.

6.1. Research Implications

My research has several broad implications both for how to use social capital in environmental and sustainability studies, and for the U.S. environmental movement. First of all, I found that to use social capital in environmental and sustainability studies, it is necessary to make several modifications from the mainstream approach. In the beginning of my research, I assumed that the benefits of social capital in terms of environmental sustainability would be accessible in the same way the other benefits (to safety, education, etc.) of social capital were in Putnam's (2001) analysis. For this reason, I began by looking for a correlation between aggregate environmental sustainability and social capital at the collective U.S. state level. I found a correlation of medium strength; however, unlike Putnam's success with similar measures of non-environmental benefits, my results suggested that understanding what is happening between social capital and environmental sustainability is not decipherable in the same way. This especially rang true when, in my next research stage, I tested the correlation between social capital and pro-environmental actions at the U.S. state level and found that along with many pro-environmental actions, collective social capital was also correlated with a few anti-environmental behaviors. I propose that these findings suggest that (short of conducting a very large-scale comparative study of city-, town-, or neighborhood-level social capital) one must study the effects of social capital on environmentally-significant actions at the individual level.

Through interviews at this individual level, I found a strong correlation between social capital and pro-environmental action. However, an understanding of this correlation required yet another modification to the way I conceptualized social capital, by distinguishing between micro- and macro-level social capital for individuals. My findings suggested that micro social capital in particular is important in facilitating pro-environmental action by instilling pro-environmental values and decision-making processes in individuals. I also found that my hypothesis that a norm of engagement in environmental issues is a condition necessary for high social capital to translate into pro-environmental action was supported.

My research is also significant for what it suggests about how to move toward sustainability. My findings suggest environmentalists and environmental NGOs would be well-suited trying to change two things in particular

if they want to empower pro-environmental agents. First, they should focus on changing a few community norms which are seemingly only indirectly related to environmental values and behavioral how-to's. In particular, it seems that a family or community with a norm of discussing environmental issues and engaging with them is likely to instill in its members pro-environmental values that they will hold the rest of their lives. Simply establishing a community norm of engagement and decision-making based on environmental values (rather than a focus on certain behaviors or values) may open the doors for the real discussions that bring communities together around pro-environmental values and empower agency. Second, my findings suggest that individuals committed to environmental sustainability may be fostered through micro-level socialization processes, which are rarely – but could be - targeted by environmental groups.

6.2. Limitations to the Social Capital Approach

Using social capital to approach the idea that communities can affect pro-environmental action provided several key insights but also has important limitations. Social capital provides special insights about social networks in particular, but it can be an unwieldy concept for approaching cultural aspects like norms and trust (which was one reason why social capital had to be considered at the micro- and macro-levels for individuals). Using social capital emphasizes scales, because it forces spatial, network thinking. However, it may not be a very good approach for looking at aspects of communities that are not directly related to networks. There are two limitations in particular that should be kept in mind: limitations to the sufficiency of social capital to facilitate large-scale action, and to the concept of networks and the challenges of sustainability.

A first limitation is that social capital, in most cases, is probably not *sufficient* to reach sustainability on its own. One reason is that solid environmental information must be available in a form accessible to the public for individuals and that those individuals must be well-educated enough to be able to understand its implications. For many environmental issues, action against one's short-term self-interest may be necessary to move toward sustainability, which simply may not be possible for everyone. Communities with high social capital that are full of individuals struggling from day to day to meet their needs will have difficulty acting outside of their self-interest. Another reason is because of the constraints that limit our options in ways that social capital cannot change. An example of this is that communities with high social capital in cold climates may, even if their values coalesce against driving, have difficulty biking to work on a large scale.

A second key limitation involves both an issue with the concept of social networks and the challenges of sustainability. As an illustration of this difficulty, consider Putnam's (1993: 171) description that he rakes his lawn because that is the social norm of his neighborhood. He says this norm is partly communicated to him by his observation that all this neighbors rake their lawns and partly through the neighbors repeatedly talking about raking their lawns. But what if Putnam does not know his neighbors well – what if he does not even know their names? He may nonetheless "feel" the social stigma associated with not raking his lawn even if this sanction is

communicated subtly through networks that are so weak as to almost disappear. I think this is a case where something may function just like social capital but not fit the definition of social capital because it does not really involve social networks, and is thus mostly ignored by social capitalists.

This difficulty is important for our exploration because sustainability is about international and intergenerational equity. This means that the concept of sustainability requires attention to collective interest at a massive scale. Although social capital may be good for focusing attention on the collective interest of communities, it is not clear if it useful for the less tangible communities required by sustainability at the global scale or over several generations. It is possible that the way social capital instills pro-social values may not apply so far outside of real and physical social networks. Further, although I think in some ways this sort of global community functions like social capital, it does not seem to be fully addressed by the concept.

One reason for these limitations and my difficulties overall may be that social capital theory is simply an overly cumbersome framework for exploring the effects of communities on individual environmentally-significant action. My research suggests that communities are important, but other theories may explain or predict this importance in more useful ways than social capital theory. The application of social capital theory to this case of environmental action, while illuminating, suggests some of the problems in the theory. After all my modifications to the theory so it would work for this case (and in addition to the modifications made by other researchers), there is a possibility that "social capital" is becoming stretched to the point of being "all good things to all" (an accusation others have levied at "sustainability"). This stretching holds a danger of it losing its core value. At its core, social capital is about how relationships and community matters, that we are not all free-floating but parts of society, parts of families, social networks, and larger communities. And that even in the atomized world of 21st century America, these relationships and sense of community matter. Therefore, further exploration into the idea that communities affect pro-environmental action should also be done using frameworks other than that of social capital, for they may elucidate new questions and relationships without some of the limitations and difficulties of social capital theory.

6.3. Directions for Further Research

The findings suggest several areas for further research about social capital and environmental behavior:

● One of the underlying starting points of Putnam's (2000) book was that social capital is declining in the U.S. and that this has implications. Since I have found that social capital may help facilitate environmental action, what might this decline mean for environmental sustainability?

● I have focused on social capital's effect on environmental behavior, but some studies (e.g. Wakefield et al. 2007) suggest that there may also be an effect of environmental action on social capital. Further research should explore the potential of this feedback loop (and the possibility that sustainability might also impact social capital), looking at how it may act over time and searching for points that are particularly open to change which could

jump-start the feedback loop into a reinforcing cycle of sustainability.

● Using the results of my interviews, a powerful survey could be crafted to shed light on how strong the relationship between social capital and environmental sustainability is at the individual level, and how prevalent the mechanisms I found are. It would be especially interesting to determine if there is a threshold level of social capital above which an individual becomes much more environmentally active than below it.

● In-depth interviews could shed light on important questions that remain from my research. For example, what is the impact of social capital "at the margins" – in individuals with low education and low income, or in individuals accustomed to acting anti-environmentally?

● As suggested in **Chapter 5**, further study into the effects of weak vs. strong and bonding vs. bridging social capital may shed light on whether these are important distinctions for environmental sustainability; however, it may be that these concepts are simply not useful for this kind of research.

● An extensive study of collective social capital including interviews and survey work in several different cities, towns, neighborhoods, or families could shed light on the proper scale at which social capital influences individuals' environmentally-significant behavior. For example, I hypothesize that there may be thresholds above which higher social capital for a community may not add to its sustainability. My research focused on how social capital works at the individual level, but it holds ideas for how it may work at the community level as well. For example, if a norm of engagement for an individual is important for his or her environmentally-significant action, we might hypothesize that this is also true at the community level. Further study of a larger scale may be able to determine how my individual-level mechanisms operate at larger scales and shed light on the interaction between individual and collective social capital.

* * *

Social capital has become a hot topic lately in part because there is something satisfying about the idea that being connected to one another is good for us. My research suggests that in addition to facilitating improvements to our health, wealth, safety, education, and democracy, social capital is likely to also be good for our environment. I have proposed that it benefits environmental sustainability in large part by instilling pro-environmental values and decision-making processes in individuals with high social capital. This finding alone suggests that renewed efforts to "build community" may have unforeseen – and mostly positive – impacts. It also suggests that Putnam's (2000) lament that our social capital levels are decreasing in the U.S. may have implications for the environment. However, further research is needed into the effects of communities on individual pro-environmental action both within the social capital framework and using other frameworks in light of social capital theory's clear inadequacies.

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APPENDIX A: Statistical Methods

In **Chapters 2** and **3**, a simple statistical measure of correlation was used, R^2 (the coefficient of determination), which "expresses how much of the variation of one variable is due to the other variable," (Bryman 2004: 233). In order to be sure that this method could be used, I plotted each pair of variables in excel to visually assess their linearity (Bryman 2004: 233); only variables related linearly to social capital were used. This coefficient is the square of another common measure of correlation, Pearson's r. Any way to label certain ranges of Pearson's r as indicating small, medium, or large correlation strengths is inherently arbitrary, but useful nonetheless for the purposes of comparisons. For these purposes, I used Cohen's (1988: 79-80) classification of correlation strength as follows:

$\mathbf{r} < 0.10$	no correlation
$0.10 < \mathbf{r} < 0.30$	small correlation
$0.30 < \mathbf{r} < 0.50$	medium correlation
$0.50 < \mathbf{r}$	large correlation

APPENDIX B: Interview Guide

Examples of the types of questions asked and the topics covered:

What are environmental problems/concerns/issues, to you?

Can you tell me about ways environmental concerns affect your daily life?
[the answers, particularly the cluster of them, will be termed X hereafter, but I would mention the specific behaviors or lifestyle cluster by name in the interview]

What was the first time you did or heard about X?
Had you heard or seen others do it?

What are your main reasons for doing X?

What do you see as the major barriers to doing X?

What do you think are the costs or benefits associated with X? Who receives them?

Do you think you're making a difference by doing X?

Do you think other people (friends, neighbors, co-workers, your town, the country) are also doing X?
Why do you think they are/are not? Should they?

Have you ever felt pressure to do X?
Have you ever found yourself putting pressure on anyone else to do X?

Is there any way that you think doing X could be exclusive or exclusionary?

About communities they have lived in:
- Have you felt a sense of community there? In what way yes/no?
- Do you think they held your values? What about environmental values?
- Did you see them also doing X?

Have you ever:
- -donated to an environmental group
- -signed a petition for the environment
- -voted with the environment in mind
- -written a letter about an environmental issue
- -protested about an environmental issue
- -attended a town meeting about an environmental concern?

Why or why not?

Is there anything you think you *should* be doing that you are not? What aren't you? Why should you?

How should these problems be solved? Who should do what?

APPENDIX C: Questionnaire for Assessing Social Capital Level

1) What is your age?
___ Under 25
___ 25-50
___ 51-75
___ Over 75

2) What is your annual household income?
___ Under $25,000
___ $25,001 - $50,000
___ $50,001 - $100,000
___ Over $100,000

3) What is the highest level of education you have reached?
___ Less than high school (Grade 11 or less)
___ High school diploma (including GED)
___ Some college
___ Assoc. degree (2-year)/specialized technical training
___ Bachelor's degree
___ Some graduate training
___ Graduate or professional degree

4) What is your main profession right now?
_____

5) Did you vote in the following elections?

2004 Presidential?	**2006 Congressional?**
___ Yes	___ Yes
___ No	___ No

6) Please *check* as many of the following as you are *currently* a member of:
____ A sports club/group (formal or informal)
____ A gym
____ A town council or other local governmental group
____ An environmental organization
____ A union or professional association
____ A social club or country club
____ A volunteer/service group
____ Another type of group, club, or association; please list: _____

7) *In the last year*, how often have you done the following? (Please *check one* per row)

	Never	**Once**	**A few times**	**Once a month**	**2-3 times a month**	**Once a week**	**More than once a week**
Attended a political rally or protest							
Attended a public meeting (ex. on town or school affairs)							
Attended a church or church-related function							
Attended a club meeting							
Attended a sports event							
Served as an officer of a club/organization							
Wrote a letter to Congress, the President, an industry, or a newspaper							
Volunteered or worked on a community project							
Donated to a group or cause							
Visited friends at their house or had them over to yours							
Went out with friends							
Chatted online with people you have never met							

8) How does your involvement in the past year in these activities (above) compare to other years for you?

___ I am usually more involved than I was this past year
___ I am usually less involved than I was this past year
___ This level of involvement was about normal for me

9) Please indicate your level of agreement with each statement by *checking* the appropriate response:

	Strongly Agree	**Agree**	**Unsure**	**Disagree**	**Strongly Disagree**
"I share a lot of the same values as my friends"					
"I share a lot of the same values as my neighborhood"					
"I share a lot of the same values as my town"					
"Most people can be trusted"					
"Most people are honest"					