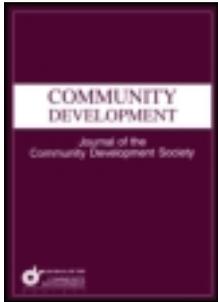


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### Community capitals and disaster recovery: Northwood ND recovers from an EF 4 tornado

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## Community capitals and disaster recovery: Northwood ND recovers from an EF 4 tornado

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The literature on community response to disaster emphasizes the significance of pre-existing bridging social capital in determining successful responses. While the social infrastructure in the form of both bridging and bonding social capital facilitates the kind of community action and social organization that allows for successful community recovery from natural disasters, communities are more likely to take collective action in the long-term recovery process if they have the capacity to act. This capacity to act resides not only in a community's social capital, but also in its cultural capital, which determines how a community engages in collective action. The Community Capitals Framework is used in this research to analyze a rural community's disaster recovery efforts. The analysis indicates that cultural, social, and human capitals were keys to mobilizing the political capital necessary to acquire the financial capital, which in turn was required to restore built and natural infrastructure. Unlike previous research that emphasizes the role of social capital as the primary capital to be mobilized, however, this research adds cultural capital as a precursor to mobilizing social capital. Cultural capital determines how a community engages in collective action.

**Keywords:** disaster response; cultural capital; rural communities; social capital

### Introduction

On the evening of 26 August 2007, the City of Northwood, ND was struck by an EF 4 tornado. The tornado covered a five mile area with a width of 0.8 miles and had peak winds of 120–150 miles per hour. One person was killed and 18 people were injured by the tornado. There was widespread damage to the main residential and business areas in town, with the most damage being sustained on the northeast side. Nearly all of the single- and multi-family homes were damaged, and all of the mobile homes were destroyed. Almost all municipal buildings were damaged, both the fire station and the public school were destroyed, and public utilities were damaged. The downtown business district suffered widespread major damage, and the only grocery store was severely damaged. In such a situation of almost total devastation, how could a small rural community ever accomplish the overwhelming task of recovery involving so many different aspects? Two years later during the weekend of 24–26

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July 2009, however, the City of Northwood celebrated its 125th anniversary, as well as its almost complete physical recovery from the tornado.

This article answers the question “What community characteristics allowed Northwood to recover so quickly from a natural disaster?” In particular, the Community Capitals Framework is employed (Flora & Flora, 2008; Flora, et al., 2004) as a means to study the process by which various community capitals aided in the recovery, how the various community capitals leveraged other community capitals, and which community capital was instrumental in beginning an upward spiral of recovery. Methodologically, a whole-community case study using ethnographic techniques (Falk & Kilpatrick, 2000) is employed to examine the community characteristics that may have facilitated Northwood’s recovery.

### **Community recovery from disaster**

Unlike the abundant research on disaster impacts, disaster response, and short-term disaster recovery, there is comparatively little research on long-term community disaster recovery. According to Flint and Luloff (2005, p. 402), “Disaster research tends to focus on the immediate post-disaster experience; it does not routinely study the long-term recovery path. Such a time frame limits the opportunity to understand what conditions make communities more resilient or more likely to recover in the long term. Longitudinal studies of disaster recovery beyond the immediate post-disaster stage are needed to reduce vulnerabilities and increase capacities.” Flint and Luloff’s (2005) approach, based on Wilkinson (1991), emphasizes the connection of the natural environment with local social interaction. By integrating both of these models, this approach lays the foundation for understanding the long-term recovery process. They define local capacity in terms of communities’ interactional characteristics, and they refer to it as the ability of communities to assemble collective resources in their communities’ interest (Flint 2004; Flint & Luloff, 2005). From this viewpoint, communities tend to act collectively in the long-term recovery process when they have the ability to act (Wilkinson, 1991). It is social interaction and social infrastructure, however, that facilitates community action and social organization, which enables community development (Flora, Sharp, Flora, & Newlon, 1997; Swanson, 1996; Wilkinson, 1991).

Although disaster research does not explicitly deal with social capital, it does imply that resilient communities have high levels of between-group social capital, which facilitates successful responses to disasters. Disaster researchers have conceptualized natural disasters as consensus crisis events (Couch & Kroll-Smith, 1994; Drabek, 1986; Erikson, 1994) in which they can create a sense of community among those affected; they develop a sense of community or a “spiritual kinship” or an enhanced sense of self-identity (Erikson, 1994). Through the process of response and recovery, between group social capital may be improved. Community resilience, however, depends on the amount of pre-existing between group social capital that crossed class and racial boundaries prior to the disaster (Berke & Campanella, 2006; Burns & Thomas, 2006; Comfort, 2006).

### **Spiraling down and spiraling up: community response to decline**

These social infrastructures associated with communities can be interpreted as “social capital,” which can be included as one of the seven community capitals in the

Community Capitals Framework (Flora & Flora, 2008). These community capitals also include financial, built, natural, political, cultural, and human capitals (Flora & Flora, 2008, Flora et al., 2004). This framework uses a system's perspective to analyze community change by identifying the assets in each capital (stock), the types of capital invested (flow), the interaction among the capitals, and the resulting impacts across capitals (Emery & Flora, 2006). The community capitals are defined in Table 1.

Emery and Flora (2006) used the Community Capitals Framework to document how one rural community strategically reversed the spiral of decline affecting many rural communities. They discussed how the decline in one community capital may begin the downward spiral. For instance, a decline in financial capital in the loss of an industry or a firm makes it more difficult to mobilize political capital, resulting in more losses in human and social capital in a cruel cycle of anguish and despair. In their study, Emery and Flora (2006) noted how a community increased its capacity through increased investments in important community capitals (i.e. human, social, and financial), resulting in increased assets among those capitals as well as in others. This investment reversed the downward spiral and created conditions that resulted in

Table 1. Definition of community capitals.

Community capital	Definition
Human	The skills and abilities of people as well as their ability to access resources and knowledge, to recognize practices that have potential for the communities, and to retrieve resources for community building. It also refers to the ability to lead a diverse set of actors, to concentrate on a community's assets, to include all members of the community, to encourage everyone to participate, and to be proactive in determining a community or group's future (Becker, 1964; Flora et al., 2004).
Natural	Placed-based assets including weather, geographic location, natural resources, amenities, natural beauty (Costanza, et al., 1997; Pretty, 1998).
Cultural	How people know the world and how they act in it, including their traditions and language. It affects whose voices are heard and noticed, whose voices are influential in a particular area, and how ingenuity, novelty, and persuasion appear and are cultivated. Dominant groups have hegemony in that their cultural capital is preferred over that of others. (Bebbington, 1999; Bourdieu, 1986; Flora et al., 2004).
Social	The relationships among people and organizations or the social attachments that promote collective action. Bonding social capital refers to close and numerous ties that construct community unity. Bridging social capital refers to the weak ties that link organizations and communities (Granovetter, 1973, 1985; Narayan, 1999).
Political	Access to power and organizations, connection to resources and power brokers (Flora et al., 2004). It also includes the ability of people to express their viewpoints and to participate in collective actions that improve community well-being (Aigner, Flora, & Hernandez, 2001).
Financial	The financial resources accessible to invest in community capacity building, to fund business development, to sustain civic and social entrepreneurship, and to create wealth for future community development (Lorenz, 1999). Built capital includes the infrastructure supporting all other community capitals (Flora et al., 2004).
Built	Built capital includes the infrastructure supporting all other community capitals (Flora et al., 2004).

a mutually reinforcing spiral of community development. Their conclusions confirmed research by Guiterrez-Montes (2005) who discovered that the flow of assets across capitals, i.e. investment in one community capital (human) in a project led to increases in the stock of assets in other community capitals (financial, political, cultural, and social), beginning an ongoing process of cumulative assets accumulation resulting in an upward spiral.

The current research uses a strategy similar to that used by Emery and Flora (2006) in documenting how a decline in natural and built capital as a result of a natural disaster could have resulted in a precipitous downward spiral of anguish and despair; instead the community's mobilization of its assets resulted in an upward spiral of asset accumulation. This paper examines the role of each community capital in the recovery process, and it uncovers the community capital that was instrumental in beginning an upward spiral of cumulative causation, resulting in a self-reinforcing cycle of increasing asset accumulation.

### **Methodology**

The methodology employed to answer the research question is a whole-community case study using ethnographic techniques (Falk & Kilpatrick, 2000). Ethnography can be defined as "the study of people in naturally occurring settings or 'fields' by methods which capture their social meanings and ordinary activities. Researchers participate directly in the setting, as well as the activities, in order to collect data in a systematic manner, but without externally imposing their meaning on them" (Brewer, 2000, p. 10). Ethnographic methods were used to gain a cultural interpretation of the community to describe what the researcher has seen, read, or heard from within the context of the subject's view of reality (Fetterman, 1989, p. 28).

Ethnographic research begins with a "foreshadowed problem," i.e. a problem or topic of interest which in this case is Northwood's recovery from a natural disaster. Foreshadowed problems, because of their ethnographic grounding, can be vague and abstract. Research questions based on foreshadowed problems, however, guide the ethnographer through the research process (LeCompte, Preissle, & Tesch, 1993). Rather than a single method, ethnography is a style of research that uses many different methods to collect data. Because the purpose of ethnographic methods is for a researcher to gain access to people's social meanings and activities, they necessarily involve a closeness and familiarity with the social setting. Actual participation in the setting is not necessarily required, but familiarity can be acquired through ethnographic techniques such as in-depth interviews, discourse analysis, personal documents and vignettes, participant observation, visual representations such as photography and film, and the Internet (Riemer, 2009).

In this research, a web-based, open-ended interview format was used with 22 community members identified by the city administrator as knowledgeable about the recovery. The in-depth interview questions were developed in consultation with researchers who had used the Community Capitals Framework in analyzing community response to economic decline.<sup>1</sup> The 19 in-depth interview questions involved defining each community capital and asking key informants to respond to questions about the role that community capital played in the recovery. After the web-based, open-ended interview format was developed, a link to the website was sent to the informed community members by email. Sixteen of the identified 22

community members completed the in-depth interview questions. Respondents who completed the in-depth interview questions were free to comment as little or as much as they wished. Some wrote rather extensive responses while others were quite short in length.

In addition to interviews, ethnographers also collect and examine site-specific documents for information related to their research questions. A document can refer to public and private texts, photographs, videos, and films as well. In this case study, we collected and analyzed newspaper articles, official government documents, and pictures of the recovery. News articles covering the recovery were collected from the Grand Forks Herald archives and were gathered into an electronic database. Official governmental publications that were collected included the First Anniversary Fact Sheet, the 125 Anniversary Booklet, the Environmental Assessment for Northwood Schools, the Environmental Assessment for Northwood Infrastructure Improvement Project, and the FEMA Historical Buildings Inventory. These eclectic and multiple methods of data collection are fairly typical of ethnographic methods in that the researcher decides what information is needed to answer the research question and develops a combination of methods to gather that information. These multiple methods of data collection permit a researcher to triangulate the accuracy of the data collected.

This paper begins with an analysis of the destruction of built and natural capital, which could have initiated a spiraling down process. It then discusses how Northwood residents drew upon their community capitals, beginning with cultural capital, to initiate a spiraling-up process of asset accumulation, culminating in restoration of built and natural capitals. It also examines the interrelationships of community capitals, especially as the mobilization of one community capital resulted in the mobilization of others. Finally, it discusses whether the results from this community case study can be generalized to other communities experiencing a natural disaster.

### **Spiraling down: destruction of built and natural capitals**

Northwood's built capital was devastated during the tornado.<sup>2</sup> The most damage was on the northeast side of the tornado track where Agvise and Gabriel Construction were completely destroyed. The downtown business district suffered widespread damage, including the Johnson Block and the old Northwood State Bank, which were completely destroyed, and other businesses suffered substantial damage including Guenther's Super Valu. The residential area also received substantial damage with 90% of the 362 single-family homes, 80% of 110 multi-family homes, and 20 mobile homes damaged (City of Northwood, 2008). The city's public infrastructure also received substantial damage. Eighty-nine percent of municipal buildings were damaged, including the fire station, school building, and municipal hangers; and city utilities (electricity, telephone, and cable) were shattered. Ebenezer Lutheran Church was completely destroyed while Northwood Lutheran Church received substantial storm and water damage.

Because of the tornado, Northwood lost more than 70% of its public, private, and shelterbelt trees, which had defined the city.<sup>3</sup> The majority of the destroyed trees were from an 800-foot long and 100-foot wide shelterbelt that lined the western edge of the city. According to the National Weather Service, the shelterbelt provided a sheltering effect for homes and other structures, and it prevented the tornado from

reaching the ground. Being the front line of defense against the tornado, it provided protection for the families who lived on the west side of Park Street, as well as for the nearby Northwood Deaconess Health Center.

### **Spiraling up: stocks and flows of community capitals**

#### ***Cultural capital***

Northwood's cultural capital provided a "mental blueprint" that defined not only how the community viewed itself, but also how it should respond to a natural disaster. Cultural capital embedded in the community facilitated the mobilization of other community capitals, such as human, built, social, and natural capitals.

That residents of Northwood utilized their cultural capital to mobilize human capital was illustrated by how they drew upon their faith, work ethic, and pride in ethnic heritage. One of the interview questions asked the respondents what values they thought had helped them in the recovery. A majority identified the residents' strong work ethic, a willingness to get to work and get the job done, hard work and discipline, and the fact that no one was afraid to get their hands dirty.<sup>4</sup> Northwood has the highest percentage of Norwegian American ancestry of any community in the United States (ePodunk, 2005), and residents attributed the speed of their recovery to this ethnic heritage. In days after the tornado, the Northwood mayor said that although the residents were stunned, they drew upon their Norwegian resolve and determination, and their work ethic in wanting to get to work.<sup>5,6</sup>

Cultural capital in terms of Norwegian ancestry may have had much to do with the level of social capital in Northwood. Putnam (2000, p. 294) said that one strong indicator of social capital in any state in the 1990s was the fraction of the population that is of Scandinavian stock. Although the connection between those of Norwegian stock and their ancestral homeland is now three or more generations removed, the relationship between social capital and Scandinavian heritage is almost a perfect correlation (Putnam, n.d., p. 11). After a strong work ethic, respondents to the interview questions most often mentioned that the value of social solidarity is important to the recovery. This solidarity was expressed as standing together through the disaster and recovery, drawing on the strength of their relationships, experiencing the love and compassion showered on them by people within and outside of Northwood, and caring for others, especially the vulnerable.

The change in Northwood's cultural capital may also be studied by examining the physical facilities such as parks, public buildings, and statues. Prior to the tornado, two carved wooden statues representing a Viking and a pioneer farmer stood in the Northwood Centennial Park (Bjorn, 2010), indicating what the members of the community thought was important and what defined them as a community. After the tornado, the new physical representations that commemorated the disaster included a statue of a black funnel cloud above a mobile home carved out of a storm-damaged elm tree, and a cross carved out of a tree stump near the former Ebenezer Lutheran Church and Northwood School.<sup>7</sup> Other post-disaster physical representations of Northwood's cultural capital were unveiled at various recovery celebrations. Most noteworthy were the restored and newly created parks to celebrate the recovery as well as to recognize Northwood's heritage. Chief among these is a Tornado Pocket Park,<sup>8</sup> and the new Northwood Veterans Memorial in Centennial Park.<sup>9</sup>

The tornado wreaked havoc on several historic buildings. The Northwood Museum, located in the old fire station, along with its contents, was severely

damaged in the storm.<sup>10</sup> When FEMA decided to save the historic building, a group of individuals organized to form a new museum board, emptied the building of its contents, and involved Experience Works to help in cleaning, cataloguing, storing, and restocking the items after the renovation was complete. The Great Northern Train Depot also suffered structural damage, but rather than tear down the historic depot, the city worked with an architect who specialized in historical renovation to restore it to its original architectural details, including signage.<sup>11</sup> Of all the historic structures damaged in the storm, the destruction of the century-old Ebenezer Lutheran Church was probably the most devastating to the members of the congregation and to the community.<sup>12</sup> The new Ebenezer Lutheran Church was added on to the former Northwood school library that survived the tornado. The new church sanctuary combined modern conveniences with historic elements from the old church.<sup>13</sup>

The tornado destroyed hundreds of century-old trees, almost 70% of the city's mature trees that had defined the community as a Tree City for the past 25 years.<sup>14,15</sup> Every respondent to the interview question about the restoration of natural capital remarked that the importance of trees to the city was displayed by the speed with which new trees were planted. During the summer of 2008, the city replaced berm and arboretum trees in the city park and developed a new shelterbelt along the south side of the drainage ditch. In addition to planting trees on the berm, the city replaced mature city park trees that had been destroyed in the storm.

Northwood's cultural capital provided a "mental blueprint" that defined not only how the community viewed itself, but also how it should respond to a natural disaster. Cultural capital embedded in the community facilitated the mobilization of other community capitals, such as human, built, social, and natural. The residents' cultural capital in the form of their work ethic and Norwegian heritage mobilized human capital in the cleanup and recovery, and their cultural capital also mobilized social capital in the form of social support, solidarity, and volunteerism. Their commitment to the rebuilding of historic buildings, i.e. a church, the downtown, and museums, facilitated the mobilization of built capital. Their cultural capital also facilitated accumulation of financial capital that permitted the restoration of built capital that represented the cultural values of the community. Finally, their cultural capital facilitated the restoration of natural capital in the form of the replanting of trees which had defined the community.

### ***Social capital***

News articles about the recovery and the interview results demonstrated the importance of social capital to Northwood's recovery. Social capital was instrumental in mobilizing human, financial, and political capitals. A possible explanation for the strong role of social capital in Northwood's recovery can be found in the research that indicates that social capital is stronger in the Upper Midwest and Northern Great Plains, and it is especially strong in this area of North Dakota (Rupasinga, Goetz, & Freshwater, 2006).<sup>16</sup> Coleman (1988) defined social capital as anything that facilitates individual or collective action, generated by networks of relationships, reciprocity, trust, and social norms. Building on Coleman's definition, Putnam (2000) defined social capital as a collective property of social networks, and it was represented by the reciprocity that arises within these networks from norms that encourage individuals to exchange assistance with one

another. Putnam (2000) used the concept of thick trust to represent the trust that is embedded in relationships of individuals in networks. He believed social capital was built from frequent interaction of individuals within dense networks of exchange, which results in the development of generalized reciprocity.

Northwood residents had multiple opportunities to have frequent and continual engagement through a variety of civic, religious, and public organizations which most likely generated a sense of thick trust, not only in each other but also in the very institutions which were essential to the recovery. Thick trust was evident in the interview responses, which indicated that, for the most part, respondents felt that they had been given ample opportunity to provide input into the recovery process.<sup>17</sup> They also noted, however, that not many chose to attend public meetings or to have input into the process. That few chose to not get involved in providing input or attending public meetings may be a reflection of thick trust, and it may also be a reflection that outside of formal channels, there were many informal opportunities for residents to visit with elected officials about the recovery process.

Once financial contributions started pouring into the community, city leaders needed a means to distribute them. Using the social capital available in the community, the city council asked the pastors of the four churches serving Northwood to form an Unmet Needs Committee to distribute these financial donations. When the Unmet Needs Committee first started, it was an example of bridging social capital; it involved the pastors from different denominations serving the community coming together. The committee distributed more than \$419,000 that had been donated by individuals, communities, and organizations from around the region.<sup>18</sup>

Thin trust, another aspect of social capital, was very essential to the recovery effort in that it mobilized human capital. According to Putnam (2000, p. 136), thin trust is a trust in the “generalized other,” which implicitly depends on expectations of reciprocity that arise in shared social settings. He contends that this kind of trust is more useful than thick trust because it extends the amount of trust beyond the realm of one’s own acquaintances. Thin trust, or generalized reciprocity, can be thought of as extending a decision to give the benefit of doubt to those people one does not know personally. As Putnam indicates, people who trust their fellow citizens are more likely to engage in civic behavior. The concept of generalized reciprocity entails a belief that people voluntarily assist those affected by a calamity with no expectation of immediate return. It is this kind of generalized reciprocity that explains the tremendous volunteer turnout to assist Northwood in the days and weeks immediately after the tornado struck. More than 2300 volunteers of all ages registered through the volunteer center, logging more than 18,000 hours from Wednesday, 30 August through Monday, 14 September.<sup>19</sup> The city administration estimates that about another 2000 volunteers came to town without registering at the volunteer center.

News articles about the recovery and the online in-depth interview results demonstrated the importance of social capital to Northwood’s recovery. That social capital was so instrumental in the recovery was not surprising given the high levels of social capital in the region. Social capital was important in mobilizing political capital in terms of support for the efforts of the city council and school board, as well as the city and school administrators. Social capital facilitated human capital in the form of volunteers from the region, as well as from within the community, who assisted in the cleanup and recovery. Social capital also was instrumental in raising

financial capital, especially with the fundraisers and other fundraising activities held throughout the region on behalf of Northwood.

### *Political capital*

The political capital that Northwood's officials leveraged played a key role in the city's recovery. They used their political relationships with state and federal elected officials to raise substantial amounts of financial capital to assist in the recovery of both built and natural capital. The fact that political capital was instrumental in Northwood's recovery cannot be overstated. The connection between Northwood's elected and appointed officials and the congressional delegation resulted in securing nearly \$20 million of federal funds for the recovery.<sup>20</sup> The State of North Dakota's contribution, in comparison, was approximately \$4.4 million; and then its contribution was a pass-through of federal dollars to the state, a loan from the Industrial Commission, a state match for Federal Emergency Management Agency (FEMA) Disaster Spending, and/or bonds approved by the state.

The opportunity for Northwood residents to have frequent and continual engagement through a variety of civic, religious, and public organizations no doubt generated a sense of mutual trust in the very institutions and the officials essential to the recovery, especially the city council and school board. Thick trust was most evident in responses to the interview question about the extent to which the residents had a voice in the decisions made by the city council or the school board. The majority of the respondents reported that official bodies provided more than adequate opportunities for residents to participate in major decisions.<sup>21</sup> They noted that the city council and the school board often held public meetings, and that a site selection committee was organized to provide input to the school board. The fact that so few citizens raised concerns may indicate a level of thick trust in their elected officials.

The residents' level of confidence and trust in elected leaders was extended to their efforts in mobilizing political support for recovery projects. Responses to the interview question indicated that many residents deferred to the city council and the school board, and that there was not much of an effort to mobilize support for or against any specific project. The trust that citizens placed in their city council and school board was reflected in the trust that citizens placed in their administrators. Northwood's elected officials and administrators worked closely not only with the congressional delegation, but also with federal and state agency representatives as well as with state and local elected officials.<sup>22</sup> The delegation and the governor attended many celebratory occasions, and they made periodic visits to check on progress.<sup>23</sup> At the request of Northwood officials, the congressional delegation and the governor designated staff persons to be their personal representatives to the community.<sup>24</sup>

That Northwood's elected officials effectively utilized their political connections to access financial capital was evident in responses to the interview questions.<sup>25</sup> Respondents indicated how important it was for them to use whatever connections they had with state and federal officials, Northwood High School alumni, non-profit organizations, business vendors, professional communities, and social service agencies to generate support for the recovery. Many times these connections were used to cut through bureaucratic regulations as well as to access financial capital.<sup>26</sup>

How political capital mobilized natural capital was shown by responses to the interview question asking respondents if there had been any contested use of natural resources. If there had been any contested use, it asked what those contested uses were, and whether these issues had been discussed publicly.<sup>27</sup> The only use of natural resources that generated any discussion was the location of the new public school. Another interview question asked whether anyone in the community had raised concerns about any environmental issues that had arisen because of the recovery and rebuilding, and what they were as well as whether they had been discussed publicly.<sup>28</sup> A majority of respondents said that they were not aware of any environmental issues that arose during the reconstruction.

The political capital that Northwood's residents and officials leveraged played a key role in the city's recovery. Local, state, and national elected officials utilized their political influence to raise substantial amounts of financial capital from federal and state government sources to assist in the recovery of built capital and natural capital. The governor and congressional delegation were present almost immediately after the tornado struck, and Northwood's elected and appointed officials worked closely with them in securing federal and state funds for the recovery.

### *Human capital*

Human capital was instrumental in Northwood's recovery in that it mobilized built, financial, and natural capital. Human capital mobilized built capital through the voluntary labor involved in the immediate disaster cleanup, as well as in the repair and rehabilitation of damaged housing. Human capital mobilized financial capital through the leadership skills necessary to access federal and state resources, as well as in distributing donated funds. Finally, human capital mobilized natural capital through the volunteer efforts in replanting trees to replace those lost in the storm.

Data from the interviews provided a picture of how community leaders felt about the human capital that Northwood residents possessed and which skills helped in the recovery.<sup>29</sup> Respondents answered that the skills needed could be categorized as skills in construction – including carpentry skills – as well as skills in coordination, organization, communication, and leadership. Regarding construction skills, respondents said that residents needed a wide variety of skills, but because they lived in a rural setting with farming as a primary occupation, residents commonly possessed many of those skills. Many, if not most, of the 1000 residents contributed their human capital to the rehabilitation or restoration of homes damaged by the tornado. The human capital of the owners of the local lumberyard was central to the recovery of individual homeowners. In addition to being a primary source of building materials, the owners provided technical assistance and support to homeowners in their rebuilding efforts. Volunteer labor was instrumental in the immediate recovery, with more than 2300 registered and at least another 2000 unregistered volunteers assisting in the cleanup of debris and repair of storm-damaged homes.<sup>30</sup>

In regard to leadership skills, many respondents noted that Northwood had leaders with good communication, coordination, and management skills. Especially important were the leadership skills of the city manager and the school superintendent, who many noted, because of their connections to the congressional delegation and the governor's office, were instrumental in securing federal and state

financial support.<sup>31-34</sup> The leadership of the pastors of the four churches in Northwood was instrumental in facilitating the distribution of funds to individuals and businesses as well as in coordinating their denominations' disaster relief efforts. The Unmet Needs Committee distributed \$419,000 that came from individuals and organizations around the region.<sup>35</sup>

According to the City of Northwood Work Plan, many tree replacement activities had been completed in 2008.<sup>36</sup> These activities involved a great deal of labor in the planting of new trees in parks, boulevards, the mobile home park, and the shelter belt; pruning of storm damaged trees and debris removal; development of a city tree management plan; and sponsoring a tree care workshop for residents and businesses.

Since the tornado, the human capital stock of Northwood's residents and officials has been a major asset for the city's recovery. Several community leaders in particular, i.e. the city administrator and the school superintendent, represented the kinds of leadership skills necessary to mobilize financial capital essential for the repair or construction of the city's or school's built capital. Officials placed a great deal of confidence and trust in local ministers, as members of the Unmet Needs Committee, to equitably distribute the financial contributions to the Northwood Recovery Fund. Home repair skills and building materials knowledge by the owners of the local lumber yard were especially important to the repair of storm damaged homes. Finally, human capital in the form of volunteers was important to the cleanup of the city, repair of homes, and replacement of trees.

### *Financial capital*

Financial capital was central to the recovery of Northwood's built capital. With \$60 million in storm-related damages, the community had to mobilize significant amounts of financial capital to facilitate the recovery. Insurance, both private and public, played a major part in the recovery of residential, business and public infrastructure. At \$30.2 million, property insurance was the major source of financial capital. Property insurance was followed by loans and grants from the federal government totaling \$22.5 million. State government was the third major source with grants and loans totaling \$4.1 million. A national non-profit housing company was the fourth major source, and the fifth major source was in the form of fundraisers and donations, which raised \$419,311 for unmet needs. Private donations of \$400,000 to build a new church were next, and the last source was \$125,593 in both public grants and private donations for tree replacement.

Of the capital provided by insurance companies, \$21 million was in personal property insurance claims, \$34,000 was in renter's insurance claims, and \$9.2 million was in insured public property claims (\$8 million to the Northwood School District).<sup>37</sup>

As of August 2010, the total amount of federal dollars invested in Northwood was approximately \$22.5 million.<sup>38,39</sup> The sources of the federal financial capital included the Federal Emergency Management Office (FEMA), the Small Business Administration (SBA), the Economic Development Administration (EDA), the Department of Housing and Urban Development (HUD), Community Development Block Grants (CDBG), the United States Department of Agriculture's Rural Development program (USDA), American Recovery and Reinvestment Act (ARRA), and the Energy Efficiency Community Block Grant (EECBG).

The State of North Dakota provided \$4.1 million in loans and grants, with a majority being the 10 and 25% local and state match for FEMA Disaster Declaration funding. The remainder was in a \$1.5 million bridge loan from the State Industrial Commission to the school district to cover a shortfall in the insurance settlement until the district settled with FEMA.

Fundraising dinners, rummage/bake sales, a charity football game, a general monetary collection, and countless other fundraisers were held in communities in the region.<sup>40</sup> The total amount of funds raised from these events was \$419,311, which was administered by the Unmet Needs Committee.

Quasi-government agencies from around the region also contributed financing to the recovery. A Fargo-based development agency, the Lake Agassiz Regional Development Corp., provided \$85,000, and the Grand Forks Job Development Authority gave \$15,000 for micro-loans to businesses so they could repair damage to buildings, purchase equipment, or use until they increased their cash flow.<sup>41</sup>

National non-profit organizations contributed to the Northwood recovery effort as well. Through the DREAM Fund loan program offered by Community Works, North Dakota, 24 eligible families rehabilitated their homes resulting in nearly \$650,000 in new community investment.<sup>42</sup> The DREAM program obtained additional financial assistance through the assistance of federal elected officials, who secured financial commitments from Enterprise Community Partners and Neighbor Works, two national nonprofit organizations.

Since the disaster, the city has received more than \$120,000 in grants and donations to assist with tree replacement. Those funds included contributions from the ND Department of Forestry, Myra Foundation, the North Dakota Soybean Council,<sup>43</sup> the Northwood Re-leaf Project sponsored by WDAZ-TV and the Grand Forks Herald,<sup>44</sup> and a donation from Archer Daniels Midland.<sup>45</sup> The result of these efforts has been that as of August 2008, the community had replanted well over 1000 trees.<sup>46</sup>

Northwood officials raised large amounts of financial capital to aid in the town's recovery effort. Sources that were mobilized included insurance companies, government funds (local, state, and federal), private donations (both private companies and individuals), nonprofit organizations and other agencies. Amounts contributed varied, as well as the specific intent for which the financial capital was to be used, but it was all intended for the recovery from the tornado that caused more than \$60 million in damage.<sup>47</sup> Financial capital enabled the mobilization of built capital in terms of repaired and new homes, businesses, public buildings, and churches, as well as the replanting of the city's and residents' trees.

### ***Built capital***

Since the tornado, the City of Northwood has made a remarkable recovery of its built capital.<sup>48</sup> The city administration has issued 170 building permits, which include \$20 million worth of permits issued for private projects and \$20 million for public projects. Ten new homes, 16 housing units in a newer development, a 16-unit apartment complex, and 35 garages have been built. A grocery store has been rebuilt, and Agvise has a new laboratory. Destroyed downtown buildings have been demolished, and 10 new commercial buildings have been built. A new fire station has been constructed, a municipal airplane hangar has been built, and the museum and

depot have been restored.<sup>49</sup> A new school has been built,<sup>50</sup> a church has been constructed,<sup>51</sup> and the hospital and nursing home added six assisted-living units.

### *Natural capital*

The natural capital that was of the most importance to the City of Northwood involved its parks and trees.<sup>52</sup> Because of the importance of trees in Northwood's identity, the city and the residents spent considerable effort in replacing trees lost to the storm. Eighty trees were planted to shelter the south entrance to the city; 205 trees were planted in residential areas; 17 trees were replaced in city parks; 52 trees were planted in a new mobile home park; 62 trees were planted at the cemetery; all of the Memorial Park trees lost to the storm were replaced; the city coordinated the planting of 400 yard trees and 500 shelter belt trees; and residents planted nearly 100 larger trees in their own yards.

### **Spiraling up from disaster: summary and conclusions**

Recent disaster researchers have recognized the importance of both hazards and vulnerability models (Hewitt 1995; Flint & Luloff, 2005) and acknowledged that both environmental and social processes influence the outcomes of a disaster recovery process. Following Wilkinson (1991), they recognized that communities do act collectively in the recovery process when they have the ability to act. Communities engaged in disaster recovery efforts usually begin recovery efforts by acquiring financial resources to restore the physical infrastructure. As this research indicates, however, the cultural, social, and human infrastructures are keys to mobilizing political capital necessary to acquire the financial capital, which in turn is required to restore built and natural infrastructure.

Thus, just as with other research, the current research confirms the importance of the role that social interaction and social infrastructure play in facilitating community action and social organization (Flora et al., 1997; Swanson, 1996; Wilkinson, 1991). Unlike previous research, however, this research adds the components of human and cultural infrastructure as necessary elements in the recovery process.

The Community Capitals Framework was used to analyze the process by which these capitals, as well as their inter-relationships, have aided in the recovery. The purpose for using the framework was to determine whether any one capital facilitated other capitals, and whether that facilitation generated an upward spiral out of disaster into recovery. "Spiraling-up" refers to the process by which assets invested in one capital increase the probability that assets will be increased in other community capitals (Gutierrez-Montes, 2005). As Emery and Flora (2006) discovered, as the stock of one community capital increased, the stock in other community capitals increased as well, creating a cumulative causation process resulting in a self-reinforcing cycle of more opportunities and increased community well-being.

Figure 1 demonstrates the relationships among the community capitals and how Northwood spiraled up from disaster. Cultural, social, human, and political capitals mobilized the financial, built, and natural capitals. Northwood was fortunate to have substantial stocks of cultural, social, and human capitals, all of which mobilized political capital, which was critical for mobilizing financial capital to repair or replace built and natural capital.

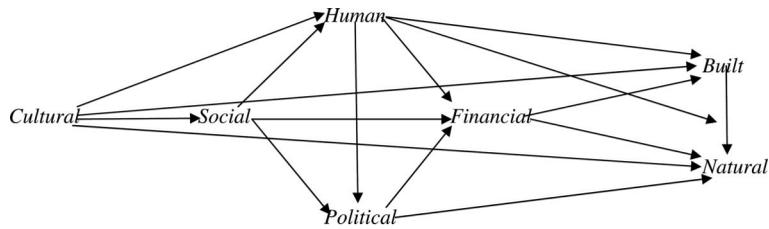


Figure 1. Spiraling up from disaster.

This research confirms the importance of the role of local interactional capacity in disaster recovery (Flint & Luloff, 2005). Interactional capacity is defined as the ability to work together on issues and problems. Communities with higher degrees of interactional capacity are better able to shape and mold their collective identities and perceptions of problems, to work together to address problems, and to act in response to perceived risks. As Flora and Flora (2008) noted, communities with high bridging and high bonding social capital have increased capacity to act and to engage the community field.

The contribution of this research is that it broadens the focus beyond interactional capacity and social capital. While not denying the importance of these key concepts in promoting collective action, cultural capital determines how a community engages in collective action. It determines how a community defines challenges such as a disaster; the appropriate ways for a community to respond to a disaster; who makes decisions about how the community should respond to a disaster; what the community's priorities are for a response to a disaster; and who should act on the community's behalf. In short, cultural capital defines the social construction of a collective response: It determines how social, human, and political capitals are operationalized and mobilized.

Given the relative homogeneity of the community, it could be asked whether the results of this research can be extended to communities not as homogeneous as Northwood. The community is relatively homogeneous in regard to race, ethnicity, income, and religion. Furthermore, the dominance of small businesses and family-operated farms continues the sense of social equality that arose during settlement (Flora & Flora, 2008). Given this homogeneity, it was perhaps not surprising that Northwood was so successful in recovering from the tornado. As a case study, its relevance arises only as one component of a typology whereby communities recovering from disaster are compared. Thus, the unique factors that facilitated Northwood's recovery may place it at one end of a typology of community characteristics that facilitate recovery from a disaster.

In contrast to Northwood's homogeneity, communities that are more heterogeneous may have a more difficult time in recovering from a natural disaster because of their lower levels of social capital. Putnam (2007, p. 149) contends that residents of communities that are racially, culturally, and financially homogeneous exhibit higher levels of trust in their neighbors than do residents of heterogeneous communities. Likewise, he contends that homogenous communities also display higher levels of social capital as demonstrated in higher rates of civic participation, group membership, and feelings of trust. On the other hand, heterogeneous communities encourage their residents to hunker down and segregate themselves from their neighbors. To make matters worse, Putnam (2007, p. 147) states that there

is a strong positive relationship between interracial trust and ethnic homogeneity, but interracial or intergroup trust decreases with an increase in heterogeneity. Thus, communities can be arrayed from less to more diverse, with their corresponding levels of higher to lower social capital. The contention of our research, however, is that social capital depends upon communities' cultural capital because it provides a blue print for how they engage in collective action, i.e. how they employ their social capital. Thus, it is essential to examine cultural capital to determine the nature of norms and values that promote engagement in collective action.

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### Notes

1. Emery, M. and C. Flora, personal communication, January 2009.
2. City of Northwood. (2008, August). *Tornado recovery fact sheet: One year later*. Retrieved from <http://www.discovernorthwood.com/Anniversary1-YearFactSheet.pdf>
3. Bonham, K. (2008, August 25). Northwood rising: Reforest gumption. *Grand Forks Herald*. Retrieved from <http://www.grandforksherald.com>
4. Northwood Online Indepth Interviews. (2009). *Question 14*. Retrieved from <http://www.surveymonkey.com>
5. Lee, S., Dodds, D., & Bakken, R. (2007, August 27). Northwood tornado nearly mile wide with 150-plus mph winds. *Grand Forks Herald*. Retrieved from <http://www.grandforksherald.com>
6. Lee, S. (2007, August 28). Horror at home. *Grand Forks Herald*. Retrieved from <http://www.grandforksherald.com>
7. City of Northwood. (2008, August). *Tornado recovery fact sheet: One year later*. Retrieved from <http://www.discovernorthwood.com/Anniversary1-YearFactSheet.pdf>
8. City of Northwood. (2008, August). *Northwood tornado, one year later*. Retrieved from <http://www.discovernorthwood.com/AnniversaryBooklet0808.pdf>
9. Bonham, K. (2009, July 23). Northwood, N.D., celebrates 125th. *Grand Forks Herald*. Retrieved from <http://www.grandforksherald.com>
10. Lee, S. (2007, August 28). Horror at home. *Grand Forks Herald*. Retrieved from <http://www.grandforksherald.com>
11. Bonham, K. (2008, August 27). She makes things happen. *Grand Forks Herald*. Retrieved from <http://www.grandforksherald.com>
12. Lee, S. (2009, April 28). Northwood's Ebenezer Lutheran to break ground on new church. *Grand Forks Herald*. Retrieved from <http://www.grandforksherald.com>; Bonham, K. (2010, April 23). A new day for Northwood church. *Grand Forks Herald*. Retrieved from <http://www.grandforksherald.com>
13. Lee, S. (2009, April 28). Northwood's Ebenezer Lutheran to break ground on new church. *Grand Forks Herald*. Retrieved from <http://www.grandforksherald.com>
14. Bonham, K. (2008, August 25). Northwood rising: Reforest gumption. *Grand Forks Herald*. Retrieved from <http://www.grandforksherald.com>
15. Bonham, K. (2008, August 25). Northwood rising: Reforest gumption. *Grand Forks Herald*. Retrieved from <http://www.grandforksherald.com>
16. While North Dakota had an overall index of .96 in 1997, which was at the high end of the medium ranking, Grand Forks County only had an index value of .39 which was at the low end of the medium ranking. In contrast, Trail County had an index value of 1.079 and Steele County had an index value of 1.759. Both of these were in the high ranking and are more indicative of the social capital of the area as Northwood is in the southwest corner of Grand Forks County and is adjacent to both Steele and Trail Counties.
17. Northwood Online Indepth Interviews. (2009). Question 5. Retrieved from <http://www.surveymonkey.com>

18. Lee, S. (2008, August 24). Disaster, death and other stresses lead pastors to recovery. *Grand Forks Herald*. Retrieved from <http://www.grandforksherald.com>
19. Northwood Online Indepth Interviews. (2009). Question 9. Retrieved from <http://www.surveymonkey.com>
20. J. Hand, personal correspondence with state representative for Senator Conrad, July 12, 2010.
21. Northwood Online Indepth Interviews. (2009). Question 5. Retrieved from <http://www.surveymonkey.com>
22. Bonham, K. (2007, September 26). Since that Sunday. *Grand Forks Herald*. Retrieved from <http://www.grandforksherald.com>
23. Bonham, K. (2009, July 23). Northwood, N.D., celebrates 125th. *Grand Forks Herald*. Retrieved from <http://www.grandforksherald.com>; Bonham, K. (2008, August 27). Standing strong. *Grand Forks Herald*. Retrieved from <http://www.grandforksherald.com>; Nadeau, S. (2008, July 2) Right at home. *Grand Forks Herald*. Retrieved from <http://www.grandforksherald.com>; Lee, Y. (2007, September 23). Good neighbours help town down road to recovery. *Grand Forks Herald*. Retrieved from <http://www.grandforksherald.com>; Bonham, K. (2008, May 18). Dorgan: I see a lot of progress. *Grand Forks Herald*. Retrieved from <http://www.grandforksherald.com>.
24. Northwood Online Indepth Interviews. (2009). Question 4. Retrieved from <http://www.surveymonkey.com>
25. Northwood Online Indepth Interviews. (2009). Question 4. Retrieved from <http://www.surveymonkey.com>
26. Northwood Online Indepth Interviews. (2009). Question 4. Retrieved from <http://www.surveymonkey.com>
27. Northwood Online Indepth Interviews. (2009). Question 18. Retrieved from <http://www.surveymonkey.com>
28. Northwood Online Indepth Interviews. (2009). Question 19. Retrieved from <http://www.surveymonkey.com>
29. Northwood Online Indepth Interviews. (2009). Question 11. Retrieved from <http://www.surveymonkey.com>
30. Northwood Online Indepth Interviews. (2009). Question 9. Retrieved from <http://www.surveymonkey.com>
31. Bonham, K. (2008, January 15). Recognizing commitment. *Grand Forks Herald*. Retrieved from <http://www.grandforksherald.com>
32. Northwood Online Indepth Interviews. (2009). Question 11. Retrieved from <http://www.surveymonkey.com>.
33. Bonham, K. (2008, January 15). Recognizing commitment. *Grand Forks Herald*. Retrieved from <http://www.grandforksherald.com>.
34. Bakken, Ryan. (2008, August 26). Schooled in disaster. *Grand Forks Herald*. Retrieved from <http://www.grandforksherald.com>
35. Lee, S. (2008, August 24). Disaster, death and other stresses lead pastors to recovery forefront. *Grand Forks Herald*. Retrieved from <http://www.grandforksherald.com>
36. Northwood City Website, Forestry. Retrieved May, 2009, from <http://www.discovernorthwood.com/forestry.htm>
37. City of Northwood. (2008, August). *Tornado recovery fact sheet: One year later*. Retrieved from <http://www.discovernorthwood.com/Anniversary1-YearFactSheet.pdf>
38. J. Hand, personal correspondence with Sen. Conrad's state representative, July, 2010.
39. M. Douglas, personal communication with the city administrator, August 2010.
40. Herald Staff Report. (2007, September 14). Northwood to conduct follow-up survey of damage and needs. *Grand Forks Herald*. Retrieved from <http://www.grandforksherald.com>; Herald Staff Report. (2007, September 8). Northwood tornado update: Fundraisers. *Grand Forks Herald*. Retrieved from <http://www.grandforksherald.com>
41. Bonham, K. (2007, October 23). GF agency to give \$15,000 for fund. *Grand Forks Herald*. Retrieved from <http://www.grandforksherald.com>
42. Nadeau, S. (2008, July 2). Right at home. *Grand Forks Herald*. Retrieved from <http://www.grandforksherald.com>
43. Bonham, K. (2008, January 15). Recognizing commitment. *Grand Forks Herald*. Retrieved from <http://www.grandforksherald.com>; Bonham, K. (2007, October 23). GF

- agency will give \$15,000 for fund, *Grand Forks Herald*. Retrieved from <http://www.grandforksherald.com>; Bonham, K. (2008, January 15). Recognizing commitment. *Grand Forks Herald*. Retrieved from <http://www.grandforksherald.com>
44. Bonham, K. (2008, January 15). Recognizing commitment. *Grand Forks Herald*. Retrieved from <http://www.grandforksherald.com>; M. Douglas, personal communication with the city administrator, August, 2010.
  45. Herald Staff Report. (2008, August 24). Northwood by the numbers. *Grand Forks Herald*. Retrieved from <http://www.grandforksherald.com>
  46. Schuster, R. (2008, January 27). Another milestone. *Grand Forks Herald*. Retrieved from <http://www.grandforksherald.com>
  47. Bonham, K. (2008, August 27). She makes things happen. *Grand Forks Herald*. Retrieved from <http://www.grandforksherald.com>
  48. City of Northwood. (2008, August). *Northwood tornado, one year later*. Retrieved from <http://www.discovernorthwood.com/AnniversaryBooklet0808.pdf>.
  49. City of Northwood. (2008, August). *Northwood tornado, one year later*. Retrieved from <http://www.discovernorthwood.com/AnniversaryBooklet0808.pdf>
  50. Lee, S. (2009, April 29). Northwood's Ebenezer Lutheran to break ground on new church. *Grand Forks Herald*. Retrieved from <http://www.grandforksherald.com>
  51. Bonham, K. (2010, April 23). A new day for Northwood church. *Grand Forks Herald*. Retrieved from <http://www.grandforksherald.com>
  52. City of Northwood. (n.d.). *Northwood City Website, Parks*, Retrieved May, 2009, from <http://www.discovernorthwood.com/parks.htm>.

## References

- Aigner, S., Flora, C., & Hernandez, J. (2001). The premise and promise of citizenship and civil society for renewing democracies and empowering sustainable communities. *Sociological Inquiry*, 71, 493–507.
- Bebbington, A. (1999). Capitals and capabilities: A framework for analyzing peasant viability, rural livelihoods and poverty. *World Development*, 27, 2021–2044.
- Becker, G. (1964). *Human capital: A theoretical and empirical analysis with special reference to education*. New York, NY: Columbia University Press.
- Berke, P., & Campanella T. (2006). Planning for post-disaster resiliency. *Annals of the American Political Science Society*, 604, 192–207.
- Brewer, J. (2000). *Ethnography*. Buckingham, UK: Open University Press.
- Bjorn, D. (2010). *They're just a little wooden*. Retrieved from <http://www.flickr.com/photos/dbjorn/1426228924/#comment72157602131727733>.
- Bourdieu, P. (1986). The forms of capital. In J. Richardson (Ed.), *The handbook of theory: Research for the sociology of education*. New York, NY: Greenwood Press.
- Burns, P., & Thomas M. (2006). The failure of the non-regime: How Katrina exposed New Orleans as a regime-less city. *Urban Affairs Review*, 41, 517–527.
- City of Northwood. (2008). *Tornado recovery fact sheet: One year later*. Retrieved from <http://www.discovernorthwood.com/Anniversary1-YearFactSheet.pdf>.
- Coleman, J. (1988). Social capital in the creation of human capital. *American Journal of Sociology*, 94, 95–120.
- Comfort, L. (2006). Cities at risk: Hurricane Katrina and the drowning of New Orleans. *Urban Affairs Review*, 41, 501–516.
- Costanza, R., d'Arge, R., de Groot, R., Farber, S., Grasso, M., Hanson, B., . . . van den Belt, M. (1997). The value of the world's ecosystem services and natural capital. *Nature*, 387, 253–260.
- Couch, S., & Kroll-Smith, S. (1994). Environmental controversies, interactional resources and rural communities. *Rural Sociology*, 59, 25–44.
- Drabek, T. (1986). *Human system responses to disaster*. New York, NY: Springer-Verlag.
- Erikson, K. (1994). *A new species of trouble: The human experience of modern disasters*. New York, NY: W.W. Norton and Co.
- Emery, M., & Flora, C. (2006). Spiraling up: Mapping community transformation with community capitals framework. *Community Development*, 37, 19–35.

- Falk, I., & Kilpatrick, S. (2000). What is social capital? A study of interaction in a rural community. *Sociologia Ruralis*, 40, 87–110.
- Fetterman, D. (1989). *Ethnography: Step by step*. Newbury Park, CA: Sage Publications.
- Flint, C. (2004). *Community response to forest disturbance on Alaska's Kenai Peninsula* (Unpublished doctoral dissertation). Pennsylvania State University, College Station, PA.
- Flint, C., & Luloff, A. (2005). Natural resource based communities, risk and disaster: An intersection of theories. *Society and Natural Resources*, 18, 399–412.
- Flora, C., & Flora, J. (2008). *Rural communities: Legacy & change*. (3rd ed.). Boulder, CO: Westview Press.
- Flora, C., Fey, S., Bregandahl, C., Chen, L., & Friel, J. (2004). *Rural community and economic development case study resources: A summary report*. Ames, IA: North Central Regional Center for Rural Development.
- Flora, J., Sharp, J., Flora, C., & Newlon, B. (1997). Entrepreneurial social infrastructure and locally-initiated economic development. *Sociological Quarterly*, 38, 623–645.
- Granovetter, M. (1973). The strength of weak ties. *American Journal of Sociology*, 78, 1360–1380.
- Granovetter, M. (1985). Economic action, social structure and embeddedness. *American Journal of Sociology*, 91, 481–510.
- Gutierrez-Montes, I. (2005). *Healthy communities equals healthy ecosystems? Evolution (and breakdown) of a participatory ecological research project towards a community natural resource management process, San Miguel Chimalapa (Mexico)* (Unpublished doctoral dissertation). Iowa State University, Ames, IA.
- Hewitt, K. (1995). Excluded perspectives in the social construction of disaster. *International Journal of Mass Emergencies and Disasters*, 13, 317–339.
- LeCompte, M., Preissle, J., & Tesch, R. (1993). *Ethnography and qualitative design in educational research* (2nd ed.). San Diego, CA: Academic Press.
- Lorenz, E. (1999). Trust, contract and economic cooperation. *Cambridge Journal of Economics*, 23, 301–315.
- Narayan, D. (1999). *Bonds and bridges: Social capital and poverty* (Report No. 2167). Washington: World Bank.
- ePodunk. (2005, October). *Norwegian ancestry maps*. Retrieved from <http://www.epodunk.com/ancestry/Norwegian.html>.
- Pretty, J. (1998). *The living land: Agriculture, food and community regeneration in rural Europe*. London: Earthscan Publications Ltd.
- Putnam, R. (2000). *Bowling alone: The collapse & revival of American community*. New York: Simon & Schuster.
- Putnam, R. (n.d.). *Social capital: Measurement and consequences*. Retrieved from <http://www.oecd.org/dataoecd/25/6/1825848.pdf>.
- Putnam, R. (2007). E pluribus Unum: Diversity and community in the twenty-first century. The 2006 Johan Skytte Prize Lecture. *Scandinavian Political Studies*, 30, 137–174.
- Riemer, F. (2009). Ethnography research. In S. Lapan & M. Quartaroli (Eds.), *Research essentials: An introduction to designs and practices* (pp. 203–221). Hoboken, NJ: Wiley. Jossey-Bass.
- Rupasinga, A., Goetz, S., & Freshwater, D. (2006). The production of social capital in US counties. *The Journal of Socio-Economics*, 35, 83–101.
- Swanson, L. (1996). Rural social infrastructure. Chapter 7. In T. Rowley, D. Sears, G. Nelson, N. Reid, & M. Yetley, (Eds.), *Rural development research: Foundations of policy*. Westport, CT: Greenwood Press.
- Wilkinson, K. (1991). *The community in rural America*. Westport, CT: Greenwood Press.