Customer Resource Integration During Negative Events: Lessons from Ants

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Abstract

Drawing on Service-Dominant (S-D) logic and findings from marketing, sociology, economics and natural sciences and using netnography this paper develops a conceptual framework to help researchers and practitioners better understand customer resource integration to achieve value co-creation following negative events. We provide a novel Practice Theory based classification of resources and resource integration by comparing customer behavior with that of ants (Holldobler and Wilson 1994; Gordon 1999).

Theoretical Framework

Theories of marketing have been criticised for failing to explicitly account for the practices and interactions that take place in a market (Vargo 2007, Storbacka 2010, Kjellberg and Helgesson 2006). In response, Vargo (2007, p54) suggests that 'the market is built around the interplay of resources ...as they are uniquely combined by economic actors that specialise in exchange with each other for mutual benefit," In S-D logic resource-rich individuals are generally free to develop their competences and exchange with others (Lusch 2006, p241). This interpretation allows the study of resource integration to break free of an economic market and to more broadly examine 'social behavior as exchange,' (Homans 1958, p606). Five S-D logic foundational premises are fundamental platforms in the construction of our framework. They are: FP1: Service is the fundamental basis of exchange; FP6: The customer is always the co-creator of value; FP8: A service-centered view is inherently customer oriented and relational; FP9: All social and economic actors are resource integrators and FP10: Value is always uniquely and phenomenologically determined by the beneficiary.

First, FP8 and FP10 highlight the importance of the role of the customer and their interaction in the exchange process. Economic exchange is the voluntary, reciprocal use of resources for mutual value-creation by two or more interacting parties (Maglio et al 2009). Customers participate in the co-creation of value that uniquely fits their life goals. Second, value is determined by recipients through the use of the service within a social context (Vargo and Akaka 2009). And finally, all social and economic actors are resource integrators. This erodes demarcation between producers and consumers; as all resource integrators come together in an exchange encounter to co-create value. Resource integration takes place in a value network. "A value network is a spontaneously sensing and responding spatial and temporal structure of largely loosely coupled value proposing social and economic actors interacting through institutions and technology to: (1) co-produce service offerings, (2) exchange service offerings, and (3) co-create value,'' (Lusch, Vargo and Tanniru 2010, p20).

Consistent with Gordon's (1999) view that 'for humans and other social animals, an individual's behavior is always embedded in a social world,' (Gordon 1999, 96) we take a constructivist approach. That is, the social world is not a given that exists independent of the thoughts and ideas of individuals. Rather, the social world is constructed on relationships, interactions and activities that exist and take place in a social context (Jackson and Sørensen 2007, Krauss 2005). Hence, there can be "multiple realities" as participants draw on their experiences, perceptions and accounts enabling each individual to construct meaning and make sense of their own experience (Krauss 2005).

We use Practice Theory (Kjellberg and Helgesson 2006, 2007) to examine the resource integration in social networks following a major crisis highlighting the role of practices, interactions and norms that direct the activities and interactions of resource integrators in social networks. Practice theory is based on three forms of practices: exchange, representational and normalizing practices. Briefly, practice theory posits that the way an

individual views their role in the world (representational practices) affects how they interact with others through accepting or adjusting norms (normalizing practices) which in turn, affects the way that individual does things in their day to day activities (their exchange practices).

To understand how network actors engage to achieve their life goals we focus on the practices of resource integration. According to Kjellberg and Helgesson (2006) practice theory can be used to explain the micro-level practices adopted by individual network actors by focusing on observable actions that change over time. Practice theory is concerned with what people "say and do" (Warde 2005, p136) that provides a situational perspective of resource integration. Understanding these practices may illuminate how resources are offered and integrated into everyday activities through the socially constructed service behaviors of actors in interactions that are based on structural, relational and perceptual norms that are shared in social networks. As such this theory assists us in understanding which resources network actors use to restore or enhance their wellbeing following a disaster.

Major negative events (natural disasters) offer an excellent setting for this study as they provide a broad lens through which to study social roles, social norms and collective behavior. Indeed, disaster recovery offers a publicly documented, accelerated and magnified account of cultural interactions, activities, expectations and behaviors that lie beneath the surface of the more mundane day to day existence in social networks.

Learning from Ants

There is much to be learnt from the natural sciences about resource integration. Ants in particular, are characterized as a colony of industrious, capable individuals who work almost tirelessly to secure a collective wealth of resources. They display incredible strength, versatility and perseverance as they toil, often against the odds, to sustain and enhance the

survival and growth of the colony. As a close-knit social group, ants are able to recognize one another and can discriminate against strangers using a distinctive communal odor which is generated by the queen and passed around by the workers (Holldobler and Wilson 1994). Their pro-social behavior is built around principles of altruism and mutualism where individual contributions add to the survival and betterment of the entire colony (Connor 1995). The fitness or success of the colony lies in the ants' ability to classify individuals quickly; to maneuver precisely in complex environments and to follow a set of simple, hard-and-fast rules that govern their collective behavior (Holldobler and Wilson 1994). "The amazing feats of the ant come not from complex actions of separate colony members (or individuals) but rather from the concerted actions of many working together, (Holldobler and Wilson 1994, p105). According to Gordon (2010), ants are simple organisms that have learnt some very clever tricks.

So too, the market increasingly operates on many to many interactions, (Vargo, Maglio and Akaka 2008; Grönroos 2004; Fyrberg and Jüriado 2009; Gummesson 2007; Ippolito 2009) is resource rich (Arnould 2008; Arnould, Price and Malshe 2006; Clulow, Barry and Gerstman 2007; Bititci et al. 2004), is self-orchestrated (Achrol and Kotler 1999; Crossley 2008; Glanville 2004; Edvardsson, Tronvoll and Gruber 2011) and is perpetually dynamic (Gummesson 2007; Kohli 2006; Lusch, Vargo and Tanniru 2010). It reacts in response to constant change and adapts quickly to new information and new technologies (Lusch, Vargo and Tanniru 2010; Vargo, Lusch and Akaka 2010). Watching an ant colony rehabilitate after a storm offers displays of these very characteristics. One by one the ants set about restoring the balance through a series of peer to peer interactions as they determine the priority of tasks and recruit others to check the stock of resources, skillfully repair any damage to the nest and finally resume the normal day to day activities of identifying, procuring and collecting valuable resources (Gordon 1999). None of this activity is controlled

centrally, nor orchestrated remotely. The ants just get up and get on with their business adapting to challenges.

In a similar manner, customers seeking solutions to accomplish life goals, engage in processes of resource identification, resource procurement and resource application, through specialization, exchange and adaptation. This is particularly so following a negative event. In such times individuals turn to their social networks to access social support, information and other resources. The study of ants provides lessons that help to better understand how customers engage, interact and accumulate resources following a natural disaster. However, unlike an ant colony, much of how social and economic actors integrate resources through their consumption activities remains unclear. Moreover, limited attention has been paid to identifying the *types of resources* consumers have access to, beyond economic resources (Arnould 2008; Arnould, Price and Malshe 2006; Baron and Harris 2008; Hilton 2008; Fahy & Smithee 1999). Additionally, little empirical work has addressed *how customers use social networks* to their advantage to integrate resources.

The purpose of this paper therefore is to outline the types of resources that are available within social networks, the sources of network resources and the practices of resource integration. The remainder of this paper is organized as follows: First, we argue that actors in a network are motivated to exchange resources to co-create value that is uniquely determined by the beneficiary through a series of activities. Second, we argue that the process of resource integration in social networks generates social capital, particularly in negative events, that requires the customer to adopt a deliberate and active role in the co-creation of value. Third, we describe how customers use the processes of experiencing (accounting, evaluating, assimilating) and integrating (bonding, bridging, linking) to realize value propositions they encounter within their social networks. Finally, we offer a conceptual framework for classifying resource integration.

Method

Netnography

We use netnography 'a new qualitative research method that adapts ethnographic research techniques to study the cultures and communities that are emerging through computer-mediated communications,' (Kozinets 2002, p62). Netnography uses publicly available information – typically information found in online discussion groups – to 'identify and understand the needs and decision influences of relevant online consumer groups," (Kozinets 2002 p62). This form of data collection is unobtrusive, accessible across geographic boundaries and timely because of its immediacy being available following the event under study (Kozinets 2010, Simpson 2006; Hamilton and Hewer 2009; Brown, Kozinets and Sherry 2003; Schau, Muniz and Arnould 2009). Netnography has been used to understand virtual communities in the same ways that anthropologists seek to understand cultures, norms and practices of face to face communities (Sandlin 2007, p289).

Site Selection

The data for this paper is drawn from online databases and a range of online news sites that have reported the spate of natural disasters which occurred in 2011 in the Asia Pacific. The natural disasters include the widespread flooding in Queensland Australia; a 6.8 earthquake in Christchurch, New Zealand; and the 9.2 earthquake and subsequent tsunami in Japan. We began our investigation with an overview of topical news groups and related Web pages. Sites were selected both for the quantity and for the directed focus of their postings (e.g., descriptive online news articles and their publicly posted commentaries). This data was downloaded from the Daily Telegraph (dailytelegraph.com.uk), The New Zealand Herald (herald.com.nz) and the Brisbane Times (news.com.au). The selected news reports offer rich descriptions of activities and interactions in local communities. The associated online

commentaries posted by readers in response to the news items provide unsolicited, relevant and personalized accounts of reactions to the natural disasters.

Data Collection

Over 300 online commentary posts were thematically analyzed using discourse analysis techniques to illustrate the processes of resource integration that take place in social networks following the major negative event. The data was downloaded between January and March to a masterfile which contained seven news stories and 321 related online postings. The volume of text comprised 65 double spaced 12-point font pages. Threads were selected for their relevance to the research topic and as illustrative examples of the practices and interactions involved in resource integration processes following the negative event. Using carefully chosen message threads in netnography is akin to "purposive sampling" in market-oriented ethnography (Kozinets 2002; Guba and Lincoln 1985; Wallendorf and Belk 1989).

<div align="center">

Results

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Examples of the lived experience posted on the public news sites focussed on the interpretation of the events; the interactions between community members; the emotions; and detailed calls for support, advice and general information. In line with practice theory, we "were concerned as much with what people think and feel as what they mean," (Warde 2005, p132). The quantity and quality of the online reports as news, blogs and comments enabled us to illustrate the types of network resources available to social and economic actors, the sources of resources, the activities involved in resource integration and the interactions that enable resource mobilization following a major negative event.

Types of Resources

Some writers have criticized the classification of resources as either operand or operant in the S-D logic arguing that early contributions to the development of the theory have 'under-conceptualized consumers' rich value-creative competencies' (Arnould, Price and Malshe 2006. p100). To address this CCT offers an extension of the S-D logic resource classification by including sub-categories of operant resources which include social, cultural and physical resources and define operand resources as physical and economic assets.

Social resources are defined as the 'networks of relationships with others ... over which consumers exert varying degrees of command' (Arnould, Price and Malshe 2006, p93). The networks of relationships can include family, ethnicity and social class as well as networks of friends, classmates, sporting teams and brand communities. Social resources play a major role in disaster recovery. For example:

> "My family & I were over in NZ on holiday when this disaster happened. Our house was submerged, but we have been overwhelmed with offers of furniture, kids toys/clothes, houses to stay in etc etc. I am so very gratefully the amount of help we received. And to our friends/neighbors/workmates who took it upon themselves to start cleaning our house" (Amanda, Brisbane, Australia)

The second class of operant resources is cultural resources. Cultural resources are defined as 'the varying amounts and kinds of knowledge of cultural schemas, including specialized cultural capital, skills and goals' (Arnould, Price and Malshe 2006, p94). Cultural resources can be viewed as resources that provide economic and social actors with opportunities to demonstrate self-expression through subjective abstractions including taste, style and refinement. Western news reports have featured examples of the patience, tolerance and acceptance of the Japanese following the tsunami. For example:

> "What's unique about Japan is really a combination of a deep belief in Buddhism and Shinto religious rituals. As an example, in restaurants, you never pour your own sake, you have to notice whose glass is empty and you serve them. It's these little rituals [that have prepared them for this crisis] so that even if you have one bowl of rice, you share it with a stranger" (Phillip Zimbardo, Time Magazine, March 2011)

In Australia and New Zealand, news reports have featured examples of mateship. For example:

> "Congratulations to our true blue Aussie mates that are giving people a hand. I mopped up at work during the week (we're on the Pine River) and then gave a hand to a mate who has a small business in Rocklea. It was terrific to have strangers pull up to businesses in the area to give a helping hand." (Proud Aussie, Kallangur, Australia)

The final class of operant resources is physical resources, which include physical, emotional and mental reserves of energy and strength (Arnould, Price and Malshe 2006, p94). For example:

> "There were about 200 people on the scene by 11am, cleaning, discarding, removing, sweeping, shovelling and hosing, I got to work sweeping the muck away. Hours went by and soon there were bobcats, electricity representatives, water representatives, State Emergency Services workers and volunteers, police, fire-fighters and army soldiers all doing their part to help clean the place, aided by several hundred volunteers, residents, students, neighbours and friends from all backgrounds and all walks of life," (Robbie, Tully, Australia).

Economic resources have been further clarified as the tangible resources such as material objects, physical spaces and monetary units, over which consumers have allocative control (Arnould, Price, and Malshe 2006). As an operand resource, economic resources often include raw materials and goods that need to be integrated with operant resources to realize value or effect. In disasters, people removed from the disaster by space or time may pledge cash donations or avail other material resources to the recovery efforts. For example:

> "A group of tech-savvy philanthropists have developed an easy way for people to contribute what they can to those in need with the simple click of a button. FloodAid.com.au is a peer-to-peer relief movement that will work alongside government to connect people who are in need of assistance with people who are able to help. "Many of us that have not been drastically affected by the floods are sitting at home wondering how to help," co-founder Graeme Caplen said. Logging on to floodaid.com.au will allow you to find people in your area that have needs suited to your abilities." People can offer their skills, services and goods to those in need and those in need can specify what would best help their situation. In coming weeks, floodaid.com.au will become available for download via iPhone, iPad, Android, Windows Phone and Blackberry applications". (Brisbane Times, 21 January 2011).

Disrupted Social Order

Disasters are characterized by the major physical damage to a community that leads to the loss or disruption of its routine functioning (Kreps 1984). The affected community typically responds through the emergent social organization that is facilitated by access to unaffected domains, an excess of human capacity and the mobilization of network resources. This collective response of network actors to perform a series of unanticipated activities is undertaken to restore social order (Weller 1969; Weller and Quarantelli 1973; Kreps 1978). As such, disaster recovery highlights linkages among activities, resources, and interactions.

Along with the physical disruption of the community a disaster disrupts the social order of a community. Everyday tasks are abandoned or become more difficult. As such customers face disruptions to the sites of consumption, the sources of consumption and the processes of consumption that are essential features of the day to day life in a social network in the 21st century. Their activities and interactions demonstrated in disaster recovery blur any formal distinction between producers and consumers in exchange situations. What we see instead are network actors actively engaged in mobilizing available resources with others to restore, maintain or enhance their wellbeing.

Exchange Practices

In an ant colony, disasters strike occasionally. Nests need to be repaired, drought leads to colony size fluctuations, predators seize and destroy feeding trails. So too, floods devastate cities, hurricanes flatten cities, earthquakes swallow economic centers adversely affecting international trade. However, amid such crises, network actors carry on busily working on co-producing services and co-creating value that helps them endure such hardship.

"Regardless of the type, in general, disasters are recognized as unique in that they affect a collective and that losses exceed the capacity of a community to absorb or resist them" (Baker 2009, p 116). The affected collective must rely on accessing a range of external

resources to rebuild and recover. "The interconnectedness of actors in the system means that risk, vulnerability and resilience are shared," (Baker 2009, p 120). Baker proposes that when faced with a disaster, network actors do not passively accept their situation', instead they actively and constructively work to reduce their vulnerability by mobilizing their resources and co-producing valued services with other actors linked to and through their social networks.

> "Chrystal Perelini, husband Amo and son Lucas, 15, with help from others, have set up a food station and market on their front lawn. The barbecues are manned by volunteers from Ashburton. Each day they bring a trailer laden with meat, fruit and vegetables supplied by Ashburton butcheries, a bakery and other businesses. The effort is co-ordinated by Ashburton real estate agent Trevor Hurley. Thousands of dollars of food and supplies continue to pour in for the hundreds of meals being pumped out each day" (New Zealand Herald).

Market exchange is embedded within social structure and the construction of markets is achieved through the interplay between a variety of network actors (Cheal 1990). These actors work at mobilizing a variety of expertise (Araujo 2007) in webs of complex entanglements (Miller 2002) or service systems (Vargo, Maglio and Akaka 2008), which create dynamic, learning spaces (Araujo 2007, p215) or value-configuration spaces (Vargo 2008, p213) where both supply and demand are continuously being co-produced as services by the partners involved in the exchange (Gummesson 2004). Network actors use their expertise locate and mobilize available resources to deal with the disaster. In the following example, co-ordinating access to available accommodation was facilitated by IT expertise:

> "When destructive floods strike, some people dig, some grab sandbags, and concerned computer technicians build websites.**QLDFloods.org** was constructed in matter of hours on Tuesday as it became clear Brisbane was headed for disaster. Developed as a means of connecting flood victims with emergency services including accommodation, the site has been visited by more than one million people. As a result, it is now offering thousands of beds for victims of Queensland's flood crisis. About 1500 people used the site to offer their homes up for accommodation, founding technician Ryan Cross said. With Queensland Premier Anna Bligh warning it could take months before some flood-affected people can return to their homes, **QLDfloods.org** may prove a godsend."We were watching the flood unfold thinking, 'we should do something'," Mr Cross said. "We didn't realize it was going to be so big."We're now hoping to get a call center off the ground to help connect people with beds". (Brisbane Times, 18 January 2011)

The acquisition, processing and redistribution of resources are day to day activities within the ant colony. So too, customers trade resources on a daily basis as they encounter life within a network. Operand and operant resources can be acquired from value propositions from a raft of market-facing, public and private network entities. Customers search for opportunities to co-create value that will help them to attain their life goals, make sense of their lives or learn something new. We define resource integration as the offer and uptake of skills, competencies or traits for the benefit of self or others. Adapting Holt's (1995) original classification we argue that resource integrators co-create value from practices that enable them to construct meaning, share their identity, demonstrate an affiliation and/or allow them to interact with others within their social networks.

Searching and selecting practices

The first stage of resource integration involves the search for and selection of resources. Network actors make resource acquisition decisions based on their life goals, experiences and knowledge. However these decisions are also impacted on by lifestyles, self-concepts and their embeddedness in social networks (Arnould, Price and Zink 2005). During a disaster, the availability of resources has a major bearing on search and selection practices. For example, following the Christchurch earthquake one resident was left to:

> "cook the vegetables from her own garden on her outside incinerator using a makeshift refrigerator which is simply a piece of retrieved broken pipe buried in the ground and covered in a wet cloth," (New Zealand Herald).

Sorting and assorting practices

Closely aligned to search and selection practices are customer sorting practices. This set of practices relates to how customers evaluate the appropriateness of resources against their needs. Resources may be matched by their suitability to satisfy a specific need. For instance, in the ant colony, searching, sorting and acquiring resources is a collective effort. A

trailer or scout ant leaves the nest before the others in search of the day's food supply. Once it has located a rich food source the scout returns to the nest to recruit a bevy of foragers to collect the seed or sugary compounds. One by one, the foragers follow the trail marked by the scout and each forager returns with a collection of resources. However, on approach to the nest, a team of midden ants act as the resource arbitrators who sort the best resources offered by the foragers. Interestingly, of the entire bounty returned by the army of foragers, only about half of the resources are accepted by the middens and enter the nest. The remaining resources are immediately marked as waste. These sorting practices can also be observed in consumption practices, where the customer evaluates a purchase against uniquely determined criteria, mostly deciding to keep their purchases, but occasionally returning their purchase to the supplier.

Expressing and appreciating practices

A further group of practices are the integration activities that may be classified by the work customers do in shaping their identity through consumption by performing cherished rituals or taking on the symbolic properties of the item being consumed. These practices make a symbolic gesture. For example, volunteers and rescuers may derive value from identifying with a ritual or role,

> "I spent a number of years living in Parkerville and was a volunteer during that time. I worked alongside a great bunch of folks within that brigade and alongside equally committed folk from other brigades. You could NOT have met a harder working, totally unselfish group of people. We fought a large fire for a number of days and some put in HUGE hours. Try donning fire retardant overalls, flash cape, hard hat, boots, gauntlets, topped off with a water sprayer back pack in thick black smoke and a temperature well in excess of 50c at the fire face" (**Colin M of Great Southern**)

Displaying and demonstrating practices

The third classification of practices involve the customer displaying or demonstrating their association with the item in a publicly visible way. These practices may be used by resource integrators who wish to be publicly aligned to the cause or resource. For example,

politicians, high profile network actors or community leaders may use their available social resources to co-create value from their public recognition or association with a resource or event.

> One volunteer, the former prime minister and current Foreign Minister Kevin Rudd (of Australia), was treated in Queensland hospital after a cut he sustained while helping flood victims became infected (Brisbane Times, 15 January 2011)

The final class of practices is entertaining (play). Customers may use their activities as a form of entertaining other customers in a shared communal experience. For example:

> "I work in a servo and seeing how many selfless people were up at 6 am and heading out to help others was heart warming. All ages all sorts of people, coming in and grabbing supplies before getting to where they were going. It made me feel useless as I was stuck at work". (**Servo Worker**) *Posted at 7:01 AM January 16, 2011*

Representational Practices: roles

Customers adopt specialized roles within their networks which they display through representational practices. Specialized roles can increase the status of social and economic actors within a network, leading to increased influential power being assigned to the particular role, as a source of expertise or authority. Often this status is accrued over time through experience, over an actor's life cycle through maturity or through the recognition of this expertise by others, as a form of influence. 'Once a role has been adopted, then the associated script or set of behaviors and patterns of interactions associated with that role will be enacted' (Parker and Ward 2000). Sometimes network actors with a specialized role, such as a neighbor who works as a nurse or a mechanic, may be asked to provide this expertise within their social networks. This creates opportunities for other members of the network to access their resources, without exchanging other resources, such as financial resources.

Ants too, adopt specialized roles. Deep inside the nest the queen is cared for by a brood of busy nurses, feeders, cleaners, while outside the four key roles are trailers, foragers, midden work and nest maintenance (Gordon 1999). Ants specialize in a particular role, some

as they progress across the life cycle, for instance, moving from nest maintenance roles onto foraging trials, or in response to environmental or personal crises such as peak harvesting times which result in large stocks of food being food or injuries sustained in territorial wars.

However, as each role is a social construction that is impacted on by changes in the environment or the context, roles can also change in a disaster situation (Callero 1994). In ordinary circumstances, network actors may play a variety of professional roles. Doctors, lawyers, chefs, nurses all conduct their day to day activities using the knowledge and expertise through meaningful "representational practices" on the job, (Kjellberg and Helgesson 2006). In the event of a disaster, many examples of changes in professional roles emerge. For example:

> "In Miyagi Prefecture, one of areas hit hardest by Friday's tsunami on Japan's east coast, information and help are still scarce. On Route 45, an ocean-bound road that goes to Kesennuma City, a man flags down passing cars, telling them to drive up a hill after a tsunami warning has gone up. On most days, he's a chef in the city's school lunch program, but today's he's a disaster coordinator. "There's a lot of confusion. We don't really get much information," says Ken Sato, who lives in the area. (Time Magazine March 2011).

The ability of network actors to change roles and representational practices in response to the changing environment supports the view competencies and skills can be reconfigured in resource integration processes (Callero 1994). Ants can adjust their roles very quickly by interpreting communication cues from other ants and assess the impact of any changes in their environment. If the speed or frequency of social contacts dramatically increases within the colony, trailers and foragers may switch tasks to support the either collective actions from the food trial or to defend any incoming predator attack on the colony (Gordon 2010; Holldobler and Wilson 1994). In disaster situations, network actors are able to adjust their roles and practices to accommodate social obligations or expectations from contextual cues, For example, in Christchurch university students have become a major source of labor in the

earthquake recovery efforts, as have high school students in the wake of Japan's recent tsunami.

> "Hundreds of students armed with shovels and raincoats gathered at Canterbury University this morning to lend a hand in quake-stricken Christchurch. Volunteers, mostly students, formed long queues to register with Student Volunteer Army, a group that has been helping residents to clean up quake damage. Fine arts and design student Michelle was among those heading out to help, armed with a shovel and wheelbarrow. ``I felt kind of useless sitting at home with nothing to do. You may as well be out doing something, so why not? I helped out with the last quake".

Normalizing Practices: interactions

Social and economic actors embedded in networks work to co-create value from a stock of resources available from private, public and market-facing sources. Through their actions, the application of specialized knowledge and skills, network actors create a collective wealth which translates into social capital. Social capital has been defined by Lin (2001) as the wealth available from the resources located in social networks. In order to draw on the wealth of social capital in social networks actors can generally use a combination of three processes: bonding, bridging (Gittell and Vidal 1998, 10) and linking (Woolcock 2001, 72).

So too ants have complex relationships within and between ant colonies. Ants recognize their neighbors, they adjust their foraging patterns around neighboring boundaries and they develop new diplomatic maneuvers as the colony grows and matures. In the dialogue between colonies, the interactional tone is set by the ages of the colony in the neighbor; with younger, less experienced colonies being cautious and respectful of more mature ones. Ants rarely compete aggressively for resources within a neighborhood. Instead they abide by foraging patterns based on social rules that suggest that what one colony does not use, another will (Gordon 2010). These rules are demonstrated in the social capital processes of bonding, bridging and linking.

Bonding is a process of drawing on the resources of personal networks, those that are generally closely tied to the actor and relatively homogenous, such as family and friends.

Bonding processes tend to be associated with the social support that actors receive from strong connections with dense networks that they are actively engaged in. Some examples are the strong ties associated with family, a network of friends, belonging to sporting or cultural groups. In a crisis, network actors can rely on these networks to provide a range of resources that may improve or enhance their wellbeing. These close networks "rally around" to ensure that members are supported through the negative event.

> "Next door are Hugh Clarkson, Clive Ryan and Rick McLachlan digging silt from around Clarkson's parents' house. Rick, from Makarora near Haast, was helping a friend in the street and joined the Clarkson crew when he had finished."

Bridging involves drawing on social capital available from heterogeneous network actors to whom we share weak ties. Resources mobilized through bridging processes can be seen in "emergent groups of private citizens who work together in pursuit of collective goals relevant to actual or potential disasters, but whose organization has not yet become institutionalized," (Stallings and Quarantelli 1985 cited in Drabek and McEntire 2003, p100). Examples of bridging resource mobilizing processes include the generosity of strangers who volunteer in recovery situations, the rapid accumulation of financial donations as people respond to disasters, and the postings of public support for the victims. Bridging processes allow 'relative strangers to co-operate successful,' (Halpern 2005, p20). Strangers are emotionally affected and respond by mobilizing their resources to the disaster,

> "I have spent the past 3 days helping a friend in Brisbane Terrace and the street is a disaster, not to mention the many other streets. I immediately thought of those in the caravan park. These residents have don't have much and live here for the costs and I too am concerned where these residents will go. I am also concerned for the many refugee families who fled their homes with nothing only to have nothing again. The evacuation center cannot last forever and what about all those renting whose landlords now want to sell, not to mention all the lost jobs whilst businesses rebuild. This area is in desperate need of help and my heart is with the many residents" ***Keeping it real*** *Posted at 2:10 PM January 17, 2011*

Linking refers to the process of mobilizing resources from institutional relationships, which may require gaining access to social capital by establishing forms of legitimacy and eligibility. "Linking social capital is the result of the weakest relationship but the most valuable outcome, as linking provides access and connection to power structures and institutions," (Hawkins and Maurer 2010, p1780). All three dimensions of social capital play an important role in generating the bonding, bridging and linking processes within and between social networks with individuals, institutions, agencies and firms playing an important role in the recovery and rebuilding process.

The loosely coupled networked nature of contemporary society means that network capital does not come reliably from one single group, because social networks rarely operate as solidarities. People cannot count on all the members of their networks to provide help all of the time. Rather network capital comes from a variety of actors in networks. People navigate through partial involvements in multiple networks – giving and getting access to network capital (Wellman and Leighton 1979; Wellman and Hampton 1999; Wellman and Frank 2001). During the Queensland floods and cyclone devastation, politicians and government leaders made direct appeals to their constituents to support those affected by the natural disasters. The Lord Mayor of Brisbane made an appeal to draw on the collective resources of the community in Queensland's recovery: "If you know someone who owns a business, if there's a friend or relative you can help go and help them. If you don't know a person or you don't know where to go, we'd like you to be part of our coordinated system for volunteers".

Bonding, bridging and linking to network resources are processes governed by normative processes that direct the shared understanding of behavior appropriate to the setting. These social constructed rules are practices based on norms applicable to the network setting and context that direct the appropriate access to network resources.

Normalizing Practices: structures and rules

Normalizing practices direct the emergent behavior that decides how network resources are redistributed within the service-system and ultimately determine how the network will respond and recover following a crisis (Ritzer and Jurgenson 2010). This example shows how physical resources are offered up in social networks as a valuable resource:

> "I have a caravan that has been sitting around the yard for years and would like to donate it to a flood victim. It is only a small van but in good condition with an annexe but would be adequate accommodation for one person. Plenty of others have dormant caravans in their yards, these would be put to good use by the disadvantaged. Charities are saying they want money not goods but surely caravans would help. Who would I be best to contact to do this?" ***Carol of Brisbane*** *Posted at 10:55 AM January 17, 2011*

No ant is able to assess the global needs of the colony, or to count how many workers are engaged in each task and decide how many should be allocated differently. The capabilities of individuals are limited. Each worker need make only fairly simple decisions (Gordon 2010). However, these practices are socially interrelated. What ants do is governed by the context they encounter and the normative rules that guide their activities and interactions. So too, network actors behave and interact in ways that are aligned to the context and circumstances they face.

Normative market structures

Reimer and his colleagues (2008) proposed four types of normative structures which condition social capital: market, bureaucracy, associative and communal. In market like networks exchange is built on resources that are traded or bartered through transactions based on forms of currency, governed by either informal or formal structures or a combination of both. In this setting, social capital 'is created, built and maintained' through fair trading, open access to impartial information and specialized negotiation skills. For example:

Carol of Brisbane Posted at 7:58 AM January 17, 2011

> So much attention on the media has been aimed at the wealthy areas, where people have other assets to get them through these tough times. These suburbs are the areas that need help but unfortunately many of the homes out that way will have to be demolished. I hope the government will feel the need to build more public housing because of this crisis. So many people out that way are only renting and with many investors in so much debt and with no insurance. They will not be able to afford to rebuild.

In bureaucratic network structures interactions are impersonal and formal, and the 'distribution of resources are based on broad generally applied principles and status positions rather than productivity,' (Reimer et al 2008, p 261). The normative structures guiding bureaucratic network structures are based on the formulation of charters that maintain legitimacy and maintain centralized control.

In an associative network structure actors connect through shared interests. Social capital in this setting emerges from common alignment and contribution to collective goals. This form of network structure has been studied extensively in empirical work on social capital which can be operationalized as voluntary participation in social groups and membership in volunteering associations. For example:

Faith in the humans Posted at 11:42 PM January 16, 2011

> To see people helping people on this scale, and the generosity with which that help was given, was humbling and spirit-lifting. The volunteers, S.E.S, military services, emergency services personnel, and others, should know that by giving their time, effort and humanity they saved lives. Without them, the scale of the destruction would have been too much for many to face. You have given the flood victims an invaluable hand-up that will help them face the rebuild.

Lastly, communal network structures are based on a strong sense of shared identity. The most common groupings include families, ethnic groups, geographical clans and groups that form through processes of cultural socialisation, such as school class groups, university cohorts and sporting teams. The normative structures that control the interactions within communal networks are largely based on reciprocity and can be maintained through the exchange of favours, either informally or formally. For instance, many sporting associations conduct elaborate competition schedules based on a shared trust that team players will attend games at a set time, dressed in uniform and contribute to the collective actions associated with

organising the games, such as notifying team members of game times and other rostered

duties such as refereeing and grounds maintenance. More informally, families can lend

resources to siblings or parents based on the trust that their belongings will be returned at

some later, usually unspecified date. For example:

Joe from Ipswich Posted at 10:27 PM January 16, 2011
We moved to Ipswich 25 years ago. I've always been proud to say I live here and never doubted that we had made the right choice. The last few days have cemented those beliefs in concrete. While helping our friends clean up their shattered homes I was reduced to tears more than once. Our so called selfish younger generation formed into groups and went round offering their services in helping to clean up. Nothing was to hard or to dirty for them to take on and not one of them left before completing their jobs. They all came back on the second and third days. I am so proud to be a member of the Ipswich community;

Normalizing Practices: rules

Reimer and his colleagues (2008) suggest that each type of network structure is

governed by distinct normative structures which lead to different outcomes and operate by

implicit "spontaneous order". These shared rules, norms, practices and conventions can be

implicitly or explicitly explained to the network actors engaged in each network. In formal

settings, clear instructions and contracts may outline the 'rules of engagement', while in

loose, informal structures interactions may be implicit and learned through socialization

processes in families, and other social institutions. Normative structures guide "network

actors to co-ordinate their activities through systems of sanctions and incentives that ensure

consistency in their actions," (Reimer et al 2008, p 259). Gaining access to network resources

can be determined as functions of form power based on the different rules that guide each

network structure.

Interactions in which both parties gain a net benefit are mutualistic (Connor 1995;

May 1982). In biology, there are three general mechanisms by which benefits are transferred

between unrelated organisms. First, one organism may *purloin* benefits from another by

preying on or parasitizing the other organism. Second, one organism may enjoy benefits that

are incidental to or a by-product of the self-serving traits of another organism. The third mechanism allows an organism to invest in another organism if that investment produced return benefits which outweigh the cost of the investment.

Interactions in the ant colony display all three mechanisms. For example, ants need sugary substances to produce their chemical communication system. They can obtain this essential resource by preying on smaller insects in the eco-system, draining the digested sugar from the carcass or raiding the prey's nest. This is a particularly benefit tactic if the cost of death or injury are not incurred (Holdobler and Wilson 1994). Ants can also trade their resources through an exchange. For instance, some ants have an exchange relationship with aphids that provide a rich resource of sugar secretions. In this case, ants provide protective and husbandry services to the aphids, in return for the authority to 'milk' the aphids for sugar secretions that can be redistributed back to the ant colony (Gordon 2010, Holldobler and Wilson 1994). And finally, symbiotic relationships based on reciprocal interaction allow ants to specialize. Ants work in teams each providing skills, expertise and activities that increase the fitness or survival of the overall colony through cooperation. Scouts find seeds and recruit foragers to collect them. Foragers then return to the nest with their bounty to have it sorted and assessed by midden ants. Valuable resources are then moved into the nest for processing and redistribution (Gordon 2010).

In a similar vein, social and economic network actors are guided by normative rules that govern their interactions. Following the disaster some resources are made available through donations, others are acquired through market transactions and in some cases, governments or social institutions provide temporary access to resources. Donation (gift giving) of resources signals generosity and is usually applauded by fellow network members. For instance:

Wellesy of South Australia Posted at 1:31 PM January 17, 2011

Carol, if it were me I'd be contacting the media who reported the story & they'd be able to put you in contact with the right people to donate your van. Good on you, that's a lovely thing to do.

Conclusion

Practice theory offers a useful framework to examine sustainable resource integration in social networks. Drawing on parallels with the practices of ants, the paper shows how resource integrators adopt exchange, representational, and normalizing practices to co-create value through reciprocal exchange. Using examples demonstrated by network actors during natural disasters we detailed exchange practices such as searching, sorting, expressing, appreciating, displaying, demonstrating and entertaining that network actors engage in when integrating resources. We identified representational practices that network actors adopt in specific roles or adapt to, in the face of a major negative event. We also described how network actors are able to draw on social capital through a variety of normalizing practices such as bonding, bridging and linking practices within social networks specific to the particular social setting, and as such are governed by structures and rules. We encourage future research that extends this work to refine our understanding of resource integration and build theory.

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