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## **springing back or veering in: the organization network consequences of downsizing**

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### **Abstract**

While unavoidable at times, downsizing is widely believed to hurt the social fabric in a firm and an individual's contribution to innovation. This paper studies the changes over time in the innovation network at a large international financial services firm as it downsizes. We find that downsizing survivor involvement with innovation can be remarkably resilient despite considerable reduction of the overall labor force. This resilience stems from being in the flow of informal information exchange prior to downsizing. Investigating the pre-downsizing informal network characteristics of the downsizing survivors, we find that awareness and control over the information exchanged with one's direct relations prior to downsizing does not matter much. Particularly the awareness and control over the information exchanged in the extended informal network determines individual innovation tie resilience post downsizing. Knowing which employee network antecedents favor continued involvement with innovation is of prime importance for management.

# SPRINGING BACK OR VEERING IN: THE ORGANIZATION NETWORK CONSEQUENCES OF DOWNSIZING

## ABSTRACT

While unavoidable at times, downsizing is widely believed to hurt the social fabric in a firm and *an individual's contribution* to innovation. This paper studies the changes over time in the innovation network at a large international financial services firm as it downsizes. We find that downsizing survivor involvement with innovation can be remarkably resilient despite considerable reduction of the overall labor force. This resilience stems from being in the flow of informal information exchange prior to downsizing. Investigating the pre-downsizing informal network characteristics of the downsizing survivors, we find that awareness and control over the information exchanged with *one's direct* relations prior to downsizing does not matter much. Particularly the awareness and control over the information exchanged in the extended informal network determines individual innovation tie resilience post downsizing. Knowing which employee network antecedents favor continued involvement with innovation is of prime importance for management.

## INTRODUCTION

Downsizing, as a particularly radical form of corporate reorganization, is an important instrument for firms to reestablish alignment between strategy and organization (Chandler 1962; Shah 2000; Trahms et al. 2013). Many such corporate change efforts actually have negative effects on a company's performance, however (Guthrie and Datta 2008; Datta et al. 2010; Van Dierendonck and Jacobs 2012), for instance because they do not proceed as planned (e.g. Greve 1998; Beer and Nohria 2000; Kostova and Roth 2002). Downsizing, the permanent and involuntary letting go of employees by management, is particularly believed to hurt a firm's innovativeness over time (Mellahi and Wilkinson 2008; Brockner et al. 1987; Amabile and Conti 1999; Dougherty and Bowman 1995; Bommer and Jalajas 1999; Shah 2000; Fisher

and White 2000). Remarkably, there is little empirical support for this claim. To date, no empirical research has studied the impact of downsizing on innovative activity within an organization over time, comparing employee involvement with innovation before and after downsizing (cf. Gandolfi and Oster 2010; Mellahi and Wilkinson 2008). The exploratory study of Dougherty and Bowman (1995) is a rare exception. Despite being a common business practice, workforce downsizing has been repeatedly identified as a structurally neglected topic in management studies (Budros, 1999; Datta et al., 2010; Guthrie and Datta, 2008; Schmitt et al. 2012).

Empirical analysis of pre- and post-downsizing patterns of interaction between individuals is non-existent although a rare conceptual study does exist (Budros 1999). If collaboration patterns in downsizing firms are studied at all, only a single, ex-post measurement is available and the focus may not be on the strategically significant activity of involvement with innovation (Fisher and White 2000; Shah 2000; Dougherty and Hardy 1996). At most, employee responses and attitudes to organizational downsizing are studied in terms of employee anxiety, job-commitment and self esteem (Van Dierendonck and Jacobs 2012; Datta and Guthrie 2010). Adopting a longitudinal network perspective, in an in-depth multimethod (qualitative as well as quantitative) case study-setting, uniquely, we empirically investigate the effect of downsizing on an individual's innovation related activities. We thus significantly add to prior downsizing studies as well as the emerging field of studies on network evolution (cf. Zaheer and Soda 2009; Guthrie and Datta 2008) as we explore how social organizational structures change in times of organizational turmoil.

Downsizing can dissolve social relations forcefully and indiscriminately (Nixon et al. 2004; Fisher and White 2000; Guthrie and Datta 2008). At the same

time, innovation inevitably is a collaborative or social effort, and so retaining the social fabric for innovation when a firm is downsizing is by no means evident. Yet, corporate recovery following reorganization depends heavily on innovative capacity being maintained or restored (Mone et al. 1998; Bolton 1993; Ocasio 1995). The effect of informal collaboration, in recent years increasingly studied in terms of social networks, is believed to be particularly conducive to innovation. Relevant extra-role information is likely to be generated, screened and dispersed when trust exists between employees (Foss et al. 2010; Gulati and Puranam 2009; Borgatti and Foster 2003; Reagans and McEvily 2003; Rizova 2007). As the relation between informal interactions and innovation activity has gained prominence in the management literature (Amabile and Conti 1999; Campbell et al. 1986; Coleman 1990; Aalbers et al. 2014), the impact of downsizing on informal activity in a firm should be a prime concern. A firm can expect its innovativeness to remain the same, suffer or recover after downsizing to the extent that employees' informal interactions are affected. Given the sensitivities for all involved in a downsizing firm, collecting data to determine the effects of downsizing, comparing the situation before and after, is challenging. To determine changes over time about interactions between individuals requires network data, which in itself is challenging to collect. It is thus hardly surprising that there has been no research on the effects of downsizing. Theory development has not proceeded much beyond that. Nevertheless, drawing on relevant literature, some propositions about some specific effects to be expected can be developed. Continued involvement of individuals with innovation, we will argue, is based on his position in the organization's informal network before downsizing. More specifically, it can be argued that someone may be expected to continue to be actively involved with innovation after downsizing if prior to this they were well positioned in

the informal network in two ways. First, if someone prior to downsizing is aware of and controls the information flow in his immediate surrounding and, second, in the full or extended informal network, he is expected to be more likely to continue to contribute to the innovative activities of a company after downsizing. We investigate whether this is actually true by empirically analyzing changes over time in the social fabric of large international financial services firm as it downsizes. We find that only being aware of and having control over the information flowing in the full informal network, i.e. having extended reach, makes people maintain their presence in the innovation network. We also find that, despite decreases in size, the overall structure of the informal and innovation networks do not change, contrary to what the literature has suggested so far. These are relevant academic insights but add to managerial understanding as well.

Section 2 discusses downsizing as a prime example of top-down organizational change by management in the pursuit of strategic goals. We do so from a social network perspective. Section 3 describes the research setting, data and analysis strategy, whereupon Section 4 presents results. Section 5 discusses implications, concludes and offers recommendations for future research.

## **NETWORK RESILIENCE DESPITE DOWNSIZING – THEORY and PROPOSITIONS**

Corporate change can be convergent or radical in scope, and either evolutionary or revolutionary in pace (Greenwood and Hinings 1996). A radical form of corporate change, downsizing has been a managerial practice to increase organizational efficiency and effectiveness (e.g. Budros 1999; Cameron et al. 1991; De Meuse et al.

1994; Littler 2000; Schmitt et al. 2012). Defined as ‘planned eliminations of positions or jobs’ (Cascio, 1993: 96), the goal of downsizing tends to be to drastically improve efficiency of a firm by decreasing costs, enhancing revenues, or increasing competitiveness (Datta et al. 2010; Freeman and Cameron 1993). By contrast, incremental change consists of smaller adaptations realized over relatively longer time spans to maintain organizational stability in the long run (Plowman et al. 2007; Freeman and Cameron 1993; Tushman and Romanelli 1985).

Downsizing may coincide with corporate reorganization or the planned replacement of the current organizational structure and operating model with a new, for instance more customer-centric one (Tushman and Romanelli 1985; Gulati and Puranam 2009). A firm’s existing orientation may change (Miller 1990) if its strategy shifts (Freeman and Cameron 1993; Agarwal and Helfat 2009). In this study we focus on workforce downsizing, what Cameron et al (1991) refer to as a workforce reduction strategy: reduction in employee numbers, involving no explicit consideration of structural differentiation (c.f. DeReu et al. 2008). The downsizing we study does not involve work redesign and structural change (redesign strategy) or systematically changing the way employees approach their work (systemic strategy) (DeReu et al. 2008; Cameron et al. 1991). Workforce downsizing is typically implemented top down, often with support of external change agents to manage the change process (Augier and Teece 2009).

Downsizing has significant implications for employees: especially uncertainty increases among employees and relations between them employees are typically believed to be severed (Datta & Guthrie 2010; Guthrie & Datta 2008; Nixon et al. 2004; Fisher & White 2000). Downsizing is seen as a largely exogenous event that impacts the organization and its social networks. Even in a relatively well-scripted

(Barley and Tolbert 1988) and well-defined situation individuals can exert their agency in how downsizing takes effect, however (Dolfsma and Verburg 2008). No script of any situation can be closed in the sense that all aspects of behavior are prescribed in full (Dolfsma et al. 2011). The script of a downsizing operation will not be a closed one. Employees may be expected to exert influence to change the course of a downsizing operation, to their own benefit and possibly to that of the firm (Brockner et al. 1987; Cascio, 1993; Schmitt et al. 2012). Employees finding themselves in an uncertain situation might decide to find another employer even if they themselves might not have to fear for their own position (Datta & Guthrie 2010). Where they are positioned in the social network of a firm prior to downsizing will make a difference as to what they can do to influence their situation post downsizing, we suggest.

### **Social Networks and Downsizing**

New network structures typically evolve from previously existing structures – social networks show structural persistence (Walker et al. 1997; Gulati and Gargiulo, 1999; Zaheer and Soda 2009). The attempts of individuals to help shape the post-downsizing situation draw on the position they have prior to downsizing and will be based on the information and the support that they are able to muster (cf. Zaheer and Soda 2009). The resources on which a firm is going to have to depend also after downsizing if it is to be successful will largely be embodied in the individuals working for it, and in the connections between them (Gulati 1995; Hillman et al. 2009; Trahms et al. 2013). Drawing on social exchange theory (Cook and Emerson 1978) and resource dependence theory (Pfeffer and Salancik 1978) one may suggest

that the strength of someone's position in a network is rooted in the dependence of others on the resources (knowledge and information mostly (Aalbers et al. 2014; Ibarra 1993) available to and controlled by the actor. Even when downsizing, thus, the social fabric prior to the event will to some degree help explain the situation after the event.

The informal network in particular is argued to allow for flexibility, access to knowledge and resources, and to stimulate creativity and innovation (Cross et al. 2002; Soda and Zaheer 2012). Informal networks are the contacts actors have with others within the organization that are not formally mandated. Informal ties are discretionary or extra-role, initiated by individuals themselves, that allow individuals to acquire personally relevant information about what is going on in their organization (Szulanski et al. 2004; Brass 1984; Ibarra 1993; Mehra et al. 2001; Smith-Doerr et al. 2004; Rodan 2010; Soda and Zaheer 2012). This informal circuit is also referred to as the 'organizational grapevine' and provides insight into the general way 'things are getting done' within the organization (Cross et al. 2002; Umphress et al. 2003). Informal relations may by-pass the formal communication structure (Cross et al. 2002; Gulati and Puranam 2009; Schulz 2003). Norms, values, and beliefs get shared through it (Lazega and Pattison 1999; Schulz 2003). Even though an informal network can be intransparent and a source of resistance to the necessary changes, it can also be a way to instigate the transfer of new ideas more easily (Albrecht and Ropp 1984; Hansen 2002).

### **Network Positions**

As in the aftermath of downsizing employees face large (human) resources constraints, the ease with which they can access to them, as evidenced from their

position in the network, is important to them (Schmitt et al. 2012). How individual actors overcome network shock as the result of downsizing relates principally to the the position the focal actor find themselves in (Ahuja, 2000a; Rodan and Galunic, 2004, Zaheer and Soda 2009). A strategic network position offers actors a combination of experiences, knowledge access, prominence, and power that can open opportunities and create inducements, which in turn influence the evolutionary pattern of network structures (Burt 1982; Brass & Burkhardt 1992; Ibarra 1993; Stevenson and Greenberg, 2000; Zaheer and Soda 2009). What position an individual maintains influences their likelihood of being successful and making a valuable contribution. We argue in this section that individuals in a favourable position prior to downsizing, allowing the to obtain more or better information from the organizational grapevine, will see their involvement in the innovation network persist.

One can be aware of and obtain knowledge and information and exert an influence over how it flows in the informal network (1) among one's direct contacts, or (2) due to one's position in the full (informal) network. We refer to the first as someone having direct reach and to the latter as someone having extended reach.

#### A. Direct reach to the flow of knowledge and information

Ibarra (1993, p.472) observed that: "bringing about a change [...] requires an individual to use power and influence to persuade others of the desirability and to mobilize support, information and material resources or to overcome resistance to change." An individual's immediate contacts in a network can be a basis for such power, controlling over the knowledge and information flowing in an organization (Ibarra 1993; Brass 1992). The control of one's direct network is commonly referred to as an one's direct power base (Ibarra 1993); we refer to this as an individual's

“direct reach”. If one has a larger number of connections, who also have a larger number of connections, one’s individual power base is higher (Bonacich 1987).

Actors can seek to align and coordinate the actions of one’s own connections as well as the further connections of one’s own connections (Bonacich 1987). Earlier research has shown that power or influence in the informal network deviates from formally designed power structures (Cross and Prusak 2002; Krackhardt and Hanson 1993; Aghion and Tirole 1997) and is critical to the support for innovative activity and innovative outcomes (Allen 1984; Aiken et al. 1980; Tushman 1977; Ibarra 1993). Kanter (1983) argued that power acquired through informal network connections is stronger when an individual maintains different kinds of contacts. While some claim that being more powerful in this way provides one with alternative sources of information and can allow one to strategically disseminate information oneself, others point to the possibility of being powerful in this way to create coalitions and political support (Albrecht and Ropp 1984; Lomi et al 2014). This power can thus help someone to survive downsizing better, and promote the innovation projects one is involved in (Aalbers et al., forthcoming). Highly uncertain times might require extensive extra-role activity to stay in the informal loop of things (Ibarra 1993). Individual power in the informal network, the ability to favorably influence one’s immediate social environment, is a necessity for a new idea to be actually approved or tolerated, let alone to be implemented (Kanter 1983, 1988; Allen 1984). In cases of substantial change to the organization, when the resulting formal structure is to a large part unclear, the position in the informal network prior to reorganization, having a large number of immediate contacts, might thus be a source of influence for individuals (cf. Bacharach and Lawler 1976; Gulati and Puranam 2009). Employees that are known to be established informal power figures have a

good sense of their direct social surrounding and hold specific (political) knowledge that helps mobilize this social environment because of their connections. (Aalbers et al., forthcoming). As innovation activities are believed to draw largely on informal patterns of exchange, individuals with high direct reach in the informal network are more likely to have established themselves as interesting counterparts for innovative matters as well (Tushman and Scanlan 1981; Westley and Vredenburg 1997).

In addition, direct relations in the informal network, or the further contacts that these have allows one to have a better sense of the value of the knowledge and information one receives from these. The lifeworld of the sources of information one has direct reach to are better understood, and the knowledge and information can be more easily confirmed. Also, complex knowledge and information can be more easily transferred between individuals who are close (Hansen 1999).

This leads us to suggest Proposition 1:

Proposition 1: Direct reach in the informal network prior to corporate downsizing contributes to the resilience *of one's innovation ties after downsizing*.

B. Extended reach to the flow of knowledge and information

Due to the uncertainty that comes with corporate downsizing, employees and entire organizational units may seek to strategically diffuse knowledge informally, perhaps in retribution to a management that has instigated and is implementing the downsizing programme (Schmitt et al. 2012). Employees may become reluctant to make suggestions to colleagues and information sharing can slow (Bommer and Jalajas 1999; Gandolfi and Oster 2010; Schmitt et al. 2012).

Informal ties are costly to build and maintain, and their existence is not necessarily supported by the organization (Tsai 2000). In more conservative knowledge sharing circumstances when a firm downsizes, individuals who are (betweenness) centrally positioned prior to downsizing, having a more extended reach in their network, in terms of being typically on the shortest path of informal information flows in the full informal network of an organization (cf. Provan et al. 2007). The advantages that may be referred to as betweenness benefits are advantages that one will not be able to muster overnight, but one will need to be able to rely on ties one maintained in the recent past, i.e. prior to downsizing. Individuals who maintained such ties will receive information in larger quantities and in particular also of a larger diversity, tapping into the various corners of the organization beyond their immediate contacts. What is more, as the information is not formally mandated, it has the potential to be more diverse and non-incremental in comparison to what is formally communicated (Cross and Parker 2004). A central position in the full informal network allows an individual to have access to a diversity of informal information sources from across different hierarchical layers and fields of expertise (Aalbers et al., forthcoming). It allows an individual to anticipate better what the organization is headed for, which might be different from what is formally communicated, and it allows an individual to infer what is expected of people under the new circumstances. Information acquired through the grapevine may be used by an individual to re-position, re-interpret or initiate innovative activities in a way that is best believed to fit with the future structure and demands of an organization. An individual who is aware of the extended information flow is better able to do such positioning, , increasing the chances of enhanced personal satisfaction and social

recognition of the individual innovator's actions (Teigland and Wasko 2009) as well as benefiting the organization (Salter et al. 2009).

Employees fulfilling a strong betweenness position in the informal network, having a more extended reach in their network, can seek to interrupt or steer the flow of information that spans the whole organization. A prior reputation for being informally 'in the loop of things' may make that such highly central individuals in the informal network prior to downsizing are more likely to hold and control valuable information, also when parts of the formal organizational structure disintegrates or are re-designed.

Control over the informal flow of information throughout the organization prior downsizing renders individuals attractive partners with whom to continue to maintain relations. As formal positions might require more time to re-establish and settle, informal positions are likely to allow one to be among the first to receive relevant and new information that could be beneficial to the success of ongoing innovative activity (Cross and Parker 2004). In a way, partnering with those that hold a central betweenness position in the informal network prior reorganization might then be an economic decision, increasing the chances of continued and timely inflow of worthwhile novel information that extends beyond one's direct informal milieu.

One's awareness of and control over the extended information flow in the informal network of a firm (betweenness centrality), prior downsizing, should be expected to encourage one to sustain innovation related contacts and activities. We thus suggest the following proposition:

Proposition 2: Extended reach in the informal network prior to corporate downsizing contributes to the resilience of *one's innovation ties* after downsizing.

## **METHOD**

**Research design and procedure.** Data collection took place at Beta Company, a leading internationally operating financial services company. Beta Company is a knowledge-intensive firm with a strong focus on offering innovative solutions to its customers. We collected network and other contextual data prior to and after corporate downsizing – a rare and unanticipated opportunity. The workforce downsizing was executed by way of a typical top-down approach and took place over a period of several months. The relatively brief downsizing implementation period is favorable from a methodological point of view for our study as developments can be more confidently attributed to the the downsizing (Lamont et al. 1994; Cameron 1994; Trevor and Nyberg 2008). Overall, the workforce was ultimately reduced by over 30%. Downsizing followed after a long period of market, corporate and social stability at Beta Company, introducing corporate as well as social uncertainty as a relatively new phenomenon. The downsizing program was planned and executed in close collaboration with a strategic change consulting firm.

**Data Collection.** We collected qualitative data throughout the full period of time. This data included semi-structured interviews with employees undergoing the reorganization as well as with those carrying out the downsizing program (20 in total) and written material such as agendas, minutes and project plans. Interviews typically lasted one hour, were recorded and transcribed, and were conducted with survivors, executioners as well as employees that left the company by  $t=2$ . In addition to the scheduled interviews, we studied formal communication on the downsizing as posted

on a dedicated intranet portal of Beta Company. Interviews served three purposes: (1) to become familiar with the organization, (2) as the first round in our snowball sampling procedure to collect data and, (3) to understand our quantitative findings in the appropriate qualitative context. We sent out a network surveys before and after the Downsizing period. Collection of the first survey data (at  $t=1$ ) was finalized in the month prior to the announcement of the reorganization. The collection of the second data set ( $t=2$ ) took place directly after downsizing.

At each time a network survey was deployed based on snowball sampling procedure, a method commonly applied in network analysis studies and especially useful when the target population is not clear from the beginning or when it may cut across unit boundaries (Wasserman and Faust 1994; Aalbers et al., forthcoming). For both datasets the target population emerged in several rounds of surveying, where contacts mentioned in one round determine who should be approached as a respondent in a subsequent round. To exclude the risk of ignoring 'isolates', relevant respondents involved in exchange of new, innovative knowledge but who are not well connected and may not be mentioned by others and thus not targeted in our survey, in our first round of snowball sampling we targeted respondents with diverse backgrounds and checked with key informants to determine that isolates were not inadvertently ignored afterwards as well (Rogers and Kincaid 1981).

The innovative knowledge sharing network was measured by asking individual respondents with whom they discussed new ideas, innovations and improvements relevant to the company (Borgatti and Cross 2003; Cross and Prusak 2002; Rogers and Kincaid 1981; Rodan 2010; Aalbers et al. 2013, 2014). Following Ibarra (1993) and Brass (1984) we measured the informal network by asking respondents with whom they discuss what is going on within the organization in

confidence to get things done that are of personal relevance to them (cf. Mehra et al. 2001; Smith-Doerr et al. 2004; Rodan 2010). As this informal network provides insight into the general way ‘things are getting done’ within the organization, it identified one’s confidants for personal support (Rodan 2010; Umphress et al. 2003). To reduce ambiguity, network questions were formulated in the native language – Dutch and English. We did not set a maximum number of contacts respondents could enter as that might unduly affect network structure (Friedman and Podolny 1993; Huang and Tuasig 1990). This generated new names involved in the informal and innovation network of the company

In total 241 individuals were identified in the innovation community. These were all surveyed; overall our response rate is 92%. In round two directly following the downsizing 175 individuals in the remaining innovation community were identified; our response in this round is 78%. Table 1 provides descriptives by network. High response rates are required to limit the effects of missing data points in a social network possibly compromising the analysis. Our response rates are considered to be acceptable response rates for the analysis of a full network (see Wasserman and Faust 1994; Kossinets 2006; Grosser et al. 2011).

### **Operationalization of variables.**

Individual innovation tie resilience post downsizing (DV). Defining innovation as the development of ideas to improve products and services or develop new ones, the innovation network is the pattern of social relations to exchange, support and bring about these new ideas (Albrecht and Ropp 1984; Rodan 2010; Aalbers et al. 2013, 2014). Innovation tie resilience post downsizing was operationalized at the individual level as the decline in an individual’s innovation ties by determining the difference

pre- to post-downsizing. A so-called Difference-in-Difference (D-i-D, or delta-Δ) estimate is the change in the number of innovation network ties available to an individual employee, comparing t=1 with t=2, based on in-degree centrality. The in-degree measure is regarded as more reliable than the self-reported out-degree measure (Costenbader and Valente 2003). Our dependent variable is a measurement of the change (reduction) in innovation ties due to the reorganization available to an individual employee.

Direct reach - Bonacich power (IV). Awareness of and control over information flows in one's direct network environment is best measured by the Bonacich power measure (Bonacich 1987). Rather than only counting direct contacts, as degree centrality does, access to the contacts of one's direct contacts also improves one's immediate awareness of and control over a network (Cook et al.1983), for instance by being more successful when bargaining (Bonacich 1987). Power in a network, referred to as Bonacich power, is derived from the ability of actors to align and coordinate action of one's own connections as well as the subsequent connections of one's own direct connections in a second level (Bonacich 1987). Equation 1 shows how to calculate Bonacich power. Here  $c$  is the derived nodal attribute power score for  $i$ ,  $R$  is an adjacency matrix, while  $\alpha$  and  $\beta$  are scaling factors. When  $\beta=0$  this measure would equal the degree centrality measure and be independent of the shape of the full network.

$$c_i(\alpha, \beta) = \sum_j (\alpha - \beta c_j) R_{i,j} \quad (\text{Eq.1})$$

Following Paruchuri (2010) and Borgatti and Halgin (2011) we calculated the Bonacich power score for each individual in the informal network prior downsizing.

Since Bonacich power values will vary by node depending on the total number of nodes and edges (ties) present in the network.

Extended reach – Betweenness centrality. Betweenness measures the strategic importance of an actor within the total network by recognizing the importance of the geodesic paths between all actors involved in the total network. Betweenness assesses the proportion of edge-independent paths that involve a given node, measuring paths in the network that would not exist if the particular node were not present (Borgatti and Everett 2006). The betweenness measure thus is an indication of the control a node has over the diffusion of knowledge or information in the full network. We calculated betweenness centrality for each individual in the informal network prior to downsizing (Wasserman and Faust 1994).

Control variables. We control for the the absolute number of innovation ties an individual has prior to downsizing. The change in the number of innovation ties an individual has might be affected by the number of ties that individual had prior to downsizing. Following, a.o., Shah (2000) as we control for a number of demographic variables, membership of a functional work group, gender, hierarchical level, and tenure. We included tenure to control for the amount of time an individual has had to develop relations over the years (Gundry 1993). Tenure has been related to positions of control and innovative capacity due to systemic legitimacy and knowledge of how to navigate an organization's political waters (Ibarra 1993; Zenger and Lawrence 1989). Hierarchical level has been linked to one's informal power base, as well as access to information and resource flows (Ibarra 1993; Baldrige and Burnham 1975; Aalbers et al., forthcoming) and for this reason is included as a control variable. Gender and functional work group membership were added to control for group affiliation effects. In addition, we controlled for individual network density since the

group dynamics or exchange patterns can differ between networks of different densities. Prior studies have linked (individual) network density to individual's knowledge retention capabilities (Reagans and McEvily 2003; Schmitt et al. 2011). Controlling for value of innovative input offered for exchange by an employee, reported by those that directly interacted with them, is calculated as an average value to correct for number of respondents per individual. Interactions of ego with alters can be different if ego has more valuable knowledge to exchange compared to when they have not, irrespective of the number of relations. One might expect that value of innovative input offered to change (decline) as a result of downsizing as no immediate use might be perceived by those receiving the input, and so this possible effect needs to be taken into account.

In addition, before presenting the regression results, at the overall network level, we further check for stability of the overall network structures over time, comparing pre- and post downsizing network cohesion. To determine cohesion we measured density, transitivity and reciprocity in a network (van Duijn et al. 2003; Brewer and Webster 1999; Hassan-Murshed et al. 2010). These cohesion measures are based on the connectivity of the network or the ability (inability) of actors to reach others, directly and via indirect paths. Cohesion measures provide us with important insights on the robustness of an organizational network (White and Harary 2001).

## **RESULTS**

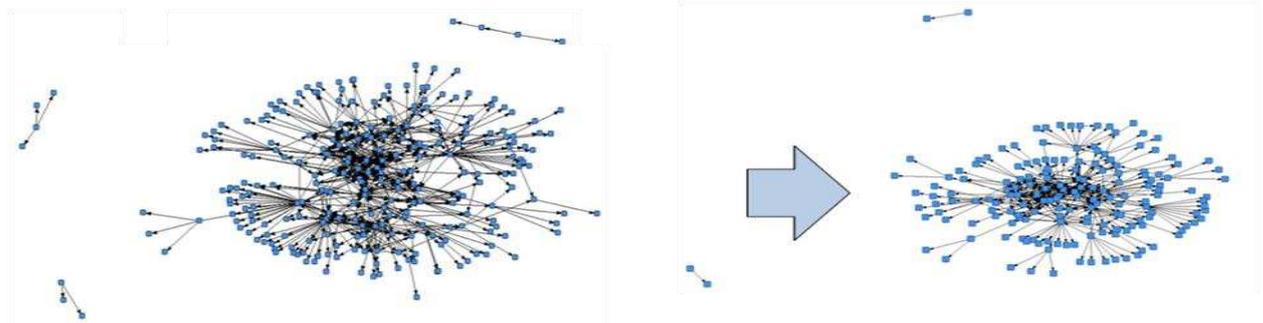
Downsizing at Beta Company had clear objectives and a detailed program to be implemented. The efficiency objectives were to be realized as a downsizing program was rolled out in a period of time lasting several months. Operational efficiency and cost recution were explicitly the stated goal. Uncertainties among employees

abounded, as one interviewee expresses this succinctly: ‘People find it difficult to come up with, or even discuss, plans and new ideas since these might actually lead to *redundancy*.’ An IT employee added to that: ‘*I am convinced that intervention is essential if we want to secure a bright future for our company. But having to watch people leave is not easy for anyone. It might very well prove to be difficult for quite a few of them to get reemployed elsewhere. I could be one of them.*’ The uncertainty for individuals that typically accompanies downsizing is thus adamantly clear in this case. An Operations employee reflects this: ‘*I and my direct colleagues are facing quite some uncertainty at the moment. The only actual certainty is that there will be people that will be asked to leave.*’

**Figure 1: Changes in the Innovation Network as Beta Company downsizes**

**t=1 (n=241)**

**t=2 (n=175)**



A characterization of the two networks studied is provided in Table 1; Figure 1 provides a visual representation of the changes for the innovation network. As a result of the downsizing activities, the labor force was reduced by more than 30%, dropping from 1000 employees in 2010 to 700 employees in 2011. At the tie level we observe a similar reduction. Ties in the innovation network reduce by 36.6% in terms of absolute numbers. This decrease is slightly less than the reductions in the informal

network that is reduced by 40.1%. Note however that there are also newcomers<sup>1</sup> to the innovation network: a group that was already employed with the company prior to downsizing but who were not involved with innovation, and a small group newly hired employees. The moment at which newcomers enter the organization might additionally explain the drop in reciprocity shortly after the reorganization. A HRM manager observed that *'Newcomers are few, but those that joint have a hard time getting involved in the informal organization, this requires time, as in any other company'*. The average number of innovation ties maintained by individuals decreased by almost 28% (3.44 on average prior to and 2.78 on average after the reorganization). The common explanation by those interviewed is pointedly summarized by an employee at the NBD department: *'Under the current climate of short term goals and uncertainty, rowing upstream is not the way to go – further investing in my innovation contacts right now therefore feels like a waste of effort'*. The networks studied are, in all, however, surprisingly stable over time in terms of their overall structure. This is in contrast to what the literature tends to suggest, but also makes our quantitative analysis more reliable. Findings we present are less likely to be biased due to the networks analysed being different in structure.

**Table 1: The network descriptives over time**

Descriptives	Pre-downsizing (t=1)	Post-downsizing (t=2)
Actors	241 3.44 ties on average	175 (-27.4%) 2.78 ties on average - 66 actors have left the company at this point - 143 actors continue from 2010

<sup>1</sup> A common misconception in periods of downsizing is that no new employees are hired. However, as skillsets are reevaluated and new projects due to corporate restructuring are established, new recruits may be required.

<b>Total # of ties</b>	<b>829‡</b>		<b>486‡ (-41.4%)</b>	
- Innovation	678		430 (-36.6%)	
- Informal	683		409 (-40.1%)	
<b>Density</b> Avg value (std dev)	Innovation	0.0148 (0.1989)	Innovation	0.0101 (0.1689)
	Informal	0.0179 (0.2376)	Informal	0.0114 (0.1897)
<b>Reciprocity</b>	Innovation	0.1281	Innovation	0.1054
	Informal	0.1308	Informal	0.0965
<b>Transitivity</b>	Innovation	25.05%	Innovation	28.69%
	Informal	23.80%	Informal	26.24%

‡ Ties in both networks may not add up to 'total number of ties' because a relation between individuals can combine both dimensions in one tie – resulting in social multiplexity (Ibarra 1993).

**Table 2: Means, Standard Deviations, and Correlations**

	Variable (actor level)	Mean	Std.D	1	2	3	4	5	6	7	8	9
1	Delta innovation ties (Delta InDegree)	.1608	6.466									
	Department membership	3.2867	1.446	-.085								
2	Tenure	8.0010	6.914	-.132	.042							
3	Gender	.7832	.4135	.074	-.107	.083						
4	Value of Input	2.3125	2.326	.094	-.381***	-.091	-.024					
5	Hierarchy	4.3566	.9299	.093	-.082	-.118	-.127	.160*				
6	Density Informal t=1	.24571	.1663	-.081	.124	-.021	-.014	-.062	.043			
7	InDegree Innovation t=1	.00682	.0101	.440***	-.135	.048	.095	.083	-.031	-.004		
8	Extended reach, Informal t=1	.00104	.0040	.454***	-.207**	.013	.018	.128	-.078	-.160*	.673***	
9	Direct reach, Informal t=1	.0804	.1588	.425***	-.069	.035	.128	-.043	-.016	.079	.899***	.582***

\*\*\* Correlation significant at 0.05, 0.01 and 0.001 levels (1 tailed); n=143 employees involved at both t=1 and t=2 in the innovation network.

Table 2 presents descriptive statistics and Table 3 presents the regression results.<sup>2</sup>

Normality assumptions were tested for and no signs of non-normal distribution or

<sup>2</sup> To rule out any bias due to independence in observations in network data, we conducted a bootstrap procedure to validate the OLS outcomes reported in Table 3 (cf. Snijders and Borgatti, 1999; Davison and Hinkley, 1997; Efron, 1979; Efron and Tibshirani 1986). An m-out-of-n bootstrap was conducted, based on 10,000 resamples, each with a size of 50 percent of the original dataset, with replacement

multicollinearity were found. VIF scores stayed within generally acceptable bounds and tolerance levels are above 0.5; Durbin-Watson tests scored 1.976.

Model 1 tests the effect of the controls separately, showing no statistically significant relationships of the controls with the dependent variable, except for the control for the absolute number of innovation ties prior to downsizing. Model 2 indicates that a betweenness position in the informal network prior reorganization allows one to remain involved with innovation after a reorganization. ( $b = .298$ ,  $p < .01$ ). Introducing betweenness position to the model results in an improvement of model fit ( $\Delta R^2 = .041$ ). Model 3 introduces Bonacich power as the preferred measure of awareness of and control over information flow in one's direct network environment. Having a favorable position that allows for better awareness of and control over the information flowing in one's immediate proximity in the informal network prior to downsizing does not allow one to remain involved with innovation ( $b = .200$ ). Only extended reach to the information flowing in the informal network (high betweenness centrality), and not direct awareness of and control over the information flowing in one's immediate proximity in the informal network (high Bonacich power) prior to downsizing makes one better able of retaining innovative ties after downsizing.

We thus reject Proposition 1 and find support for Proposition 2.

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(Bickel and Ren 1996; Bickel, Goetze and Zwet 1997). Results of this analysis validated the OLS outcomes of Table 3 and can be made available upon request.

**Table 3: Innovation Resilience Because of Position in the Informal Network**

DV	IV: Innovation ties available after downsizing (delta t1 to t2)		
	model 1	model 2	model 3
	Department membership	.018	.047
Tenure	-.146	-.141	-.138
Gender	.058	.077	.067
Value of Input	.031	.021	.044
Hierarchy	.098	.120	.113
Density, informal, t=1	-.086	-.044	-.059
InDegree, innovation, t=1	.444***	.247*	.066
Extended reach, informal, t=1		.298**	.297**
Direct reach, informal, t=1			.200
n	143	143	143
F-value	5.969***	6.545***	5.971***
R <sup>2</sup>	.236	.281	.288
Adjusted R <sup>2</sup>	.197	.238	.240
Delta Adj. R <sup>2</sup>		.041	.002

Standardized coefficients. \*\*\* p<0.001, \*\* p<0.01, \* p<0.05.

## DISCUSSION AND CONCLUSIONS

Our study provides much needed empirical insights into the development of firm-internal organizational networks or patterns of collaboration over time in times of organizational turmoil and downsizing in particular (c.f. Schmitt et al. 2012). Taking a social network-based view of the firm allows us to be more specific and detailed than many other approaches allow for (Shah 2000; Schmitt et al. 2012). Our study is,

for the first time specifically able to pinpoint the effects of downsizing on the activities of the individual employee, including how they contribute to a firm's continued ability to innovate. We systematically compare the situation prior to and after the downsizing event.

In a cross-sectional study of a limited number of firms, studied after the reorganization had taken place, Dougherty and Bowman (1995) find that downsizing disrupts an organization's ability to innovate. We show, however, that innovative activities and social exchanges are remarkably resilient throughout a downsizing episode. The innovation network does decrease in terms of absolute size, as a considerable amount of employees were made to leave the organization, but the informal and the innovation networks remains largely intact and coherent in terms of structural characteristics. Employees do not resort to activities that have only an immediate, visible effect to evidence their contribution to the organization, avoiding a strong reduction of involvement with an activity that for most is extra-role: innovation. The innovation network actually shrinks less than the informal network.

We hypothesize and find that, at the individual level, resilience of ties in the innovation network is due to the extent to which individuals could obtain information and knowledge exchanged in the informal network prior to downsizing. Information flows in one's immediate network environment is not important, however. Extended reach, and the subsequent control over the flow of information in the full informal network indeed is what matters, we find. One way of interpreting this finding is to suggest that awareness of and control over a diverse flow of information that comes with connectedness in a complete network is more important than of the information from one's immediate contacts. One would expect one's direct reach to be more likely to provide one with redundant information than one's extended reach provides. Yet,

the control variable Value-of-Ideas offered by others does not offer statistically significant results – in a period of uncertainty information that confirms other information obtained, while not being valuable in itself, can still be important to the focal individual. One may also suggest that political positioning and coalition building, typically best undertaken with immediate contacts, may not contribute to remaining involved with innovation. This may point to the need to move beyond observations by single individuals (for instance this Beta Company employee observing that ‘[T]he informal communication has become more chaotic. In the end it *is evident that everyone has to fend for himself*’), as failing to perceive the full network picture may obscure what goes on at the overall firm level. The fact that one’s hierarchical position is not a significant control variable is indicative of this as well.

Given that cohesion in the networks does not substantially increase to produce social groupings of tightly connected individuals who might resist input of new ideas and newcomers (Reagans and McEvily 2003; Gargiulo and Benassi 2000), we suggest that downsizing need not spoil a firm’s climate for innovation. Those unfavorably positioned in the informal network stand a bigger chance of not being involved with innovation anymore after a corporate reorganization. These individuals might even have been forced to leave the organization. We do not know if this effect of a reorganization will leave the organization vulnerable to loss of crucial knowledge and experience, unfortunately. One NBD employee remarked in this context that: ‘*Several of those who left our company were informally most definitely key players. But they were also bottlenecks, no doubt*’. As an other IT employee stated, however: “Actually, I do not much miss those who left as one might indeed have expected. The fact of the matter is that I keep on going with the people I knew.” This employee may or may not have the organization’s interest in mind in addition to his own. This would need to be

studied in subsequent research and is something for management to consider as well. Individuals who risk being excluded, are more easily identifiable based on the social network approach adopted in this paper.

### **Limitations and future research**

Our single case study research design can raise questions about the generalization of our findings (Miles and Huberman 1994; Yin 1994). Corporate reorganization and downsizing is among the most important forms of radical strategic change for a firm, yet it has not been comprehensively studied so far (Datta et al. 2010; Guthrie and Datta 2008; Schmitt et al. 2011). If at all studied, the negative impact of downsizing on employees is considered only (Burke and Greenglass 2000). The effects on the strategically and competitively important issue of corporate innovativeness has not been studied in depth. Some claim these effects are negative (Mellahi and Wilkinson 2008; Amabile and Conti 1999; Dougherty and Bowman 1995), but this study questions that. In this sense, this study is exploratory, and the unique opportunity of the in-depth and extensive collection of network data we could collect justifies the choice for single case study as a research design (Siggelkow 2007). In addition, a cross-sectional design for a study of the changes in the interactions in a firm due to downsizing, taking a social network approach, is impossible: aggregating network data for multiple firms into a single dataset is senseless as that would assume that the individuals from different firms could but do not have a tie to connect them. That is an untenable assumption. Future research should examine the effect of downsizing on innovation, replicating the current study. A comparison of the effects of downsizing between knowledge intensive companies and less knowledge intensive organizations could be informative. The effects of downsizing could differ by firms' competitive environment (cf. DeWitt 1998; Cascio 2002), and firm governance style (Perry and

Shivdasani 2005). Differing degrees of autonomy for employees might lead to varying effects of a reorganization. Comparing radical and incremental forms of intervention by management will further understanding of the effectiveness of each kind of interventions.

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