

# Brokerage and Closure

An Introduction to Social Capital

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This one's for my Raytheon colleagues,  
as emotionally and intellectually provocative a set  
as one can realistically hope to have.

Thirty spokes meet in the hub.  
Where wheel isn't is where it's useful.

Hollowed out, clay makes a pot.  
Where the pot's not is where it's useful.

Cut doors and windows to make a room.  
Where the room isn't, there's room for you.

So the profit in what is  
is in the use of what isn't.

Lao Tzu, Tao Te Ching, 500 B. C.  
(from Le Guin, 1997:14)

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# Introduction

Saturday probably began like most days for George Temple. He woke up hungry, perhaps hesitant to get out of his warm bed. This Saturday will turn out to be unique: George will be dead at the end of it. But that was later. Now was about breakfast and waking up.

The trouble started just before noon when the regiment rounded the edge of town and started up the two linked hills known locally as Marye's Heights, because of the Marye family farm at the top. Confederates were dug in behind a stone wall with cannon and musket trained on the approach. It was December 13th, 1862 in Fredericksburg, Virginia. Fourteen times Union soldiers attacked the Confederate line. Fourteen times they failed. When they quit, around dinner, George was one of twelve thousand Union casualties.

## **Civil War Competence-Capability Gap: Fire Power**

Consider two views of the carnage. One highlights the admirable resolution and élan of the Union troops repeatedly attacking the difficult Confederate line. This view is expressed with feeling in a popular documentary film in which the battle is discussed (Burns, 1990).

From a second angle, also mentioned in the documentary, the Union deaths were a foolish waste, reflecting the generic problem of social competence lagging technological capability. Union troops were massed and marched against the Confederate line because that was the strategic thinking of the day. Generals were trained to mass their men to achieve the firepower needed to break a fortification. The thinking was correct with respect to smoothbore muskets, but that was yesterday's technology. The French "Minie" ball, adopted in the decade before the

Civil War, made practical the deadly potential of rifled gun barrels. Guns previously accurate to 150 yards were now accurate to 450 yards. Troops could blow apart one another's formations from a distance. Massive casualties were the cost of using smoothbore strategy in a fight with rifled weapons. The tragedy would recur on other Civil War battlefields, and on a larger scale fifty years later when massed troops in Europe were thrown against machine-gun fortifications.<sup>1</sup>

## **Contemporary Capability-Competence Gap: Social Networks**

The image of old thinking wasting young lives is repugnant, but hold that emotion as you look at contemporary organizations. We today fight in our own Fredericksburg, with its own staggering potential for casualties. Technology has expanded our ability to communicate across geographic and social distance. Our ability to coordinate across markets has expanded accordingly. "Global" is the word of the day. The

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<sup>1</sup>As one military historian describes the setting (O'Reilly 2003:7): "Prior to the Civil War, military leaders had been inculcated with Napoleonic tactics, which were based on smoothbore musket fire. Smoothbore muskets had proven notoriously inaccurate and rarely damaged a target beyond a hundred yards. Rifling, however, made shoulder weapons accurate at ranges exceeding four hundred yards. Massed fire practice -- or close-order tactics -- planted men shoulder to shoulder firing in unison, to compensate for the inaccuracy of smoothbore muskets by creating a dense concentration of fire. But close-order tactics for attacking forces had become a liability in the face of superior firearms. Military practice had failed to evolve past massed formations, so weaponry decidedly favored the defender over the attacker. Fredericksburg would prove that better than anywhere else." Here is an excerpt from the diary of Union officer Josiah Favill on the evening after the attack:

"... the head of the column appeared in the open and the rebel batteries opened fire. Pandemonium at once broke loose. The whizzing, bursting shells made one's hair stand on end. We marched rapidly forward -- passing a huge pile of bricks which the round shot was scattering in every direction, then came a mill race, and on the other side of it a high board fence -- clearing these obstacles in the face of a terrible fire, then in full line of battle.

We marched directly forward in front of Marye's house, the strongest point of the enemys' works. It seemed a terrible long distance. We hurried forward with bated breath and heads bowed down, the rebel guns plowing great furrows in our ranks at every step; all we could do was to close up the gaps and press forward. When within some three hundred yards of the rebel works, the men burst into a cheer and charged for the heights.

Immediately the hill in front was hid from view by a continuous sheet of flame from base to summit. The rebel infantry poured in a murderous fire while their guns from every available point fired shot and shell and canister. The losses were so tremendous that before we knew it our momentum was gone, and the charge a failure. Within one hundred yards of the base of the hill we dropped down, and then flat on our bellies, opened fire while line after line of fresh troops, like ocean waves, followed each other in rapid succession, but none of them succeeded in reaching the enemy's works. A few passed over our line, but the bulk of them dropped down before they reached us. Looking over the field in rear, from where I lay, the plain seemed swarming with men, but it was easy to see that the attack was a failure, and that nothing that could be done would amount to anything.

Our losses were heavy, while those of the enemy sheltered behind superb works were almost nothing. Just then there was no romance, no glorious pomp, nothing but disgust for the genius who planned so frightful a slaughter."

limited scale of yesterday's organizations is today inefficient. We removed layers of bureaucracy and laid in fast, flexible communication systems.

Ask the leader of any large organization about the most difficult barriers he or she has to manage to harvest the coordination potential of our communication capabilities. They inevitably talk about people issues, culture issues. People continue to work the way they learned in legacy organizations, in yesterday's organization silos. We are capable of coordinating across scattered markets of human endeavor. We are not yet competent in how to take advantage of the capability.

In this period of competence trying to catch up with capability, authority in the formal chain of command no longer provides the answers it once did. Matrix structures have people reporting to multiple superiors, which weakens the authority of each reporting relationship. Efficiencies gained by removing layers of bureaucracy shift control from vertical chains of authority to horizontal peer pressure. Work once defined by superiors in the formal organization is now negotiated between colleagues who have no authority over one another. People are more than ever the author of their jobs, not told what to do, so much as expected to figure it out. Feeling that someone must be at fault, people blame one another for problems created by the capability-competence gap. I do not wish to make too much of the Fredericksburg analogy because it is only one of many such, but it is interesting to hear Fredericksburg soldiers voice complaints I so often hear in contemporary organizations: Officers in the field recognize the folly of attacking the Confederate line and so hope there is no truth to the rumor of headquarters ordering an attack.<sup>2</sup> Staff officers blame failure on a "want of cooperation" in the organization.<sup>3</sup> Then as

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<sup>2</sup>My information on the Fredericksburg battle comes primarily from O'Reilly (2003) but internet access to soldier letters and diaries was useful. Here is an excerpt from Union field-officer Josiah Favill's diary five days before the attack: "We hear to-day that Burnside has made up his mind to cross the river, and attack the rebel works. It hardly seems possible, as they are now fortified in the most approved manner, and garrisoned by the best army the Confederacy has in the field. Whoever undertakes it is sure to be beaten; therefore we hope the rumor may prove untrue."

<sup>3</sup>Here is an excerpt from Union surgeon Alfred Castleman's diary after the attack: "Night has come, and the firing has ceased. It has been a terrible day. The wounded have been sent in to us in great numbers. I have been amputating and otherwise operating all day. The result of the battle I do not know. The enemy is very strongly posted, and I exceedingly doubt our ability to dislodge him. In my letter of the 10th, I prophesied that we would cross without much fighting; that when we crossed,

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now, technological capability exceeds social competence and we blame one another for failure: ". . . if only we put in more effort and pulled together as a team."

In our zeal to cut costs and coordinate more broadly with our communication capabilities, we weakened vertical chains of authority relations and deepened our dependence on informal, discretionary relations. When people are confused, they turn to friends and colleagues for advice. When authority is unclear, people turn to friends and colleagues for support. Accountability flows through the formal organization of authority relations. All else flows through the informal -- advice, coordination, cooperation, friendship, gossip, knowledge, trust. Formal relations are about who is to blame. Informal relations are about who gets it done. Informal relations have always been with us. They have always mattered. What is new is the range of activities in which they matter, and the emerging clarity we have about how they create advantage for certain people at the expense of others.

## **Social Capital**

The advantage created by a person's location in social structure is known as social capital. Reflecting the coordination capability-competence gap bedeviling our time, social capital has become a core concept in business, political science, and sociology. There are an increasing number of research articles and chapters on social capital, with the attendant reviews and books that accompany an exciting idea.<sup>4</sup> The term "social capital" appears across the internet as a business competence, a goal for non-profit organizations, a legal category, and subject of university conferences.

The concept begins as a metaphor about advantage. The advantage is visible when certain people, or certain groups of people, do better than equally able peers.

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the enemy would contest every inch of ground, but that if Burnside was heartily sustained by his officers he would drive the enemy. The two first have been fulfilled to the letter. Burnside has not yet driven the enemy, but the fight is not over. Has he had hearty co-operation? I hear hints of the want of co-operation from our subordinate Generals. I have feared this from the start."

<sup>4</sup>For example, Adler and Kwon (2002), Baker (2000), Baron, Field and Schuller (2001), Cohen and Prusak (2001), Flap and Volker (2004), Foley and Edwards (1999), Leenders and Gabbay (1999), Lesser (2000), Lin (1999, 2002, forthcoming), Lin, Cook and Burt (2001), Nahapiet and Ghoshal (1998), Portes (1998), Sandefur and Laumann (1998), Woolcock (1998). Also, Monge and Contractor (2003) and Cross and Parker (2004) draw heavily on social-capital mechanisms to describe instrumental behavior in communication networks.

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The advantage can be visible in higher incomes. Some people become prominent more quickly. Some lead more important projects. More generally, the interests of some are better served than the interests of others. The human capital explanation of the inequality is that the people who do better are more able individuals; they are more intelligent, more attractive, more articulate, more skilled.

Social capital is the contextual complement to human capital in explaining advantage. Social capital explains how people do better because they are somehow better connected with other people. Certain people are connected to certain others, trusting certain others, obligated to support certain others, dependent on exchange with certain others. One's position in the structure of these exchanges can be an asset in its own right. That asset is social capital, in essence, a concept of location effects in differentiated markets. For example, Bourdieu is often quoted defining social capital as the resources that result from social structure (Bourdieu and Wacquant, 1992:119, expanded from Bourdieu, 1980): . . . social capital is the sum of the resources, actual or virtual, that accrue to an individual or group by virtue of possessing a durable network of more or less institutionalized relationships of mutual acquaintance and recognition." James Coleman, another often-cited source, defined social capital as a function of social structure producing advantage (Coleman, 1988:S98, 1990:302): "Social capital is defined by its function. It is not a single entity but a variety of different entities having two characteristics in common: They all consist of some aspect of social structure, and they facilitate certain actions of individuals who are within the structure. Like other forms of capital, social capital is productive, making possible the achievement of certain ends that would not be attainable in its absence." Putnam (1993:167) grounded his influential work in Coleman's metaphor, preserving the focus on action facilitated by social structure: "Social capital here refers to features of social organization, such as trust, norms, and networks, that can improve the efficiency of society by facilitating coordinated action." I echoed the above to begin my argument about the competitive advantage of structural holes (Burt, 1992:8, 45).

So there is a point of general agreement to begin talking about social capital. The perspectives cited above are diverse in origin, and diverse in their style of

accompanying evidence, but they agree on a social capital metaphor in which social structure is a kind of capital that can create for individuals or groups an advantage in pursuing their ends. People and groups that do well are somehow better connected.

## **This Book**

Clear-thinking observers can be frustrated with the vagaries of social capital left as a metaphor. Social capital is the wild west of academic work. There are no skill or intellectual barriers to entry. Contributions vary from rigorous research to devotional opinion, from carefully considered to bromide blather. Research and theory in economics, political science, and sociology are distributed across loosely related perspectives and specialties, each a group of connected experts purporting to have a productive view across groups. The variety is as interesting and exciting as it is corrosive to cumulative work.

What struck me while reviewing social-capital research a few years ago (Burt, 2000) was the variety of theoretical and practical questions on which useful results were being obtained -- and the degree to which more compelling results could be obtained and integrated across projects if attention would cut beneath the metaphor to reason from concrete network mechanisms responsible for social capital. Social capital has the potential to be a powerful technology applied to a critical issue. The technology is network analysis. The issue is performance. Social capital promises to yield new insights, and more rigorous and stable models, describing why certain people and organizations perform better than others. In the process, new light is shed on related concerns such as coordination, creativity, discrimination, entrepreneurship, leadership, learning, teamwork, and the like -- all topics that will come up in the following pages.

My goal for this book is to state the concept of social capital in four reliable and general facts that span the space of issues described by social capital. These facts are stylized to apply across study populations, but precise enough to provide a frame of reference for integrating research projects and posing new questions.<sup>5</sup> I

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<sup>5</sup>The manner in which I construct the stylized facts, and the uses to which I put them, explains their substance and function in this book. Nevertheless, the term "stylized fact" warrants a footnote

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cover diverse sources of evidence, however, I focus on organizations and managers because that is where I have found the highest quality data on the informal networks that provide social capital.<sup>6</sup>

In terms that will become clear across the chapters, here are the four stylized facts around which the book is organized:

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because it is more familiar in economics than in sociology (e.g., a November, 2004 search of JSTOR shows more than 200 articles in economics mentioning stylized facts versus 22 articles in sociology, and the bulk of the 22 in sociology were authored by people in business schools or appeared in journals at the intersection of economics and sociology such as the Industrial and Labor Relations Review and Journal of Human Resources). The first JSTOR article in an economics journal mentioning stylized facts is Corry's (1966) article in the American Economic Review: "In an effort to limit the possible theoretical permutations that can be dreamed up, resort has been made to what I shall call (following Kaldor) the constraint of the stylized fact." British economist Kaldor (1985:8-9) explains in a later lecture entitled, "Stylized facts as a basis for theory building:" "I called them 'stylized facts,' a term used also by Okun, because in the social sciences, unlike the natural sciences, it is impossible to establish facts that are precise and at the same time suggestive and intriguing in their implications, and that admit no exception. . . . we do not imply that any of these 'facts' are invariable true in every conceivable instance but that they are true in the broad majority of observed cases -- in a sufficient number of cases to call for an explanation that would account for them." This is an image of empirical data summarized to be descriptive of the "broad majority of observed cases" on a point that is theoretically intriguing. I am using stylized facts in this book to represent empirical data at a level of abstraction targeted by Merton's (1948a, 1968: Chap. 2) argument for middle-range theories, and Hedstrom and Swedberg's (1998) renovation of Merton's argument to propose that contemporary work would do well to focus on social mechanisms. I offer a stylized fact on the mechanism by which brokerage constitutes social capital (Figure 2.3) and evidence of its association with performance (Figure 1.8). I offer the same for closure (Figures 4.8 and 3.5 respectively). Some colleagues have expressed discomfort with the variation ignored by my deliberate oversimplification, but data representation is not my primary goal. The four stylized facts are empirical reference points for integrating alternative explanations, reference points meant to facilitate comparison between alternative explanations by cutting beneath the social-capital metaphor to reason from the network mechanisms responsible for social capital.

<sup>6</sup>The focus on managers probably means that I will find more evidence of social capital than would be found in a representative cross-section of occupations. First, Carroll and Teo (1996) use survey network data on a probability sample of Americans to show that manager networks (relative to non-managers) involve more participation in voluntary associations, more core discussion contacts, a larger proportion of contacts who are colleagues or co-workers, and more contacts who are total strangers to one another. Second, managers have more job autonomy than non-managers and social capital is more of an advantage for people who have more autonomy (see Section 3.3). More evidence of social capital makes professionals and managers a productive research site for studying social capital, but warrants a caution against generalizing to other populations. The caution should not be taken too far. Business students sometimes ask whether social capital is irrelevant to their small organization because every one knows one another within the organization and key contacts are outside -- so closure is complete allowing no brokerage. I do not wish to make too much of this because the response is obvious, but it deserves mention in a footnote. It is true that social capital evidence comes disproportionately from large organizations (research sites often number employees in the thousands while the median organization in which Americans work contains 50 full-time employees and two part-time people operating on an annual budget of three million dollars; Kalleberg, Knoke, Marsden and Spaeth, 1996:49). However, managers in all settings have contacts in their immediate workgroup along with contacts in the rest of the world. In a large organization, the rest of the world is typically elsewhere in the same firm. In a small organization, the rest of the world is the external environment of suppliers, competitors, and customers. In either situation (anticipating the structural autonomy model in Figure 3.5), closure is productive within the workgroup combined with brokerage beyond the group.

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The first two facts describe the mechanism and returns to network brokerage, which is about the value of increasing variation in a group. Informal relations form a small world of dense clusters separated by structural holes (Figure 1.1). People whose networks bridge the holes are brokers rewarded for their integrative work, rewarded in the sense of more positive individual and team evaluations, compensation higher than peers, and faster promotion (Figure 1.8). Simply put, the first fact is that brokers do better. Second, improved vision is the mechanism responsible for returns to brokerage. Information is more homogeneous within groups such that people who bridge the holes between groups are at greater risk of having creative ideas and more likely to see a way to implement ideas (Figure 2.3).

The third and fourth facts describe the mechanism and returns to network closure, which is about the value of decreasing variation in a group. Closure increases the odds of a person being caught and punished for displaying belief or behavior inconsistent with preferences in the closed network. In so doing, closure reinforces the status quo. It protects against decay in new relations between friends of friends, and amplifies strong relations to extremes of trust and distrust (Figure 4.8). Facilitating the trust and collaborative alignment needed to deliver the value of brokerage, closure is a complement to brokerage such that the two together define social capital in a general way in terms of closure within a group and brokerage beyond the group (Figure 3.5).

I close, in Chapter 5, with implications of the four stylized facts for images of stability and change. The two main points are, first, that network models of brokerage and closure measure forces that bear a striking similarity to the market metaphor in the Austrian school of economics, most notably in the work of Schumpeter and Hayek. Second, the productive potential of brokerage as an engine of endogenous change is more clear in theory than in fact. Closure's inertial forces typically prevail, deepening the structural holes that segregate groups. Legacy organizations can survive in spirit long past the formal organizations in which they developed. In the pages to follow, you will find a world in which reputation replaces authority, pursued opportunity replaces assignment, and reward is associated with competitive advantage in a social order of continuous disequilibrium.

## Personal Note

This book is based on the 2001 Clarendon Lectures in Management Studies at the Said Business School, University of Oxford. I appreciate the engaging audience and the opportunity to assemble my thoughts that the Lectures provided. The bulk of my research reported in the book was funded by work for private clients. In addition, I appreciate support from CEDEP, the University of Chicago Graduate School of Business, INSEAD, and the Kauffman Foundation. I have acknowledged in papers published over the last few years colleagues whose comments helped shape the work reported here. I owe a special debt to three people who read through this book manuscript, Valdis Krebs, Holly Raider, and Don Ronchi. Valdis, with his network entrepreneur breadth of involvements, brought to my attention productive analogies I had missed. Holly caught inconsistencies in the internal logic of the argument. Don I watched as a barometer of my target audience. Don is an entrepreneur between the academic and corporate. He has a Ph.D. in Psychology from the University of Chicago, a successful career in management consulting, and the responsibilities of serving as the Chief Learning Officer at Raytheon Company. That is a rare cluster of attributes; not my target demographic. Don represents my target audience in the sense that he is not wedded to any particular cluster of jargon and he brings a literate, analytical mind to practical problems of how to create value. My target audience is people like Don whose analytical efforts do not fit easily in the traditional categories of basic or applied research. The fit is better to what Stokes (1997) described as "Pasteur's Quadrant," a category of research in which general models emerge from solutions to practical problems.

More broadly, the book is a product of the social capital it describes. There is an element of brokerage in any sociology appointment to a business school. Brokerage is facilitated by the workshop culture of the Chicago GSB, but it is fair to say that an element of brokerage remains in negotiating group boundaries. In part to better understand business in Europe, I began in 1999 teaching part-time as the Shell Professor of Human Resources at INSEAD. Beginning in 2000, I had an opportunity to put my ideas about social capital into practice by becoming a full-time

manager in Raytheon Company, eventually Vice President of Strategic Learning. I mention the mix of roles in part to indicate that I draw on different sensibilities in writing about brokerage, from American mixed with European, from academic as well as corporate. I also mention the mix of roles because it forced me to better appreciate how it feels to work coordination problems. In juggling contradictory demands within and between my roles at Chicago, INSEAD, and Raytheon, I experienced the richness and difficulty of what is described in this book. Weeks spent more often away than at home, emotions ground between divergent groups, and long periods of weekly commuting between Chicago and Paris are exemplary sour memories from the period. I know mine were minor coordination problems on the scale of what is possible, and what many manage. Regardless, it was more than I want to do again. As Jim Baron described my abundant mileage points with his usual biting verve, I was "getting two surgeries for the price of one." Better you read the book.

