



MIT Open Access Articles

Demographic Diversity as Network Connections: Homophily and the Diversity-Performance Debate

The MIT Faculty has made this article openly available. **Please share** how this access benefits you. Your story matters.

Citation	Reagans, Ray. "Demographic Diversity as Network Connections: Homophily and the Diversity-Performance Debate." Chapter 11 in: "The Oxford Handbook of Diversity and Work." Edited by Quinetta M. Roberson, London: Oxford University Press, 2013. (Oxford Library of Psychology)
As Published	http://www.oup.com/us/catalog/general/subject/Psychology/IndustrialOrganizationalPsycholo/?view=usa&sf=toc&ci=9780199736355
Publisher	Oxford University Press
Version	Author's final manuscript
Citable link	http://hdl.handle.net/1721.1/72046
Terms of Use	Creative Commons Attribution-Noncommercial-Share Alike 3.0
Detailed Terms	http://creativecommons.org/licenses/by-nc-sa/3.0/

Demographic Diversity as Network Connections: Homophily and the
Diversity-Performance Debate

Ray Reagans
MIT Sloan School of Management
rreagans@mit.edu

Abstract

Research documenting the influence of demographic diversity on informal social networks is reviewed and critiqued. I focus in particular on research describing the importance of demographic diversity in the development of strong interpersonal relationships. I also consider the importance of network connections between team members and with colleagues outside the team in mediating the association between demographic diversity and team performance. Internal and external relationships define a team's social capital and I illustrate how a focus on a team's social capital helps to explain why the "diversity effect" on team performance varies from positive to negative. In my call for future research, in addition to a focus on demographic diversity, I emphasize the importance of considering more general dynamics and processes that either moderate or mediate the association between demographic diversity and important organizational outcomes.

Keywords: demographic diversity, identification, competition, propinquity, social networks, homophily, transactive memory systems.

Introduction

Over the last 30 years, the US labor force has become more diverse with respect to a number of demographic characteristics, including age, gender, race and nationality. Changes in the US labor force have quite naturally resulted in more diverse working environments. The increase in demographic diversity has coincided with a significant shift in the organization of work processes. Firms have replaced layers of bureaucracy and managerial control with more strategic and temporary forms of organization (e.g., cross-functional teams) that facilitate the transfer of knowledge, information and expertise. Firms are focusing on more effective knowledge management because the ability to transfer knowledge effectively among individuals is critical to a host of organizational processes and outcomes, including the transfer of best practices (Szulanski, 1996), new product development (Hansen, 1999), learning rates (Argote, Beckman, and Epple, 1990; Darr, Argote, and Epple, 1996), and organizational survival (Baum and Ingram, 1998).

Network connections contribute to knowledge management by helping to surmount two significant barriers to knowledge transfer (Reagans and McEvily, 2003; Tortoriello, Reagans, and McEvily, 2011). In particular, while knowledge transfer can be beneficial, it is difficult to achieve when a source and potential recipient do not overlap in their knowledge and expertise. Knowledge overlap facilitates knowledge transfer because individuals learn new ideas by associating those ideas with what they already know (Cohen and Levinthal, 1990; Simon, 1991). When knowledge overlap is low, successful knowledge transfer will either require more effort by the source and recipient

or a greater capacity for knowledge transfer. Prior research suggests that strong network connections increase the amount of effort individuals are willing to exert during the knowledge transfer process (Szulanski, 1996; Uzzi, 1997; Hansen, 1999; Reagans and McEvily, 2003; 2008; Sgourev and Zuckerman, 2009). Prior research also indicates that network range (i.e., maintaining a network that spans structural holes or disconnects) improves an individual's capacity for knowledge transfer (Reagans and McEvily, 2003; Tortoriello, Reagans, and McEvily, 2011).

Since informal network connections contribute to processes, like knowledge transfer, that ultimately contribute to organizational performance, the value of informal network connections is increasing during a time period when the work environment is becoming more diverse. Consequently, a number of scholars and practitioners have asked how changes in the demographic composition of a firm or organization have affected the development of interpersonal network connections. In this chapter, I discuss and review two distinct lines of research that have considered the intersection between diversity and social networks. The first area of research considers how diversity affects the development of network connections between individual firm members. The second line of work considers how diversity affects team performance by influencing the relationships that team members develop with each other and with colleagues outside the team. I also discuss potential avenues for future research that would advance our understanding of how diversity affects network formation and team performance.

Diversity as Connections: Homophily

Researchers with an interest in the network formation process have considered how an increase in diversity has affected the tendency for relationships in a firm or organization to exhibit homophily. Homophily exists when network connections, especially strong connections, are concentrated among individuals who share a demographic characteristic (Lazarsfeld and Merton, 1954). A network connection is strong when it connects individuals who feel emotionally attached to one another and/or communicate with each other frequently (Marsden and Campbell, 1984). Outside of firms in the general population, homophily has been documented across a large number of characteristics, including age (Marsden 1988, Burt 1991), education (Yamaguchi 1990), gender (Brass 1985, Ibarra 1992,1997), race (Marsden 1987, Ibarra 1995, Moody 2001), and religion (Laumann 1973). Inside of firms and organizations, researchers have found organizational networks are often characterized by homophily. People who share a demographic characteristic are more likely to be connected to each other and are more likely to communicate with each other more frequently (Lincoln and Miller, 199; Miller et al. 1981; Pfeffer 1982, 1985; Kram and Isabella, 1985; Tsui and O'Reilly 1989; Zenger and Lawrence 1989; Ibarra, 1992, 1995, 1997). Homophily has been documented so frequently that it is often assumed to be a "law of interpersonal relationships" (McPherson et al. 2001).

Demographic Similarity

The initial explanation for homophily focused on interpersonal dynamics in generating strong network connections. People who shared a demographic characteristic were assumed to also share life histories, experiences, and attitudes, which made it easier for them to interact. An easier and more pleasant encounter was more likely to result in a strong network connection (Laumann 1966, Byrne 1971, Schneider 1987). While scholars focused on the positive effect in-group membership had on tie strength, the positive effect was assumed to be a function of people who were similar on the “surface” (e.g., both women) also being similar with respect to “deep,” or unobserved, behaviors, attitudes, and characteristics (e.g., both liberal).

Instead of assuming that demographically similar individuals will always be attracted to each other, more-recent research grounded in social psychology gives priority to the broader social context in which similar individuals meet and interact with each other. In particular, social psychological explanations for homophily have highlighted the salience or social significance of the demographic characteristic two individuals have in common. Sharing a demographic characteristic will be of little consequence if the two individuals do not assign any weight or significance to the shared characteristic. Moreover, a demographic characteristic that is of little consequence in one situation could be socially significant in another situation. For example, sharing the characteristic American could result in a more positive interaction if two Americans meet one another on a street in Paris. But if the same two individuals were to meet on a street in Chicago, sharing that same characteristic would have little or no effect on their interaction, because almost

everyone in Chicago is an American. In Chicago, the most important characteristic could be where an individual lives or was educated.

The salience of a demographic characteristic is important because individuals are more likely to identify with a salient characteristic, and identification with a characteristic generates positive affect for in-group members (Hogg and Turner 1985; Hogg and Hardie 1991; Hogg 1992, 1993; Hogg and Hains 1996; Grieve and Hogg 1999). Prior research has established that two demographic factors can influence the salience of a characteristic and therefore the rate at which demographic similarity translates into homophily. One factor is the composition of the focal organizational unit or group. If an organizational unit contains a minority and a majority group, its composition is skewed (Kanter 1977: 209). The demographic characteristic that defines minority status is more likely to be salient, while the characteristic that defines majority status is less likely to be salient (Tajfel and Turner 1979, Mullen 1983, Turner 1985, Brewer 1991). If women, for example, represent ten percent of an organizational unit and men represent the remaining ninety percent, the category of female will be salient for women but the category of male will not be salient for men. As the composition of the unit becomes more balanced, the characteristics female and male become more salient. If men and women each represent fifty percent of a unit (i.e., the unit is balanced demographically), the category of male will be salient for men and the category of female will be salient for women.

A second demographic factor is the correlation among demographic characteristics. Salience increases when in-group membership with respect to one demographic

characteristic is reinforced by in-group membership with respect to multiple characteristics (Blau and Schwartz 1984, Lau and Murnighan 1998). When multiple characteristics are “consolidated”, the boundary between the in-group and the out-group is more clearly delineated. For example, if all the women on a team are young and all the men are older, membership in each in-group (i.e., young women and older men) will be salient. Thus, a demographic characteristic can be salient even for members of a numerical majority if those members share multiple demographic characteristics. The importance of being similar along multiple dimensions is not limited to demographic characteristics. If, for example, members of a numerical minority all perform the same task or activity in an organization, or if minority status in a firm corresponds with minority status in the general population, the characteristic that defines minority status will be more salient (Turner 1987: ch. 6).

The general idea is two individuals will assign more weight to their demographic similarity when the shared characteristic is salient and the increase in salience should increase the rate at which demographic similarity produces stronger network connections. The available empirical evidence is consistent with the two explanations for salience and the resulting homophily discussed above. Reported empirical results indicate that social similarity is more likely to produce a strong tie when people who share the focal characteristic (a) are part of a numerical minority (Mehra et al. 1998, Mollica et al. 2003, Reagans 2005), (b) are assigned to a balanced organizational unit (Moody 2001, Bacharach et al. 2005, Mouw and Entwisle 2006), or (c) share multiple characteristics (Blau and Schwartz 1984).

Negative In-Group Bias

While most researchers have focused on the positive association between demographic similarity and tie strength, a small but growing number of scholars have focused on the conditions when demographic similarity will have a negative effect on the strength of a network connection (Reagans and Burt, 2002; Reagans, 2005; Duguid et al. 2010; McGinn & Milkman, 2010; Loyd 2011). Indeed, while scholars emphasize the positive association between demographic similarity and tie strength, the available empirical evidence indicates that sharing a demographic characteristic increase, reduce, or have no effect at all on tie strength (Reagans, 2005: 1379-1381). Elsewhere, I developed an argument that sought to explain variation in the association between demographic similarity and tie strength as a function of three distinct causal mechanisms: (a) some baseline level of interpersonal attraction associated with sharing a demographic characteristic, (b) a positive effect due to in-group identification, and (c) a negative effect due to in-group rivalry and competition (Reagans and Burt, 2002; Reagans, 2005). In-group identification and competition vary with the relative frequency of the shared characteristic to define a predictable association between the effect sharing a demographic characteristic has on tie strength and the relative frequency of the shared characteristic in the larger organizational unit. Sharing a demographic characteristic can be expected to have its most positive effect on tie strength when in-group members are part of numerical minority. As members of the numerical minority increase in size, the magnitude of the positive effect should start to decline (the positive effect that in-group identification has on tie strength is declining and the negative effect

associated with in-group competition is rising). As the group continues to grow in size and starts to represent a plurality of individuals in the organizational unit, the effect associated with sharing a characteristic could turn negative (the negative rivalry effect is large enough to offset the baseline level of attraction and the positive identification effect). If group members represent a majority of the unit (and the characteristic defining in-group membership isn't consolidated with other demographic characteristics), sharing a demographic characteristic should have no effect on tie strength. Supporting evidence has been documented among investment bankers (Reagans and Burt, 2002), research scientists (Reagans, 2005) and teachers (Reagans, 2011).

My argument focused on status-based competition within a group in producing negative in-group connections. A related line of research focuses on the amount of status available to a group (Duguid et al. 2010; Duguid, 2011; Loyd, 2011). All demographic characteristics are not the same. Some characteristics confer more status (e.g., white, male, educated) than other demographic characteristics (e.g., African American, female, uneducated). If an individual belongs to a low status group, he or she might avoid interacting with in-group members, especially if he or she has managed to exceed the status generally associated with his or her group (Duguid et al. 2010). For example, a female manager might avoid advocating for a female subordinate if she believes her female colleague is not as talented as she is (Duguid, 2011). The female manager could believe that the presence of a woman with less ability would undermine her standing in the group. Individuals could avoid strong in-group relationships even

when quality is not an issue. For example, the female manager might avoid advocating for another female out of concerns for appearing biased in the eyes of her male colleagues (Loyd, 2011).

Propinquity

A more-sociological explanation for homophily gives causal priority to being proximate in time and/or space (Festinger et al. 1950; Feld 1982, 1984; McPherson et al. 2001; Ingram and Morris 2007). The basic idea is that individuals are more likely to be connected to people they encounter more frequently. More frequent interactions could have a positive effect on tie strength either because repeated exposure provides individuals with an opportunity to discover mutual or compatible interests or because with repeated exposure individuals become more appreciative or tolerant of their differences. The positive effect that proximity can have on network connections has been established across a number of proximity indicators, including classrooms (Shrum et al. 1988), dormitories (Festinger et al. 1950), neighborhoods (Mouw and Entwisle 2006), voluntary organizations (McPherson and Smith-Lovin 1986, 1987), seating arrangements (Caldiera and Patterson 1987), and break schedules (Reagans, 2011).

The proximity argument focuses on the formation of relationships in general. When used to account for homophily, sociologists focus on the opportunities that demographically similar individuals have to interact with each other. They maintain that institutional and structural forces provide demographically similar people with more opportunities to develop a network connection. For example, typecasting by employers

segregates men and women at work (Bielby and Baron 1986). As a result, men and women have more opportunities to develop relationships with members of their respective in-groups. The very same dynamics could just as well produce stronger ties between people who do not share a characteristic. For example, most of us are educated with people our own age, which generates strong ties between individuals who are proximate in age. But because most schools are coed, the same process creates stronger cross-gender ties. Housing segregation by race in the United States generates strong ties among people who belong to the same racial group. Housing segregation by race can generate stronger network connections between individuals of different education levels or who belong to different economic classes. Indeed, racial segregation makes it more difficult for middle-class African Americans to maintain social closure with respect to class and avoid many of the social ills associated with poverty (Pattillo, 1999).

Future Directions: Diversity as Connections

I have discussed the role of demographic similarity and propinquity in producing homophily. While the two mechanisms are distinct conceptually, organizational demography researchers often assume the two share demographic diversity as a common antecedent. In particular, it is generally understood that an increase in the demographic diversity of an organization or organizational unit, will increase the salience of demographic similarity and the increase in salience will result in more homophily. However, the same increase in demographic diversity will make out-group members more proximate, thereby providing unit members with more opportunities to

develop relationships with out-group members, which should reduce the tendency for relationships inside the organization or organizational unit to be characterized by homophily. The causal framework is illustrated in figure 1. An increase in demographic diversity increases two mechanisms that have opposing implications for homophily (Blau and Schwartz 1984, Brewer and Kramer 1985, Moody 2001, Hewstone et al. 2002). The positive effect that an increase in the salience of demographic similarity can have on homophily will be offset by the positive effect that opportunity can have on relationships between dissimilar individuals.

The causal framework in figure 1 indicates that an increase in diversity has ambiguous implications for homophily. Given the directions of the link along the pathways, if the magnitudes of the coefficients are not known *a priori* it is impossible to know how an increase in demographic diversity will affect homophily. Figure 1 is not examined directly. Instead, scholars infer the relative magnitude of the coefficients in figure 1 from the overall association between demographic diversity and homophily. For example, in an analysis of cross-race friendships among high school students, Moody (2001) found an increase in racial diversity in a school reduced the likelihood a student would be involved in a cross-race friendship. Moody concluded the salience effect was larger than the opportunity effect. When the association between diversity and homophily has been negative, scholars have concluded the opportunity pathway was larger than the magnitude of the similarity pathway (Rytina et al. 1988: 650-652; Bacharach et al., 2005; Mouw and Entwisle, 2006).

Instead of using demographic diversity as a proxy for (salient) demographic similarity and the opportunities an individual has to interact with out-group members, future research should consider how demographic similarity and propinquity combine to produce strong network connections. Indeed, despite the large body of research, we do not know how much each mechanism contributes to tie strength. Organizational demography researchers have either focused on the salience of demography similarity, propinquity, or have used demographic diversity as a proxy for both mechanisms. As a result, we do not know how much demographic similarity and propinquity contribute to strong ties alone and when combined with each other.

While it seems reasonable to assume that propinquity will moderate the association between demographic similarity and tie strength. Being in close proximity could either amplify or dampen any positive effect that demographic similarity has on tie strength. On the one hand, when demographic similarity is salient, two individuals could be more likely to take advantage of the opportunity that being in close proximity provides. Thus, being in close proximity should amplify any positive effect that demographic similarity can have on tie strength (Zeng and Xie 2008). But on the other hand, more-frequent contact between in-group members could reduce the positive association between demographic similarity and tie strength. In particular, recent research has shown that the positive association is a function of actual and expected similarity (Hogg and Hardie 1991, Hogg et al. 1995). Expected similarity is a function of sharing a demographic or social characteristic, whereas actual similarity is a function of sharing unobserved attitudes, behaviors, and beliefs. When an in-group member meets or exceeds prior

expectations with respect to unobserved attributes, his or her relationships with in-group members are stronger (Hogg et al. 1995). However, if two people who share a demographic or social characteristic are similar only on the surface, propinquity would provide them with more opportunities to discover how very little they actually have in common, which should reduce the positive effect that demographic similarity can have on network connections (Ziebro and Northcraft 2009: 148-149). For example, if a young person assumes all young people are liberal Democrats, more opportunities to interact with a young conservative Republican would make it more likely their differences in political philosophies would be revealed and, consequently, the positive effect of being the same age would be diminished.

Recently, I analyzed how demographic similarity and proximity contributed to strong ties among elementary and middle school teachers. Network connections among teachers were a source of social support and were also conduits for knowledge transfer that allowed teachers to improve the quality of the instruction and ultimately the test scores of their students. I focused on age similarity. I focused on age because empirical analysis indicated that age was a primary source of demographic diversity in each school and therefore was likely to be salient or socially significant. Proximity was defined in terms of two teachers having a classroom on the same floor and overlap in the teacher's break schedules. Teachers with classrooms on the same floor were proximate in space and teachers who took breaks at the same time were proximate in time. Being proximate in time and/or space provided two teachers with more opportunities to develop a meaningful relationship.

I found that age similarity had a positive effect on tie strength and the positive age similarity effect was even more positive under the conditions that made age similarity more salient. I also found that the positive effect that age similarity had on tie strength was even more positive when teachers the same age had more opportunities to interact with each other (i.e., two teachers had a classroom on the same floor). My findings call into question the “trade-off” illustrated in figure 1. Among the teachers I analyzed, demographic similarity and propinquity had positive effects on tie strength and the effects were even stronger when both mechanisms were present. Moreover, an increase in the salience of demographic similarity didn’t come at the expense of the expense of the opportunity to develop relationships with socially dissimilarity colleagues. The correlations between the indicators of propinquity (i.e., the same-floor and break-overlap variables) and the age-similarity variable were modest. However, the research findings did indicate that the negative effect age dissimilarity had on tie strength was even more negative when age-dissimilar teachers were more aware of their differences and had classrooms on the same floor.

Thus, the empirical results are consistent with prior theorizing in the sense that the positive effect that proximity had on the strength of relationships between age dissimilar individuals declined as their social differences became more salient. The decline in the proximity effect was not a function of age dissimilar individuals’ having fewer opportunities to interact with each other. As differences in age became more salient, age-dissimilar individuals were less likely to take advantage of the opportunity to build a strong tie. While statistically and theoretically significant, the decline should

be considered in the context of the large and positive effect that propinquity had on tie strength. Among the teachers I studied, proximity had the largest effect on tie strength, independent of demographic similarity. The results indicated that teachers did develop strong ties with age-dissimilar colleagues as their opportunity to develop a strong tie increased.

The research findings reported above illustrated how demographic similarity and proximity can combine in the production of strong interpersonal connections. I highlight *can* because while I found that propinquity amplified the positive effect demographic similarity had on tie strength, it is not immediately clear to me that propinquity will always amplify the positive effect that demographic similarity can have on tie strength. In particular, if demographically similar individuals do not share important attitudes, behaviors, and beliefs, being in close proximity and encountering each other more frequently should provide them with an opportunity to learn how little they actually have in common and therefore reduce the positive effect that surface similarity can have on network connections (Ziebro and Northcraft 2009). If people who share a demographic characteristic are only similar on the surface, the interaction between demographic similarity and proximity would be negative. If people who share a demographic characteristic are also similar with respect to deep characteristics, being in close proximity should provide them with more opportunities to reinforce what they have in common. When surface and deep similarity are congruent, proximity should amplify the positive effect social similarity can have on tie strength.

Among the teachers I studied, I found that proximity amplified the positive effect age similarity had on tie strength. Although it is possible that age similar teachers were also similar in unobserved attitudes, behaviors, and beliefs, prior research has established that the association between surface and deep similarity is often weak (Harrison et al. 1998; Phillips and Loyd, 2006). Perhaps the critical issue is not what people actually have in common but what they believe they have in common. If an individual identifies with a demographic characteristic, perhaps he or she could assume that everyone who shares the characteristic also possesses the behaviors and characteristics that define in-group status (Hannan et al. 2007: ch. 5). Identification with a salient characteristic could increase the tendency to give in-group members the benefit of the doubt during interactions. If in-group members are assumed to possess certain behaviors and characteristics, an individual is more likely to notice those behaviors and characteristics when they are exhibited. Individuals often see what they expect to see and do not see what they do not expect to see. If, however, individuals are motivated to draw distinctions between themselves and members of their in-group, perhaps because they compete against members of their in-group for status and attention (Reagans 2005) or because they are concerned about how ties to in-group members will affect their standing in the larger group (Duguid et al. 2011), proximity would provide them with more opportunities to individuate in-group members.

I believe focusing on identification and competition in future research will be worthwhile because I believe identification and competition can help explain how propinquity moderates the association between demographic similarity and tie

strength. Propinquity provides an individual with an opportunity to learn more about an in-group member but concerns about status can affect which behaviors an individual is more likely to notice. When in-group identification is high, being in close proximity with in-group members could provide an individual with more opportunities to discover and observe positive in-group characteristics. When an individual is concerned about his or her status, being in close proximity with an in-group member could provide him with more opportunities to discover and observe individuating characteristics.

Finally, throughout my review, I have emphasized the importance of situational and contextual factors in generating strong ties in general and homophily in particular. I recognize, however, that individuals do not respond to situational factors in the same way. For example, some individuals have spent more time as a member of a numerical minority and experience in the minority condition could affect how much an individual identifies with current members of a minority (Smith and Moore, 2000). In an analysis of network connections at a large Midwestern University, Smith and Moore (2000) found that black college students who were educated at predominately white high schools were less likely to be connected to other black students. Or some individuals are more collective in their orientation, while others people are more individualistic. Adopting a more collective orientation could amplify how much identification and competition shape an individual's interactions with demographically similar colleagues, while the same situational factors could matter very little for a person with a more individualistic orientation. Future research should focus on how individual differences influence the link between contextual factors and the network formation process.

Diversity as Connections: Team Performance

Diversity researchers have also considered how a team's demographic composition affects its performance. The available empirical evidence has been mixed (Williams and O'Reilly, 1998). Reported research findings indicate that an increase in demographic diversity could either increase, decrease or have no effect at all on team performance. Despite the ambiguous research findings, scholars have maintained that demographic diversity is either beneficial or harmful for team performance. Given the ambiguous research findings, the two positions are often described as either being "pessimistic" or "optimistic" about the performance implications of demographic diversity (Reagans and Zuckerman, 2001; Mannix and Neale, 2005). In this section, I summarize the rationale underlying each stance and focus in particular on the importance of social networks in mediating the association between demographic diversity and team performance. I also describe a conceptual framework that is, at least implicitly, shared by both sides of the diversity-performance debate. The framework is used to motivate future research questions.

Diversity-Performance Debate

Scholars who are "pessimistic" about the performance implications of demographic diversity have argued that an increase in demographic diversity will be problematic for team performance because increasing diversity introduces social divisions that fragment interpersonal relationships inside the team (McCain, O'Reilly, and Pfeffer, 1983; Pfeffer, 1985; O'Reilly, Caldwell, and Barnett, 1989). Strong internal connections are important

because they provide a foundation for a number of performance-enhancing processes and dynamics. For example, a team is more likely to be successful when team members are motivated to do well, share their knowledge and expertise, and develop a division of labor that utilizes whatever knowledge and expertise is available on the team. Each outcome is more likely when team members are connected by strong network connections (Cummings and Cross, 2003; Oh, Chung and Labianca, 2004; Balkundi et al. 2007). Thus, by introducing social divisions, an increase in demographic diversity reduces the likelihood that team members will develop work structures and processes that ultimately contribute to superior performance outcomes.

Scholars who are more “optimistic” about diversity have focused the knowledge and information individuals bring to a team. Individuals who share a demographic characteristic are assumed to be more similar with respect to unobserved characteristics such as frameworks, opinions and worldviews. As a result, diverse teams are more likely to be characterized by a wider array of frameworks and perspectives, which should promote more critical debate during group discussions. By introducing divergent thoughts and opinions into internal team discussions, an increase in demographic diversity should also promote learning, creative problem solving, and, all of which contribute to superior performance outcomes (Bantel and Jackson, 1989; Ancona and Caldwell, 1992; Pelled, Eisenhardt, and Xin, 1999).

Diversity and Social Networks

Closure and Collective Action

While the two sides of the diversity-performance debate predict different performance outcomes, the two positions actually have a great deal in common. Diversity researchers are in relative agreement about the social networks that mediate the association between demographic diversity and team performance (Reagans and Zuckerman, 2001; Reagans, Zuckerman, and McEvily, 2004). The importance of social relationships is explicit in the so-called pessimistic position. An increase in diversity is assumed to be problematic because it will fragment relationships inside a team, thereby undermining a team's capacity to achieve collective goals and objectives. A large body of research has established that the focus on internal cohesion is warranted. Strong interpersonal relationships (both direct and indirect) inside a community help to align individual behavior with collective goals and objectives and therefore communities overcome collective action problems (Ingram and Roberts, 2000). In any group or community, conflicts of interest can develop between what is best for the community and what is best for each individual member of the community. For example, the successful transfer of knowledge between individuals has a positive effect on a host of organizational processes and outcomes. Knowledge transfer can be beneficial for the organization but sharing knowledge is costly for the source. At a minimum, sharing knowledge requires time and effort. Moreover, anyone who shares what they know with their colleagues reduces the extent to which he or she can monopolize and therefore benefit from controlling valuable knowledge and information.

Explanations for the network closure effect are often grounded in rational choice theory (Grief, 1989; Coleman, 1990). When relationships in a community are

characterized by closure (i.e., strong direct and indirect third party ties), information travels more quickly (Coleman, 1988). And as a result, community members hear about uncooperative behavior more quickly. The dense web of connections also means that community members are in a better position to sanction offending community members (Greif, 1989). Thus, individual members of a community cooperate out of a desire to protect their reputation and standing in the larger community. The origins of trust and cooperation could be grounded in rational choice but once a strong tie has been developed, it is more likely to be maintained, even when commitment is not “rational” (Sgourev and Zuckerman, 2011). The empirical evidence supports the idea that the strong ties (both direct and indirect) defining network closure facilitate pro-social behaviors (e.g., knowledge transfer, extra effort) that allow collectivities (e.g., dyads, teams, or communities) to achieve outcomes that would be difficult to achieve otherwise.

Brokerage and Creative Problem Solving

Network connections play an important role for “optimists” as well. Instead of focusing on relationships between team members, optimists focus on the pattern of relationships between contacts outside of the team. People who do not share a demographic characteristic are assumed to possess different knowledge and expertise but they are also assumed to travel in different network neighborhoods, which helps to maintain those differences. Social capital researchers have established the importance of being exposed to diverse knowledge and information. The issue is most often

discussed in terms of the benefits associated with maintaining network connections that spans “structural holes” or disconnects between communities (Burt, 1992; 2005; Reagans and Zuckerman, 2008). When network connections are conduits for information diffusion and knowledge transfer, knowledge and information is more likely to be redundant within versus between communities (Granovetter, 1973). As a result, individuals with relationships that span communities have access to more diverse knowledge and information, hear about new developments more quickly, and have support in more social circles (Burt, 1992).

Initial “structural hole” research focused on network connections in facilitating the more rapid diffusion or transfer of knowledge and information. More recent arguments have focused on how being exposed to more diverse ideas and frameworks changes an individual (Reagans and McEvily, 2003; Burt, 2005). Being exposed to a wider array (and therefore potentially conflicting) of knowledge and information promotes the kind of learning that improves an individual’s capacity for knowledge transfer and creative problem solving (Reagans and McEvily, 2003; Burt, 2005). Thus, scholars who expect for diversity to have a positive effect on team performance assume that a team will be more productive when the team assumes the position of a “broker” in an organization’s information and knowledge network.

Thus, while the two sides of the diversity debate expect for an increase in diversity to have different performance outcomes, each side emphasizes the importance of network connections in producing team performance. Pessimists focus on the presence of relationships *inside* the team while optimists give priority to the absence of connections

between contacts *outside* the team. Each side even acknowledges the importance of the network feature emphasized by the other side. For example, Jeffrey Pfeffer and his colleagues (McCain, O'Reilly, and Pfeffer, 1983) warn that diversity can be problematic for team performance but Pfeffer (1985) also advises managers to develop network connections that cut across tenure cohorts because of the information and learning benefits boundary-spanning ties can create. And while Ancona and Caldwell (1992) expect for diversity to have a positive effect on team performance, they fully acknowledge that diverse teams will have a difficult time developing relationships and coordinating their behavior.

Teams that are internally cohesive and have range in their relationships with colleagues outside the team have more social capital and diversity researchers are also in agreement about how and why diversity affects a team's social capital. Each side assumes that network connections in an organization are characterized by homophily. As a result, as demographic diversity increases on a team, team members are less likely to be connected by a strong interpersonal relationship. If the organizational network is characterized by homophily, people who do not share are less likely to be connected to each other and they are also less likely to be connected to the same third parties (White, 2002). As a result, as diversity increases, individuals who are added to the team are less likely to be connected to the same people outside the team.

Thus, at least with respect to the social networks that mediate the relationship between diversity and team performance, there is (at least implicitly) agreement about which network connections matter and how changes in diversity will affect those

connections. The underlying conceptual framework is illustrated in figure 2. The coefficients in the “causal” chain indicate that an increase in demographic diversity is expected to reduce internal cohesion and increase external range and each network feature is expected to have a positive effect on team performance. Figure 2 was tested in a small research and development firm (Reagans, Zuckerman, and McEvily, 2004). The teams performed a number of tasks including process improvement, scientific analysis, and product/material development. Analysis indicated that demographic diversity had the predicted effect on a team’s social capital and social capital had the predicted effects on a team’s performance.

With so much agreement, one has to wonder what the “debate” has been all about. Researchers who study diversity might disagree about the performance implications of introducing diversity but they agree about the network factors involved. They simply emphasize different parts of the framework. Pessimists focus on the upper pathway, while optimists give causal priority to the lower pathway. Despite differences in perspective one would have imagined that the agreement about the underlying conceptual framework would have resulted in more consensus or at least a less protracted debate. I believe the debate has persisted because scholars have tested their arguments indirectly. In particular, instead of estimating the coefficients in figure 2, scholars have regressed team performance on demographic diversity. If the estimated diversity effect was negative, they have concluded that whatever benefits diversity introduced were not large enough to offset the negative effect diversity had on internal relationships. If the estimated effect was positive, they have concluded that whatever

difficulties in internal processes diversity introduced were not large enough to offset the benefits associated with having access to a wider array of knowledge and information.

The diversity-performance debate has persisted because the research strategy has allowed diversity researchers to be ambiguous about the causal mechanisms underlying their position and so has obscured just how much both sides have in common.

Figure 2 illustrates how diversity affects a team's social capital and how social capital affects performance. One can draw two opposing implications from the figure. If an individual only cares about the overall diversity effect, figure 2 suggests that he or she can ignore the intervening social capital variables and focus on the overall association between demographic diversity and performance. Initial research adopted this empirical approach. The strategy is based on two very strong assumptions. First, diversity will only have the predicted effects on a team's social capital when the broader organizational network is characterized by homophily. And the second assumption is that people who are similar on the surface are also similar with respect to important knowledge and expertise. Empirical evidence calls both assumptions into question (Lawrence, 1997; Harrison et al., 1998). Moreover, an exclusive focus on diversity can result in the wrong conclusions being drawn. For example, in the research and development firm we studied, diversity didn't have a direct effect on team performance and one could have concluded that diversity didn't matter. But it did. Diversity had the predicted effects on a team's social capital and a team's social capital had the predicted effect on team performance. Diversity had an effect on the social networks that help to determine a

team's performance. The overall diversity effect was zero because the two pathways offset each other in the firm we studied. But diversity clearly mattered.

A second implication is that one can ignore diversity and focus on the social capital variables because they are the more proximate determinants of team performance. Not only do the social capital variables have a predictable effect on team performance. One can imagine they are easier to manage. For example, consider a manager who is charged with increasing a team's capacity for creativity. In an attempt to introduce more divergent thoughts and opinions, a manager could either increase diversity or the manager could staff the team optimizing the holes between external contacts. When the network is characterized by homophily, the manager must consider the relative change in each pathway in figure 2 because increasing diversity will increase range *and* reduce cohesion. The overall effect diversity will have on performance is difficult to predict without an appreciation for the relative magnitude of coefficients in figure 2. A focus on external range will result in a more predictable outcome and will not necessarily come at the expense of the benefits provided by internal cohesion.

I see value in remaining mindful of the effects diversity can have on the network variables and how much those variables contribute to performance. In particular, focusing on the links in the framework helps to explain systematic "variation" in what might appear initially to be ambiguous research findings. Given the direction of the links in the causal chain, the effect that an increase in diversity will have on team performance can vary from positive to negative as a function of the relative magnitude of the links in the chain. If the coefficients in the lower pathway are larger than the

coefficients in the upper pathway, the overall diversity effect will be positive, but if the coefficients in the upper pathway are larger than the coefficients in the lower pathway, the overall diversity effect will be negative. And if the two pathways are equal, or if diversity has no effect on the network variables, the diversity effect will be zero, as I observed in the firm I studied. Focusing on the big picture allows us to understand that the “mixed” or “ambiguous” empirical results documented across previous studies have emerged from a systematic process (Chatman et al., 1998; Kochan et al., 2003; Mannix and Neale, 2005: 33).

Future Directions: Diversity and Team Performance

Figure 2 illustrates how a team’s social capital mediates the relationship between a team’s composition and its performance. I believe future research should focus on the factors that shape a team’s social capital. For example, one explanation for the mixed diversity effects observed across previous studies is that the value of diversity is contingent upon a team’s primary objective (Tsui and Gutek, 1999: 96-97). Diversity introduces divergent thoughts and opinions but also makes it more difficult for team members to coordinate their activity. Divergent thoughts and opinions are beneficial when the primary objective is creativity or innovation. The fact that diversity makes it more difficult for team members to coordinate their activity looms large when the team’s primary objective is efficiency. Therefore, the managerial implications seem clear. Since diversity introduces divergent thoughts, a manager should introduce diversity when creativity or innovation is the primary objective. But since diversity

makes it more difficult for team members to work with each other, diversity should be avoided when efficiency or cost reductions are the goal. The contingency approach speaks to the magnitude of the coefficients on the right hand side of figure 2. The positive effect that each network variables can have on team performance, however, suggests that the contrast while appropriate is also too stark. All teams need to innovate and coordinate their behavior (Hackman and Morris, 1975). Even teams that are concerned with efficiency can benefit from creative and innovative solutions. And teams that are concerned with innovation need to cooperate with each other. That being said, the magnitudes of the network effects could vary with the team's primary objective (Rowley, Behrens, and Krackhardt, 2000). Therefore, a potential area for future research is to consider how the value of internal cohesion and external range varies as the primary goal of the team changes, either overall all or at different points in time.

The previous discussion suggests that teams that have a specific level of social capital do not experience a constant increase in performance. And the value of a team's social capital could very well be contingent upon internal team dynamics that help determine how much network connections contribute to a team's performance. For example, internal cohesion helps to align individual behavior and team goals. Cohesion generates consistency in behavior and consistency is important when team members value achievement or performance. If team members have low aspirations or performance goals, increases in cohesion will undermine team performance. In addition to aspiration levels, I see value in analyzing a team's social capital and internal work structures and processes in a more dynamic framework. In particular, future research should consider

the interplay between a team's transactive memory system and its social capital. A team has a well-defined transactive memory system (TMS) when work roles and responsibilities exploit team member's knowledge and expertise (i.e., knowing and doing are matched on the team) *and* when team members have developed frameworks that facilitate coordination across their specialized assignments. Internal cohesion increases the likelihood that a team will develop a TMS because when team members are connected by strong ties, they have a better sense for who knows what (Reagans and McEvily, 2003) and as a result, team members are more likely to have developed work roles and responsibilities that exploit team members' knowledge and expertise (Liang, Moreland, and Argote, 1995; Reagans, Argote, and Brooks, 2005). Once a team has developed a TMS, the positive effect internal cohesion has on team performance could increase. For example, Linda Argote, Ella Miron-Spektor and I (Reagans, Argote, and Miron-Spektor, 2011) considered how the presence of a shared language interacted with specialized work roles to determine team performance. Sharing a language allowed team members to coordinate their behavior more effectively. Effective coordination was important but it was especially important when team members had been assigned to work roles and responsibilities that took advantage of what they know (Reagans, Argote, and Miron-Spektor, 2011). Internal cohesion provides a foundation for the development of performance-enhancing work structures and processes but once established the same structures and processes could increase the positive effect that internal cohesion has on team performance.

The development of a TMS could also increase the positive effect external range can have on team performance. External range affects the likelihood that a team will have access to diverse knowledge and expertise and therefore defines a team's capacity for creativity and innovation. How team members use the knowledge and information at their disposal is also important and quite often diverse knowledge and information is underutilized. For example, prior research on knowledge transfer and communication inside of teams has shown that team members are more likely to share common knowledge and information (Wittenbaum and Stasser, 1996). And even when a divergent thought or opinion is shared with other team members it is less likely to be accepted. A divergent or minority opinion is more likely to be accepted if the person with the divergent opinion is viewed as credible and is viewed by others to be proposing a course of action that is consistent with the interests of the team and not his or her personal interests (Argote, 1999: 121-122). Moreover, divergent thoughts and opinions are more likely to influence team processes when the person expressing the "minority" or dissenting views is also different demographically (Phillips, 2003; Loyd et al. 2011), unless the characteristic that defines his or her difference also indicates that he or she is less able (Thomas-Hunt and Phillips, 2004). This line of research has established that diverse knowledge and expertise is more likely to be beneficial when experts are willing to share what they know and when their team members are willing to evaluate team members' knowledge and expertise objectively and critically. When team members are willing to objectively engage in critical debate and discussion, the best work routines and practices are more likely to be developed and implemented (Jehn, 1995, 1997).

The proceeding discussion suggests that developing a TMS could make external range more valuable. When a TMS has been developed, knowledge experts are more credible and as a result, they are more willing to share what they know and what the share is more likely to be critically engaged. External range could also affect the quality of the TMS that develops on a team. As external range increases, team members are less likely to overlap in their knowledge and expertise and they are more likely to have developed an ability to combine what they know. Both factors should increase the odds of a team developing a TMS. Moreover, the value of external range should be higher when expert status on a team is reinforced by an information and knowledge advantage in the larger network outside the team.

Multiple Teams

My discussion has focused on a single team. Organizations, however, are often concerned about the performance of multiple teams and those teams are often interdependent. The performance of one team often affects the performance of another team. Recent theoretical models have focused on the kind of organizational network that would increase team performance on average. Initial research findings illustrate the importance of a “small-world” network structure. A global network is a small world when network neighborhoods are internally cohesive and when those neighborhoods are connected by a small number of bridges or shortcuts. A small world network structure provides teams with an opportunity to learn from each other, which would raise the performance of every team (Uzzi and Shapiro, 2005; O’Leary, Woolley,

and Mortensen, 2011). Learning from the experience of others can also be detrimental. Indeed, the rapid diffusion of knowledge and information across teams can be beneficial when performance metrics emphasize the short-term (Lazar and Friedman, 2007; Fang, Lee, and Schilling, 2010). Rapid information diffusion can undermine longer-term and more dramatic improvements in performance because dramatic improvements are more likely when individuals and teams are exploring different parts of a knowledge-space. Global network structures that maintain system-wide diversity for a longer period of time increase the odds that teams will find the maximum peak in a problem-space (Lazar and Friedman, 2007). The results are based on computational and simulation techniques but in my opinion represent some of the most promising research in the field (Hong and Page, 2004). The research is informative but is also limited. Teams in the simulation are often performing the same task or working in the same problem-space. It seems more likely that teams will have divided their efforts and are working on complementary but distinct parts of a problem. What we need are more theoretical models and empirical analyses assuming that the teams in an organization are interdependent but have also specialized their efforts.

References

- Ancona, D.A., & Caldwell, D.F. (1992). Bridging the boundary: External activity and performance in organizational teams. *Administrative Science Quarterly* 7(4), 634-665.
- Argote, L. (1999). *Organizational learning: Creating, retaining and transferring knowledge*, MA: Kluwer Academic Publishers.
- Argote, L., Beckman, S. & Epple, D. (1990). The persistence and transfer of learning in industrial settings. *Management Science* 36(2), 140-154.
- Bacharach, S. B., Bamberger, P.A., & Vashdi, D. (2005). Diversity and homophily at work: Supportive relations among white and African American peers. *Academy of Management Journal* 48, 619-644.
- Balkundi, P., Kilduff, M., Barsness, Z. & Michael, J.H. (2007). Demographic antecedents and performance consequences of structural holes in work teams *Journal of Organizational Behavior* 28, 241–260.
- Bantle, K.A. & Jackson, S.E. (1989). Top management and innovation in banking: Does the composition of the top team make a difference? *Strategic Management Journal* 10, 107-124.
- Baum, J. & Ingram, P. (1998). Survival-Enhancing Learning in the Manhattan Hotel Industry, 1898-1980. *Management Science*, 44(7), 996-1016.
- Bielby, W. T. & Baron, J.N. (1986). Men and women at work: Sex segregation and statistical discrimination. *American Journal of Sociology* 91, 759-799.
- Blau, P. M. & Schwartz, J.E. (1984). *Crosscutting social circles*. Orlando, FL: Academic Press.
- Boyer O'Leary, M., Mortensen, M. & Woolley, A.W. (2011). Multiple team membership: A theoretical model of its effects on productivity and learning for individuals and teams. Tepper School of Business.
<http://repository.cmu.edu/tepper/577>
- Brass, D. J. (1985). Men's and women's networks: A study of interaction patterns and influence in an organization. *Academy of Management Journal* 28, 327-343.
- Brewer, M. (1991). The social self: On being the same and different at the same time. *Personality and Social Psychology Bulletin* 17, 475-482.

- Brewer, M. & Kramer, R. (1985). The psychology of intergroup attitudes and behavior. *Annual Review of Psychology* 36, 219-243.
- Burt, R. S. (1991). Measuring age as a structural concept. *Social Networks* 13, 1-34.
- Burt, R.S. (1992). *Structural holes: the social structure of competition*. Cambridge, MA: Harvard University Press.
- Burt, R.S. (2005). *Brokerage and closure*. London: Oxford University Press.
- Byrne, D. (1971). *The Attraction Paradigm*. New York: Academic Press.
- Caldeira, G. A. & Patterson, S.C. (1987). Political friendship in legislature. *Journal of Politics* 4, 953-975.
- Chatman, J. A., Polzer, J.T., Barsade, S.G. & M. A. Neale, M.A. (1998). Being different yet feeling similar: The influence of demographic composition and organizational culture on work processes and outcomes. *Administrative Science Quarterly*, 43, 749-780.
- Cohen, W. & Levinthal, D. (1990). Absorptive capacity: A new perspective on learning and innovation. *Administrative Science Quarterly*, 35, 128-152.
- Coleman, J.S. (1988). Social capital in the creation of human capital. *The American Journal of Sociology*, 94, Supplement: Organizations and Institutions: Sociological and Economic Approaches to the Analysis of Social Structure, S95-S120.
- Coleman, J.S. (1990). *Foundations of social theory*. Cambridge, MA: Harvard University Press.
- Cummings, J. N., & Cross, R. (2003). Structural properties of work groups and their consequences for performance. *Social Networks*, 25(3), 197-210.
- Darr, E., & Epple, D. (1995). The acquisition, transfer and depreciation of knowledge in service organizations: Productivity in franchises. *Management Science* 44, 1750-1762.
- Duguid, M. (2011). Female tokens in high-prestige work groups: Catalysts or inhibitors of group integration? *Organizational Behavior and Human Decision Processes: forthcoming*.

- Duguid, M., Loyd, D.L. & Tolbert, P.S. (2010). The impact of categorical status, numeric representation and work group prestige on preference for demographically similar others: A value threat approach. *Organization Science*. *In press*.
- Fang, F., Lee, J. & Schilling, M.A. (2010). Balancing exploration and exploitation through structural design: The isolation of subgroups and organizational learning. *Organization Science* 21(3), 625 - 642.
- Feld, S. (1982). Structural determinants of similarity among associates. *American Sociological Review* 47, 797-801.
- Feld, S. (1984). The structured use of personal associates. *Social Forces* 62, 640-652.
- Festinger, L., Schachter, S. & Bach, K. (1950). Social processes in informal groups. *Stanford, CA: Stanford University Press*.
- Festinger, L. et al. (1950). The spatial ecology of group formation. In L. Festinger et al. (eds.) *Social pressure in informal group*.
- Granovetter, M. (1973). The strength of weak ties. *The American Journal of Sociology* 78(6), 1360-1380.
- Grief, A. (1989). Reputation and coalitions in medieval trade: Evidence on the Maghribi traders. *Journal of Economic History* 49, 857-882.
- Grieve, P. & Hogg, M. (1999). Subjective uncertainty and intergroup discrimination in the minimal group situation. *Personality and Social Psychology Bulletin* 25, 926-940.
- Hackman, J. & Morris, C.G. (1975). Group tasks, group interaction process, and group performance effectiveness: A review and proposed integration. In L. Berkowitz (Ed.), *Advances in experimental social psychology* (Vol. 8). NY: Academic Press.
- Hannan, M., Polos, L. & Carroll, G.R. (2007). *Logics of organization theory: audiences, codes and ecologies*. Princeton, Princeton University Press.
- Harrison, D. A. & Klein, K.J. (2007). What's the difference? Diversity constructs as separation, variety or disparity in organizations. *Academy of Management Review*, 32, 1199-1228.
- Harrison, D. A., Price, K.H. & Bell, M.P. (1998). Beyond relational demography: Time and the effects of surface- and deep-level diversity on work group cohesion. *Academy of Management Journal* 41, 96-107.

- Hewstone, M., Rubin, M. & Willis, H. (2002). Intergroup bias. *Annual Review of Psychology*, 53, 575-604.
- Hogg, M. (1992). The social psychology of group cohesiveness: From attraction to social identity. Hemel Hempstead, UK: Harvester Wheatsheaf.
- Hogg, M. (1993). Group cohesiveness: A critical review and some new directions. *European Review of Social Psychology* 4, 85-111.
- Hogg, M. & Hains, S.C. (1996). Intergroup relations and group solidarity: Effects of group identification and social beliefs on depersonalized attraction. *Journal of Personality and Social Psychology* 70, 295-309.
- Hogg, M. & Hardie, E.A. (1991). Social attraction, personal attraction and self-categorization: A field study. *Personality and Social Psychology Bulletin* 17, 175-180.
- Hogg, M., Hardie, E.A. & Reynolds, K.J. (1995). Prototypical similarity, self-categorization, and depersonalized attraction: A perspective on group cohesiveness. *European Journal of Social Psychology* 25, 159-177.
- Hogg, M. & Turner, J.C. (1985). Interpersonal attraction, social identification, and psychological group formation. *European Journal of Social Psychology* 15, 51-66.
- Hong, L. & Page, S. (2004). Groups of diverse problem solvers can outperform groups of high-ability problem solvers. *PNAS* 101(46)
- Ibarra, H. (1992). Homophily and differential returns: Sex differences in network structure and access in an advertising firm. *Administrative Science Quarterly* 37, 422-447.
- Ibarra, H. (1995). Race, opportunity, and diversity of social circles in managerial networks. *Academy of Management Journal* 38, 673-703.
- Ibarra, H. (1997). Paving an alternative route: Gender differences in managerial networks. *Social Psychology Quarterly* 60, 91-102.
- Ingram, P. & Peter W. Roberts, P.W. (2000). Friendships among competitors in the Sydney hotel industry. *American Journal of Sociology*, 106, 387-423.
- Ingram, P. & Morris, M. (2007). Do people mix at mixers? Structure, homophily and the life of the party. *Administrative Science Quarterly* 52, 558-585.

- Jehn, K. (1995). A multimethod examination of the benefits and detriments of intragroup conflict. *Administrative Science Quarterly* 40, 256-282.
- Kanter, R. (1977). Men and women of the corporation. New York, NY: BasicBooks.
- Kochan, T., Bezrukova, K., Ely, R., & Jackson, S. (2003). The effects of diversity on business performance: Report of the diversity research network. *Human Resource Management*, 42 (1), 3-21.
- Kram, K. & Isabella, L.A. (1985). Mentoring alternatives: The role of peer relationships in career development. *The Academy of Management Journal* 28(1), 110-132.
- Lau, D. C. & Murnighan, J.K. (1998). Demographic diversity and faultlines: The compositional dynamics of organizational groups. *Academy of Management Review* 23, 325-340.
- Laumann, E. O. (1966). Prestige and association in an urban community. Indianapolis, IN: Bobbs-Merrill.
- Laumann, E. O. (1973). Bonds of pluralism: The form and substance of urban social networks. New York: Wiley.
- Lawrence, B. (1997). The black box of organizational demography. *Organization Science* 8(1), 1-22.
- Lazarsfeld, P. F & Merton, R.K. (1954). Friendship as social process: A substantive and methodological analysis. In M. Berger, T. Abel & C. H. Page, (Eds). Freedom and control in modern society. Toronto, Canada: Nostrand.
- Lazer, D., & Friedman, A. (2007). The network structure of exploration and exploitation. *Administrative Science Quarterly* 52, 667-694.
- Liang, D. W., Moreland, R. L., & Argote, L. (1995). Group versus individual training and group performance: The mediating role of transactive memory. *Personality and Social Psychology Bulletin*, 21, 384-393.
- Lincoln, J. R. & Miller, J. (1979). Work and friendship ties in organizations: A comparative analysis of relational networks. *Administration Science Quarterly* 24, 181-199.
- Loyd, D. L. (2011). Undermining diversity: How favoritism threat alters evaluations of similar others by women. *Working paper, MIT Sloan School of Management*.

- Mannix, E. & Neale, M. (2005). What differences make a difference? The promise and reality of diverse teams in organizations. *Psychology in the Public Interest*, 6(2), 31-55. (Abbreviated version reprinted in *Scientific American*, August, 2006, 32-40).
- Marsden, P. V. (1987). Core discussion networks of Americans. *American Sociological Review* 52, 122-131.
- Marsden, P. V. (1988). Homogeneity in confiding relationships. *Social Networks* 10, 57-76.
- Marsden, P. V. & Campbell, K.E. (1984). Measuring tie strength. *Social Forces* 63, 482-501.
- McCain, B., O'Reilly, C. & Pfeffer, J. (1983). The effects of departmental demography on turnover: The case of a university. *Academy of Management Journal* 26(4), 626-641
- McGinn, K.L. & Milkman, K.L. (2010). Shall I stay or shall I go? Cooperative and competitive effects of workgroup sex and race composition on turnover. *Working paper, Harvard Business School*.
- McPherson, J. M. & Smith-Lovin, L. (1986). Sex segregation in voluntary associations. *American Sociological Review* 51, 61-79.
- McPherson, J. M. & Smith-Lovin, L. (1987). Homophily in voluntary organizations: Status distance and the composition of face-to-face groups. *American Sociological Review* 52, 370-379.
- McPherson, J. M., Smith-Lovin, L, & Cook, J.M. (2001). Birds of a feather: Homophily in social networks. *Annual Review of Sociology* 27, 415-444.
- Mehra, A., Kilduff, M. & Brass, D.J. (1998). At the margins: A distinctiveness approach to the social identity and social networks of underrepresented groups. *Academy of Management Journal* 41, 441-452.
- Miller, J., Lincoln, J.R. & Olson, J. (1981). Rationality and equity in professional networks: Gender and race as factors in the stratification of interorganizational systems. *American Journal of Sociology* 87, 303-386.
- Mollica, K. A., Gray, B., & Trevino, L.K. (2003). Racial homophily and its persistence in newcomers' social networks. *Organization Science* 14, 123-136.

- Moody, J. (2001). Race, school integration, and friendship segregation in America. *American Journal of Sociology* 107, 679-716.
- Mouw, T. & Entwisle, B. (2006). Residential segregation and interracial friendship in schools. *American Journal of Sociology* 12, 394-441.
- Mullen, B. (1983). Operationalizing the effect of the group on the individual: A self-attention perspective. *Journal of Experimental Social Psychology* 19, 295-322.
- Oh, H., Chung, M-H., & Labianca, G. (2004). Group social capital and group effectiveness: The role of informal socializing ties. *Academy of Management Journal*, 47, 860-875.
- O'Reilly, C. A., III, D. F. Caldwell, D.F. & and W. P. Barnett, W.P. (1989). Work group demography, social integration, and turnover. *Administrative Science Quarterly*, 34, 21-37.
- Pattillo-McCoy, M. (1999). Consumer culture among Cuban and black American youth souls: A critical journal of Black politics. *Culture and Society* 1(2), 58-63.
- Pelled, L.H., Eisenhardt, K.M. & Xin, K.R. (1999). Exploring the black box: An analysis of work group diversity, conflict, and performance. *Administrative Science Quarterly* 44(1), 1-28
- Pfeffer, J. (1982). Organizational demography. In L. L. Cummings & B.M. Staw (Eds.), *Research in Organizational Behavior* (pp. 299-357), Vol. 5. Greenwich, CT: JAI Press.
- Pfeffer, J. (1985). Organizational demography: Implications for management. *California Management Review* 28, 67-81.
- Phillips, K. W. (2003). The effects of categorically based expectations on minority influence: The importance of congruence. *Personality and Social Psychology Bulletin* 29, 3-13.
- Phillips, K. W. & Lewin Loyd, D. (2006). When surface and deep-level diversity collide: The effects on dissenting group members. *Organizational Behavior and Human Decision Processes* 2, 143-160.
- Reagans, R. (2005). Preferences, identity, and competition: Predicting tie strength from demographic data. *Management Science* 51, 1374-1383.

- Reagans, R. (2011). Close encounters: Analyzing how social similarity and propinquity contribute to strong network connections. *Organization Science, in Press*
- Reagans, R. & Burt, R.S. (2002). Homophily, legitimation, and competition: Bias in managerial peer evaluations. *Unpublished manuscript*.
- Reagans, R. & Zuckerman, E.W. (2001). Networks, diversity, and productivity: The social capital of corporate R&D teams. *Organization Science Vol. 12(4), 502-517*.
- Reagans, R. & McEvily, B. (2003). Network structure and knowledge transfer: The effects of cohesion and range. *Administrative Science Quarterly, 48, 240-267*.
- Reagans, R. E., Zuckerman, E.W. & McEvily, B. (2004). How to make the team: Social networks vs. demography as criteria for designing effective projects in a contract R&D firm. *Administrative Science Quarterly 49, 101-133*.
- Reagans, R., Argote, L., & Brooks, D. (2005). Individual experience and experience working together: Predicting learning rates from knowing what to do and knowing who knows what. *Management Science, 51, 869-881*.
- Reagans, R., Argote, L. & Miron-Spektor, E. (2011). The two wonders of working together: How specialization and coordination influence team performance. *Working paper, MIT Sloan School of Management*.
- Reagans, R. & Zuckerman, E. (2008). Why knowledge does not equal power: the network redundancy trade-off. *Industrial and Corporate Change 17(5), 903-944*.
- Rowley, T., Behrens, D. & Krackhardt, D. (2000). Redundant governance structures: An analysis of structural and relational embeddedness in the steel and semiconductor industries. *Strategic Management Journal 21, 369-386*.
- Rytina, S., Blau, P., Blum, T. & Schwartz, J. (1988). Inequality and intermarriage: A paradox of motive and constraint. *Social Forces 66, 645-75*.
- Schneider, B. (1987). The people make the place. *Personnel Psychology 40, 437-453*.
- Sgourev, S. & Zuckerman, E. (2011). Breaking up is hard to do: Irrational inconsistency in commitment to an industry peer network. *Rationality and Society 23(1), 3-34*.
- Simon, H.A. (1991). Bounded rationality and organizational learning. *Organization Science. 2(1), 125-134*.
- Shrum, W., Cheek, N.H. Jr. & Hunter, S.M. (1988). Friendship in school: Gender and racial homophily. *Sociology of Education 61, 227-239*.

- Smith, S., & Moore, M. (2000). Intra-racial diversity and relations among African-Americans: Closeness among black students at a predominately white university. *American Journal of Sociology*, *106*(1), 1-39.
- Szulanski, G. (1996). Impediments to the transfer of best practice within the firm. *Strategic Management Journal*, *17*, 27-44.
- Tafjel, H. & Turner, J.C. (1979). An integrative theory of intergroup conflict. In W. G. Austin, & S. Worchel (Eds), *The social psychology of intergroup relations*. Monterey, CA: Brooks-Cole.
- Thomas-Hunt, M. & Phillips, K.W. (2004). When what you know is not enough: Expertise and gender dynamics in task groups. *Personality and Social Psychology Bulletin*, *30*(12), 1585-1598.
- Tsui, A. & O'Reilly, C.A. III (1989). Beyond simple demographic effects: The importance of relational demography in superior-subordinate. *Academy of Management Journal*, *32*(20), 402-423.
- Tsui, A. S. & Gutek, B.A. (1999). *Demographic differences in organizations: Current research and future directions*. Lexington, MA: Lexington Books.
- Turner, J. C. (1985). Social categorization and the self-concept: A social cognitive theory of group behavior. In E. J. Lawler (Ed.), *Advances in Group Processes 2* (pp. 77-122). Greenwich, CT: JAI Press.
- Turner, J. C. (1987). Rediscovering the social group: A self-categorization theory. Oxford, UK: Basil Blackwell.
- Uzzi, B. & Spiro, J. (2005). Collaboration and creativity: Big differences from small world networks. *American Journal of Sociology*, *111*, 447-504.
- White, H. (2002). Strategies and identities by mobilization context. *Working paper, Department of Sociology, Columbia University*.
- Williams, K. Y. & O'Reilly, C.A. III. (1998). Demography and diversity in organizations: A review of 40 years of research. In B. M. Staw & L. L. Cummings (Eds.) *Research in Organizational Behavior*, Vol. 20 (pp. 77-140). Greenwich, CT: JAI Press.
- Wittenbaum, G. M., & Stasser, G. (1996). Management of information in small groups. In J. L. Nye & A. M. Brower (Eds.). *What's social about social cognition? Research on socially shared cognition in small groups* (pp. 3-28). Thousand Oaks, CA: Sage.

- Yamaguchi, K. (1990). Homophily and social distance in the choice of multiple friends: An analysis based on conditionally dymmetric log-bilinear association model. *Journal of the American Statistical Association* 85, 356-366.
- Zeng, Z. & Xie, Y. (2008). A preference-opportunity-choice framework with applications to intergroup friendship. *American Journal of Sociology* 114, 615-648.
- Zenger, T. & Lawrence, B. (1989). Organizational demography: The differential effects of age and tenure distributions on technical communication. *Academy of Management Journal* 32, 353-376.
- Ziebro M. & Northcraft, G. (2009). Connecting the dots: Network development, information flow, and creativity in groups. In E. Mannix, J. A. Goncalo, M. A. Neale, (Eds.) *Creativity in Groups. Research on Managing Groups and Teams* 12 (pp. 135-162). Stamford, CT: JAI Press.

Figure 1

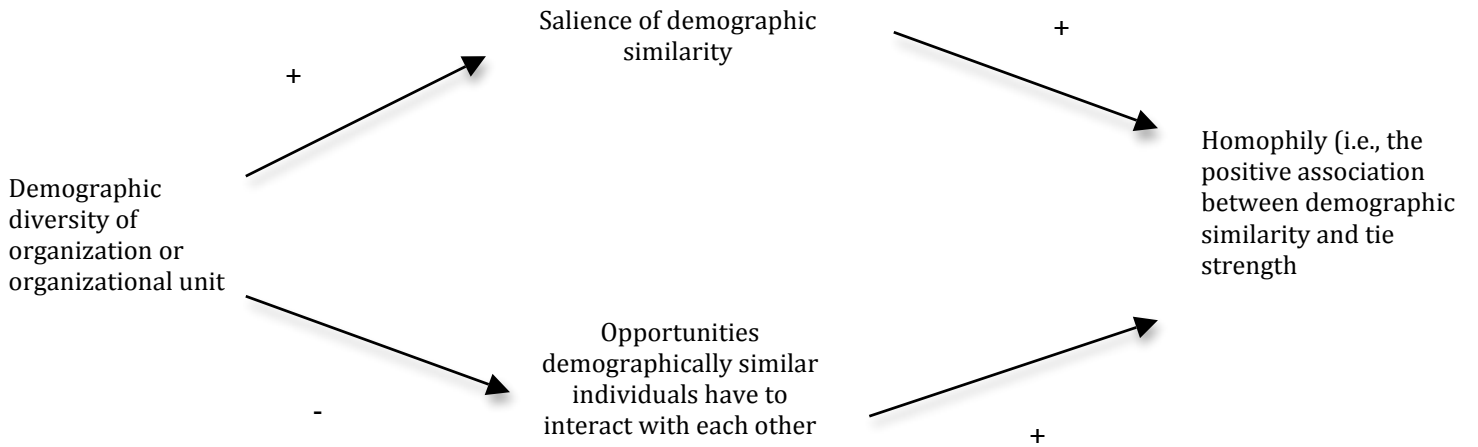


Figure 2

