

# A Network Perspective on Leadership

by

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“What new ideas and perspectives will characterise successful leaders of  
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*“Individual leaders can play crucial roles in shaping the growth of nations.”*

Jones and Olken (2005)

A recent study published on the prestigious *Quarterly Journal of Economics* offers one of the clearest examples of the impact individual leaders can have on the world: the authors provide strong evidence that exogenous changes in leadership cause “shifts in country growth rates” and “affect policy outcomes.” In other words, the leadership of one person can single-handedly increase the well-being of an entire country.

It is to nobody’s wonder then that everybody, from governments to private organizations, is on a quest to understand how the new leader of tomorrow will be, what innovative visions and ideas he will bring, and what unique approach he will have<sup>1</sup>. Countless proposals have been put on the table (see Bass (1990) for a comprehensive review), but they all share an underlying assumption that makes them irremediably stuck in the past. They adopt a micro-oriented and individualistic perspective on leadership that puts the leader in the spotlight, leaving all the rest outside or at the periphery of the whole picture.

In this essay I will argue that a leader must have a *network perspective* to guide his actions and fully grasp the impact they will have on the set of his followers. The successful leader of tomorrow has to understand how the network topology of his target sphere of influence assigns a key role to some people. The identification and establishment of a strong connection with these key people is essential for the leader to create an effective two-way channel to exert his influence and receive feedback on his actions. In a few words, a network perspective is indispensable for efficient and effective leadership.

## **1. The Traditional Approach: An Individualistic Perspective on Leadership**

*All the great leaders have had one characteristic in common: it was the willingness to confront unequivocally the major anxiety of their people in their time. This, and not much else, is the essence of leadership.*

John Galbraith (1979)

*The art of leadership is saying no, not yes.*

Tony Blair

*Leaders need to be optimists. Their vision is beyond the present.*

Rudolph Giuliani

*Innovation distinguishes between a leader and a follower.*

Steve Jobs

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<sup>1</sup> In most of this essay I will use the pronoun “he” when referring to a leader. This choice does not imply any belief of the author that the leader is or should be a “he” rather than a “she,” but it is determined by the lack of a better “neutral” alternative that does not hinder the flow of the exposition.

*Some of the best business and nonprofit CEOs I've worked with over a sixty-five-year consulting career were not stereotypical leaders. They were all over the map in terms of their personalities, attitudes, values, strengths, and weaknesses.*

Peter Drucker

The quotes above are a list of how some prominent leaders and thinkers of the 20<sup>th</sup> century see leadership. They focus on the personality traits, like being an “optimist” or an “innovator,” or on the behavioral patterns that distinguish leadership, like “ability to say no,” or “willingness to confront people’s anxiety.” In the management literature (see Bass 1990) openness, humility, charisma, assertiveness, etc. have all been characterized as the crucial traits of leadership. Most readers of this essay will also have their own beliefs of what personality characteristics or ways of behaving are fundamental to make a good leader.

A natural question arises: is there a set of characteristics and/or ways of acting that are indispensable for the leader of the future? Peter Drucker gives us what is probably the best answer: a reductionist approach that aims at reducing a complex concept like leadership to a fixed set of characteristics is doomed to fail. Leadership is intrinsically subjective, and an attitude, strength or value that makes someone a leader might not work for someone else. All the characteristics listed above can be important components of leadership, but none of them is strictly necessary.

Now, imagine your perfect leader, with the ideal personality, attitude, and values. Put this leader at the center of the stage, under the spotlight, give him the microphone, and tell him... *Show us how you lead!* The answer will inevitably be an anticlimax: *Leading...whom?*

## **2. A Broader Perspective: The Leader and His Followers**

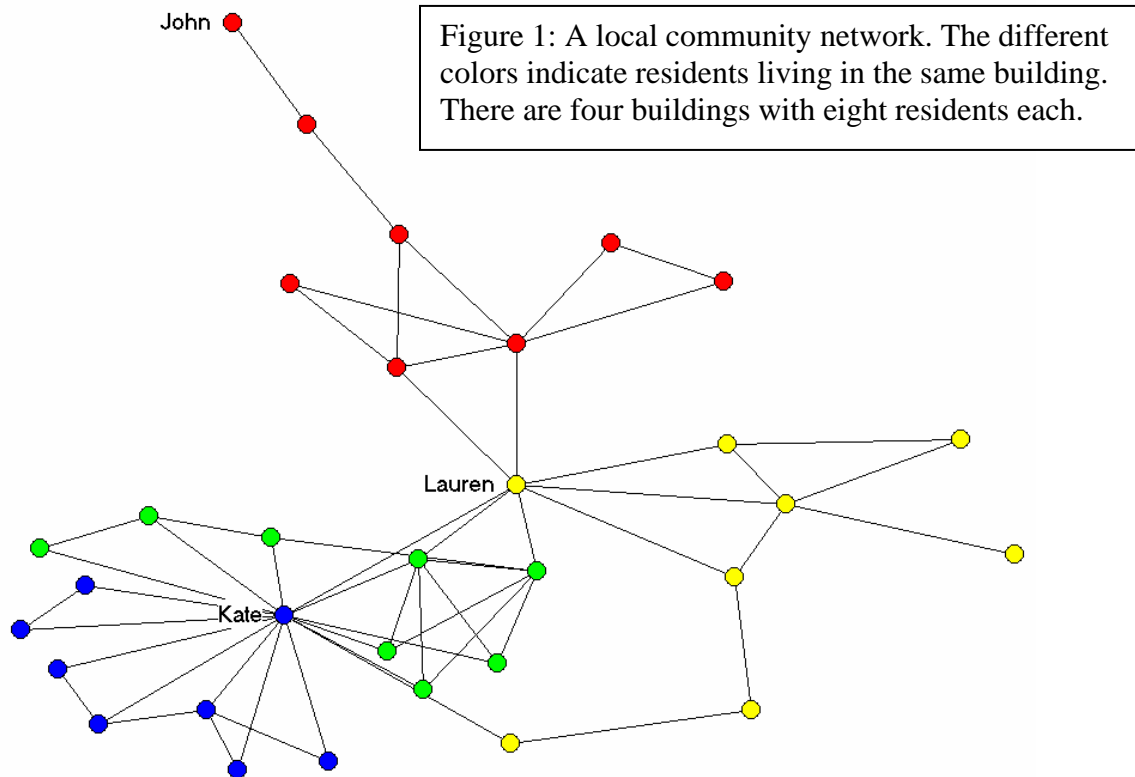
Figure 1 is a map of the connections present in a group of people<sup>2</sup>. For our purposes, a link between two people will mean that they “communicate” with each other, and the colors will denote different groups to which each person can belong to. This map of relations could emerge in several contexts: employees from different departments within the same company, high-school students belonging to different races, researchers from different fields, etc. Here I will assume that these are inhabitants of a residential area, with the colors denoting people living in the same building.

The residents have to choose a leader to represent them to a municipal meeting. Suppose each resident has the individual characteristics to be a leader, can we use the communication network to differentiate them and select the best candidate to be the representative? Would John be a good candidate?. He communicates with only one resident in the red building, and he has no other links. If John had to persuade a majority

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<sup>2</sup> This map has been created by the author using the network analysis software UCINET, see Borgatti (2002). The data is fictitious, and it has been created for the illustrative purposes of this essay only. It is available from the author upon request. The same holds for the maps in Fig .2.

of the other residents to support his view on a certain issue, he would have very little leverage since he does not know any of them. If there were an important problem that a majority of the residents would want their representative to address, John might not know about it unless it affects him directly. Clearly, John would not be a good leader for this community. Note how John could have all the characteristics of the “perfect” leader envisioned in the previous section, and still not be a good representative because he does not have the means to exert his influence.



Kate in the blue apartment complex seems to be a better candidate. She is the resident with the highest degree centrality, roughly a measure of the number of links, in the communication network<sup>3</sup>. She seems well-positioned to know what the main issues affecting the community are, since she communicates regularly with a lot of members. She should also be able to use her natural ability to lead to exert her influence on a majority of the residents and persuade them to follow her. Is Kate then the best leader for this community? She might. But there are also some reasons why she might not:

- Kate might suffer an information overload. She communicates with so many people that she is not able to process all the information, and she does not have

<sup>3</sup> To be more precise, in network analysis the degree centrality of a node is defined as the ratio of the actual number of links  $K$  to the number  $N$  of total links in the network. Thus, in the residents’ network Kate’s degree centrality is  $K/N=16/110=0.145$ . John’s degree centrality is  $1/110=0.009$ , which is clearly lower.

time to reflect on the best actions to take. Cross and Prusak (2002) have shown this can be a significant issue by studying an organization of approximately 1,000 employees. Each of the top five managers had more than forty-five people coming to them regularly for information. These five managers were working very hard, but they were always falling behind, feeling stressed, and spending all their time fighting fires.

- Kate does not communicate with anybody in the red building, and she has only two connections with the residents of the yellow one. She will find it very challenging to exert her influence with those residents since most of them do not know her. If there is an important issue affecting the yellow and/or red building residents, but not the blue and green, she is unlikely to be aware of it.
- Kate communicates with a lot of people, but she might not have a strong connection with any of them. If she has a marginal role in a “deeper” network, then she will find it very challenging to exert her influence on a majority of residents who talk to her, but do not know her very well. Cross (2001) has shown how in an organization the communication network can be very different from networks of “deeper” relations, like trust or ability to problem-solve together.

Graen (1976) was the first to recognize the importance of different types of relations with his “Leader-Member Exchange” (LMX) model. This model studies leader-member exchanges starting from the assumption that differentiated role definitions will naturally lead to a varied set of relations. The time limitation all leaders face on the job will reinforce this differentiation. The LMX model proponents then hypothesize that this leads to the formation of two qualitatively different categories of leader-member exchanges: the “in-group,” characterized by high levels of trust, interaction, support and formal/informal rewards, and the “out-group,” characterized by low levels of trust, interaction, supports, and rewards.

Several empirical studies have showed that the LMX model is a better representation of reality than what Dansereau (1975) labeled the Average Leadership Style (ALS) approach to research, which implicitly assumes that a leader acts in a relatively uniform way toward all subordinates. Katerberg and Hom (1981) analyzed the leader-member exchanges in a sample of 672 members of an Army National Guard unit. They showed how in most leaders’ sphere of influence one could clearly separate the in-group and the out-group subordinates. The in-group members had a significantly higher number of interactions with the leader, they received more official rewards, and they were more trusted. Moreover, the in-group usually had few members, and they tended to remain the same over time.

The LMX model points us toward the right direction by focusing on few relationships that enhance certain outcomes. However, the model does not shed light on the selection mechanism a leader should adopt to differentiate between members in his sphere of influence.

Now let's go back on stage with this new leader. His followers are now with him, under the spotlight. Each one of them has a microphone and they can interact with their leader. Let's tell him... *Show us how you lead!* The result is more encouraging: there is a dialogue between the leader and the rest of the people. But the anticlimax comes nevertheless: soon the dialogue becomes a cacophony of voices, with no clear common purpose. The leader soon understands that there is something he is not seeing...

### **3. The New Approach: A Network Perspective on Leadership**

The only way a leader can efficiently and effectively select the key followers is by adopting a network view of his sphere of influence. This entails much more than simply knowing the type of connections he has with his followers. What matters is the complete picture: the topology of the network of his sphere of influence. This topology will then determine the type of key people he should strongly connect to. The last step is to identify these people, which requires an understanding of the role each member plays in the network. This selection process can be summarized in two stages:

Stage I: Understand the topology of the network to identify roles to target

Stage II: Identify the people in the network that occupy these roles

Stage I is the most challenging because it requires a mental shift from an atomistic view of reality, which is built in our cognitive processes. There are two characteristics of the topology of a network that a leader must understand: the heterogeneity in the centrality scores and the degree of clustering among the followers. The network maps in Fig. 2 help illustrating these concepts. In a network with heterogeneity in centrality<sup>4</sup> scores there is a lot of variation in the number of connections across members, and typically there are a few members, called "hubs," that have a much higher number of links. Fig. 2.1 and 2.2 show two networks with heterogeneity in centrality scores, A and B are clearly the hubs. Vice versa, in a network with homogeneity in centrality scores all the players have similar number of connections. Fig. 2.3 and 2.4 show two networks with homogeneity in centrality scores, there are no clear hubs. The degree of clustering is a measure of how much the network is divided into subgroups<sup>5</sup>. Fig. 2.2 and 2.4 are representations of very clustered networks composed by two subgroups, or clusters, while Fig. 2.1 and 2.3 show two networks with very low levels of clustering.

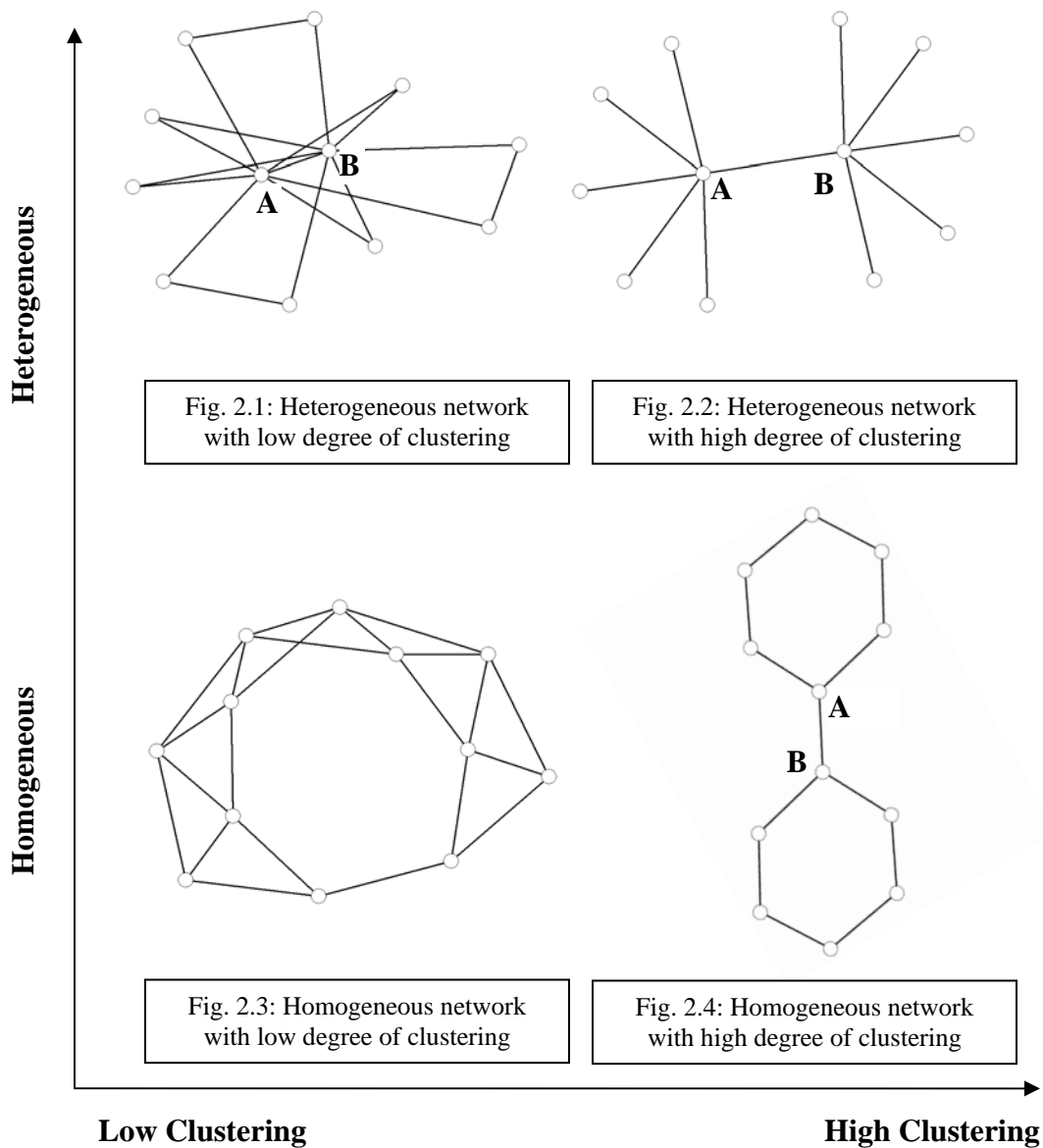
It is the classification of the network topology along these two dimensions that allows a leader to define the type of followers he needs to find. As Fig. 2 illustrates, there are four distinct cases.

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<sup>4</sup> Here I will use centrality to mean "degree centrality" (see note 3). In this context, it would be more accurate to use a more refined measure of centrality, like influence or information centrality. However, for the illustrative purposes of this essay, degree centrality will suffice. See Bonacich (1987) for a review of the different measures of centrality used in the literature.

<sup>5</sup> See Wasserman and Faust (1994) for a mathematical definition of clustering that is beyond the scope of this essay. For an explanation of the algorithms used by UCINET to compute the level of clustering, see Hanneman (2002).

Figure 2: Topological classification of leadership networks.



- 1) Heterogeneous Network with Low Degree of Clustering as in Fig. 2.1: In this very compact network there are a few hubs (A and B in Fig. 2.1) that are very central to all the important interactions. One might be tempted to conclude that the leader should try to be of these hubs. This can be true in networks with a few members, like the one in Fig. 2.1. However, in networks with hundreds of members these hubs are overloaded. The best leader will establish strong connections with all or almost all of the hubs, without being a hub himself. He will cultivate these *few crucial* connections to exert his influence through them.

He will also come to know any relevant information flowing through the network because the hubs will know it.

- 2) Homogeneous Network with High Degree of Clustering as in Fig. 2.4: This network is divided into subgroups, and there is no hub in the whole network, or even within subgroups. The best leader will try to be a “boundary spanner,” someone that is strongly connected to at least one member in all or almost all subgroups. This is the connection that will allow him to exert his influence on the subgroup, and to gather information on the issues affecting the subgroup. In Fig. 2.4, A and B are the best candidates for leadership. Cross and Parker (2004) mapped the information network of a group of information scientists in a pharmaceutical company. This division had different locations in Europe and the US, and it had been recently formed integrating two formerly separate groups. Management had recently praised the first successful research collaboration pulling together scientists from the previously separated divisions in Europe. The information network maps showed that the leader and initiator of this project was not one of the hubs in the highly clustered network. Moreover, he was the only connection between the two European divisions, and he connected directly with the main hubs of both divisions. It was by using these connections that he was able to put together the project team and push the project forward.
- 3) Heterogeneous Network with High Degree of Clustering as in Fig. 2.2: This is a combination of the two previous networks, it is divided into subgroups and it has hubs within each subgroup. The best leader is a combination of the leaders above: a boundary spanner who is strongly connected to the hubs of each subgroup. In Fig. 2 the best leader would be someone connected to A and B only<sup>6</sup>.
- 4) Homogeneous Network with Low Degree of Clustering as in Fig. 2.3: This is the least interesting case. Barabasi (2002) and Watts (2001) have shown for a variety of human and non-human networks that hubs and/or a relatively high level of clustering are almost always present. Thus, this type of network is rarely observed in reality, especially for large groups. In this case the best leader would be the person with the highest number of connections since it can exert his influence and gather information more easily.

Once the knowledge of the network topology has shed light on the type of followers the leader needs, stage II consists in identifying these key followers. It seems this would require an accurate knowledge of all the strong connections present in a network, a daunting task. In practice, an approximate knowledge is enough. Once the leader understands that some people have a marginal role in the network, he does not need to know anything more about their connections. Similarly, the leader does not need to know the exact number of connections to identify a hub, a rough approximation usually suffices. Krackardt (1990) has mapped every employee’s “cognitive network” in

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<sup>6</sup> The boundary spanner connecting A and B is not shown in Fig. 2.2. The reason is that, due to the low number of members in the network, it would have been less clear visually that the network is highly clustered.

a small entrepreneurial firm of 36 people. A person's "cognitive network" is their perception of who is connected to whom, for everyone in the network. Krackhardt showed that people who had "more accurate cognitions of the advice network were rated as more powerful by others in the organization." The best leaders were also the ones that had a better perception of the complex social network in the whole company.

Suppose the links in Fig. 1 represent a "deeper" relation like trust. Who would be the best leader for this community? First of all, the picture shows this is a heterogeneous network with a high degree of clustering. Thus, the best leader is a boundary spanner connected with the hubs of each subgroup. Lauren perfectly fits this profile. She has a strong connection with all the four hubs of the four buildings, and she is the only community member that has a connection with at least one resident from each building. On the other hand, Kate is not a boundary spanner, and she is not connected with the hubs in the yellow and red buildings. The topology of the network shows us Lauren's strong connections put her in a better position than Kate to be a leader.

We are back on stage with this new leader, the leader with a "network perspective." The whole stage is in the spotlight, everyone is there. But at first we can't see... him! Finally, we spot him. He is in a corner, carefully watching everything that is going on. He is trying to discern the strong, invisible patterns that connect him and everyone else in a complex network that he is trying to influence. He does not have a microphone, nobody does. At times we see someone coming to him, having an intense conversation, and then going back at the center of the stage. Everything seems to run smoothly. At last, we decide to try with him too...*Show us how you lead!* He slowly turns toward us: *I'm already leading, can't you see?*

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