

Net and Nodes: Social Network Analysis and PR

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A PR practitioner doesn't have to work for long before confronting a scenario like the following. Hank, a general manager, wants to gain compliance for a new policy. Hank, however, knows that talking to or sending e-mails to his direct reports Sherry, Bill and Nancy are not going to be enough to change behavior among employees below them. His direct reports are busy, and they have little time to enforce the policy themselves. Hank knows his assistant, Peter, has regular contact with three assistants reporting to Sherry, Bill and Nancy. If Peter knows that Hank will be upset unless "they get with the program," Peter will report Hank's feelings to Sierra, Sally and Sandra who in turn will spread the word to those reporting to Sherry, Bill and Nancy. But, Hank also knows there are other relationships among his direct reports that might help or hinder getting the word out and gaining compliance. He is not sure what all these relationships are, but he has clues. How does Hank gain compliance for the new policy as soon as possible? A PR practitioner might call for an all-hands meeting, bulletins on the intranet, e-mail messages and a number of other secondary media. These might do the trick, but they might not. People don't change behavior easily, even when held accountable.

Another way to look at Hank's challenge is through social network analysis, which plots formal and informal relationships among individuals and organizations and reveals who is important to effective communications. Social network analysis has been around for more than a century, but it has gained importance with the internet. Social networking software like wikis, e-mail, Facebook, Twitter and Linked-in are spreading informal communications and relationships broadly at business, social, cultural and other levels. However, linking is not enough nor is e-mail. Anyone can link to tens or hundreds of names and e-mail is spammed to co-workers and others who pay little or no attention to it. It is how one uses formal and informal networks that counts.

The term, *social network*, has been used for more than 50 years to describe ties across formal boundaries on the basis of gender, social class, ethnicity, family, business relationships, etc. With the advent of the internet, social networks expanded to communities of interest crossing geographic boundaries. The social networks of a major global corporation, for example, are bewildering. There are formal and informal networks within departments, across multiple departments and across geographic locations. There are vendor relationships that are singular with one individual or multiple with various individuals and departments.

How an organization works differs from organizational charts on paper. Knowing how to get things done, whom to call, whom to prod and who has real power are important. PR practitioners serving in organizations develop their own formal and informal networks in time that help them understand what is happening and to detect communications emergencies or other changes. The question is whether it is worth documenting their networks. Social network analysts would say it is. Software helps make social network analysis easier, but there is still a great deal of work to surface both formal and informal relationships among individuals, and it is easy to get lost. Even simple networks become complex. We will provide a brief -- and incomplete -- overview of social network analysis and provide a typical example. It is unlikely that a PR practitioner would complete a complex social networking study. That is a task for professionals, but practitioners should be aware of the discipline and what it can do for them in planning and implementing communications.

It takes two

Networking begins with at least two people or organizations who have a relationship, be it kin or other role, intellectual, emotional, business or an affiliation. Network analysis examines how the structure and composition of ties between individuals or organizations affect behavior and mores. A network builds from two to many. The importance of formal and informal relationships is not the number of participants but how they relate. The relationship may define hierarchy, opportunity or constraint and how well a network operates and communicates. Social networking analysis examines the influence individuals have on one another.

Social network analysis looks at many states of a network including how closely related individuals are, who is at the center of network, relationships between networks and distances of individuals in a network from each other. Each of these states provides information for how successfully one can communicate within a network and how easily information from outside the network can penetrate it.

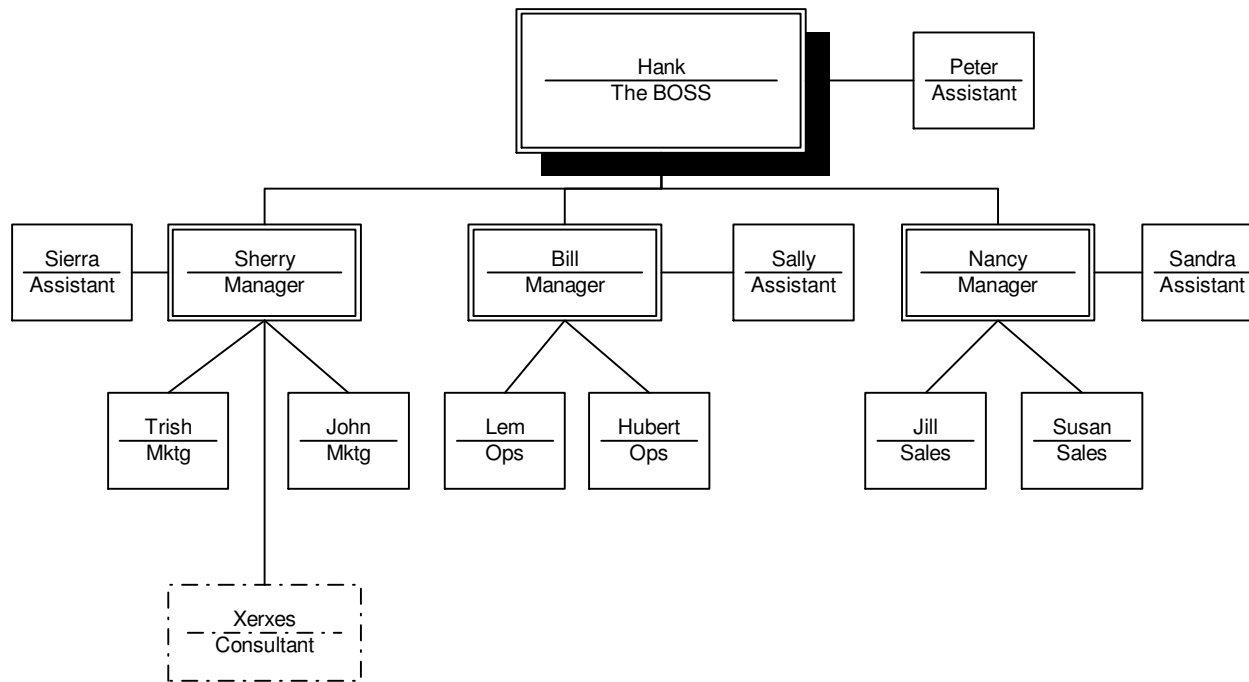
There are two ways to look at social network analysis. The first is all the people who relate to one individual – called an ego network. The second is how all individuals relate to one another— a complete network. There are various methods for defining relationships within networks including assigning values to strength of ties among participants, calculating the flow of information, summing the frequency of interaction among individuals, totaling distances between individuals and assigning probability weights to whether someone will pass on information. Social networking analysis also looks at the fragility of networks in that it asks what individual(s) and links are critical for a network to survive. They identify cutpoints that would disconnect a network and bridges between networks where an individual can broker information to two different networks but would disconnect the networks if the person departed.

Analysts also look at the density of networks and the number of ties among individuals. Persons who all know each other are in a dense network called a clique. Individuals who know one other but no one else are in low-density networks. This makes a difference in how one communicates. So too, the average distance between all pairs of individuals makes a difference. A network made up of cliques that barely relate to one another will communicate differently than a network made up of a group in which everyone knows everyone else. As a rule of thumb, managers who build self-contained networks with few relationships outside of the networks are less successful than managers who built loose relationships to many networks. The latter manager is a better team player. In other words, successful managers cultivate connections to a variety of networks rather than remaining isolated. These managers serve as bridges between networks to pass along information that otherwise would not be transmitted. The degree to which an individual in a network is at the center of many relationships is more important than the person's job title because of the power that centrality confers. Social networks are influential in business success and provide ways to gather information, to compete and to develop policies and procedures. PR practitioners who work within organizations know that their success is directly dependent on networks they build.

There is a great deal of terminology that goes into social network analysis, but the best way is to go through a typical scenario and to look at one.

An Example

First, we create an organizational chart.

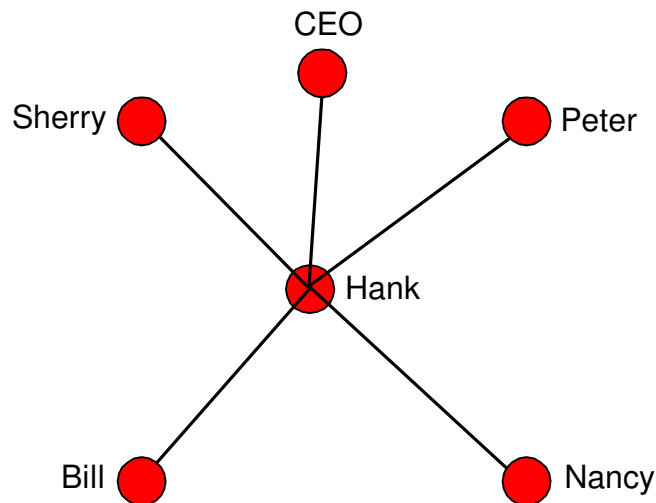


Then we research the formal and informal ties in the organization. (This is often difficult to do and is the province of experts.) Our results are as follows:

- Hank and Peter work together.
- Sherry, Bill and Nancy report to Hank.
- Sierra works with Sherry, Sally with Bill and Sandra with Nancy.
- Trish, John and Xerxes, the consultant, reports to Sherry. Trish and John don't like each other and rarely speak.
- Lem and Hubert report to Bill. Bill is a dominating manager and his group rarely talks to anyone outside of it.

- Jill and Susan report to Nancy. They are a tight team but Jill talks to Trish regularly and Susan lunches weekly with John.
- Sherry and Nancy work closely together.
- Xerxes works with Bill but not Nancy.
- Peter lunches daily with Sierra, Sally and Sandra.
- Peter bowls monthly with Xerxes, but avoids Sherry, Bill and Nancy.
- Sandra used to babysit the CEO's two children.
- Hank knows the CEO but not well.

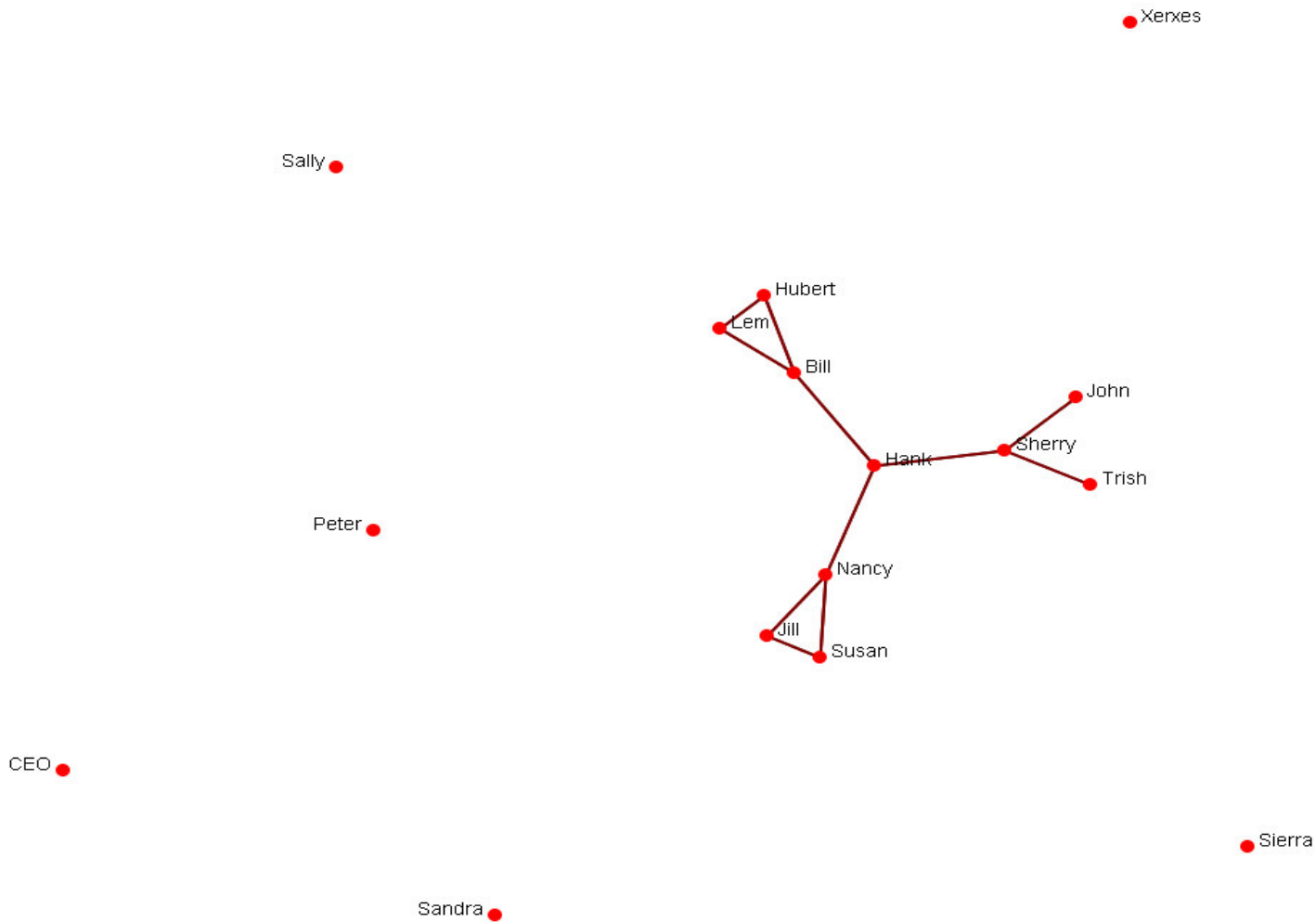
We will start with Hank and his relationships. This is the network of people with whom Hank has direct contact. It is called his ego network. It is a simple diagram but it accounts for all of Hank's contacts inside and outside of the organizational diagram. Hank's ego network shows five connections but none below the tier reporting to him. This verifies the challenge Hank has to gaining compliance for the new policy.



Now let's create a matrix of relationships for all participants. The matrix details formal and informal relationships between participants and renders textual description in numerical detail. Higher numbers indicate the strength of a relationship. Lower numbers or zero indicate there is little or no relationship. Each person is scored against every other person in the matrix.

| | Hank | Peter | Sherry | Bill | Nancy | Xerxes | Sierra | Trish | John | Sally | Lem | Hubert | Sandra | Jill | Susan | CEO |
|--------|------|-------|--------|------|-------|--------|--------|-------|------|-------|-----|--------|--------|------|-------|-----|
| Hank | 0 | 2 | 3 | 3 | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 |
| Peter | 2 | 0 | 0 | 0 | 0 | 1 | 2 | 0 | 0 | 2 | 0 | 0 | 2 | 0 | 0 | 0 |
| Sherry | 3 | 0 | 0 | 0 | 2 | 0 | 2 | 3 | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Bill | 3 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 2 | 3 | 3 | 0 | 0 | 0 | 0 |
| Nancy | 3 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 3 | 3 | 0 |
| Xerxes | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Sierra | 0 | 2 | 2 | 0 | 0 | 0 | 0 | 2 | 2 | 0 | 0 | 0 | 2 | 0 | 0 | 0 |
| Trish | 0 | 0 | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 |
| John | 0 | 0 | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 |
| Sally | 0 | 2 | 0 | 2 | 0 | 0 | 2 | 0 | 0 | 0 | 2 | 2 | 0 | 0 | 0 | 0 |
| Lem | 0 | 0 | 0 | 3 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 3 | 0 | 0 | 0 | 0 |
| Hubert | 0 | 0 | 0 | 3 | 0 | 0 | 0 | 0 | 0 | 2 | 3 | 0 | 0 | 0 | 0 | 0 |
| Sandra | 0 | 2 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 2 | 0 | 0 | 0 | 2 | 2 | 1 |
| Jill | 0 | 0 | 0 | 0 | 3 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 2 | 0 | 3 | 0 |
| Susan | 0 | 0 | 0 | 0 | 3 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 2 | 3 | 0 | 0 |
| CEO | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 |

The problem with a matrix is that it is hard to read. One can sort and resort it but it gets harder as a matrix grows larger to define who the key agents are in it. Here is where graphics help solve the problem. We take the matrix and turn it into a network diagram, first of the strongest relationships in the network: (See the next page.)

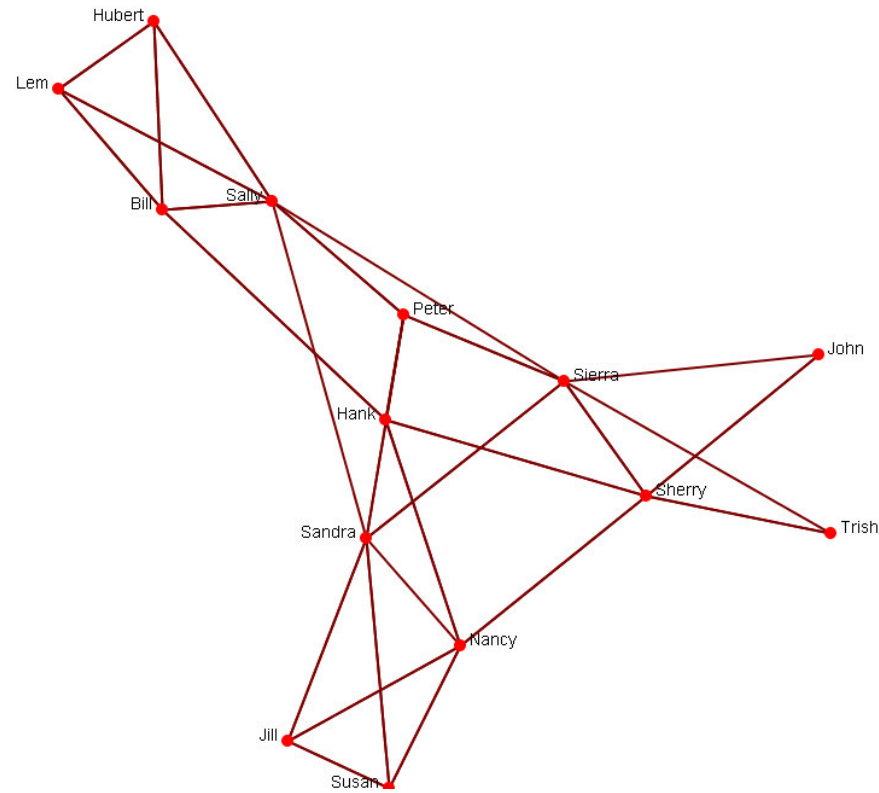


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We see in this version of the network that Hank is the bridge to two cliques led by Nancy and Bill and one unit with two isolates – Trish and John. Hank is two steps away from lower echelon employees, which weakens his power to communicate and the isolation of Trish and John is worrisome in terms of gaining a change in behavior.

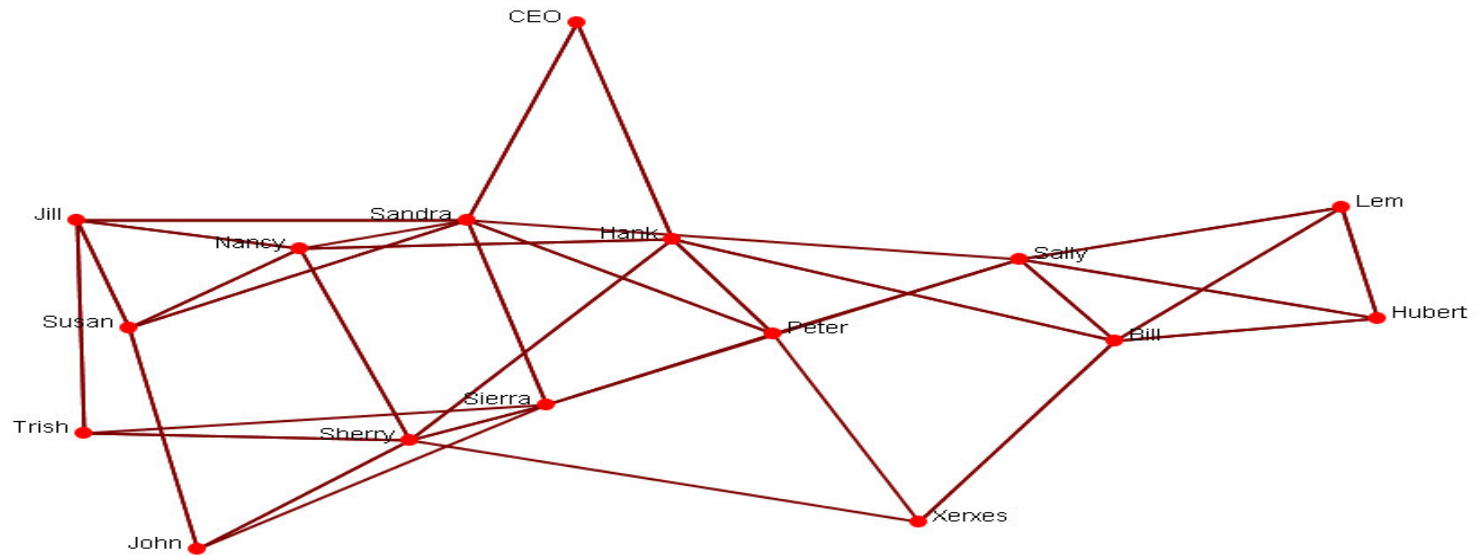
Now we add the assistants, and a second communications network appears. That network exists through Peter's relationship with the other assistants. Neither Trish nor John are isolated any longer but the communications links to them are stretched and weak. Moreover, Hank continues to be two steps away from workers at the bottom of the organizational chart.

HANK-TOTAL



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Lastly, we will add the weakest links in the network between the CEO and Hank and Sandra and Xerxes and Sherry, Peter and Bill.



The diagram has become a complex mesh of lines seemingly running in every direction. What it shows for those who are patient is a totality of networks available to Hank.

Did we need social network analysis to discover this? No. This is a simple case. A quick glance at the organizational chart would provide much of the key information in this example. But, imagine a case where there are dozens or

hundreds of workers and individuals linked into an extended network. Social Network analysis comes into its own with this kind of complexity, particularly for its reliance on statistical analysis to determine:

- The distance between individuals.
- The degree to which an individual lies between others in a network. Surprisingly, Sandra leads in this measure followed Hank, Sally and Sherry.
- How close to the center of the network any one individual is – and that person’s power as a result. It turns out that the top four individuals in centrality above are Nancy, Sandra, Sherry and Hank. They are connected to others more than anyone else.
- The degree to which any one node adds to the maximum flow among all pairs of individuals.
- How centralized or decentralized a network is. This network looked decentralized when there was just Hank bridging to the managers but when the subsidiary networks were added in, it became more centralized.
- The existence of tightly coupled networks versus loosely coupled – cliques versus low-density networks. Sherry and Sierra lead in the count of cliques.
- The existences of holes in the network that can be filled by linking together unlinked individuals. For example, Hank might want to decrease the isolation of Bill’s group by having them meet more frequently with sales.

The mathematical complexity of social networks is prohibitive, but increasingly it makes sense for PR practitioners to be aware of social network analysis in order to determine how to communicate better to target audiences. With the internet, linkages have risen to the tens of billions, if not trillions with overlay upon overlay of networks. No one can comprehend the totality of what the internet has provided to humankind in terms of linking and influence. However, social network analysis allows one to isolate segments of networks and to examine them closely. That in itself makes the discipline worth knowing about.

Sources to Consult:

- Social Network Analysis Instructional web site: <http://www.analytictech.com/networks>

- Social Network Analysis, A Brief Introduction: <http://www.orgnet.com/sna.html>
- Wikipedia source list: http://en.wikipedia.org/wiki/Social_network
- Centrality measurements: <http://en.wikipedia.org/wiki/Centrality>

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