

**O**rganisations are full of people with wonderful, creative, inspiring ideas. Whether these ideas emanate from top management, middle management or the rank and file in the firm, they can be the cornerstone of renewal and resurgence for the organisation. Yet our experience tells us that most of these good ideas fail – mostly because they were not implemented well.

What is the key, then, to the successful implementation of good ideas? Of course, this question defies a simple answer. Organisations are complex systems by nature. Poke it here with a good idea and someone baulks over there in an unanticipated way.

While these complexities make it difficult, one can increase the hit rate of good ideas with a simple notion: informal networks reveal the backbone of how things really get done in an organisation. If one can master how to use this knowledge, there is no limit to an organisation's ability to implement change.

Help is available from the most unlikely corner of academia. The field of "social network analysis" is at least 75 years old and has been the playground of the most

mathematically minded and least pragmatic of social scientists ever since. Whether they labelled themselves anthropologists, sociologists, social psychologists or, more recently, even physicists and computer scientists, what they had in common was a love of how complex network structures could be represented by high-powered mathematics. What motivated these scholars was the sheer beauty of understanding, representing and reducing complex structures through mathematical tools. While their ideas were certainly exciting, they mostly talked to (and wrote for) each other.

This insularity has changed dramatically over the past 15 or 20 years. We have discovered that these network principles can be used to understand ordinary organisational problems. Recently, Kathleen Carley, a fellow professor at Carnegie Mellon University, and I have applied network models to the analysis of terrorist organisations in an effort to... well, I can't talk about that. Collective work in the organisations field has led to a better handle on many fundamental organisational phenomena, including motivation, leadership, conflict, crisis management, organisational culture and change itself. The

GETTY

BY DAVID KRACKHARDT

# NATURAL COLLECTION



The real power of any organisation lies with those groups of staff that form naturally and informally. Learning more about the dynamics of these networks can help HR teams to implement change successfully

community of network analysts, especially in business schools, has grown exponentially over the past decade. They have reached out to the real world of organisational problems and have found both questions and answers that were previously impossible to consider.

How do these insights help us to get a better handle on implementing change? The answer stems from two key aspects of networks. First, the complexity of the network matches or reflects the complexity of an organisation – the feature that so frequently defeats our best efforts at change. Networks reveal dependencies, coalitions, and co-operative and/or competitive channels. They help you to anticipate what happens when you poke the organisation in a certain place, or when you ignore that person over there.

Second, network “centrality” begets power. In other words, one may predict an individual’s ability to make things happen by their position in the overall network structure, independent of their formal position or personal traits and skills.

These two features combine to aid change. The first feature, that networks reflect the complex realities of the organisation, provides a map of the political landscape. The second, that key central positions can be identified, allows the change agent to focus their energy in an efficient and concentrated way. So both of these become useful diagnostic tools.

I am assuming here that the change agent has already decided on the best course of action for the organisation or target group. So the issue being addressed is what needs to be ascertained in order to maximise the chances of success. Clearly, both the overall map of the political landscape and the identification of particularly crucial actors will be critical to this stage.

What types of questions will the change agent want to address with the overall map? First and foremost, the agent will want to know where the primary groups and coalitions are. Are there particularly close-knit groups, some of whose members are known to be against the proposed change? How large and tightly knit are the groups? Are there any fissions within them?

The second task is to identify the central actors. These people are often the sources of diffusing a good idea. Knowing where these powerful actors are, who can act as a conduit from one group to another, and who the critical actors are within and between

## “ Informal networks reveal the backbone of how things really get done in an organisation ”

groups, can help the change agent to target specific people. Once these actors are on board, change is much more easily accepted by the others.

The third job is to overlay the informal network on to the formal organisational structure. This allows us to characterise various departments and divisions by the extent to which they have ties to other formal groupings. A useful index here is the E-I index, a simple number that captures the extent to which a group has ties that cut across organisational units. The index is calculated as:  $E-I \text{ index} = (E-I)/(E+I)$ .

E is the number of external ties (those that reach beyond the boundaries of the group) and I is the number of internal ties (those that connect people within the group). This index ranges continuously from -1 to +1, where a -1 indicates that the group has entirely internal ties, and +1 indicates that all the ties connect to people outside the group.

Our research shows that the higher the E-I index, the more likely it is that the group will be open to change that may threaten the group itself. This is because more external ties allow one to identify with the larger organisation. Conversely, an E-I index value close to -1 indicates that there are hardly any external ties. This suggests that people tend to identify only with that sub-grouping and are less likely to co-operate with other

groups or the organisation as a whole when faced with threatening change.

There is an alternative to this purely quantitative approach. While not as precise as the mathematical tools mentioned above, this option has several advantages. This alternative is to visualise the network structure – literally, to draw a map of the network in a way that depicts all the relevant relations among all the relevant actors. Although this can be done by hand, it is not recommended, since human beings are not inherently good at it. It would be better to use one of the freely available computer programs, such as Netdraw, Pajek or KrackPlot. Visualisations of the network can be most useful if the network has an appropriate “density” (a measure of the number of lines connecting different people). I like to refer to this “appropriate density” as the volume control. If the network is too dense (the volume control is too high), then the picture contains no visible structure, only loud distortion. If the network is too sparse (the volume control is too low), then there is no structural information at all to see in the picture.

This readable visualisation has many advantages. Human beings are capable of visualising complex structures in this way, and it is easier to decipher what is going on if you can see a picture rather than lists of names. You can see the groupings, sub-groupings and relationships between the groupings. You can easily identify the external bridges between groups. And you can intuitively see where the primary targets should be for the change effort. In addition, you can monitor the change on a visual map to assess how it is going, where the stumbling blocks are and where efforts need to be redeployed or refocused to bring a renegade group on board.

In truth, a combination of these techniques is often best. Visualisation allows you to see the overall picture and gives a sense of the strategy you should take to implement the change. Quantitative analysis can supplement this with details on how central some key actors might be, and thus provide more precise details on how much energy should be applied to particular targets of the change. By putting this information together, you can easily establish a force and strategy for change that will markedly improve the odds of seeing the change actually happen. ■

### Further info

David Krackhardt is professor of organisations at the Heinz School of Public Policy and Management and the Tepper School of Business, both at Carnegie Mellon University. He is speaking on “Informal networks” at the CIPD’s annual conference and exhibition in Harrogate on 26-28 October » [www.cipd.co.uk/annualconf-ex](http://www.cipd.co.uk/annualconf-ex)

☎ 020 8612 6202

 annual conference & exhibition 2005