THE INFLUENCE OF STAKEHOLDER NETWORKS ON ENVIRONMENTAL PRACTICES AND LEARNING IN ORGANIZATIONS

A conceptual paper

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ABSTRACT

In this conceptual paper the research project of Tilburg University which is part of the Dutch research programme DynEmics is described. The research project deals with the influence of networks of stakeholders on organizational learning. Therefore, the stakeholder approach, the concept of organizational learning, and social networks theories have been critically analysed. Common use of the stakeholder approach shows two shortcomings : the focus is on bilateral relationships, and the organization is viewed as a black box. In the paper solutions to these problems are given. In a review of the literature on organizational learning, two types of learning can be discerned; in this paper they are called efficiency learning and effectiveness learning. Besides, the learning process and impediments to learning are dealt with. Networks can be dealt with by using social network analysis. It is possible to study the structure of a network by means of its characteristics density and centrality. This kind of relationships are measured by relational data, which characterize the properties of a system of actors.

After some remarks about the research methodology and the collection of data, the paper is finished by combining the merits of all three concepts in formulating propositions about the relationship between networks of stakeholders and organizational learning.

1. Introduction

This paper deals with the methodology of a research project that is part of the strategic research program on Environment and Economy, **DynEmics**, which stands for **Dyn**amics in **E**nvironmental **M**anagement; **I**nteraction, **I**ntegration, **C**hange and **S**trategy. The research program is concerned with the dynamics of environmental management. The overall research question is: *how and why does environmental management change over time?* Four Dutch universities participate in *DynEmics*: Amsterdam University, Free University, Erasmus University Rotterdam and Tilburg University. The four projects venture to integrate different aspects of environmental management within organizations, considering both internal and external factors, and the interplay between them. The projects deal with the integration of environmental concern into company strategies and practices, the role of marketing in environmental practices in companies, the influence of stakeholder dynamics and networks, and the dynamic interactions between heterogeneous companies and environmental authorities. They all take the underlying framework of **organizational learning in complex systems into account.**

The Tilburg University project is concerned with the influence of networks of stakeholders on environmental practices and learning in companies. In this paper the **research methodology** of the Tilburg project is discussed. The core research question of this project is:

In what ways, and to what extent, do stakeholder networks influence environmental decision making and practice ?

Three related research questions are formulated:

How do the perceptions of environmental problems by stakeholders translate into pressure on companies?

How is pressure of stakeholder (networks) interpreted by (different parts of) the organization?

How does the influence of stakeholder networks relate to organizational learning?

To answer these questions, we will first pay attention to the stakeholder approach : its merits, its usefulness, the shortcomings and possible solutions to them. Next we will elaborate on the concept of organizational learning and on the concept of (social) networks. We will discuss whether it is useful to combine the stakeholder approach with the concept of social networks and the relationship with learning. Finally, we will focus on the research methodology.

As this four-year project started in January 1998, we are in the phase of elaborating on conceptual matters and the research methodology. So this paper is a conceptual one and not an empirical one. We will end up this paper by formulating a number of propositions, which we will test using the specially constructed panel of managers from firms.

2. The stakeholder approach

2.1. Usefulness of the approach

Organizations have relationships with various groups or constituencies, which can be defined as stakeholder groups. Theoretical and empirical studies suggest that stakeholders (like consumers, suppliers, competitors, government, shareholders, neighbours) are essential for the performance of companies (Mitroff 1983, Freeman 1984, Donaldson and Preston 1995, Campbell 1997, Rowley 1997 and Sternberg 1997). These studies show that every company has a (broad) array of stakeholders and that they influence organizational decisions in different ways.

Many studies have been published about stakeholders and stakeholder management. Since the publication of Freeman's book **Strategic Management: A stakeholder approach** in 1984, the stakeholder approach of the firm has got a prominent position in organization theory. According to Freeman, stakeholders can be defined as *any individual or group who can affect or is affected by the actions, decisions, policies, practices or goals of the organization.*

In literature, there is an ongoing debate about the usefulness of the stakeholder approach for business management and about the question as to whether the approach is an alternative model of corporate governance (Campbell 1997, Sternberg 1997). Some argue that the stakeholder approach has weaknesses, because it is hard to decide who is a stakeholder and who is not (Campbell 1997). In that view, shareholders are the "intended beneficiaries", all other stakeholders are the "collateral beneficiaries". It is also not clear what stakeholders should expect to receive. According to Sternberg (1997), stakeholder theory undermines

private property, because it denies owners the right to determine how their property will be used. Stakeholder theory stipulates that those assets should be used for the benefit of all stakeholders. Stakeholder thinking interferes with performance measurement.
Shareholders and regulators have legal rights that distinguish them from other stakeholders.

But that does not imply that managers can ignore the demands of other stakeholders. A fundamental premise of the stakeholder concept is that effective corporate management involves achieving and maintaining a balance between the interests of multiple parties that have a stake in business operations (Mitroff 1983). Stakeholders need to be considered both to improve organizations' chances of achieving their objectives and to ensure that their conduct is ethical.
In this paper, our a priori assumption is that managers are influenced by more than shareholders and their agencies.
According to Rowley (1997), whether a stakeholder theory exists is a matter of debate. He argues that all kinds of efforts to create testable stakeholder theory, are evidence of a movement toward theory explaining how organizations function.

An important epistemological issue in this respect is the problem of justification of stakeholder theory (Donaldson and Preston 1995). Why should stakeholder theory be accepted or preferred over alternative conceptions, such as the classical input-output model? The answer depends on the purpose that the theory is intended to serve. Stakeholder theory has been presented and used in a numer of ways that are quite distinct and involve different methodologies. Donaldson and Preston (1995) mention three types of use: **the descriptive/empirical, the instrumental and the normative use** of the stakeholder concept. Those uses adress the question "what happens", "what happens, if" and "what should happen" (Jones 1995). In the descriptive/empirical case, attempts are made to find out whether the concepts embedded in the theory correspond to observed reality. In the instrumental view of stakeholder theory, the relationship between stakeholder management and (environmental) performance is investigated, whereas the normative approach involves the connection of stakeholder theory with fundamental and normative concepts.
In our research we are interested in how people at different levels in the organization perceive stakeholders' influence. We are interested to know in what ways managers actually act with respect to stakeholder relationships. The focus of this study is on the descriptive/empirical view of stakeholder theory and on the instrumental one. That is because we are interested in *patterns* of influence of stakeholder dynamics and networks. We hope to be able to find a relationship between stakeholder management and (environmental) performance and learning.

2.2. Shortcomings

Common use of the stakeholder approach shows two shortcomings : the focus on bilateral relationships, and the focus on the firm as a black box.

In most literature, the focus is on bilateral relationships between managers and different groups of stakeholders. Stakeholders are classified into categories that provide an understanding of how individual stakeholders influence an organization's operations. There is much debate about the number of categories that should be considered. Some writers have argued for eight or ten classes of stakeholders, while others suggest potentially an infinite number of classes (Campbell 1997). Campbell makes a distinction between "active" and "passive" stakeholders. Active stakeholders are those who can affect the performance of the company and whose demands are unquenchable. These stakeholders are according to Campbell "infinitely greedy", they always want more dividend, higher wages, better terms of trade and lower prices. The passive stakeholders are all the other stakeholders. They have less active influence on the company, because they don't have daily transactions with the company. As long as the company performs at some acceptable level, these stakeholders have very little influence on the company.

Clarkson (1995) works with two stakeholder groups : "primary" and "secondary" stakeholders. Primary stakeholders are those groups without whose continuing participation the firm cannot survive, while secondary stakeholders have influence but they are not essential for the survival of the firm. The classification of Campbell and Clark are to a great extent the same.

Dyllick (1989) distinguishes between three main groups of stakeholders : political, public and market stakeholders. Boons and De Groene (1998) find that large and medium-sized Dutch industrial firms experience environmental influence mainly from political (government) and internal stakeholders, and to a lesser extent from chain stakeholders (suppliers, customers, competitors). Other stakeholder groups that are taken into account are public stakeholders such as media, environmental groups, trade organizations, etc. This last group has hardly any influence on firms.

However, there is evidence that relationships between or among stakeholders must exist. The multiple and interdependent interactions that simultaneously exist in stakeholder environments must be taken into account (Pfeffer and Salancik 1978). The idea that stakeholder groups can influence each other and next simultaneously can exert influence on companies, is quite old (Emery and Trist 1965). Nevertheless, this so called turbulence in companies' environment is not very well investigated. This combined influence can have different effects, for example an increasing impact on environmental decision making. If this is true, is this combined pressure unambiguous or ambiguous, concerted or fragmented? And, will government pressure lead to minimal measures, wheras combined market pressure will lead to more far reaching measures ?
We will view stakeholders as dynamic networks of influence.

Another important point is that most previous studies have only been concerned with classification. In the earlier mentioned studies of Dyllick, and Boons and De Groene, the question of *how* stakeholder influence affects firms' decisionmaking is not investigated. The firm remains a **black box**. However, not only an explanation of stakeholder influences is

needed to understand the functioning of organizations, but also how firms respond to these influences.

The notion of stakeholder influence has been investigated in the field of environmental management. According to Starik et al. (1996) stakeholders' interest and concern about environmental issues has meant that stakeholder involvement has become a fundamental aspect of corporate environmental management.

The extent to which stakeholders influence environmental decision making, the pressure it exerts on managers and the processes of stakeholder induced changes, still remain unknown. This finding corresponds with the results of two Ph.D. theses (Bouma 1995, De Groene 1995). Both studies reveal the importance of stakeholders, but do not unravel the process through which their influence is brought about. An important recommendation is to open the black box of decision making processes within companies. Grafe-Buckens and Hinton (1998) tried to assess current environmental stakeholders initiatives. They find that few companies have built communicative relationships with their stakeholders, fewer have tried to involve them in their decision-making process. They also notice that while it is easy for companies to determine their need to involve stakeholders in their decision making processes, it appears more difficult to fully understand stakeholders' needs and concerns and to effectively and satisfactorily communicate with them.

2.3. Influence

Until now, the word "influence" has been used many times, without describing it. According to different authors, influence is "simply a special instance of causality, namely the modification of one person's responses by the actions of another" (Marsden and Friedkin 1994). According to Knoke (1994) influence occurs when one actor provides information to another with the intention of altering the latter's actions. The modification of a person's response can be subject to all kinds of processes, such as authority, identification, expertise, competition, and power. Social psychological studies emphasize the occurrence of some form of social power in the modification of actions of actors. Control over information is an important element of social power (Pettigrew 1972, Raven 1965).

Influence does not require face-to-face interaction. The only precondition for influence is information about attitudes or behaviours of actors. Influence comes about by spontaneous pick up or imitation of action of others or by intended actions of other parties. In the first case actors do not intend to get others to do what they did, while in the intended case, the actor initiates behaviour which has the manifest objective of affecting behaviour of others (Marsden and Friedkin 1994). Influence of stakeholders will be intended or spontaneous, depending on the special type of stakeholder or network under study. For example, much behaviour of government has the intention to influence firms to behave more environmentally friendly. When studying networks, it is to be expected that much influence will be spontaneous, because of the nature of networks. In this research we will try to identify what type of influence we are dealing with.

3. Organizational learning

From the literature consulted we have learned that there is no convergence on the notion of organizational learning. Different perspectives, assumptions, views of the world, etc. logically lead to different outcomes. Learning can be seen as a cultural phenomenon, as information processing, as an adaptation process, or as a system (Romme & Dillen 1997). It can be considered from a descriptive, an instrumental or a normative stance.

In this section we shall define the notion, distinguish different dimensions of organizational learning, localize the different theoretical approaches within our framework, characterize factors conducive to learning, look for booby traps impeding organizational learning, and finally relate the subject to networking.

3.1. What is learning ?

According to Argyris and Schön (1978), pioneers in this field, learning occurs when organizational agents detect and correct errors in their internal and external environments. To Levitt and March (1996) learning implies the inclusion of lessons drawn from past experiences into organizational routines. Weick and Westley (1996), and Romme and Dillen (1997) consider that learning takes place when newly acquired insights induce an organization to adjust its behaviour.

We consider organizational learning as an organization's increasing understanding of its relevant internal and/or external factors and their interactions. Our definition excludes the adjustment of norms, values and behaviour. We consider them as the consequences of learning, and not as parts of the learning process.

All definitions consider learning as a dynamic process. Observations of past events bring about information which was hitherto unknown. These observations are incorporated into an organization's present stock (i.e. routines, norms and values, understanding). This adjusted stock influences future behaviour. All definitions mentioned above also imply implicitly that organizations do not dispose of perfect information at any time. In other words, organizational learning takes place in a context characterized by bounded rationality.

3.2. Dimensions of learning

There are two types of very different learning processes, which we consider as the two extremes of a continuum of learning.

Efficiency learning. Literature labels the first type of learning as 'single-loop learning' (Argyris and Schön 1978 ; 1996), 'exploitative learning' (Weick and Westley 1996), or 'adaptive learning' (Senge). We might also call it 'operational learning'. It is concerned with a better understanding of a problem given fixed parameters. Within the same paradigm (so with a given set of parameters : values and norms, beliefs, assumptions, techniques, etc.) an organization learns how to perform better : the classical learning curve effects (Levitt & March 1996 ; Porter 1982).

Effectiveness learning. This type of learning is also known as 'double-loop learning (Argyris and Schön 1978, 1996), 'explorative learning' (Weick and Westley 1996), or 'generative learning' (Senge 1996). 'Strategic learning' would be an alternative label. It consists of learning which involves a major change of parameters. An organisation treads a new path, following a radical change in one or several of its basic parameters. Technological innovations, a major change of its surrounding environment, or altered goal-setting are examples of effectiveness learning.

These two, fundamentally different learning processes, are the two opposites. Several scholars consider organizational learning to be in-between. Levitt and March (1995), as well as Nelson and Winter (1982) take the status quo, which is encoded into the organizational 'routines' (which we have labeled parameters), as a starting point. They try to improve their understanding of the world by trial-and-error experimentation or through search. Organizations tend to be very careful to challenge these routines. They have the tendency to improve within the same paradigm. They also consider new paradigms, which are usually explored on an evolutionary, incremental basis. So this positions is between the two extremes but closer to paradigm-taking learning than to the paradigm-making type.

3.3. What promotes learning ?

The two poles of learning appeal to different factors conducive to learning (Weick & Westley 1995 ; Argyris & Schön 1996 ; Mintzberg 1979). The optimal context for *efficiency learning* is the structure of a bureaucracy with its highly-specialized tasks, involving frequent repetition of well-structured activities. A conducive culture is closed, promoting consent, habits and uniformity. Communication, inside and outside the organization, is limited and usually confined to homogeneous subgroups, and is technical and well-documented. The organization is embedded in a stable environment. The efficiency drive implies quantified targets, the optimal use of limited resources, reactive and technical problem-solving by using existing memories extensively.

Effectiveness learning thrives in an adhocracy with its flexible structure, low job specification and specialization, frequently changing and variegated activities. The open culture welcomes pluriformity and dissident opions in order to avoid 'group thinking'. Frequent, informal meetings with and between heterogenous subgroups, including new ones, inside and outside the organization promote optimal communication. The organization's environment is dynamic. The search for effectiveness means qualitative objectives, abundant resources, proactive behaviour, and a limited use of existing organizational memories.

3.4. The learning process

The cybernetic process of learning can be decomposed into the following steps (Morgan 1997 ; Romme and Dillen 1997) :
1. *acquistion*. An organization scans its internal and/or external environment to observe the actual situation. Examples are seeing how employees work, hearing that a competitor courts a major customer, or feeling the market potential of a new, green product.
2. *interpretation*. The acquired information is interpreted against existing parameters. They act as normative filters (by 'colouring' observations) and as reference points (new information is interpreted against the status quo). Do our employees work efficiently, are our sales jeopardized, do we want to diversify our assortment into green products ?
3. *storage*. The interpreted observations are stored into the organizational memory : the memories of employees, organizational culture, documents, organizational structure, the physical structure of workplaces. The supervisor won't forget the shirking worker, the sales staff is drilled never to lose a good customer, a marketing report on green products is included into the organization's archives.
4. *inferences*. In case of discongruity between desired and actual situations, corrective action must be prepared. The organization may consider to fire the lazy worker, convince the major customer to keep on buying from it, or introduce the new, green product line.

We would make some remarks as to this highly simplified cybernetic model. Firstly, the outcome of scanning is not only compared with existing norms and values, but in turns can influence them (cf. Levitt & March's 'routines'). Secondly, scanning may not be necessary to learning. Inductively-induced learning is definitely very important, but we can also consider learning as stemming from mere deductive reasoning. Thirdly, learning may not be the intended result of a deliberate process, but can also be an unintended 'accidental' result, e.g. as a by-product of another activity or search for something else.

Required *assets* for learning are : the ability to observe (through our human senses or assisted by computers), normative bench-marks (the expression of the organizational culture), a memory (human memories, documents, databases), skills to interpret observations, the ability to requestion existing parameters (in case of effectiveness learning), an organizational memory, and the ability to link the outcomes of this process to future behaviour.

We have not yet operationalized the concept of learning, but think that the different stages and assets discerned above will be helpful.

3.5. Impediments

Organizational learning is surrounded by a number of pitfalls, undermining beneficial learning. The main impediments are :
1. *individual versus organizational learning.* It can be argued (Argyris & Schön 1996) that only people can learn and that the personification of the learning organization is a fiction. We reject this reasoning. If individuals can learn, and if organizations are collections of individuals, then organizational learning does exist (just like organizational strategies or organizational behaviour exist).
Several scholars (Argyris & Schön 1996 ; Weick & Westley 1996 ; Romme and Dillen 1997) contend that whenever an individual has learned, this does not automatically imply that the organization to which they belong has learned. To them the newly acquired insights have to be disseminated throughout the organization, to be shared with others, before they can be considered as true organizational learning. Otherwise, a selfish individual or a quitting organizational member would take with him insights which he acquired on behalf of the organization. We recognize that if organizational key members keep acquired insights for themselves, an organization becomes vulnerable. It is therefore advisable to share insights with other members. But we do not consider information dissemination to be imperative before learning can take place.
2. *focal entity.* A related question is to the appropriate level of analysis (Argyris & Schön). If learning takes place through people, and if the organization is the subject of analysis, how can these different perspectives be reconciled ? Weick and Westley (1996) suggest to focus on culture to avoid this pitfall. We would rather follow Argyris & Schön, arguing that higher levels of aggregation do not open the black box of organizational learning, and that the starting point should be at the individual level. The aggregate, interacted outcome of all lower-level learning processes can be considered as organizational learning.
3. *imperfect observations.* The scanning process can, especially in a complex environment, be defective. If e.g. wrong conclusions are drawn as to the relationship between certain observed factors, a misunderstanding of the actual situation is the logical consequence. Needless to say that this 'superstitious learning' (Levitt & March 1995) does not lead to learning, and that incorrect future actions and outcomes are likely to occur. Biases in our interpretation of observations, e.g. generalization on the basis of single events (Levitt and March 1995) may as

well lead to a wrong understanding. The 'double ignorance trap' (not understanding to be not understanding) is a genuine problem, of which we have to be fully aware.

4. *wrong interpretation.* Correctly made observations are unlikely to lead to correct actions if they are not correctly interpreted. A careful, explicit analysis of observations as compared to existing parameters can be helpful.

5. *defective memory.* People forget or do not correctly remember past events, they quit their organization, documents get lost, etc. (Levitt & March 1995). Optimal information dissemination throughout the organization and appropriate formal recording are remedies.

6. *change aversion.* The human propensity to preserve the status quo induces people to stick to the old situation rather than adjusting to new circumstances (Morgan 1997 ; Argyris & Schön 1996 ; Levitt and March 1995 ; Senge 1990). This is exemplified by Levitt and March's 'competency trap' : maintaining inferior practices leading to favourable performance is preferred over adopting superior practices yielding better performance. Status quo propensity explains why efficiency learning prevails when effectiveness learning is called for. Remedies are freely flowing, valid, complete and precise information, frequent contacts between different organizational departments, non-defensive behaviour of organization members, the public utterance and discussion of all (including dissident) views, and the regular challenging of existing paradigms.

7. *sensitive information.* An organization may be very reluctant to let information flow freely throughout. Especially in the case of competition-sensitive information (technical know-how, marketing information), diffusion of information increases the risk of outside leakages (Levitt and March 1995).

3.6. Recapitulation

The main findings can be summarized as follows :

	Efficiency learning	Effectiveness learning
Conducive elements	Structured hierarchies	Informal adhocracies
	Repetitive, narrowly-defined jobs	Variegated,broadly-defined jobs
	Closed, formal, consensus cultures	Open, informal, dissid. culture
	Limited, intragroup communication	Frequent intergroup communicat.
	Stable environment	Dynamic environment
	Reactive, rational behaviour	Proactive, intuitive behaviour
	Limited resources	Abundant resources
	Highly-exploited memory	Limited use of memory
Problems	1. Individual learning	1. Individual learning
	2. Imperfect scanning	2. Imperfect scanning
	3. Wrong interpretation	3. Wrong interpretation
	4. Defective memory	4. Defective memory
	5. Competency trap	5. Resistance to change
Solutions	1. Recording in databases	1. Socialization (teach org.norms)
	2. More fragmented scanning to improve precise understanding	2. Broader scan to understand all related factors
	3. Explicit technical analysis	3. Discussion of all relev. factors
	4. Optimal formal recording	4. Inform all members regularly

5. Follow technical developments, consult outside peers regularly	5. Frequent, non-defensive, informal discussions with different (sub)groups

We conclude, like Argyris and Schön (1978, 1996) and Senge (1990), that efficiency learning is the most prevailing type of learning. A major underlying reason is our notion that people tend to be change aversive, preferring to perform better what they are already doing rather than considering new paradigms. Secondly, efficiency learning is often a by-product of ongoing, directly productive activities, whereas effectiveness learning tends to necessitate organizational members to stop their regular activities and communicate. So efficiency learning tends to occur almost 'automatically', whereas effectiveness learning has to be set in motion explicitly. Thirdly, bureaucracies are a much more prevailing organization structure than adhocracies. The pigeon-holing work division which bureaucracies bring about is conducive to efficiency learning. Fourthly, the pay-offs of efficiency learning are immediate, whereas effectiveness learning generally fruits in the long run. Therefore, it is tempting to focus on immediate returns (because in the long run we are all dead).

An issue which has not been sufficiently investigated is the relationship between influence of stakeholders and organizational learning. It is stated that it is necessary for companies to gather real information from its stakeholders in an effective way. This information is needed to identify, develop and resolve key environmental choices, issues and problems (Grafe-Buckens and Hinton 1998). Companies can learn from the communication with and involvement of their stakeholders.

4. Networks

4.1. The notion and questions raised

Stakeholders as networks of influence on organizations can be analysed by using social network analysis (Rowley 1997). This kind of analysis can provide a mechanism for conceptualizing the simultaneous influence of different stakeholders and predicting organizational responses to these forces. Network analysis can make clear how the pattern of relationships between stakeholders, and between stakeholders and the organization, influences an organization's behaviour. In the words of Nohria (1992), it provides a means for examining "the interaction of interactions". The stakeholder environment is seen as a set of social actors. Instead of analysing individual behaviours, attitudes and beliefs, social network analysis focuses on social entities or actors in interaction with one another. Next, the way these interactions constitute a framework or structure that can be studied and analysed in its own right, is investigated.

In social network analysis, a number of assumptions about actors, relations and the resulting structure are made (Wasserman and Faust 1994):

actors and their actions are viewed as interdependent rather than as independent autonomous units;

relational ties (linkages) between actors are channels for transfer of flows of resources (either material, like money, or immaterial, like information, political support, friendship or respect);

network models focusing on individuals view the network's structural environment as providing opportunities for or constraints on individual action;

network models conceptualize structure (whether social, economic or political) as enduring patterns of relations among actors.

Networks can consist of interorganizational and intraorganizational relationships. Most work has been done in the field of interorganizational networks (Krackhardt and Brass 1994), the goal being the study of relations among organizations. Networks are often seen as hybrid forms between markets and hierarchies. Three theoretical approaches that have been used in studying interorganizational relations are the resource depence approach, the social class approach and the institutional approach (Mizruchi and Galaskiewicz 1994). Those authors argue that although the three frameworks are distinct approaches, in reality much of the research on interorganizational relations defies easy categorization.

Network analysis raises some methodological issues such as (Rowley 1997):

what are the boundaries of the network under study?

what type (s) of relations will be measured?

do the relations measured represent the range of relevant components of the construct?

are the exchange ties between network partners reciprocal?

At this moment it is not necessary to answer all these questions. The first and second questions will be dealt with in the next section.

4.2. Dimensions of networks

Rowley (1997) tries to answer the question as to how the structure of a network affects the response to stakeholder pressure. He therefore introduces two *network characteristics: density and centrality*. He argues that the **density** of the network and the **centrality** of an organization in a network influence the degree of resistance to stakeholder pressure.

Density of the network stands for the number of relations that exists in the network divided by the total number of possible ties if each network member were tied to every other member. Density means an environment's interconnectedness, the structure of a given network. It measures the relative ties in the network that links actors together. The idea behind this concept is that if density increases (the number of ties between network members grows) communication across the network becomes more efficient and shared behavioural expectations will be established.

Besides the number of contacts, the type of contacts in a network is important. When contacts take place with persons, departments or organizations within the same working constellation, or with colleagues in other departments or organizations holding similar positions, we will call the network **homogeneous**. On the other hand, when contacts take place with people from other organizations or with people in other working constellations, different world views, influences perspectives and information represented by the members of the network will be exchanged. This type of network is called a **heterogeneous** network.

Centrality refers to an actor's position in the network relative to others. It implies a position of power, or status. As Rowley (1997) states: "centrality refers to power, obtained through the network's structure, as opposed to power gained through individual attributes". Centrality can be measured in different ways. Degree centrality stands for an actor's number of direct ties to other actors, closeness centrality represents independent access to others and betweenness centrality means control over other actors. Nevertheless, the central element is the identification of actors occupying important or prominent positions, which give them the possibility to exert influence. Actors with a high betweenness centrality can be seen as "gatekeepers in the sense that they facilitate exchanges between less central actors". This means that those central actors can play a role of change agent or not, or that they have power to influence other stakeholders positively or negatively.

Contrary to Rowley, in our research we are not primarily interested in resistance and conflicts, but in organizational learning and change. Networks of actions and networks of learning play a critical role in the process of change within and between organizations and their institutional fields (Roome 1998a).

5. Research methodology

5.1. Methodology

To investigate the influence of stakeholder networks, the first methodological issue is to define the boundaries of the stakeholder network. The question is what actors to include in the network. Knoke (1994) suggests three alternative ways to define network boundaries:

* actor attributes. Researchers can focus on stakeholders with common attributes, like suppliers, customers, government. In many stakeholder studies this way of deliniating the business environment is used;

* types of relations under study. Researchers can focus on types of relationships, such as resource exchanges, information sharing, interpersonal ties, interlocking directorates;

* a central issue or event providing the setting for the study. A specific event can be chosen to bring together an identifiable group of stakeholders.

In our resarch, the third alternative seems to be the most promising one to investigate the potential of organizational learning through networks. While companies have uniquely defined stakeholder sets or networks of stakeholders, which influence organizational decisions in different ways, it is not useful to start with defining possible stakeholder sets.

An environmental event can be the launching of a new product, the implementation of ISO 14001, the appointment of an environmental coordinator. Taking **an event in the focal firm as a point of departure**, we want to trace persons, institutions, internal or/and external to the organization, that have influenced that specific event. We want to trace back all those influences and relationships of stakeholders, to get clear the shape and content of the network in that specific case. To achieve that, the snowball technique is a practical and useful approach for defining boundaries and to collect data (Scott 1991, Wasserman and Faust 1994). The first step is to define an event. Via interviews, information is asked from the initial person, or group of persons, or department, responsible for that event. They are asked to nominate other actors who have influenced them. Researchers then interview informants from the nominated actors or organizations , who are also asked to nominate relevant actors. This process is repeated until few new actors are nominated; the result is a relatively complete set of data describing network participants and relationships. The resulting networks will not be either interorganizational or intraorganizational : they will cross the boundaries of organizations.

Having traced networks in this way, the question is what types of relations will be measured, the second methodological question raised in the last section. Roughly speaking, two kinds of data can be distinguished; **attribute data and relational data** (Scott 1991). Attribute data are data which characterize the properties, qualities or characteristics of an individual or group. Examples are size, age, structure, diversification of the organization, attitudes, opinions, culture of actors. Relational data are data which characterize the properties of a system of actors. Ties relating one actor to another are important in this respect. These relations connect pairs of agents into larger relational systems. Network theorists examine relational data. In our research we are interested in the learning capacities of networks; we want to know whether networks mean an incentive for firms to learn in order to reach a more sustainable situation. So, the relationship between density and centrality (which are system characteristics) and learning is of interest to us. That means that we are not primarily interested in culture, or structure of organizations, or in management capabilities, because they are not characteristics of the network.

When we use relational data, we are able to measure density and centrality, and next the relationships between these measures and learning.

5.2. Data

In this research we will use multiple case studies. Case studies are consistent with the concern to understand "how or why questions being asked about a contemporary set of events over which the investigator has little or no control" (Yin 1994 : 9). A specially constructed business panel will be used. In this panel, organizations will be included that reflect the experience of environmental management in industry. Each research group within the DynEmics program is connected to a number of businesses (6 to 10) through a company-based contact (Roome 1998b). Most of the research groups have established contacts with

companies active in environmental management before the DynEmics program began. These contacts will be used to involve firms in the business panel.

One consequence of this approach is that the research design does not readily conform to a sampling logic. Instead of presenting a statistical representation of dynamics in environmental management, the research program aims to illustrate the nature of the processes of learning and change. An option is to reference the results from the case studies against quantitative data obtained from earlier work on larger, statistically significant samples, such as the European Business Environmental Barometer (Boons, De Groene and Batenburg 1998).

We can profit from the longitudinal character of the business panel by studying a number of events in each company. We will start with a recently adopted event, for which we try to find a stakeholder network and to identify whether learning processes take place. With this knowledge, we will investigate another event in the same company, but two years later. Over time, it is expected that new and additional stakeholders will add to the stakeholder network (Hart 1995). Besides this, the question is to whether the firm has learned from the experience of the first event, in other words whether learning has taken place.

As this process is very time consuming, a limited number of events within firms of the business panel can be investigated. Tilburg University will take care of 10 companies from the business panel; if in each of these 10 firms two events are identified, we can trace 20 specific networks of learning After having studied the events, we hope to be able to see and explain patterns of influence of stakeholder networks on organizational learning.

5.3. Summary of the research methodology

We can represent our approach by using a scheme developed by Van den Bosch (1996). According to Freeman (1984), he distinguished between 3 levels of analysis of stakeholder management structure: the rational level, the process level and the transactional level. Van den Bosch adapted Freeman's scheme by taking dimensions into account instead of levels. His dimensions are: the interests dimension, the process dimensions and the transaction dimension. If we use Van den Bosch's scheme to summarize our approach of the research of the influence of stakeholder networks on firm's performance, the result is visible in the next figure.

Research methodology of the stakeholder networks project

Point of departure:		
An event in the focal firm		
Dimensions	*basic questions*	*instruments/concepts*
Interest	who are the stakeholders	snowball method to make a stakeholdermap/grid or

		network map
Process	through what processes does the network function	density of the network centrality of the network
Transaction	what negotiations and transactions do take place with (networks of) stakeholders	Efficiency learning Effectiveness learning

Source: Van den Bosch (1996) adapted

6. Conclusions and propositions

In this paper the concepts of stakeholders, organizational learning and networks have been discussed. In our DynEmics research project we will make use of all three concepts. The stakeholders are seen as networks of actors. Their influence on environmental practices of organizations is of interest to us, and the way organizations can learn from them. At this stage of our research we want to combine the insights gained from network analysis with those from organizational learning. This does not mean that we know enough of all concepts. This holds especially for the problem of measuring organizational learning. But in formulating propositions and operationalizing them, our knowledge will continue to increase.

The relationships between organizational learning and networks can be hypothesized as follows:

Proposition 1 : A densely tied, open network of heterogeneous stakeholders is conducive to effectiveness learning.

When network density increases, communication across the network will become more efficient and shared behavioural expectations will be created. This means that densely tied networks create possibilities for learning. This learning will be more innovative when the network is diverse or heterogeneous, because different stakeholders' world views, influences and information are exchanged. Besides, if the network is open, new contacts will be added, and new information will be brought in. This is an ideal setting to scan changes in the internal and external environments, to requestion existing paradigms, and to consider new, more effective ones.

Proposition 2 : A densely tied, closed network of stakeholders is conducive to efficiency learning.

A densely tied network promotes the efficient dissemination of information, and hence shared behavioural expectations. In a closed network no new contacts are added, which makes the proposition of new paradigms unlikely. No doubt will be raised on existing paradigms, which

will be reinforced. The combination of efficient information sharing and the confirmation of existing paradigms is conducive to efficiency learning.

Proposition 3 : A highly centralized network is not conducive to effectiveness learning.

In a network characterized by high centrality, one actor fulfils a central role. A large part of the shared behavioural expectations pass through him. The central actor interpretes this information is a specific way, so the original variety of information will be reduced (deliberately or unintendedly). Besides, the central actor may have an incentive not to share all information with (certain) other stakeholders within the network. The reduction of variety, the imperfect information dissemination, and the interpretation bias are elements which are not conducive to effectiveness learning.

REFERENCES

Argyris, C., D. Schön (1978), *Organizational learning : A theory of action perspective*, Addison-Wesley Publishing Company, Reading.

Argyris, C., D. Schön (1996), *Organizational learning II : Theory, method and practice*, Addison-Wesley Publishing Company, Reading.

Boons, F., J. de Groene, R. Batenburg (1998), *Milieubarometer 1997: Milieumaatregelen van de Nederlandse industrie in internationaal perspectief*, Katholieke Universiteit Brabant, Tilburg.

Bosch, F. van den (1996), *Stakeholders en management: een case-studie*, Holland/Belgium Management Review, nr. 47, pp. 24-31.

Bouma, J. (1995), *Milieuzorg bij de Koninklijke Landmacht en de industrie : Een onderzoek naar de integratie van milieu-aspecten in strategische bsluitvormingsprocessen*, Humanitas Rotterdam.

Campbell, A. (1997), Stakeholders : The case in favour, *Long Range Planning*, vol. 30, no. 3, pp. 446-449.

Donaldson, T., L. Preston (1995), The stakeholder theory of the corporation : Concepts, evidence and implications, *Academy of Management Review*, vol. 20, no. 1, pp. 65-91.

Dyllick, T. (1989), *Management der öffentlichen Auseinandersetzungen, öffentliche Auseinandersetzungen als Herausforderung*, Wiesbaden.

Emery, F., E. Trist (1965), The causal texture of organizational environments, *Human Relations*, no. 18.

Freeman, R. (1984), *Strategic management : A stakeholder approach*, Pitman, Boston

Grafé-Buckens, A., A. Hinton (1998), Engaging the stakeholders : Corporate views and current trends, *Business Strategy and the Environment*, vol. 7, no. 3, pp. 124-133.

Groene, J. de (1995), *To control or to influence? Firms' responses to environmental problems. The importance of the business environment*, Ph. D. thesis Katholieke Universiteit Brabant, Tilburg.

Knoke, D. (1994), Networks of elite structure and decision making, in S. Wasserman and J. Galaskiewicz (eds.), *Advances in social network analysis : Research in the social and behavioral sciences*, Sage Publications, London.

Krackhardt, D., D. Brass (1994), Intraorganizational networks : The micro side, in : S. Wasserman and J. Galaskiewicz (eds.), *Advances in social network analysis : Research in the social and behavioral sciences*, Sage Publications, London, pp. 207-229.

Levitt, B., J. March (1995), Chester I. Barnard and the intelligence of learning, in : O. Williamson (ed.), *Organization theory*, Oxford University Press, New York, pp. 11-37.

Marsden, P., N. Friedkin (1994), Network studies of social influence, in : S. Wasserman and J. Galaskiewicz (eds.), *Advances in social network analysis : Research in the social and behavioral sciences*, Sage Publications, London, pp. 3-25.

Mintzberg, H. (1979), *Structure in fives : Designing effective organizations*, Prentice Hall International Editions, London.

Mitroff, I.I. (1983), *Stakeholders of the organizational mind*, Jossey-Bass, San Francisco.

Mizruchi, M., J. Galaskiewicz, Networks of interorganizational relations, in : S. Wasserman and J. Galaskiewicz (eds.), *Advances in social network analysis : Research in the social and behavioral sciences*, Sage Publications, London, pp. 230-253.

Morgan, G. (1997), *Images of organization*, Sage Publications, Thousand Oaks.

Nelson, R. & S. Winter (1982), *An evolutionary theory of economic change*, Belknap Press of Harvard University Press, Cambridge.

Nohria, N. (1992), Is a network perspective a useful way of studying organizations?, in N. Nohria and R.C. Eccles (eds.), *Networks and organizations : Structure, form and action*, Harvard Business School Press, Boston.

Pfeffer, J., G. Salancik (1978), *The external control of organizations*, Harper & Row, New York.

Porter, M. (1980), *Competitive strategy : Techniques for analyzing industries and competitors*, Free Press, New York.

Romme, S., A. van Witteloostuijn (1998), *Action science, circular organizing and triple loop learning*, paper presented at the 14 th EGOS colloquium in Maastricht, July.

Romme, S., R. Dillen (1997), Mapping the landscape of organizational learning, in : *European Management Journal*, vol. 15, no. 1, pp. 68-78.

Roome (1998a), N., *Action-learning networks and the sustainable enterprise : The case of Ontario Hydro,* Paper presented at the Academy of Management Meeting, San Diego, August.

Roome (1998b), N., *A meta-theoretical perspective on organisational learning and change in complex business and environmental systems,* Paper to be presented at the 7th Greening of Industry Network Conference, Rome, November, forthcoming.

Rowley, T.J. (1997), Moving beyond dyadic ties : A network theory of stakeholder influences, *Academy of Management Review*, vol. 22, no. 4, pp. 887-910.

Schön, D. (1983), Organizational learning, in : G. Morgan (ed.), *Beyond method : Strategies for social research*, pp. 114-128.

Scott, J. (1991), *Social network analysis : A handbook*, Sage Publications, London.

Senge, P. (1990), *The fifth discipline : The art & practice of the learning organization,* Doubleday.

Starik, M. et al. (1996), Growing an environmental strategy, *Business Strategy and the Environment*, vol. 5, pp. 12-21.

Sternberg, E. (1997), The defects of stakeholder theory, *Corporate Governance : An international review*, vol. 5, no. 1, pp. 3-10.

Wasserman, S., K. Faust (1994), *Social network analysis : Methods and applications*, Cambridge University Press, New York

Weick, K., F. Westley (1996), Organizational learning : Affirming an oxymoron, in S. Clegg, C. Hardy and W. Nord, *Handbook of organization studies*, pp. 440-458.