The dolphin attractor: Dialogue for emergent new order in a Dutch manufacturing firm

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Dialogue for Emergent New Order in a Dutch Manufacturing Firm

Frans M. van Eijnatten & Maarten C. van Galen

Institute for Business Engineering and Technology Application
Eindhoven University of Technology, Faculty of Technology Management, The Netherlands
Tel.: +31 40 247 24 69, Fax: +31 40 243 71 61
E-mail: F.M.v.Eijnatten@tm.tue.nl Internet: http://www.chaosforum.com/nieuws/index_eng.html

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Abstract

This paper documents a series of complex responsive processes, observed in a Dutch capital-equipment manufacturing firm in the South of The Netherlands, which are focused on the development of the organisational mind, seen through the Chaos lens. The organisational goal is to facilitate self-organisation by using Dialogue as a main mode of communication. The research is covering a period of two years (September 1999 - August 2001).

The project was executed in a firm which is specialised in developing and producing tailor-made processing systems for the food industry. Its rich history of organisational development dates back to 1988. Up until 1999 the company evolved into a fully team-based organisation, using Socio-Technical Systems Design as the main re-design approach. However, an evaluation study carried out in 1999 revealed, that − although numerous projects have been successful both in implementing new team structures in production, sales, R&D, and service, and in increasing productivity − individual attitudes did not show much development. Management complains that taking initiatives by employees still runs below expectation. Medio 1999 management, researchers and consultants collaborated to explore some possibilities how to furnish the renewal process with new impulses.

The diagnosis that came out of that process showed that the interior aspects − the actual thinking of individuals and groups − were less well developed than the exterior aspects − tasks, structures, processes, and systems. A remedy to repair this incompleteness constitutes of introducing Dialogue as the main mode of communication in the manufacturing firm, in order to develop the thinking process (intentional and cultural domains) to the same degree as the tasks, structures, processes, and systems did (behavioural and social domains), in the past ten years. The goal of practising Dialogue is to develop employees' individual competencies, and to boost the holonic potential of the organisation in order to enable it to re-design and transform itself from within, and to jump to a next level of coherence, while making use of emergent processes of self-organisation and self-reference to their full extend.

The introduction of the new concepts, and the consecutive change trajectory was planned and executed by an external consultant, applying the theory and practice of Chaos. Over a period of two years a great number of sessions were held for different groups: Introductions in Chaos concepts, and consecutive workshops in small groups to let management actually experience Dialogue and Emergent Leadership, and to develop the basic competences for using it. The Emergent-Leadership session became known as 'Dolphin Training'.

The project, which is partly reported in this paper, was set up as an action research initiative, in which the external consultant, company managers and the authors / researchers collaborated. This paper is documenting and evaluating the actual 'cultural interventions', seen from a researcher's point of view. Some effects of these 'interventions' have been reported elsewhere (Van Eijnatten et al., 2001).

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Eindhoven University of Technology, Faculty of Technology Management, The Netherlands
Tel.: +31 40 247 24 69, Fax: +31 40 243 71 61
E-mail: F.M.v.Eijnatten@tm.tue.nl Internet: http://www.chaosforum.com/nieuws/index_eng.html

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Corresponding author: Frans M. van Eijnatten, Institute for Business Engineering and Technology Application (BETA), Eindhoven University of Technology (TU/e), Faculty of Technology Management (TM), Postal Address: Pav. U10-T&A, P.O. Box 513, 5600 MB Eindhoven, The Netherlands.

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1. Introduction: Theoretical Orientations and Justifications

Nowadays, not only the environment of organisations is changing rapidly – continuously and unpredictably – but also organisations themselves are confronted with turbulence. Periods of relative stability, in which the behaviour of systems is predictable, are alternated by periods of instability, characterised by unpredictability and uncontrollability.

A way to survive is by tapping the interior potential, which gives organisations the ability to transform by itself to a higher level of coherence. In this new state of order the organisation is able to see through its complexity more effectively. It is assumed that in periods of instability, enterprises should rely on the innovative character and creativity of its employees. Old control paradigms – for example cost reduction – are of less use under these circumstances and an organisation may seek for smarter ways of dealing with instability (Van Eijnatten & Fitzgerald, Eds., 2002).

The *Chaos metaphor* recognises that systems are complex, dynamical and non-linear, in which chaos and order co-exist. This is expressed in the notions 'chaord'[1] and 'chaordic system'[1] (c.f. Hock, 1996; The Chaordic Alliance, 1998). A chaordic system is "a complex and dynamical arrangement of connections between elements forming a unified whole the behaviour of which is both unpredictable (chaotic) and patterned (orderly) ... simultaneously. Chaos then is the science of such chaotic and orderly, that is 'chaordic' entities" (Fitzgerald, 1997a, p. 1). By this definition, almost any system ranging from complex to simple can be considered chaordic. However, in this paper we will refer to any system designed (rather than natural) to sustain itself in an optimal dynamical balance in Far-From-Equilibrium (FFE) situations. Chaordic Systems Thinking (CST) is a way of thinking and subsequently, an approach to designing a complex organisational system that recognises the enterprise not as a fixed structure, but as 'flow' (Van Eijnatten & Fitzgerald, 1998; Van Eijnatten & Hoogerwerf, 2000; Van Eijnatten, 2001). It offers new concepts in order to deal with uncontrollability, uncertainty and complexity in an enterprise. Chaordic systems are characterised by five core properties (c.f. Fitzgerald, 1996a/b; 1999):

1. *Consciousness*. The essential ground state of an enterprise is mind, not matter. Reality is anything one thinks. There is no matter without an act of mind.
2. *Connectivity*. Chaos verifies that the enterprise is both whole and part. No part can exist independently of the whole, nor can any whole be sustained separately from its parts. Each part is by itself a whole and this whole is part of a bigger whole.
3. *Indeterminacy*. Chaos points out that in the dynamical complexity of an enterprise, every event is both cause and effect. Because of this complexity, the future is principally unknowable in advance. There is only now in which the 'past' presents itself by memory, and the 'future' exists as vision.
4. *Dissipation*. Enterprises are dissipative systems engaging in a cycle of both destruction and creation. They continuously 'fall apart' and then grow back together again, each time in a novel new form, ungoverned by the past.
5. *Emergence*. Enterprises strive toward ascending levels of coherence and complexity, made possible by capacities for self-organisation, self-reference, and self-transcendence.

These five properties together form a single indivisible conceptual whole. Consciousness enables an enterprise to 'jump' to a higher form of complexity and coherence. Emergents can develop within an enterprise under the influence of the organisational consciousness, the organisational mind or 'orgmind' for short (Fitzgerald, 1997b). These emergents can help the organisation not to dissipate in a period of instability – the state of Far-From-Equilibrium – but to jump to a higher level of complexity and coherence.

As already stated above, one of the central features of *Chaordic Systems Thinking (CST)* is the concept of *'holons'*. Holons or whole/parts are entities that are both wholes and parts of ever-greater wholes, simultaneously and at all times. Holons are both autonomous and dependent structures at the same time. Holons emerge, that is they evolve to higher orders of whole/partness by virtue of four fundamental capacities possessed by each (Wilber, 1996). Holons are able to generate 'emergents' – novel qualities of the whole not present in the parts – because they are inherently self-organising, self-referencing, self-iterating and self-adapting. Holons emerge holarchically (develop greater depth), transcend and include their predecessors (preserve its component parts while going beyond the limitations of each), and holons know their worlds according to the terms and limitations of their core identity. Holons dissipate: They are always subject to falling apart because they fail to leap, or when they become unbalanced (the wholeness dominates and represses its partness, or the parts refuses responsibility for other than itself). Damaging or destroying of any holarchical level will result in damage or destruction of all higher levels. Although the higher level is more significant, the lower holon is more fundamental. Holons and holarchies are characterised by differentiation (generation of variety) and integration (generation of coherence). There is no such thing as 'whole' whole holon (all autonomy is autonomy-in-relationship). Every holon possesses both an interior essence as well as the exterior surface it presents to the world. The adjective 'holonic' is used to indicate the 'both...and' character of entities (both whole and part, both social and technical, both surface and depth, both order and chaos, both content and process, both exterior and interior, both structure and culture, both feasible and desirable, both design and development, both objective and subjective).

Another important CST concept is *'attractor'*. An attractor is a condition that forces a holon to repeat its typical pattern of behaviour, never in exactly the same way, but every time within clear and specified boundaries. It acts as a sort of magnet, that imposes the holon to repeat the behavioural pattern over and over again.

Not all holons are equal: One whole/part is distinguished from another by the relative degree to which it taps its *'holonic capacity'* (Fitzgerald & Van Eijnatten, 1998). The higher a holon climbs the ladder of knowing or consciousness, the greater its ability to apprehend reality. Holonic capacity is the holons' ability to operate with greater mindfulness, expanded awareness, 'control- and response-ability' (Fitzgerald & Van Eijnatten, 1998). Control-ability is the degree to which a holon is able to influence future events, and response-ability is the ability to respond to FFE conditions. The organisational mind – the sum total of beliefs, assumptions, premises, values, and conclusions mostly tacit members of an organisational system hold commonly as truth – is the 'container' of the holonic capacity of an organisation.

Chaos suggests that by developing holonic capacity, an enterprise is able to see 'the window of opportunity' when arriving at 'the edge of chaos'. Only then, an enterprise is able to leap to a higher order of coherence – a new stable dynamic that is however more complex and more effective – and therefore escaping dissipation. When the organisational mind is developed in such a way, an enterprise is able to transform itself – from within – into a totally new form, which can grasp the pace of our changing world. An organisation seen as a holon possesses both an exterior surface as well as an interior essence (Wilber, 1996). Our attention is focused on the exterior, most of the time. By *'exterior'* we mean any objectifiable entity or process that can be described by empirical observations, making use of our five senses or their extensions (the 'IT' in *Figure 1*). The *'interior'* consists of processes that can't be studied using our five senses. Let us summarise that with the term 'thinking process' (the 'I' and 'WE' in *Figure 1*). Both the interior and exterior have individual and collective dimensions. A holon consists therefore of *four quadrants*, see *Figure 1*. Chaos is meant to re-unite the interior with the exterior, on both the individual and collective levels.
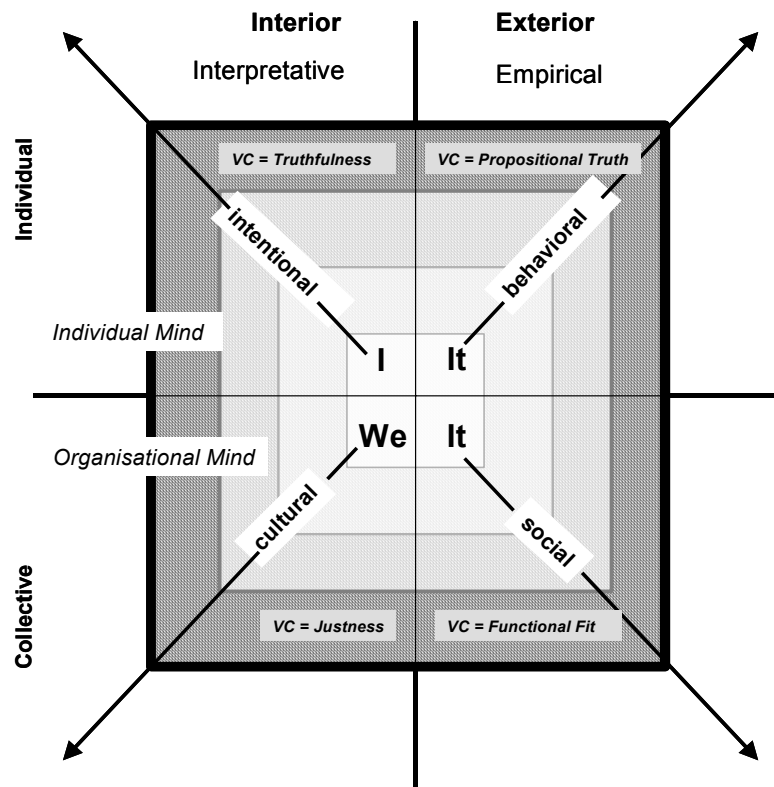
Figure 1 *The Four Faces of an Organisation Seen as a Holon, after Wilber (1996)*

Legend: ➝ *= Dimension of Development   VC = Validity Claim*

As Wilber (1996) explains, the exterior of the individual can be described by, for instance, tasks and forms of behaviour. The exterior of the collective can be seen as the noticeable structures and patterns of behaviour of groups in an organisation. Both quadrants are about facts, propositional truth, and functional fit. The interior of the individual is characterised by emotions, thoughts, and feelings, which is indicated by 'individual mind'. This quadrant is about consciousness, subjectivity and truthfulness. When individual thoughts are exchanged and shared with other individuals, the result may be a collective world view or commonly shared meaning. This is the interior of the collective that is indicated by organisational culture or organisational mind. This quadrant is about mutual understanding, cultural fit, and justness. It is worth noting that Wilber is giving each individual quadrant its unique scientific validity claim, see *Figure 1*.

Where *'Sociotech'* may be quite helpful to develop the exterior (Van Eijnatten 1993; 2001), *'Dialogue'* can be used to develop the interior of the individual and the collective (Ellinor & Gerard, 1998). One might think of Dialogue as a stream of meaning flowing among and through a group of people, out of which might emerge some new understanding (Gerard & Ellinor, 1999). Dialogue in many respects is the opposite of discussion, see *Table 1*. Dialogue moves beyond any one individual's understanding, to make explicit and build collective meaning and vision. A typical dialogue process slows down the sequence of the following mental activities, so that we can become aware of them: Reception of data, interpretations (perceptions), assumptions and conclusions. These four stages are usually carried out in an instant. We have learned to see our assumptions as the truth, without testing so. Dialogue explores the four different stages explicitly with the aim to identify our assumptions, those things that are assumed or thought to be. By learning how to identify or recognise our assumptions, we are able to identify inconsistencies.

Table 1 *Nine Distinctions between Dialogue and Discussion*

Dialogue	Discussion
Seeing the whole among the parts,	*Breaking issues or problems into parts,*
Seeing the connections,	*Making distinctions,*
Further inquiring into ones own assumptions,	*Justifying/defending ones own assumptions,*
Creating shared meaning among many,	*Gaining agreement on one single meaning,*
Listening deeply together without resistance,	*Preparing to pose better arguments,*
Release of the need for specific outcomes,	*Aiming at conclusions or decisions,*
A slower pace with silences in between,	*Continuous flashing battle of arguments,*
Learning through inquiry and disclosure,	*Persuading, selling, telling,*
Divergent.	*Converging.*

(After Fitzgerald, 1997b; Ellinor & Gerard, 1998)

There are three steps in a typical dialogue process: Public reflection, meaning-seeking inquiry and open advocacy. In public reflection a person is speaking out in public about a specific process, to better understand the meaning and dynamics of it. Listening is the key to interpretation and perception and other persons in the group are supposed to carefully listen to the public reflection. In meaning-seeking inquiry other members of the group ask for the assumptions behind the thinking. It is about understanding where thoughts come from and by inquiry you get a better understanding of what the other is saying. In open advocacy a group member is presenting his or her thinking and asks for feedback from the other group members so that everybody can learn from it. Advocacy means expressing what you think, speaking from a point of view.

Where a discussion is aimed at a material end result (plan, measure, decision), a typical Dialogue combines pieces into a whole with no intended goal or end result, see *Table 1*. Dialogue is aimed at the understanding of consciousness with the intention to develop shared meaning in the whole and to become aware of well-established inefficient thought patterns. With the use of Dialogue an organisation can develop its mind. The practice of Dialogue creates community and transforms the organisational culture (Gerard & Teurfs, 2000). Through ongoing practice with Dialogue, participants learn how to interact with each other differently. Interaction skills are shaped, which leads to behavioural transformation. The more often groups practice, Dialogue sets up the conditions of community. The atmosphere within the group changes which leads to experiential transformation. Stacey (2001) speaks about "complex responsive processes of relating" (p. 94). As group members experience the effects of Dialogue, a profound shift takes place at the belief and attitude levels. Attitudes of rigid individualism change into attitudes of collaboration and partnership. Dialogue produces attitudinal transformation, both in the individual and in the group.

2. The Company's Change History

The Dutch manufacturing firm in this study is world market leader in its industry. The company that has a history of 25 years, employs 550 people in The Netherlands (800 world wide), while 95 % of its turnover is delivered outside The Netherlands. Although it is specialised in tailor-made complex processing systems, it also delivers single machines. Its product portfolio contains 250 functions and

2,500 variants. The company is very active in product innovation. Its market share is 60%. The company has an American subsidiary with nearly the same product portfolio, that employs 250 people, and is serving both the North and South American markets. It has its own departments for research and development, marketing, sales, production, and service.

For many years now, the company has played a leading role in developing and manufacturing processing equipment and systems. A market-oriented approach, quick response to change, innovative engineering and the application of strict quality standards are the basis for this global market leadership. The Dutch company and its American sister-company form part of a Dutch concern, which operates at international level and has an annual turnover of well over 1.35 billion Euro. First and foremost, this means continuity, but also expert knowledge of many disciplines, such as product development, finance, sales support, service and production.

2.1 Sociotechnical Systems Thinking for Organisational Renewal of the Firm

The company suffered a large number of problems in the Eighties: I.e., long throughput times, low product quality, poor planning, low motivation of the personnel, lack of both product and volume flexibility, and too many supervisors and technical staff. The company decided to start a sociotechnical re-design trajectory. Organisational renewal activities actually started in 1988 with a pilot test of a self-managed team in Parts Production. Two years later, in 1990, self-managed teams were implemented in Parts Production, following a process called 'parallelisation of product order flows', on the basis of the identification of product families. Also, the physical lay-out was changed accordingly. In 1992, self-managed teams were introduced in the assembly, stock and shipping departments of the company. Also, the central planning was transformed, and both Parts Production and Assembly were fused into a Production department. Assembly also started to work in parallel streams and self-managed teams. The quality department was brought under the responsibility of the new Production department.

In the beginning of the Nineties, in Parts Production multi-disciplinary staff groups were formed, in which planning, stock control, maintenance, logistics, and hard- and software improvements were grouped to form self-managed teams. These so-called 'operational groups' developed the computer programs for the CNC machines, designed all sorts of tools and were engaged in planning activities. In order to support further renewal work, and to help the production teams with structural problems and technology investment decisions, and with the development of production and quality norms, a so-called 'structural group' was created, in 1991.

The implementation of the self-managed teams proved to be a very intensive and time-consuming process. Workers were trained to execute multiple tasks and roles, and were taught all sorts of technical, social and administrative skills (for instance, problem analysis and discussing techniques, writing reports and doing presentations, chairing meetings, etc.). In 1993, a start was made with improving quality by defining so-called 'star roles' in Production. Star roles are temporary responsibilities of selected team members to coordinate and communicate information about problems and improvements concerning specific aspects between teams (maximum five aspects, i.e., logistics, work place, personnel, quality, and technical issues). Team members who perform star roles have the authority, but not the responsibility, to control the aspect-related process. Doing so, they relate self-managed teams to each other.

In order to improve quality, in two teams performance indicators – for efficiency, safety, quality, time management, multi-skill level, and economical use of resources – were developed by the team members themselves. After a successful pilot phase, the system was introduced in all production teams, in 1993. Each team got its own budget. An annual award was introduced for the team that was performing best on these performance indicators. In 1994, a project was initiated to improve office work. The idea was to transform the administrative organisation from a functional to a process-oriented structure. The aim was to reduce the integral cost prize by 10 % within five years. In 1995, self-managed teams were introduced in Sales and Installation, and in the Parts and Service processes. In order to improve coordination between self-managed teams, management started to think about company-wide performance indicators. This proved to be a difficult objective. A feasibility study

remained inconclusive. From 1996 onwards, the role of team coordinator rotated among team members, because the individual self-managed teams developed too much autonomy.

In 1996, organisational renewal started in Research and Development by transforming the design- and product development departments into a newly formed Systems Group. Two parallel-development teams were created, and added to the existing organisation, to develop new products. Parallel-development teams are multi-disciplinary product creation teams, consisting of a small core team that stays during the whole project, and a peripheral group of temporary team members, who come and go during the course of the project. Parallel-development teams do have a team leader. Because they were very successful, the company decided to set up parallel-development teams for each new product-creation project.

Also, in 1996, a series of company-wide 'dialogue' sessions were organised, in order to develop the organisational mind. The sessions were organised to stimulate deliberations about common problems, and to start developing integral solutions, using the tacit knowledge of all staff members. One of the ideas was to develop measures of performance that went beyond the departmental level, and to invest in company-wide improvements. In 1997, all departments started to develop those kinds of measures. In 1997, the development of strategic management indicators was initiated, and mission statements were both articulated and communicated in the organisation concerning, for instance, 'customer care'. Performance indicators were developed in the Sales and Installation processes, using nearly the same approach as was originally used in Production. Also, a structural group was formed to support the two teams serving the Sales and Installation processes and the three district groups of sales engineers. In 1998, four dedicated projects were carried out to improve specific performances within the company. One had to do with getting rid of overdue developmental work; another one aimed at becoming more accurate in product deliveries. A third was concerned with technical optimisation of products. The last one was about improving both product-order inputs and product-order specifications. Also, the company started a dedicated knowledge-management project in 1998.

Since 1988 the company has been restructuring its production processes, by using the Dutch approach of Integral Organisational Renewal (Van Eijnatten, 1993; De Sitter et al., 1997; Van Eijnatten & Van der Zwaan, 1998). Functional departments were changed into self-managed teams. During this change process, special attention was paid to interdepartmental relationships. A main characteristic of this decade of organisational renewal is, that the company never copied exactly any standard approach. They have not followed blindly the rules and regulations of the sociotechnical theory, nor any advises of consultants, without looking first into the desirability of the intended overall effects. The management has discussed these issues over and over again, following intensive consultations with the workers to learn their responses. Considerable amounts of time were spent to discuss all details of both the contents, the processes, and the phasing of change. The company's management also has been very active in constantly stimulating and supporting the renewal process. During the whole course of the project, large amounts of money were invested in additional training of the personnel. Also, many 'dialogues' were organised off-site, in conference centers, and measures were taken to guarantee equal opportunities for all personnel to participate in the 'dialogue', carefully preventing any blocking of the communications by differences in status or function. As mentioned before, the company hired a number of (process) consultants to support its renewal trajectory. However, these consultants only were allowed to train the personnel or to prepare for decisions. Self-Design by Knowledge Transfer proved to be a very powerful means to let managers and workers develop their own action strategies. The company's management team never abdicated responsibility, and took all strategic decisions themselves!

Another main characteristic of the development process is, that change always was incremental: That means that renewal activities were carried out step by step. Although renewal measures were carefully planned and management tried to avoid unintended consequences by using an integral perspective, there was no overall master plan to change the whole company, at the same time! Although implementation was carefully timed by the management and very much dependent on the readiness of the workers, every next move was in a way a surprise. It was not the normative aspect of sociotechnical theory that was the trigger for change, but the developmental stage of the organisational mind! The pace and depth of the new culture development were decisive for the company's management team for deciding 'if and when' a next measure was to be implemented. They 'felt it', so

to speak, when the time was right. The development of the organisational mind was found far more important than actually implementing new work structures according to plan.

A third central aspect of organisational renewal in this company is the so-called 'ad hoc'- or 'anticipating' approach to change. At any arbitrary point in the ten years transition period, there has been no single master plan for a long-term strategic development of the firm. The management team only was pointing into the direction where to go with the company. There never has been an overall strategy how to reach that point. In order to start moving into the desired direction, each time only one single course of action was selected and discussed, and finally implemented. After a certain period of time, the effects were evaluated against the intended direction, and corrective action was taken if the activity was diagnosed to have gone off course. A major consequence of this 'ad hoc' way of working was, that the path the organisational renewal process took in the company was far from 'straight forward'; on the contrary, it showed all sorts of detours and strange bends and curves.

2.2 Reflection and Diagnosis

Another negative aspect of the company's organisational renewal process was, that a proportion of the workers were still somewhat reluctant to start new change efforts, as they did not yet consider change as a normal daily work routine. Maybe this is caused by the fact that a certain percentage of the personnel is hired from temping agencies, to keep up with the actual changing work demands. Also, management is a bit disappointed about the percentage of workers that is really taking personal initiatives.

Due to the use of Integral Organisational Renewal, the firm's structures and processes have been successfully developed over time. These activities resulted in major benefits, see *Table 2*.

Table 2 *Major Benefits Resulting from 10 Years of Integral Organisational Renewal*

Some Hard Figures

- Successful change from 'Assemble-to-Order' to 'Make-to-Order' production regime,
- Throughput times of Production reduced by 65%,
- Costs associated with insufficient quality of products (rejects, etc.) reduced by 50 %,
- Ratio of indirect/direct labour costs lowered by 30 %,
- Set-up times in Production reduced by at least 20 %,
- Task times reduced by 5 %.

Some 'Soft' Figures

- Significantly improved market position,
- Increased controllability of business processes,
- Improved quality of quotation and order specification,
- Equal pre- and post-calculations of orders (usually showing a difference of 2-3 %),
- Very low turnover of personnel (less than 5 %),
- Strong team spirit and high involvement of production personnel,
- High commitment and increase in internal flexibility.

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Ten years of experience with integral organisational renewal enabled the company to keep its position as a market leader. However, for reasons of consolidating this valuable position in the years to come, the company is looking for both substantial and prolonged organisational transformation. This seems

only feasible when change is no longer initiated by management, but is prompted from within by the employees themselves, who are enabled by management to use their intuitions and tacit knowledge, whenever they choose to. Therefore, from September 1999 onwards the company is investing in the changing of its culture or its 'organisational mind' (Fitzgerald, 1997b). The actual 'interventions' to accomplish that goal are the subject of this study.

3. Method

3.1 General Research Model

The basic orientation in this study is 'action research'. One of the central features of action research is a change strategy in which the researcher is actively collaborating with internal and external stakeholders in an organisation, in order to co-create changes into a desired direction (Reason & Bradbury (Eds.) (2001). Because of this ambition the action researcher faces a basic dilemma: Evaluation research easily can lose its independent stance (Dijkstra & Van Eijnatten, 1999). Therefore, the design of such an evaluation study should be of indisputable high quality. Because in action research the familiar methodological framework of independent and dependent variables is not applicable, we use an action model instead, which specifies why and how effects will appear. We want to know *why* (theoretical justification) and *how* (under which conditions, and by using which kind of implementation rules) the actual 'intervention' is effective. For those aims, we use two distinct methodological mechanisms: 1) The *'Module of Justification'*, which gives a justification of the theoretical and practical grounds on the basis of which effects of the 'intervention' are predicted or expected; and 2) The *'Module of Intervention'*, which specifies the totality of rules and recipes for the planning and high-quality technical execution of the 'interventions' (c.f. Dijkstra & Van Eijnatten, 1999).

3.2 Design of This Study

In the theoretical orientation paragraph we have already specified the module of justification in more general terms: The introduction of Dialogue as a main mode of communication is expected to change the culture of the company, moving away from a conservative set of values into the direction of an more open and challenging set of values. Dialogue is said to be particularly useful for employees to check tacitly-held assumptions about each other, and about the company as a whole. These individual and personal assumptions may block the development of a company as a chaordic system, to a large extent. Dialogue is supposed to improve the way employees understand each other, accept each other's ideas, and engage in collaborative actions. The use of Dialogue thus is supposed to enhance the number of initiatives which are to be taken by individuals and groups.

The design of the 'interventions' was entirely based on the following set of assumptions: Employees competent in Dialogue will actively engage in inquiring and analysing their own thinking, in understanding hidden assumptions, and in correcting erroneous ones. This subsequently will give way to a change in work habits from relative passive modes into more active behaviour patterns. It is assumed that Dialogue will further develop the individual and organisational minds – the intentional and cultural dimensions: Both the 'I' and 'WE' quadrants in *Figure 1* – which will finally result in a higher-order holon with greater holonic potential. We assume that, in actual practice, the sum effect of *well-balanced* interior and exterior dimensions will result in initiatives undertaken by individuals and groups, in the absence of explicit managerial control, more frequently (i.e., the chaordic property of emergence). This will occasionally lead to experiential transformation.

Of course, all the above-mentioned assumptions are open for empirical test. However, such an evaluation is outside the scope of this paper: The behavioural and attitudinal effects of the executed 'interventions' for both experimental and control groups have been, or will be, presented elsewhere (Van Eijnatten et al., 2001).

In this paper we particularly focus on the intervention module: Basically, the study was set up as a descriptive case study, which will document the actual 'interventions' as they emerged in the process, and will test their appropriateness in terms of actual exposure to and experiencing of Dialogue by the different project groups. First, we will describe the intended 'interventions', as they were designed 'on the fly' by the American consultant, the Change Management Team (CMT), and the two researchers. The'change program' consists of two Chaos-Concepts workshops, and several Dialogue-Training and Dolphin-Training sessions. These 'designs for intervention' are compared with the actual 'interventions', executed mainly by the American consultant.

The main method of data collection used in this study is observation: The researchers were present at all workshops and training sessions. In the Chaos-Concepts workshop, and in the Dialogue and Dolphin sessions the researchers made extensive notes of the interactions, trying to keep up with the conversations as they developed, typing them down using a palmtop computer. Time measurement was carried out in units of 10 and 15 minutes. The edited 'transcriptions' were fed back to the participants for additions and corrections. The actual data analysis was based on edited and corrected transcriptions, only. The data were coded to enable further quantitative analysis.

A great number of employees were to be involved in the training sessions, over a period of two years. They participated in the same composition as they usually work in operational teams. Three technical project teams were selected as experimental groups for this study. They were selected because they started all at the same time, at the beginning of the change project. The three groups are:

- *Project Group 1*: Strategic Decision Making about ICT Issues,
- *Project Group 2*: Reduce Lead Times of Certain Products,
- *Project Group 3*: Maintaining Existing Products Portfolios.

Project group 1 and 2 consist of 8 persons, project group 3 consists of 10 persons. The groups are not completely mutually exclusive. That means that a few individuals are a member of two different project groups, at the same time. This 'contamination' was inevitable, due to the fact that the company is a medium-sized enterprise. Because the 'interventions' are the actual focus of study, this paper concentrates entirely on the experimental groups, leaving the control groups fully unspecified.

4. Results

The Chaos-Concepts workshop was planned as a single plenary session for all the above-mentioned project groups, and for the company's Change Management Team (CMT). The Dialogue and Dolphin sessions were organised separately for each individual project group. All sessions were planned for, and actually took place in the spring of 2000.

The workshops / training sessions are aimed at diffusion of the new thinking in the organisation. The particular diffusion method arose out of intense interactions between the CMT, the American consultant, and the two researchers. Four out of five actual workshops (i.e., Chaos-Concepts workshop, Dialogue-Training session, Dolphin-Training session, and Deep-Chaos workshop) were designed and facilitated by the consultant. The fourth workshop – the Vision Conference – was designed by the CMT in collaboration with and facilitated by the American consultant.

The change process was incremental, i.e. step-by-step, involving more and more people, as time elapsed. There was no structured plan for the whole change process in advance, and next steps were designed not earlier than after a previous step had been finished.

4.1 Cultural 'Interventions'

A number of joint activities were successively developed over the project period of two years (September 1999 - August 2001). Although all actions are highly interactive endeavours, we call them 'interventions'. For each consecutive group in the company, these 'interventions' were phased as follows:

- *Start-up: Chaos-Concepts Workshop*
  This workshop offers an explanation of the 'old' basic assumptions of our worldview. Next, the five Chaos principles are presented, and each principle is discussed in small groups. The workshop lasts one full day,

- *Start-up: Dialogue-Training Sessions*
  Per team or project group of 10 to 15 people, the principles of Dialogue are explained. Then the Dialogue is practised in conversations about subjects like elephants[2], assumptions and patterns. These training sessions last one full day,

- *After 2 to 4 months: Dolphin-Training Sessions*
  This training session is done with the same group of people that also did the Dialogue-Training session. The principles of Emergent Leadership[2], Carps[2], Sharks[2] and Dolphins[2] are explained. Group members are asked to give personal examples of the roles that were described. The afternoon is used to engage in a Dialogue about applying the concepts in practice. The training session lasts one full day,

- *After 6 months: Vision Conference*
  The vision conference is held with several groups together and focuses on the personal visions and on accomplishing that vision in/with the organisation. The conference starts with a deliberation in small groups about personal visions. After that, the structure for the rest of the day is designed on the spot. This conference lasts for one full day,

- *After approximately 1 year: Deep-Chaos Workshop*
  After one year a workshop is held that reviews the principles of Chaos and confronts the participants with questions and behaviours that should fit with these principles.

In this study we will concentrate on the first three types of 'interventions' only, i.e., The Chaos-Concepts workshop, and the Dialogue-Training and Dolphin-Training sessions. The researchers did not monitor the Vision Conference and the Deep-Chaos workshop in the same amount of detail, because they were not administered in the specified period of research (September 1999 - August 2001).

4.2 Overview of Actual Involvement of Personnel in the Change Process

In September 1999 the Change Management Team (CMT) was formed. This team got an introduction in Chaos concepts, extensive and prolonged training in Dialogue, and an intensive Dolphin training. The CMT was expected to 'plan' or facilitate the culture change process for the whole company.

Almost half a year later, in February 2000, the actual change process started by involving three project groups of middle managers, and again the CMT, in a plenary chaos workshop and in a Dialogue-Training session. These three project groups are the focus of this study. Some members of the CMT also participated in these project groups. From February 2000 till September 2000 the HRM team and the management team of the service department also became involved, and got a similar training (Chaos-Concepts workshop, Dialogue and Dolphin Training). In September 2000, one year after the start of the project, another group of middle managers and technically educated employees were involved along similar lines. In May 2001 a group of 25 higher educated employees was given the Chaos-Concepts workshop and Dialogue training.

Only managers from production, commercial and technical departments have been involved in the change process, up until October 2001. It is aimed to involve workers and employees from all levels of the company as well.. In *Table 3*, an overview is presented of the gradual involvement of personnel in the culture-creation project. In the period of this research some 105 managers (all levels) were involved in the change project. From October 2001 onwards it is planned to involve both white and blue-collar workers in the Chaos-Concepts workshop Dialogue-Training sessions and Dolphin-

Training sessions, as well. For that purpose, all workshops and training sessions will have to be administered in Dutch.

Table 3 *Total Number of Personnel Involved in the Change Process*

Date	# of Persons	Total # of Persons*	Position in Organisation
September 1999	7	7	Top Management
*February 2000**	*14*	*21*	Middle Management
May 2000	3	24	Human Resource Management
August 2000	6	30	Middle Management
*September 2000**	*50*	*80*	Middle and Lower Management
*May 2001**	*25*	*105*	Lower Management
October 2001	15	120	White and Blue Collar Workers

<div align="center">© 2001 TU/e</div>

Legend:
*   The company employed 500 people at the time this study was executed
** The dates in italics are formal, dedicated periods of activity in the change process

4.3 Training and Facilitation

In September 2000 a process was started to develop facilitators and trainers for future diffusion of chaordic concepts and Dialogue at the shop floor in the company. The need for facilitators was recognised because so many new groups still had to be introduced into Dialogue. The HRM department has initiated this process and approximately 30 people step forward for a facilitators training in January and March 2001. In May of that same year two project groups were formed out of this facilitator group to develop and translate into Dutch the Chaos-Concepts workshop and Dialogue-Training and Dolphin-Training sessions. Organisational members themselves, to involve shop floor personnel, from October 2001 onwards, will use these translations for training purposes.

4.4 Design of a New Organisation

As mentioned before, the main goal of the change process is to enable the Dutch manufacturing company to make a leap to a higher level of complexity and coherence. Such a leap would mean that the organisation should transform into a new form that cannot be imagined beforehand. Conversations about the forming of a design team for that goal already started in February 2000. In May 2000 it was recognised by the CMT that they were not the team who should design the new organisation, but rather that they were to organise the process.

The first activity that was to be organised in this respect was a search conference with the entire company to search for a new future, and to set up a design team. A design team is a team with the task to design a whole new organisation. Unfortunately, the search conference never happened. Instead of that, a vision conference was designed and took place in September and October 2000 with a limited number of people that were already involved in the process (CMT, project groups 1, 2, and 3).

The discussion about a design team started again in May 2001. Up until May 2001, the design team has not 'emerged by itself', and therefore the CMT felt the urge to help to make it happen. But the CMT team realised perfectly well, that it should not press anybody to become a member of this team. It could only create a climate that was advantageous for people to apply for it. Actually, the design team came into being much later then was expected by both the CMT, the American consultant

and the two researchers. Finally, in March of 2002, the design team was formed and started its work to develop a new design for the company.

4.5 Chaos-Concepts Workshop

The Chaos-Concepts workshop was planned and executed by the American consultant as a single plenary session for the three project groups and the CMT, in a conference centre outside the company. The session lasted from 8:30 a.m. till 6:00 p.m.

     The total group was divided into five tables of four or five persons. The table groups do not coincide with the operational teams that were used for the Dialogue sessions. In the first hour (8:30 a.m. - 9:30 a.m. the American consultant presented the basic assumptions of Newtonian science (empiricist assumption, the reductionist assumption, the determinist assumption, the interventionist assumption and the conservative assumption), and talked about some pathologies of classical thinking (pattern blindness, control compulsion, equilibrium obsession, addition addiction, particle bias, boundary-itis, aggrevated egoism, and chronic certainty). She used some scenes from the film *"Jurassic Park"* as illustrations. Also, she used the material examples of a check board and pick-up sticks to illustrate that order and chaos are intertwined. Next, the table groups were asked to individually discuss the pathologies of classical thinking (10 minutes), and to report back to the whole group. In the second hour (9:30 a.m. - 10:30 a.m.) the consultant presented the new lens of Chaos, especially the consciousness property, followed by a break of 20 minutes. During the third one and a half hour (11:00 a.m. - 12:00 a.m.) the consultant continued with the explanation of two additional chaordic properties, i.e., connectivity and indeterminacy. The lunch was served from 12:30 a.m. - 1:30 p.m. During the fourth one and a half hour (1:30 p.m. - 3:00 p.m.) the consultant continued with the last two chaordic properties, i.e., Emergence and Dissipation, and the growth graph of discontinuous growth (S-curve). Before the break of 30 minutes the consultant asked the audience to evaluate the Chaos-Concepts workshop thus far on a so-called 'believability scale'. She asked all the individuals to give a score between 0 = "I reject this thinking", and 10 = "I know this". The results of this preliminary evaluation are shown in *Figure 2*.
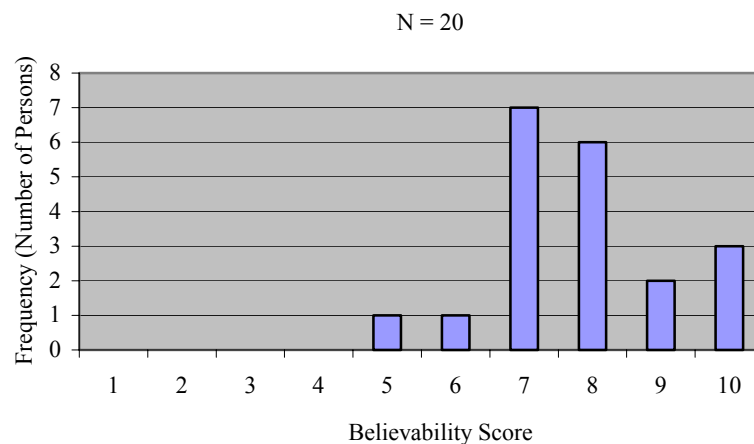
Figure 2 *Chaos-Concepts Workshop Reflections – Individual Scores on a 'Believability Scale' (N = 20)*

After the break, from 3:30 p.m. - 4:45 p.m., each table group prepared a presentation about one of the five chaordic properties. The groups presented their findings in a plenary feedback session from 4:45 p.m. - 5:15 p.m. Here are their remarks, uncensored and not corrected for language:

- *Feedback by the Consciousness Group:* Increased control is not the solution, people must be trusted, and must have space to act. Company-wide optimal solutions (practical solutions we can use). A shared vision through the whole company. Company-wide agreement to change (is there a need to change?). At the moment we are still growing, and do fine-tuning. It is not clear how far we are. The culture: Some persons have a big Ego. We must anticipate problems. We must reduce riscs or accept the consequences. Hold people responsible for their mistakes (learning curve),

- *Feedback by the Connectivity Group:* They show a drawing of the world. On it is a globe and a helicopter and the expression: *"Think globally, act locally".* Try to get a helicopter view to get the whole picture, and act at the local level. You have to look at the whole for understanding the organisation. SAP: People don't see the benefits of their actions. Change an organisation as a whole, not as a part. Team building is important, developing something together. You create an extra boost for the organisation. Before a team starts to do something for a customer, they have to sit together. Chemistry in a team is positive energy,

- *Feedback by the Indeterminacy Group:* Respect: self-governing process in organisation. Trust in people: Gives them self-confidence. Mistakes can be accepted. React to it in a flexible way. Tools needed to help people with it: Flexible production tools; multiple employable labour; access to update information; quick and fast communication; external communication for marketing. Act on it. You can be overwhelmed by changes. Even if you have not enough information, you have to act,

- *Feedback by the Dissipation Group:* A drawing is shown on which there is a growth curve. As a company, we had some hick-ups but we are still on the way to growth. We need a culture change in order to reach a higher level. We push the limits up to a higher level. We think the teams have a long way to go before they reach the limits. But it will never do it forever. That day when you reach your limits, what than? Culture change will prepare people for that,

- *Feedback by the Emergence Group:* Present situation in one of the technical project teams is no connection. We need a new approach. We discussed the teams in development. It is possible to change the kind of working. A picture is shown of a collection of terms in a drawing: Target, vision, involvement, respect, connection, open, self-direction, environment, responsible. If you do it all, the company will do a little bit better. They are all important.

The group checked out from 5:15 p.m. till 6:00 p.m. Some final remarks of them were: Lots of ideas and possibilities, very interesting, useful theory, well brought, strange theory, little bit shocked, impressed by it. Although the concentration of a number of people faded a bit after lunch, the level of attention of the majority of people stayed high during the entire workshop.

A synopsis of subjects treated in the Chaos-Concepts workshop, reads as follows:

- Check-in,
- Five basic assumptions of the Newtonian lens,
- Eight pathologies of classical thinking,
- Exercise: Pathologies applied to the company
- The Chaos lens,
- Five basic assumptions of the Chaos lens,
- Five chaordic properties,
- Evaluation on the scale of believability,
- Exercise: Chaordic properties,
- Check-out.

4.6 Dialogue-Training Sessions

The Dialogue-Training sessions all were set up as a conversation about the past, present and future of the change process within the company. 'Dia logue' means literally: "Through word or meaning". It

stands for a flow of meaning through the group, as if the group is one. Its main purpose is learning, or the expansion of the group's thinking. A typical Dialogue session in this project had the following basic structure: Check-in (30 minutes); Dialogue part 1 (3 hours, including two 10 minutes breaks); Dialogue part 2 (2.5 hours without a break); Check-out (30 minutes).

- In the check-in, each group member is asked to speak out about any thoughts, actions, or experiences since the last workshop. Also, his/her opinion is asked about any expectations for today's event,
- In the Dialogues, the team members may continue the process they have started last time, or engaged in new arenas of thought. It is completely up to the team members about what subjects they want to dialogue with each other,
- In the check-out, each group member is asked to report about both his/her experiences and evaluation of the session, and about what they want to do next.

The change process is top-down, and was started with top and middle management. Besides that, several organisational members, commonly seen as open-minded to new concepts or changes, were involved as well. Over time, all other organisational members will be involved in the culture change project.

One could say that the managers who were involved in the process have positions all over the company. Also, the change process only has involved people who belong to a team with a particular task in the company. The reason for this is that these teams of 10-15 people meet in between training periods, which give them ample opportunities to practice with the new concepts.

The Chaos-Concepts workshop, and all Dialogue-Training and Dolphin-Training sessions were held in a conference centre outside the company. For all groups the tables in the room were arranged in a rectangular layout to host both the group members and the consultant.

There were no detailed plans for the sessions. The general design was that after presenting and discussing some principles, the groups were given ample opportunities to experience and experiment with it. The sessions lasted for a full working day, from 8:30 a.m. till 6:00 p.m. There have been three breaks for coffee, tea, and lunch. People were asked in advance to wear casual clothes. Now we will look more closely into some details of the Dialogue-Training sessions.

4.6.1 Summary of the Dialogue-Training Session of Project Group 1

> The first 45 minutes (8:30 a.m. - 9:15 a.m.) were about introducing Dialogue. After a brief check-in, there was a presentation about Dialogue by the consultant: The reasons and the meaning of it (ladder of abstraction), the difference with discussion (exterior versus interior), and the concepts of the 'elephant'[2] (undiscussables) and other defensive routines were communicated.
>
> During 30 minutes (9:15 a.m. - 9.45 a.m.) a conversation was initiated about the dialogue process itself. From 9:45 a.m. - 10.20 a.m. a conversation took place about undiscussables in the group. This was followed by a Time Out Of Time (TOOT) of 18 minutes.
>
> After the coffee break, there was a second conversation about the group's openness to discover errors in personal thinking, followed by a 10 minutes TOOT. A third conversation was held from 11:35 a.m. - 12:00 p.m., about the reasons for not participating in a meeting, followed by a 30 minutes TOOT. At 12:30 p.m. people started lunch.
>
> After lunch, 1:30 p.m., a conversation was initiated about the reasons for not producing desired results, followed by a TOOT at 2:00 p.m. The conversation continued for another 50 minutes, from 2:20 p.m. - 3.10 p.m. There was another TOOT before the 15 minutes break started at 3:30 p.m. From 3:45 p.m. - 4:00 p.m. a conversation was started about individual contributions to the team and to the Dialogue, followed by a 30 minutes TOOT. At 5:00 p.m. a conversation was initiated about the question: "Do we have a deal?", followed by a TOOT. From 5:50 p.m. till 6:00 p.m. the people did check out.

The Dialogue-Training session of project group 1 was a mixture of Dialogues and discussions. With respect to the content, six different subjects came on the table: Undiscussables[2], openness for errors, participation in and attendance of meetings, the hierarchy in the group, contribution to the Dialogue, and the facilitation of meetings. Several patterns of collusion were discovered: Proposals from the respective sectors in the company are only checked marginally in the IT team; Self-censorship: Lower-level employees don't contribute in a meeting.

With respect to the process, the data indicates, that it was very difficult for the team to stay in Dialogue. When emotions became involved, the Dialogue changed into a discussion, immediately. In the morning, only part of the group was involved in the conversations. During the day, there was an increase in the number of persons who participated in the conversations, including the three new members in the team. During the day, also the number of examples of successful Dialogue increased. Urged by the facilitator, the communication was slowed down, and the consideration of hidden assumptions and feelings became more common as the session progressed. There were also several instances of "thinking behind the assumptions", which enabled the whole group to learn. At the end of the day, the dialogue process converged into a confrontation with a group member, because of his behaviour in the group. The persons in project group 1 reported that although they have learned a lot, there is no consensus about the question if they can go forward without an external facilitator.

4.6.2 Summary of the Dialogue-Training Session of Project Group 2

> The first 45 minutes (8.30 a.m. - 9:15 a.m.) were about introducing Dialogue. After a brief check-in, there was a presentation about Dialogue: The reasons and the meaning of it (ladder of abstraction), the difference with discussion (exterior versus interior).
>
> During 30 minutes (9:15 a.m. - 9:50 a.m.) a conversation was initiated about the dialogue process itself. The difference between hearing and listening was explored. From 9:50 a.m. -10:20 a.m. a conversation took place about 'elephants' (undiscussables) in the project group. This was followed by a Time Out Of Time (TOOT) of 18 minutes, followed by an example of climbing the ladder of abstraction (interpreting the act of throwing a book on the table). After the break, there was a 10 minutes conversation started about the relation between sales and production, followed by a TOOT. A next conversation was held from 11:00 a.m. - 11:35 a.m., about problems between Sales and Production, followed by two TOOTs. During this conversation the drama triangle was explained (distinction between rescuing and helping). At 12:30 p.m. people started lunch.
>
> After lunch, 1:30 p.m., a fourth conversation was initiated about a person that had left this group, followed by two TOOTs from 2:10 p.m. - 3:00 p.m. The conversation continued for another 50 minutes, about politics, before the 10 minutes break started at 3:40 p.m. From 4:00 p.m. the conversation about politics and responsibilities continued, interchanged by TOOTs. From 5:30 p.m. to 6:00 p.m. people did a check-out.

The Dialogue-Training session of the project group 2 was a mixture of Dialogues and discussions. With respect to content, two main different subjects came on the table: Political behaviour and team membership.

In the introduction two main concepts were presented by the consultant: The ladder of abstraction, and the differences between Dialogue and discussion. During the FAQ another two concepts were presented: The difference between hearing and listening, and the concept of the undiscussable ('elephant').[2] Later in the session the concept of the 'drama triangle'[2] was presented by the consultant.

During the morning, the pattern of overruling was analysed in great detail, as it is practiced by Sales to change priorities in Production. Another subject that was intensively dialogued, was a member's withdrawal from the group. This was already announced during the check-in but came on the table only in the afternoon, when that member had actually left for another appointment. The conversation developed into a Dialogue about politics: The power balance of Sales and Production in project group 2. The rest of the session was entirely devoted to politics, while the Dialogue was focused on 'pre-cooking', and the use of political behaviour both in the company as a whole, and in

this team. Towards the end of the session a confrontation between two dialogue group members built up about overruling, that resulted in an explicit refusal of one of them to promise the other not to use this kind of political behaviour in the future, any more.

   During the check-out the persons of project group 2 reported that they had learned a lot, and feel positive about Dialogue. They also confirmed, that there will be 'politicing' in this group, and that they are not sure how to handle that accurately, and how to continue with their process.

4.6.3 Summary of the Dialogue-Training Session of Project Group 3

> The first 30 minutes (8:30 a.m. - 9:00 a.m.) people checked in. The next 15 minutes there was an introduction about Dialogue: The reasons and the meaning of it (ladder of abstraction), and the difference with discussion (exterior versus interior).
>   During 30 minutes (9:15 a.m. - 9:45 a.m.) a conversation was initiated about the dialogue process itself. From 9:45 a.m. till the break at 10:55 a.m. discussions were initiated about action points of project group 3, interrupted by a TOOT of 10 minutes. After the break the 'dialogue about the Dialogue' was continued, followed by several TOOTs. At 12:30 p.m. people started lunch.
>
> After lunch, 1:30 p.m., the consultant asked the members of project group 3 to make a personal commitment not to run in circles, any more. At 2:10 p.m., a conversation was started about roles and responsibilities, followed by a TOOT. The next subject for conversation was the goals of project group 3. That conversation, that was interrupted by a TOOT, lasted for more than 70 minutes till the break started at 3:45 p.m.. From 4:00 p.m. there was another TOOT followed by a long conversation about the necessity of a chairman for this team. The conversation converged into explicit frustration and disappointment around 5:20 p.m. From 5:40 p.m. till 6:05 p.m. people did a check-out.

In the Dialogue-Training session of project group 3, the following concepts were presented by the consultant: The difference between discussion and Dialogue, the ladder of abstraction, and defensive routines (undiscussables including 'elephants'). Later that day, also collusion[2] was explained.

   The conversations in project group 3 stayed at the level of a discussion. Even after a second attempt to "dialogue about the Dialogue concept", and an explicit round to ensure individual commitments not to go in circles anymore, no successful dialogue process was observed.

   With respect to contents, the following subjects came on the table: Action points, goals of project group 3, individual roles and responsibilities, and a new chairman for the team.
With respect to the process, the data indicates that technical discussions dominated the conversations, for the whole day. Although everybody was involved in the conversations, it stayed on the surface level, most of the time. The team constantly was looking for practical solutions. During the day, people started to become more open to each other, but because they were unable to successfully dialogue with each other, irritations gradually built up. Towards the end of the session, frustration, disappointment and serious doubt about the process were phrased by several members of the group.

   Some persons in the project group 3 reported that they needed more time to become a team, before to be able to engage into a real Dialogue, successfully.

4.7 Dolphin-Training Sessions

Like the Dialogue-Training sessions, the Dolphin-Training sessions were set up as conversations about the past, present and future of the change process in the company. Where the Dialogue-Training sessions focused on the training in Dialogue and exploring assumptions behind the thinking, the Dolphin-Training sessions focused on choices one can make in complex interactions. The story of the Dolphin[2] illustrates the way you may adapt your role in a particular situation. A Dolphin is a metaphor for your own personal way of life, in which you consciously choose to either change or accept the situation. A dolphin never chooses to suffer from a situation.

A typical Dolphin-Training session in this project had the following basic structure: Check-in (30 minutes); theoretical concepts and Dialogue (3 hours, including two 10 minutes breaks); Dialogue, part 2 (3 hours with one single break); Check-out (30 minutes). The general design was that the session would be divided in two parts. The first part focused on concepts regarding the change process and was set up as a test period, and the second part would be used to give opportunities to experience and experiment with these new concepts.

4.7.1 Summary of the Dolphin-Training Session of Project Group 1

> The first 10 minutes (1:00 p.m. - 1:10 p.m.) people checked in. During the check-in a conversation evolved about the attendance of observers in the team and the necessity of the team to have a facilitator. This conversation lasted 25 minutes and after that the check-in was finished (1:35 p.m. - 1:50 p.m.).
>
> During the next 30 minutes (1:50 p.m. - 2:20 p.m.) a conversation was initiated about designated and emergent leadership. The first 20 minutes were used by the facilitator to introduce some new topics on this subject. The group gave a short reaction (10 minutes) on that.
>
> After that, the facilitator shared the concept of Carps[2], and Sharks[2] with the group. The first 15 minutes were used by the facilitator to describe this subject and to explain the left-hand method (2:20 p.m. - 2:35 p.m.). Next, the members of the group had to think of an example of Carp and Shark behaviours, followed by a break (2:35 p.m. - 3:00 p.m.). Following the break, the examples were discussed for 35 minutes (3:00 p.m. - 3:35 p.m.).
>
> The theory of the Dolphin was given from 3:35 p.m. - 3:50 p.m. This theory was discussed within the group for 10 minutes. The 'Bermuda Drama Triangle' was shared from 4:00 p.m. till 4:10 p.m. This is a scheme with pathological relationships between a victim, a prosecutor, and a helper, seen as roles people can play in interaction to each other. A short conversation about the triangle followed (10 minutes), and the group decided to take a break (4:20 p.m. - 4:40 p.m.).
>
> After the break a couple of conversations followed. The first two conversations were focused on the S-curve and Dolphin behaviour and lasted for 45 minutes (4:40 p.m. - 5:05 p.m., and 5:05 p.m. - 5:25 p.m.). Then a conversation about the (dis)functioning of the team was initiated, which lasted 40 minutes. The session ended with a conversation of almost an hour (6:05 p.m. - 7:00 p.m.) about the authority to sign financial papers. The check-out was performed at the start of the dinner (7:00 p.m. - 7:20 p.m.).

Exercising Dolphin behaviour by project group 1 was a mixture of practice with Emergent Leadership and Dialogue. With respect to the process, the conversations indicate, that there was almost never a shared meaning about a topic of conversation. When the conversation developed to a point where the change was real that you have to make in yourself, it often went away again, or a discussion was initiated about what to do or not to do.

The first part of the meeting was generally focused on a couple of concepts regarding the change process. The first conversation started already in the check-in, and was about the fact that 'someone outside' decided for the team that they should have another workshop and also that there would be people of the HRM Team being around. This conversation had a lot to do with politics and the secretive culture of the company ("using information against you"). The rest of first part was used to learn and practice with the concepts of Emergent Leadership and Carps, Sharks and Dolphins.[2] The second part of the meeting was about Dolphin behaviour in the company and within the group. The group practised a number of times with Designated Leadership[2] in the company. The way to change that into Emergent Leadership had often to do with giving away responsibilities. Overall, the group focused less on the change in yourself when you want to behave like a dolphin or when you want to stimulate emergent leadership. The group had difficulties finding examples of change when the organisation would transform. There were a lot of moments of silence, when transformation was the subject of the conversation. The facilitator tried a number of times to focus on the change within the members of the group themselves. Only a few were successful. Also, the choices a dolphin can make, were practised only a few times.

The members were a bit disappointed and not really satisfied about the session. There still are big differences in the levels of dominance of people within the project group 1.

4.7.2 Summary of the Dolphin-Training Session of Project Group 2

Project group 2 started a few minutes later as planned, because not all members were in in time. The first 30 minutes (9:15 a.m. - 9:45 a.m.) people checked in. After that, two persons of the group explained why they want to leave, and subsequently, they actually left the session (9:45 a.m.- 9:50 a.m.). The group counted 7 members from that moment on.

During 50 minutes (9:50 a.m. - 10:40 a.m.) a conversation was initiated about designated and emergent leadership. The first 25 minutes of this conversation were used by the facilitator to introduce some theory on the topic. The other 35 minutes the conversation was about the costs and benefits of designated leadership.

After that, the facilitator shared the concept of Carps and Sharks with the group (10:40 a.m. - 11:15 a.m.). The first 15 minutes were used to learn about the behaviour of Carps and Sharks, and to introduce the left-hand method. Next, the group did an exercise, in which they had to use this left-hand method by themselves in a situation where they reacted as a Carp or a Shark. Project group 2 decided to take a break of 20 minutes (11:15 a.m.- 11:35 a.m.).

After the break the members of the group shared some examples of Carp- and Shark-like behaviours (11:35 a.m. - 12:25 a.m.), and this conversation was finished by the explanation of the Bermuda drama triangle (12:25 p.m. - 12:35 p.m.). After that, the group went for lunch.

After lunch: 1.35 p.m., the consultant started with some theory about Dolphins. The group went outside to sit in the sun (1:45 p.m. - 1:55 p.m.). A conversation started about Dolphin behaviour with the S-curve in mind, and the leap towards a whole new organisation (1:55 p.m. - 2:15 p.m.). It gradually converged into a conversation about personal change to behave like a dolphin, which lasts for an hour with a TOOT in between (2:15 p.m. - 3:15 p.m.). The conversation ended with a TOOT related to the process of this conversation (3:15 p.m. - 3:25 p.m.).

The next conversation focused on the choice some participants made to let go of the last conversation. It continued also after the break and lasted till 4:25 p.m. Then a new conversation developed regarding the change in personal behaviour being a dolphin, which lasted for 1 hour (4:25 p.m. - 5:25 p.m.). Then the group checked out, beginning with the feedback of the HRM members (5:25 p.m. - 5:35 p.m.). After that, all members of project group 2 check out (5:35 p.m. - 6:00 p.m.).

The Dolphin-Training session of project group 2 was mainly focused on Dolphins and their behaviour in situations of transformation.

In the morning the concepts of Emergent Leadership, Carps and Sharks were put forward by the consultant. The group had a conversation about the costs and benefits of Designated Leadership and everyone in the group could put forward examples of Carp and Shark behaviours. The Bermuda Drama Triangle[2] was also presented in the morning. The morning focused mainly on new concepts about behaviours one can show in conversations or in a non-chaordic company.

The afternoon started with some theory about Dolphins[2] and the position of Dolphins, Carps and Sharks on the s-curve. The conversation that evolved was about the S-curve. The group started exploring what the outcome of a transformation could be, but soon the conversation turned into personal change to become a Dolphin between two people, one wanting to know what the other would change to become a Dolphin. This interaction set the context for the rest of the conversations during that afternoon.

Listening to that Dialogue, the group learned what choices you can make. The rest of the group made the conscious decision not to say anything when the others were deliberating (let go). Not only Dolphin behaviour, but also patterns in the group were explored.

The members of project group 2 were positive in their check-out. The concept of Dolphin behaviour was interesting and the group decided to come together again, soon.

4.7.3 Summary of the Dolphin-Training Session of Project Group 3

> The first 30 minutes (9:00 a.m. - 9:30 a.m.) people checked in. The last person who checked in, initiated a conversation about a decision that was initially made in the project group, but changed recently. This conversation lasted for 15 minutes (9:30 a.m. - 9:45 a.m.).
>
> The next hour (9:45 a.m. - 10:45 a.m.) a conversation took place about designated and emergent leadership. The first 20 minutes were used by the facilitator to introduce this subject. The other 40 minutes, till the break at 10:45 a.m., was about taking and giving responsibility.
>
> After the break (10:55 a.m. - 12:28 p.m.) the facilitator shared the concept of Carps, Sharks and Dolphins with the group. The first 30 minutes were used to learn about the behaviour of Carps and Sharks and to find example of behaving yourself like that. After that, the examples were discussed for 35 minutes. The last 25 minutes were used to learn about Dolphin behaviour. At 12.30 p.m. people started lunch.
>
> After lunch, 1:40 p.m., the consultant asked the team members to explore how it would be to begin thinking like a Dolphin. The conversation was about being late and rules within the company regarding this topic.
>
> At 2:40 p.m. a conversation was started about practising skilled discussion by the team, which lasted till 3:45 p.m. This topic was chosen by the group beforehand, in order to ask the facilitator's advice on. One group member asked the others if they wanted to practice skilled discussion now. He first did not get a real answer, but after 30 minutes he came back with his question and asked every member for an opinion (25 minutes). After that, some individual feedback to that person is given (10 minutes) by the facilitator. From 3:45 p.m. till 4:10 p.m. there was a break.
>
> The next subject for conversation was the preparation for change (4:10 p.m. - 5:15 p.m.). The group first shared the S-curve and explored what the changes could be. Some members of the group were individually asked to share their thinking. The facilitator was asking the members of the group about their opinions: what has to change in themselves. At 5:15 p.m. the check-out started with some observations shared by the HRM members. From 5:30 p.m. - 6:00 p.m. the members of the group checked out.

The Dolphin-Training session of project group 3 was focused on Dolphin behaviour and the necessary changes in the members and in the organisation to make better use of the possibilities of all people in the company. The morning was used to learn about Emergent Leadership, Carps and Sharks. These topics were explored by conversation and by giving examples of Carp and Shark behaviours. The morning ended with the concept of Dolphins.

The afternoon was used to explore ideas of Dolphin behaviour in the change process. The consultant had to point a number of times to the change that has to take place within oneself, instead of in others. The first two conversations that afternoon were about someone being late at work and the way you react in that situation. Then the conversation totally switched, when one member of the group asked if they could practice skilled discussion with the consultant, because that could be really useful to the team. By changing the conversation, the group did practice the choices that a Dolphin can take. First, there was no real answer to the question of the member of the group about skilled discussion. Then he changed the situation and asked everyone but still got no answer. These conversations were used to explore the choices that a Dolphin can make. The meeting ended with a conversation about the transformation and the necessary changes.

In the check-out the members of project group 3 thanked the consultant for the interesting new concepts and were positive about how the process went that day.

5. Quantitative Analysis

The quantitative analysis is based on 'edited transcriptions' of the Chaos Concepts, Dialogue and Dolphin sessions, which were produced 'in situ' by the researchers. It is estimated that 80% of the

content was captured successfully by this method. Time measurement was carried out in units of 10 and 15 minutes. The edited transcriptions were fed back to the participants, for additions and corrections.

Apart from the previous qualitative analyses, we also have coded the results in order to enable a more quantitative analyses of the data. The results of the quantitative analyses are summarised in *Tables 4 to 8*.

5.1 Dialogue-Training Sessions

Table 4 is showing a numerical analysis of some characteristics of the Dialogue sessions for the three project groups in the following research periods: Trial or training period (Test), experimental period A, and experimental period B. The training period equals the morning session immediately following the explication of the Dialogue concepts and processes by the consultant (approximately 2 hours, 30 minutes). It also includes the 'Dialogue about the dialogue process'. Experimental period A and B cover the whole afternoon session. They equal each other in duration (2 hours, 15 minutes). In *Table 4* are shown: The number of members in the dialogue groups, total number and mean duration of conversations, types of conversations (discussion versus Dialogue), and number of TOOTs (Time-Out-Of-Time's, or group reflections). *Table 5* is also showing the subjects and focus of the TOOTs (individual or group feedback, versus patterns recognised in the conversations), and the mean number of participants in both the conversations and in reflections.

Table 4 *Numerical Analysis of Some Characteristics of the Dialogue Process*

Legend: dia = Dialogue   Test = Trial or training period, 2 hours, 30 minutes
         dis = discussion   A = Experimental period I, 1 hour, 15 minutes
         TOOT = Time out of Time   B = Experimental period II, 1 hour, 15 minutes

Characteristics of the Dialogue Process	**Project Group 1**			**Project Group 2**			**Project Group 3**		
	Test	A	B	Test	A	B	Test	A	B
Number of dialogue members	8	8	8	8	7	7	10	10	10
Total number of conversations (dia + dis)	3	2	3	3	3	2	3	3	2
Mean duration of conversations (minutes)	25	30	25	25	25	25	28	28	32
Number of discussions (dis)			1	1			2	3	2
Number of mixed Dialogues/discussions (dia/dis)	3	2	2	2	3	2	1		
Total number of TOOTs	3	2	3	4	2	4	4	3	0
Subject = feedback/pattern discription	2/1	0/1	2/2	4/0	2/1	4/2	2/1	2/0	0/0
Focus = individual/group	3/2	1/2	3/2	4/4	2/0	4/2	2/1	2/1	0/0
Mean number of participants in dia/dis	5	6	5	6	6	4/5	7	6	8/9
Mean number of participants in TOOTs	4	5	8	5	4	2	7	2	--

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Table 4 shows that, although there was no pre-set program other than both a common starting time, time for lunch and breaks, and closing time, the total number and the *mean* duration of conversations in the three Dialogue groups show the same dynamic rhythms: three conversations in the morning session (training period) and five conversations in the afternoon session (experimental periods A and B). The *mean* duration of the conversations for all groups is approximately 25-32 minutes.

With respect to the kind of conversations, project groups 1 and 2 predominantly show a mixed pattern of discussions and Dialogues, while the project group 3 conversations during the experimental phases have been categorised as discussions only. In one of the experimental sessions of project group 1 there was a single instance of pure discussion, late in the afternoon.

The number of TOOTs is highest for project group 2, and lowest for project group 3. In the experimental periods, both project group 1 and 2 show small increases in the frequencies of reflections during the afternoon, while project group 3 shows a decrease.

As to the percentage of participants who actively contributed to the conversations, the *mean* for all three groups is almost the same: 70-75%. The number of members actively participating in TOOTs is highest for project group 1, and lowest for project group 3. In both project group 1 and 2 the subjects of these reflections were both feedback and pattern recognition, in project group 3 it was feedback only. In project group 1 and 2 the reflections were mostly focused on both the individual and the group, while in project group 3 they were focused mainly on the individual.

Analysing these data in terms of the appropriateness of the 'intervention', one may conclude that although the amount of training was similar for all three groups, Dialogue training for project group 3 was least effective during both the trial and experimental periods.

In *Table 5* a summary is given of theoretical concepts, the American consultant offered the three Dialogue groups, both during the trial session and during the experimental conversations.

As can be seen from the table, the five basic theoretical aspects of Dialogue were presented to all project groups (distinction between discussion and Dialogue, ladder of abstraction, exterior versus interior, undiscussables, TOOT). On top of that, project group 1 received six additional concepts to work with (defensive routines, paradoxes, openness for errors in thoughts, thinking behind assumptions, collusion, and self-censorship); project group 2 got three additions (hearing versus listening, drama triangle, and political behaviour); and project group 3 got two additional aspects (defensive routines, and collusion). In conclusion, project group 1 received most diverse Dialogue concepts to play with, and project group 3 the least. Combining this result with the data of *Table 4*, one can state that project groups 3 got least theory and was least effective in mastering Dialogue. From the observations it became clear that project group 3 developed a very complicated group process during the morning and the afternoon sessions, because it just had began working as a project team.

Table 5 *Summary of Theoretical Concepts, Offered by the Consultant in the Dialogue Sessions*

Dialogue Concepts	Project Group 1	Project Group 2	Project Group 3
Distinctions Dialogue/discussion	x	x	xx
Ladder of abstraction[2]	x	x	x
Exterior versus interior	x	x	x
Undiscussables ('elephants')[2]	x	x	x
TOOT ('Time out of Time')[2]	x	x	x
Defensive routines[2]	x		x
Paradoxes	x		
Openness for errors in thinking	x		
Thinking behind assumptions	x		
Collusion[2]	x		x
Self-censorship[2]	x		
Hearing versus listening		x	
Drama triangle[2]		x	
Political behaviour		x	
Total Number of Concepts	**11**	**8**	**7**

5.2 Dolphin-Training Sessions

The Dolphin-Training sessions can be divided in two parts. The first part (Test) was used to learn about the concepts of Emergent Leadership and Carp, Shark, and Dolphin behaviours.[2] For project group 2 and 3 this part was mainly executed in the morning, for project group 1 it was executed in the afternoon. The test period lasted for approximately 2 hours and 45 minutes, for all three groups.

   The second part (Exp) of the training sessions was used to practice with the new concepts and with Dolphin behaviour. This part of the session lasted for approximately 3 hours (for project group 1 it was 2.5 hours).

The first issue, that was already addressed in the qualitative analysis, is related to the practice with the new theoretical concepts. The training had the purpose to practice with the concept of Emergent Leadership. Emergent leadership is leadership that emerges from a person or a group to serve the whole. Dolphin behaviour was focused on the choices that one may make facing a problem in a certain situation.[2]

   In the first part of the training session (Test) the following topics were addressed by the consultant: Designated versus Emergent Leadership,Carps, Sharks and Dolphins.[2] Immediately after the consultant had put forward the theory, the members of the group were asked to give feedback. This practice was partly done by conducting an exercise. Based on the transcriptions of the interactions, the time that the groups spent on practising with the concepts was measured, see *Table 6*.

Table 6 *Time Measurement of Direct Practice with Dolphin Concepts*
Legend: Test = Trial or training period
All time measurement is in minutes

Practising Dolphin Concepts	**Project Group 1**	**Project Group 2**	**Project Group 3**
	Test	Test	Test
Emergent Leadership[2]			
• Theory	20	25	15
• First Thoughts	10	30	40
Subtotal: Time Emergent Leadership	*30*	*55*	*55*
Old Role Models: Carps and Sharks[2]			
• Theory Carps and Sharks	5	10	15
• Theory Left-Hand Method	5	5	10
• Examples Carp and Shark	35	50	35
Subtotal: Time Old Role Model	*45*	*65*	*60*
New Role Model: Dolphin[2]			
• Theory Dolphin	15	10	25
• Dolphin behaviour in Carp/Shark Sit.	-	-	10
Subtotal: Time New Role Model	*15*	*10*	*35*
Total Time of Direct Practice	***90***	***130***	***150***

Table 6 shows that there are clear differences in total time spent on direct practice in the respective project groups. Project group 2 and 3 practiced 45% and 65% more than project group 1. Project group 3 spent extra time in the first exercise on the behaviour of a Dolphin in situations with Carps or Sharks. Project group 3 has more members than project group 1, which could account for the extra

time needed for giving personal examples of Shark and Carp behaviours. Project group 2 and 3 are comparable in size, but nevertheless project group 2 spent a lot more time practising the concepts.

It was observed only occasionally that teams addressed a change in themselves when talking about the transition into Emergent Leadership. Mostly, the talking was about changing 'them' to achieve that goal.

Analysing the data of *Table 6*, we may conclude that there are differences between project groups. Project group 1 took least time to practice the Dolphin concepts.

Table 7 is showing the numerical analyses of some characteristics of the three teams for both the test and experimental periods. In *Table 7* are shown: the number of members in the Dialogue groups, total number and mean duration of conversations, types of conversations (discussion versus Dialogue), and number of TOOTs (Time out of Time's, or group reflections). *Table 7* is also showing the subjects and focus of the TOOTs (individual or group feedback, versus patterns recognised in the conversations), and the mean number of participants in both the conversations and the reflections.

Table 7 *Numerical Analysis of Some Characteristics of the Dolphin Process*

Legend: dia = Dialogue   Test = Trial or training period
            dis = discussion   Exp = Experimental period
       TOOT = Time out of Time

Characteristics of Dolphin Process	**Project Group 1**		**Project Group 2**		**Project Group 3**	
	Test	Exp	Test	Exp	Test	Exp
Number of dialogue members	8	7	7	7	9	9
Number of HRM members	0	2	1	2	1	2
Number of observers	1	1	1	1	1	1
Amount of time in period (Test or Exp)	3:05	2:25	2:45	3:15	2:35	3:10
Total number of conversations (dia + dis)	5	4	2	6	3	8
Mean duration of conversations (minutes)	20	35	35	25	30	25
Range in duration time (minutes)	10-25	20-55	25-50	20-55	15-40	10-35
Number of first thoughts	3	0	1	1	1	0
Number of exercises	1	0	1	0	1	0
Number of discussions (dis)	1	3	0	1	1	2
Number of mixed Dialogues/discussions (dia/dis)	0	1	0	4	0	5
Number of Dialogues	0	0	0	0	0	1
Total number of TOOTs	0	0	0	2	0	1
Mean duration of TOOTs (minutes)				15		10
Subject = feedback/pattern discription				FB/PD		FB
Focus = individual/group				Ind.		Ind.
Mean number of participants in conversations	5	7	7	4	7	6/7
Mean number of participants in TOOTs				4		3

Analysing the data of *Table 7*, one can conclude that the number of conversation was equal for all three groups. Project group 1 spent most time in the trial phase, and least in the experimental phase, while it was least effective in engaging into Dialogue and into reflection. Project group 3 was most effective in Dialogue.

In *Table 8* a summary is given of the theoretical concepts, the consultant offered the three Dialogue groups in the Dolphin-Training session. She presented several examples of companies which adopted the Chaos lens and use Emergent Leadership. As can be seen from the table, there hardly any

differences in the amount of theoretical aspects the American consultant shared with the different groups.

Table 8 *Summary of Theoretical Concepts, Offered by the Consultant in the Dolphin Sessions*

Dolphin Concepts	Project Group 1	Project Group 2	Project Group 3
Designated versus Emergent Leadership[2]	x	x	x
• Example: Sin Can	x	x	x
• Example: WL Gore	x	x	x
• Example: GHP	x	x	x
• Example: TCG	x		
Carps and Sharks [2]	x	x	x
Dolphins[2]	x	x	x
S-Curve and Carps, Sharks and Dolphins	x	x	
S-Curve and Transformation	x	x	x
Left-Hand Method	x	x	x
Bermuda Drama Triangle[2]	x	x	
Ladder of Abstraction[2]		x	x
Total Number of Concepts	**7**	**8**	**6**

Analysing these data in terms of the appropriateness of the 'intervention', one may conclude that the Dolphin-Training was successfully administered to all three groups. Although the total amount of time spent on training was almost similar for all three groups, the Dolphin role models were best practised by project groups 2 and 3, and least by project group 1. Project group 3 also engaged best in Dialogue.

6. Further Analysis and Synthesis

When we further analyse and synthesise both the qualitative and quantitative data, and concentrate on the immediate effects of the 'interventions', the following combined results arise:

- *Project Group 1* made a flying start in mastering Dialogue. They had deep conversations with each other, and examined quite a few assumptions in rather fine detail during the Dialogue session. Eventually, the group went through a crisis concerning the behaviour of one of its members. Despite its progress that was ranked best in the Dialogue-Training session, project group 1 progres was ranked lowest in the Dolphin-Training session. The group showed not much active exploration of emergent-leadership roles, and they got lost in discussing the company's secretive culture. Project group1 did not practice Dialogue very much in between the two sessions, and did not show much of this competence in the Dolphin session,
- *Project Group 3* made a very slow start in mastering Dialogue. Mainly technical discussions dominated the conversations of this newly formed team during the Dialogue-Training session. Notwithstanding severe doubts, the group practised Dialogue in between sessions, and its progress was ranked highest in the Dolphin-Training session, in which they actively explored and dialogued about emergent-leadership roles.
- *Project Group 2* was ranked performed average in both the Dialogue-Training and Dolphin-Training sessions. The group engaged in some Dialogue and had a crisis concerning 'pre-

cooking' and the 'passing-over' behaviours of managers in the Dialogue-Training session. In the Dolphin-Training session two group members seriously explored emergent-leadership roles.

These combined results give rise to the conclusion that the three project groups developed unique individual learning trajectories: They are different, diverse and equivalent to each other, at the same time

Although the training sessions were effective, the learning curve proved to be rather flat. All project groups reported that they found it rather difficult to engage into Dialogue in daily work. As soon as emotions become involved, Dialogue easily turns into a discussion. Also, it is difficult for individual group members to understand and accept the idea that behavioural change is only possible following a change in own thinking and the assumptions which go with it; that emergent leadership is most likely following a *personal* transformation of the self from Carp and Shark behaviours into Dolphin behaviour. The two interior dimensions of Wilber's Quadrant – intentional and cultural – which were shown in *Figure 1*, have to be developed to the same extend as the exterior ones – behavioural and social. The change from a traditional into a new culture is a rather difficult, time- and energy-consuming, process.

7. Conclusions

In the following nine points we evaluate the above-described series of 'interventions', and the immediate effects they had on the three project groups:

1. The plenary Chaos-Concepts workshop, as planned and facilitated by the consultant, contained the vital elements of the Chaos lens, i.e., the assumptions of traditional scientific thinking and its pathologies, the five chaordic properties, the growth curve of discontinuous growth, and a couple of exercises to master the concepts. The Chaos-Concepts workshop was very much up to standard, both in its design and in its execution.

2. The plenary Chaos-Concepts workshop was evaluated positively by a majority of its attendants. Most people indicated that they understood the new concepts quite well at the end of the day, and that they 'believe' in them, which may be interpreted as that they are intending to use them in their work, in the future. We conclude that there has been an effective diffusion of the new concepts by lecturing and experiential learning.

3. The Dialogue-Training sessions, as planned and facilitated by the consultant for the three respective project groups separately, differed per group. Although the three project groups got the same amount of time to exercise with Dialogue, only 35% of the all Dialogue aspects, i.e., distinctions between Dialogue and discussion, ladder of abstraction, exterior versus interior, and undiscussables were presented to all groups. Some 15% of the Dialogue aspects, i.e., defensive routines and collusion, were presented to two project groups, and 50% of the Dialogue aspects, i.e., paradoxes, openness for errors in thoughts, thinking behind assumptions, self-censorship, hearing versus listening, drama triangle, and political behaviour, were presented to only one of the three project groups. We conclude that, although the necessary ingredients of Dialogue were satisfactorily communicated to all three groups, a deeper theoretical base for Dialogue was unevenly distributed among the project groups.

4. The Dialogue-Training sessions were evaluated differentially in the three project groups. The group that got educated on the highest number of Dialogue aspects was most positive; the group that received the smallest number of Dialogue

aspects was least positive in their evaluations. Another conclusion is that although there was the same amount of time to exercise Dialogue in all three groups, there are differential effects. Although positive effects were present in all groups, their maturity as project teams seems to be an important factor, here.

5. The Dolphin-Training sessions, as planned and facilitated by the consultant for the three respective project groups separately, also differed per group. The communication of theoretical concepts was quite equally distributed among groups, but the amount of effective training time deviated sharply. Experiencing the same theoretical luggage, the time available for the minimal-training group was only 60% of the time available for the maximum-training group. We conclude that, although the theoretical base was identical for all three groups, training and experiencing was unevenly distributed among the project groups.

6. The Dolphin-Training sessions were evaluated differently in the three project groups. The group that was most negative, was the minimal-training group. The other two project groups were positive in their evaluations.

7. The project group that was most positive about the Dialogue-Training session, was most negative about the Dolphin-Training session. This group hardly practised with Dialogue in between the training sessions.

8. The project group that was most negative about the Dialogue-Training session, was most positive about the Dolphin-Training session. This group spent several meetings in between the training sessions to actually focus on having a Dialogue within the group. We conclude that practising Dialogue between sessions did have a positive effect on the complex responsive processes of relating, as were shown in the Dolphin-Training session.

9. Each project group developed its own characteristic learning path in mastering the new concepts. The observed learning curve is flat, which means the the different groups have to do a lot more exercising before Dialogue as the new mode of communication has become a basic routine in daily work practices.

8. Discussion

Culture creation is defined in this paper as a process of diffusing new ways of *thinking* - based on chaordic principles - throughout the company. The implication of applying those new concepts is not primarily to use a new technique of interaction or to use new behavioural roles. Rather it points towards a basic change of thinking. Hence, it is not a primary purpose that the involved people are going to *act* in a way the new concepts prescribe, but rather that they are going to *be* like the new concepts.

This study describes the culture interventions as they were executed by an American consultant. The purpose of it was to specify the 'Module of Intervention' (Dijkstra & Van Eijnatten, 1999) as accurate as possible. In the data gathering and analysis of this study we have tried to keep as close as possible to the practical situation. Therefore, we have used observation as our main method of data collecting.

On the basis of chaordic theory, which constitutes the Module of Justification, one can 'predict' or expect what effects will be the result of these 'cultural interventions'. After measuring the effects, one can empirically 'test' these expectations, and refine the theory. Because in action research the familiar methodological framework of independent and dependent variables is not applicable, we use an action model instead, which specifies why and how effects will appear. We want to know *why* (theoretical justification) and *how* (under which conditions, and by using which kind of implementation rules) the actual intervention is effective.

The interventions described in this paper, are just a sample from the whole change program. There have been more project groups involved over the course of the project. Also, the three project groups who were subject of this study, did receive additional trainings sessions. For this study, we have taken a meaningful sample out of the whole change program.

Apart from the planned interventions by the consultant, the following factors have been proved crucial in the process:

- *Commitment of the MT.* Numerous time and efforts are put into informing, updating and involving the MT of the company. To show the example is important as MT and middle management is seen as a crucial factor for expansion and success of the change process.

- *Well lived through.* More time than ever before - especially with the CMT - is spent on grasping the new concepts and on designing the change process.

- *Financially flourishing.* At the start of the change process in September 1999, the company was worrying about its financial position. But from the start of the year 2000, things changed completely, which has lead to probably the best (financial) year ever for the company. As for 2001, similar prospects are made. One could argue whether this wealthy position of the company contributes ("We have the time and the money now") or obstructs the change process ("We do well, why change?").

- *Merger of the mother company.* An unexpected merger and also the discontinuation of the intended merger have brought the members of the MT more closely together. The same can be said for the members of the CMT, and for the relation between MT and CMT.

For a systematic inquiry into the effects of the 'interventions' see Van Eijnatten et al. (2001). This research is assessing the effects of Dialogue on individual attitudes and personal initiative behaviour. Basically, it was set up as an evaluation study, carried out by the same authors. On the basis of observations and conversations with managers during some initial Dialogue sessions, existing behavioural patterns were identified. These served as an operational definition of the company's dominant culture at the start of the change project. Also, desired behavioural patterns were phrased on the basis of literature about a new point of view called Chaos. These served as an operational definition of the new culture. Finally, some items about personal initiatives were added. These three sets of behavioural patterns were used to develop a questionnaire that was administered three times over a period of one single year. Two groups of managers who were actually involved in the Dialogue training served as experimental groups, while two groups of employees who did not get any training served as control groups. Questionnaire data were analysed using statistical Q- and R-analyses, and the results were interpreted and tested against six hypotheses which were based on the theoretical framework. To add more context, open interviews were held with individual managers and employees of both the experimental and control groups.

Van Eijnatten et al. (2001) report in detail on the results of one experimental and one control group. The results indicate that for both the experimental and control group the old organisational mind - that was primarily based on control values - is fading away. At the same time a new organisational mind - based on chaordic values - develops in the experimental group as an effect of the intervention, but lacks to develop in the control group.

This study sheds some light on the efficacy of the use of Dialogue as a new mode of communication in creating holonic capacity, so that an enterprise is better able to thrive in Far-From-Equilibrium conditions.

The strategy of the Dolphin could serve as an attractor that might trigger the emergence of a new order in the Dutch manufacturing firm. It is expected that Dialogue as a new mode of communication will develop both individual and organisational thinking, and by doing so, will enhance the holonic capacity of the organisation as a whole to create novelty from within.

Notes

[1] 'Chaord®' and 'Chaordic®' are registered trademarks of the Chaordic Alliance, see World Wide Web: http://www.chaordic.com

[2] **A Glossary of Terms and Concepts Used in This Paper**

Carps, Sharks and Dolphins

Imagine the world as a big ocean with three types of fish in it: a Carp, a Shark and a Dolphin. They are very different because of the strategy they use. Of course, these fish are metaphors for *behavioural roles* within a n organisational setting.

The **Carp** is the bait of the ocean but this fish does everything it can to avoid pain or consequences. The way it does that is by hiding. Carps are very good at tuning in using subtle clues and they try very hard to do what is expected from them. But the problem is that this is a disguise, because they feel a lot of anger and rage beneath the surface. That rage can come out in rumours and gossip. Carps are very vague, they don't say it directly, but go around hoping that the other fish are going to understand. The Carp is a manipulative fish; they manipulate without telling and therefore avoid responsibility. The **Strategy of the Carp** can be described as avoiding and compromising.

The **Shark** seeks out the weak ones, often the Carps, and they avoid risks by killing them. Sharks are very narcissistic: they constantly need self-confirmation (*"I am good, the mirror."*). Sharks must be right. Even when they are wrong they keep on fighting claiming they are right. They have to keep their eyes open and they don't trust anybody. The **Strategy of the Shark** is defined as *"Win against any cost".* He survives by destroying of and winning against other fish.

The **Dolphin** is an alternative to a Sharp and a Carp. Dolphins break through commonly-held behavioural roles. Although Dolphins love to win, they don't need it, especially when that means that others have to lose. If someone chooses to lose, a Dolphin will keep on beating. The Dolphin is very clearly focused on what it wants. It can change its behaviour easily when it wants to accomplish something. In practice, the Dolphin constantly changes its behaviour and its view of the world. The **Strategy of the Dolphin** can be described as 'win-win'. It wants everyone to win, and a Dolphin is not afraid to retaliate. They do that so that you have an opportunity to change your behaviour. A Dolphin doesn't need to fulfill its Ego, and can admit faults. Dolphins travel in groups and they make no time for Carps; they ignore them. Dolphins take 100% responsibility for their behaviour. The Dolphin sees the world as reality, a place with enough to go around for everybody.

A Dolphin has four principles (Four-Fold Way):

1. *Be Present in the moment of now*: Be aware of where you are,
2. *Pay Attention*: What is beyond? What is really going on here? Details and meanings are important,
3. *Speak the Truth*: Truth as you see it. Do not leave things out, or add things. Be honest,
4. *Let Go*: Let go of your attachment to any particular outcome. Deal with whatever it is.

A Dolphin has three choices in a situation that is not what you want it to be:

1. *Go out*: Leave the situation,
2. *Change the situation*: Start a conversation in another context,
3. *Change yourself*: Change your way at how you look upon a certain situation,
   Suffer: This is the choice that Carps and Sharps would make, *not* a Dolphin.

Bermuda Drama Triangle

The dynamics of Sharks and Carps can occur in repeating patterns known as the **Bermuda Drama Triangle**. This model represents a situation that may occur when people are interacting without taking responsibility. The model shows the interdependencies between a *Persecutor*, a *Victim* and a *Rescuer*. A Persecutor can be seen as a Shark, while a Rescuer and Victim can both be seen as Carps. There is a distinction between Rescuing and Helping. Rescuing is assisting somebody who actually don't need it. Real helping is characterised by the fact that the other person can't do it, personally. When you play the role of Rescuer you make the assumption that the other person is not able to help him- or herself, successfully. While rescuing you look at the target person as a victim, convening the message that you are superior. Of course, this is not by intention, but that is the message. Victims are powerful because they are cared for, most of the time. Often, they will present themselves as victims deliberately, in order to get help. These three roles will reinforce

each other constantly, and can be seen as a powerful attractor from which it proved to be very difficult to escape. The dynamic of Dolphins will be able to successfully avoid the occurrence of any Bermuda Drama Triangle.
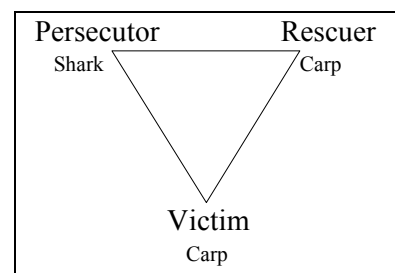
Elephants, Undiscussables, and Defensive Routines

An ***Elephant*** is a metaphor of a collective error in the group that nobody wants to see. The term is best explained by an example of family therapy. A family goes to therapy because of heavy quarrels. It appears that they are not talking about the alcoholic member of the family during therapy. The elephant is the alcoholism, and nobody wants to talk about it. Elephants are therefore ***Undiscussables*** for a group. These are general issues that should not be discussed, because that is very uncomfortable for one or more members of the group. There is also the danger of a ***Defensive Routine,*** a collective set of behaviours that prevents you from looking at the undiscussables. It is like a pattern, which holds you back from 'hitting the real issues'.
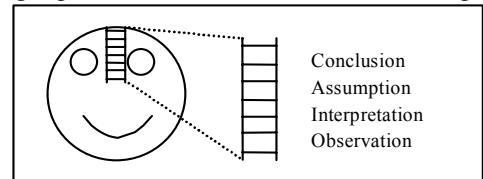
Collusion, Self-Censorship, and TOOT

Collusion is a secret unspoken agreement you have with somebody else ("I will not discuss that, if you don't discuss that"). ***Self-censorship*** is a particular thing or routine that stops you from asking the person what you want to ask, or which stops you from saying what you are thinking. ***TOOT*** or Time Out Of Time is a mechanism which can be used to systematically look back at what happened during a conversation.

Designated versus Emergent Leadership

Designated Leadership is best illustrated by the saying: *"The leader is at the top"*. However, our environment becomes more volatile and that is why a new way of leadership is immanent: ***Emergent Leadership***. In the midst of complex interactions someone will emerge as a leader. This form of leadership will emerge whenever it is felt a necessity by the people who are involved. The conditions under which Emergent Leadership will occur, are straightforward: Everyone should be able and willing to step forward to take responsibility.

Ladder of Abstraction

A technique to become aware of the judgements and the assumptions you make is the ***Ladder of Abstraction*** or inference (Argyris) It suggests that we create inferences about what we perceive in an instant, without noticing. The ladder is nothing more than a simple graphic model of our thought process, which includes the following four steps: Observation, interpretation, assumption, and conclusion. For example, you observe a colleague coming in 30 minutes after a meeting has started. That is your data. Your interpretation is that your colleague is late, and your judgement is that this behaviour is not acceptable. You make the assumption that he or she thinks the meeting is unimportant. You draw the conclusion your colleague is not a good team player. You may act on that conclusion by not

Conclusion
Assumption
Interpretation
Observation

Ladder of Abstraction

giving any responsibility to him or her, in the future. People can draw all sorts of different conclusions from the same data. BTW, the reason why the person was late, proved to be a traffic jam caused by an complex accident.

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Corresponding author: Frans M. van Eijnatten, Institute for Business Engineering and Technology Application (BETA), Eindhoven University of Technology (TU/e), Faculty of Technology Management (TM), Postal Address: Pav. U10-T&A, P.O. Box 513, 5600 MB Eindhoven, The Netherlands.