

# CULTURE AND THE THEORY OF CONSTRAINTS

Exploring cultural values and organisational design parameters



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## **Preface**

This research was originally designed to serve two purposes. Firstly to generate knowledge that contributes to the research question that is posed on page 2 and which is further specified in paragraph 2.5. Secondly to generate specific knowledge that contributes to improvement on the progress within the software development processes at the R&D departments of Lucent Technologies, Hilversum, the Netherlands. For this specific purpose the list of interview questions was extended considerably (see appendices B and C). The extended list would have been used to write a specific report for the research site. The relevance of the extended list for the research questions is, it made the respondents able to inform the researcher on the different aspects of their environment, such as software programs used, and practical elements the engineers and managers encountered when trying to make progress on projects.

Unfortunately a downsizing decision was made during my research (end of July 2001), in which all employees of the departments investigated were told that they were about to lose their job. Now, November 2001 the company which was full of life during my research, exists of beautiful empty offices, and only a small group of survivors. My research co-ordinator at Lucent Technologies, senior project-manager, M. Graaf, gave all the information needed to accustom to a technical group of people in a very short period of time. Without his support, this research wouldn't have been as informative as it is now.

I admit my research consists of 87 pages, but qualitative research requires precautionary measures to obtain more verified data relationships. I also admit that before this research was done, I presumed that qualitative research was easier to construct than quantitative research. That isn't the case at all, I know now. However qualitative research has the important advantage of containing more concrete information than quantitative data, which is specifically an advantage in an explorative research as this.

I wrote the conclusions in chapter 5 with the intention to provide the reader with an overview of the research. The preliminary chapters substantiate these conclusions.

I would like to thank the person who was dearest to me during this research and throughout supported me in stressful situations that now and then occurred. I also would like to thank Rick for his work as a second researcher. Finally, I would like to thank my professor, prof.dr. E.H.J. Vaassen RA, for giving indications that helped form this research, and for reading the complete manuscript.

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## **Introduction**

A lot has been written about culture and organisational culture. Mergers among companies from different countries have increased the visible effects of culture on organisations and their performance. Clarity about how to use the factor culture to achieve the missions and goals of organisations, however, stays far behind.

The most important assumption for using the in the organisation embedded culture to achieve organisational goals, is the best practice fallacy. This fallacy states there is no such thing as a best operating system, a best organisational structure or a best business process. It depends on different factors, of which culture is one.

In order to lift organisational culture out of vague, broad discussion, I think it's important to provide managers with a method which (1) reaches the core problems that the company faces, which (2) uses the core elements of organisational culture, which (3) provides a deeper insight in the problems to all participants and which (4) uses the knowledge and creativity present in the company to provide solutions which are close to the company's present values and therefore more easily accepted.

Denison (2000) and Cameron (1999) provide practical frameworks aimed at managers to use culture. However these frameworks are complex and less direct than I think possible. Due to this complexity and distance, the frameworks are less powerful for managers to use. Johnson (1997, p 220) as a lot of authors, provides a checklist about organisational culture, but does not explain how to use the results from this checklist. Furthermore it addresses details which do not provide direct links to possible business problems, business processes and solutions.

This thesis tries to find out whether the Cultural Values Card Game approach can reach results at a simple and effective way. Rowe and Struck used this game in a research about media use in a software developing company. The Cultural Values Card Game approach will be applied to a management philosophy called the Theory of Constraints. Although implemented more widely the last years, research about the Theory of Constraints and its relationship with organisation culture can be found only very scarcely. The Theory of Constraints (TOC) mainly addresses factory businesses with machines as the most important production factor. However, most of the more recent literature on TOC also tries to provide insight into how this philosophy can be used in businesses where people are the most important production factor. Combining embedded organisational culture with the Theory of Constraints could therefore prove useful when applying TOC in specific environments.

The thesis thus addresses the following main research question:

What relationships between cultural values and TOC organisational design parameters can be found using the Values Card Game?

An intensive case study was chosen as the overall research method. The conducted information can be used as an impulse for further research on the main research question. It can also be used as a first step for further research on methods such as the Cultural Values Card Game, which can increase the actual management usage level of these sorts of methods. This may further define organisational culture.

The paper is constructed as follows: In chapter 1 provides a literature overview on the Theory of Constraints. At the end of the chapter four TOC organisational design parameters are chosen.

Then culture and organisational culture are discussed and the relationship with management and management change is explained in chapter 2. The end of chapter 2 states four further specified research questions, as well as logically related provisional assumptions constructed using information from chapter 1 and 2.

Chapter 3 discusses the methods and the case study that was used to obtain the information needed. From then on, the data analysis and case study results follow in chapter 4. Finally limitations and conclusions of the research are presented, as well as suggestions for future research.

## **1. The Theory of Constraints**

The last decade, businesses had to deal with a global competition trend. Due to the global competition, management issues as reduced cycle time, increased quality, reduced costs, reduced inventory and increasing sales and market share, have become more important to survive (Smith, 2000).

The Theory of Constraints (TOC) is a way to look at business processes to make them more productive according to their goals. Goldratt (1984) first developed this management philosophy in the eighties and since then, it has received more and more attention of managers.

First it was applied only to industrial processes where production was mechanical, but more recently, several companies tried to implement it within complex projects where humans are the most important production resource.

In this chapter we will look at the assumptions of the Theory of Constraints, the constraints that a company can face, TOC's view on inventory, multitasking, work-in-process, and measurements. We will define the parameters that will be used in this research.

The overview given here will provide the reader with enough information needed for understanding the choice of parameters. For further exploration of the Theory of Constraints however, I strongly recommend critical analysis of all the literature written about this subject, since it is a relatively new management philosophy.

It also has to be stated that the word 'overview' here was used for a special reason. Most of the authors mentioned in this chapter, are advocates of the Theory of Constraints. Smith, Kendall and Corbett are management consultants. Corbett however wrote his thesis on TOC when he was still at university. Goldratt of course, is a strong advocate of his own theory. Newbold developed the software program for critical chain, and also own the company that sells it. These occupations and interest could have biased the opinions of these authors. The scarce literature found on TOC, written by people without such affiliation is also used in this overview.



## 1.1 What is the Theory of Constraints?

As mentioned before, the Theory of Constraints (TOC) is a way to look at business processes to make them more productive according to their goals. It looks at the business by looking at its constraints. Most management introduction books mention the importance of information about constraints in a company in order to make good decisions (Smith, 2000). Every system must have at least one constraint in order not to have infinite profits (Noreen et al, 1995). To make optimal use of a company one has to exploit these constraints.

There are different kinds of constraints. First a company faces market constraints, which include demands of the market on the assortment, absorption capacity of the market, the influence of the price on the demand, and the chance to lose an order by not meeting a delivery-agreement (Chase, 1998). Newbold (1998) also refers to response time, the quality of a product, the features and options a company offers, and the image of the company. Second a company faces capacity constraints, among those the maximum orders a company can handle with its capacity to produce products. Third a company faces financial constraints. The amount of money a company can use to produce products is restricted, departments are therefore restricted by budgets and so on. The fourth set of constraints are resource constraints, for example the amount of raw material or specific human skill is restricted. The last type of constraints is policy constraints. The following statements can hint at policy constraints (Newbold, 1998):

- we can't sell below cost
- it makes no sense to hire someone if they won't even be half utilised
- everyone should have enough work on their desks to keep busy
- people who are overloaded with work are more valuable
- we won't start anything we don't intend to finish
- get rid of the buffers, they reflect that we will fail our intended deadline
- we just want employees to do what they're told
- follow the schedules exactly

## 1.2 The five step model

The Theory of Constraints is based on the following five-step model (E. Goldratt, 1984, p.301):

### Step 1 Identify the systems constraint or bottleneck

E.g. by counting the stock in front of each machine. The machine with the highest stock in front of it is likely to be the constraint or bottleneck (see also paragraph 1.3).

### Step 2 Decide how to exploit the bottlenecks

If a highly skilled programmer is the bottleneck, relieve him of answering the phone or cleaning his desk so he can spend more time on his primary job.

### Step 3 Subordinate everything else to the above decision

If in case of the programmer as the bottleneck, everyone should make sure he keeps productive, without needless build up of work-in-process in waiting for him.

### Step 4 Elevate the system's bottlenecks

If in case of the programmer, in the long run you could hire a second employee with the same skills

### Step 5 If in a previous step a bottleneck has been broken go back to step 1.

If also if the location of the constraint changes, for example because at another place in the trajectory a good technician suddenly quit and a new, poorly trained employee took over. Then at least temporarily this technician might become the bottleneck.

Smith (2000) made the following base line assumptions on the usage of these steps:

- a. There are a few bottlenecks (or key leverage points) in any interdependent system. They determine the overall performance of any organisation. These bottlenecks can be identified. A short explanation can be found in paragraph 1.3.
- b. Maximising the contribution margin (sales money, truly variable costs) per unit of the constraining resource will maximise the system's profit. Truly variable cost is identified as a cost with a direct linear relationship with volume. Besides the obvious raw materials, other truly variable costs can include sales commissions, packaging material and shipping costs, but not direct labour, with the exception of labour payment based on piece-rate production.
- c. The reality is that constraints or bottlenecks exist. Either manage them or they will manage the organisation and result in constant fire fighting.

- d. A logical connection can be made between constraints and their effects on the organisation (the firefights are the symptoms). Effect-cause-effect logic can be used to diagram the current environment and pinpoint a core problem, the underlying cause or place that causes the symptoms. This is the place where implementing a solution would result in the elimination of many or all of the symptoms the organisation is facing
- e. Focusing resource improvement (or simply measuring the efficiency of a non-constrained resource area) may result in some local area improvement but will not ensure that the overall performance of the organisation will improve. In many instances a local performance improvement can actually decrease the total organisation performance.
- f. All organisations have limited resources. Resources used to increase performance of the constraining resource will result in increased performance for the entire system thereby maximising the return on investment (ROI)
- g. Most constraints are not physical limitations but are limitations created because of the beliefs or policies about how to staff, supply, maintain and support the organisation. Our assumptions on how an area or group of people must be managed can create many obstacles or limitations. Discovering flawed assumptions supporting a belief or policy can uncover limits or restrictions artificially imposed on the constraint area. Policy or philosophy constraints are part of an organisation culture and are often unwritten. As such they are even more difficult for organisations to challenge and change
- h. Tackling policy and culture constraints is similar to slaughtering sacred cows. In order to tackle a universal belief, the logic of the negative effects of the behaviour supporting the sacred cow must be clearly shown and discovered by the people who must make and adopt the new. The Theory of Constraints 5-step model is the process for identifying what is relevant information for decision-making by creating a methodology that challenges the predicted results.

### **1.3 How to find a bottleneck or constraint in practice**

A bottleneck is defined as any resource whose capacity is less than the demand placed on it. A bottleneck can be for example a machine, scarce or highly skilled labour, or a specialised tool. A nonbottleneck is any resource whose capacity is greater than the demand placed on it. A non bottleneck, therefore should not be working constantly because it can produce more than is needed (Chase et al, 1998)

The symptoms of a bottleneck are: high stock in front of the bottleneck, a work pressure above 100 %, bottleneck parts that are missing at the assembly and the bottleneck gets special attention (due to the constant fire fighting) (Aertsen et al, 1996). In order to identify a bottleneck you could for example count the stock in front of every resource and look for any other symptoms mentioned. It's therefore better to identify a bottleneck by interviewing operators (Aertsen et al, 1996) than by interviewing higher level managers because the latter will not have a clue of the real inventory waiting to be processed. The symptoms are easier to identify when one deals with visible bottlenecks such as a machine with the lowest capacity. When one has to deal with invisible constraints such as policies, training and measurement, it becomes more difficult to identify them. These constraints however can cause a person to undertake an action that makes the company lose money (Kendall, 1998).

### **1.4 The Drum-Buffer-Rope Principle**

The Drum-Buffer-Rope principle (DBR) is one of the techniques that can visualise the systems constraints (see figure 1.1). Every production system needs some control points or points to control the flow of product through the system. The Theory of Constraints argues that the best place for control is at the bottleneck. This control point is called the drum, because it strikes the beat that the rest of the system (or those parts that it influences) uses to function. A buffer can be used in front of the bottleneck, to make sure the bottleneck always has something to work on. Because it is a bottleneck, its output determines the throughput of the system. Communicating back upstream to A, what D has produced so that A provides only that amount, is called the rope. It keeps inventory from building up. It can be formal (such as a schedule) or informal, such as daily discussion (Chase, 1998). Figure 1.1 shows a visual reproduction of the DBR.

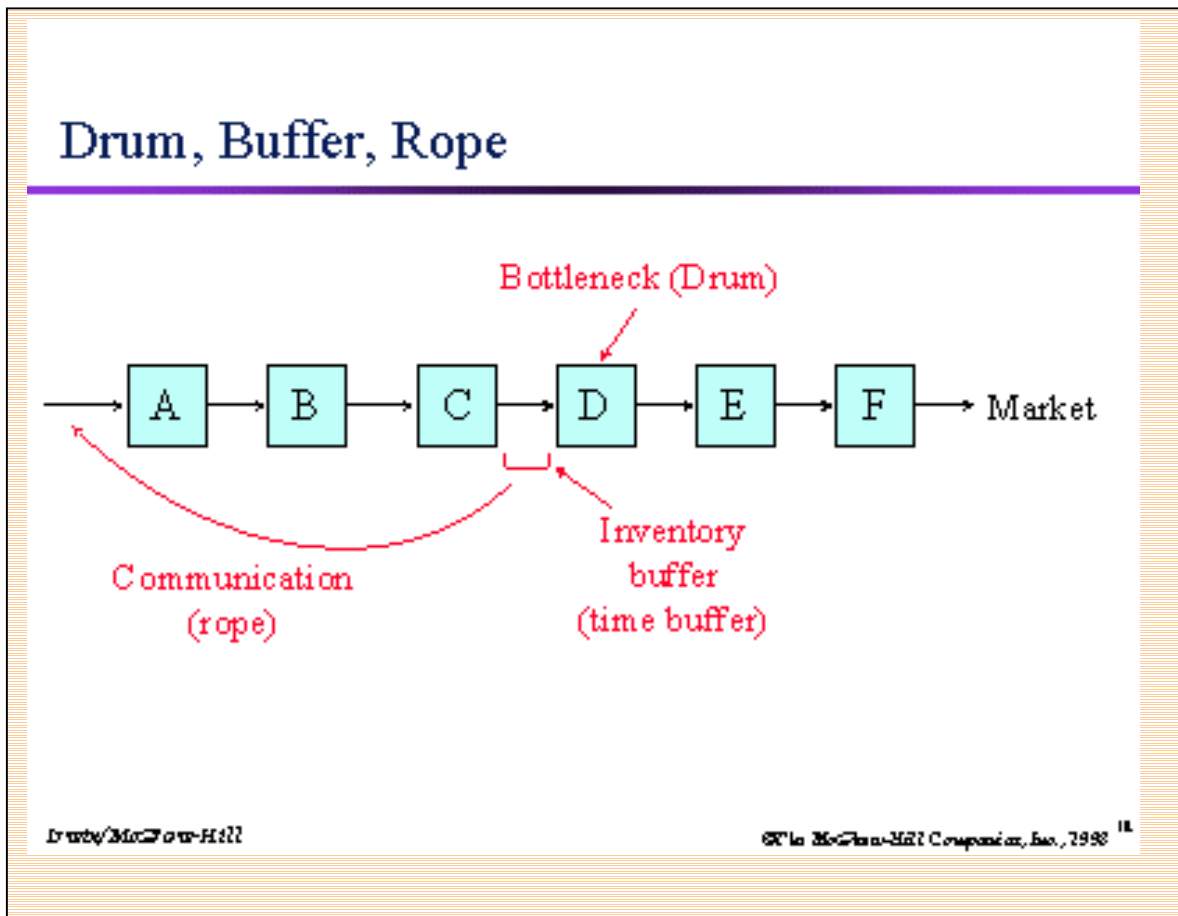


Figure 1.1

### 1.5 Inventory, multitasking and work-in-process (WIP)

Inventory has the function of reducing risk of not being able to produce. When a system is unbalanced, one can see high stacks of inventory in front of the buffer while the tasks that follow after the buffer suffer from starvation. The Just in Time (JIT) theory uses the identification of inventory and work-in-process as a cost to make their point of producing at the last minute in order to have as few costs as possible. It works towards a balanced production system. This however is theoretical. When one applies JIT directly to companies with an unbalanced production process, JIT can have disastrous results.

TOC assumes an unbalanced production process fixed on short term and from that point tries to find the best way to optimise the process within the given situation. In the longer run if the constraint still exists the system can be elevated, for example in the production process of a software development company, more people with a certain expertise or better tools can be purchased. This is the so-called step 4 of the five-step model. Often though, this step is not needed, due to better productivity use of the existing resources.

High work-in-process in some places in the production process is a signal that the production process may be unbalanced. Work-in-process is defined as work in a production-system waiting to be finished. Next to the fact that work-in-process (WIP) is a cost until the product has gained revenue, it has another negative impact on the production process: When we are not working with machines but with people, the people at the constrained resource get overloaded by the amount of work that they have to do, thus making the production process even longer, due to wrong priority setting. Secondly, high inventory of tasks to process often leads to multitasking, especially when different people ask the person to execute their task because it is “important”. In order to give everybody what they want, the employee is forced to execute two, three or even more tasks at one time. This makes every task last longer and increases cycle time of all two or three of the projects (Interview R. de Haan, department head of project-managers at Lucent Hilversum, May 2001).

In reality project managers seldom pay a lot of attention to work-in-process. Newbold (1998) mentions the following reasons:

1. WIP is hard to quantify in a meaningful way. E.g. work-in-process could be information (stored on paper or computer disk) which is not produced in measurable quantities.
2. Some tasks are ongoing which makes it hard to quantify WIP. E.g. training and education of an employee
3. Some tasks don't require a clear commitment to delivery date (such as answering a question of a colleague, or reviewing a program made by a colleague )
4. The negatives with high WIP as the one mentioned above are not well understood by project-management

The advantages of low work-in-process are the following:

1. It reduces cycle-time and thus allows to satisfy customers more quickly
2. Short lead times lead to reduction on changes or cancellation on projects, because customers have less time to change their mind
3. There is less confusion by using simpler schedules
4. The decrease in the stacks of papers to be sorted through, an increase of predictability of deliveries, and a reduced need for reliance on questionable forecasts.

Smith (2000) therefore mentions that having the least WIP inventory ensures the least cash outflow and the highest rate of on time delivery.

## 1.6 Productivity

Assuming throughput is quantified, TOC uses the following equation for productivity:

$$\text{Productivity} = \text{Throughput} / \text{Operating Expense}$$

Throughput: the rate at which the system generates money through sales.

Investment: all the money the system invests in purchasing items the system intends to sell.

Operating Expense: all the money the system spends in turning investment into throughput.

This is based on the fact that the operational goal of a firm is to increase throughput while reducing inventory and operating expense (Chase, 1998, p.794). Treating these three simultaneously and continually achieves the goal of making money (figure 1.2).

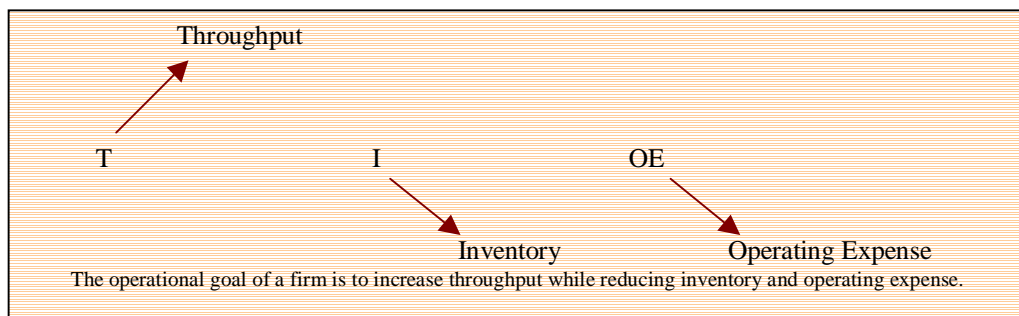


Figure 1.2

If a company has work-in-process and can use measurements that work with hidden individual buffers. That means for example that people who are asked to commit a duration for the task they are about to perform, bear in mind that something could go wrong, so they lengthen the duration they commit in order to be sure they can meet their deadline. Due to these individual buffers, productivity in the organisation can be lost due to the following hidden costs:

- Parkinson's Law (1957): "work expands so as to fill the time available for its completion"

- Set-up time that's needed when one has multiple tasks (and switches from one task to another)
- Using more people to perform tasks that have to be done sequentially costs time. The more a project is split up, the more communication and set-up time is needed (Brooks, 1995)
- The 'tomorrow' syndrome: there will always be work to do tomorrow, there will always be tomorrow in which to do work. The lack of real incentive to finish something quickly due to a pile of work.

Segmentation of tasks and multitasking are mentioned frequently in the Theory of Constraints' literature. Segmentation of tasks and projects causes a need for communication lines. Alignment of segmentation to the bottleneck can therefore enhance optimal use of the bottleneck. The Theory of Constraints uses reduction of multitasking to increase productivity. Reducing multitasking can also have implications for the segmentation of tasks done by people, due to the change of need for communication lines.

Goldratt (1997) used TOC as the background to develop the Critical Chain method. This is a method to increase productivity through optimal use of resources. Of course this is given the measurements and policies that a company uses. The critical chain is assumed to be that set of tasks, which determines overall project duration, taking into account both task and resource dependencies. There are several software programs for Critical Chain management, one of which is Concerto. This is the software program that the research site uses to make decisions about how to plan tasks and resources.

Using Critical Chain method can optimise productivity by actively involving resource dependencies in the project planning phase. When one plans resources with the Critical Chain method, the assumptions made by the critical chain is that one resource (or person) can be allocated to only one task at a time. Thus it avoids multitasking, at a minimum to the level of formal tasks which are described and recognised by the users themselves.

A further optimisation of the production system and hence increase of the productivity can possibly be achieved by looking at measurements, as is shown in the following paragraph.



## 1.7 Measurements

Several aspects of an organisation are important, if one wants to optimise a production system by looking at the measurements. In the Haystack Syndrome (1990) Goldratt repeatedly describes how behaviour is influenced by the way people are measured. Thus critically looking at the measurements can clarify why managers and employees make certain decisions even if those decisions do not benefit the production process.

Kendall (1998) mentions the following characteristics of bad measurements:

- Measurements that encourage local optimisation instead of global optimisation
- Measurements that do not encourage or even discourage a more effective overall organisation
- Management that has a focus on achieving absolute volume (local output) and on reducing costs rather than on effectiveness per dollar spent for the constraint of the company.
- Measurements that breed an attitude of maintaining the status quo and complacency rather than innovation and experimentation
- Measurements that do not encourage continuous improvement
- Automation is a bigger consideration in choosing measurement than improving the deeper cause-effect relationships.
- The measurements are mostly internally focused (e.g. not on the client)
- There is no or little accountability e.g., a department is measured on their budgets and training rather than looking at the correlation between the productivity and the training.

Good measurements are said to be those that have the following characteristics:

- They drive collaboration between functions to reach a global goal
- They focus toward meeting strategic objectives
- They have a simple impact on throughput (T)/Investment (I) and operating expense (OE).
- They drive continuous improvement
- They drive people to think about customer benefits and competitive advantage

Cost allocation can lead to local measurements. Noreen (1995) describes an example of a controller who confesses that in his opinion the constant push for local efficiency was wrongly taking the attention away from the goal of the organisation he was working for.

Newbold (1998) sums up the following reasons why local measurements should exist:

1. They allow individuals to evaluate how they are doing, relative to global objectives
2. They allow monitoring of project performance (and how that performance relates to the global objectives)
3. Provide performance feedback for job evaluation. Often some component of bonuses, salary, and/or awards is based on level of performance
4. Provide performance feedback for analysis of whom to promote. Of course, this is very different from routine job performance analysis

According to Corbett (1998) the big mistake here is that measuring local performances leads to optimal global performance. This is a mistake made by the cost accounting paradigm. TOC does exactly the opposite by tying local measurements back to global performance.

## **1.8 Specification of TOC parameters**

In this chapter we gave an overview of the Theory of Constraints and its vision on the production system, inventory, productivity and measurements. The following TOC parameters for organisational design can now be identified.

Firstly use of segmentation of tasks and communication lines, in the Drum-Buffer-Rope principle as well as the frequent mentioning of segmentation and communication lines in the literature written about TOC, make it a usable organisational design parameter for this research.

Secondly the role of multitasking due to high inventory when trying to increase progress on tasks, found paragraph 1.5 of this literary overview, together with the use of this principle in the Critical Chain method, justifies multitasking as an organisational design parameter.

Thirdly exhaustive use of Resource management to control the bottleneck (see paragraph 1.6), legitimates it as a parameter for organisational design of TOC in this research.

Finally in paragraph 1.7 measurements and the measurement system appear as an important factor when implementing the Theory of Constraints. This research will therefore use measurements and the measurement system as an organisational design parameter.

The next chapter will discuss organisational culture and further specify the research questions.

## **2 Culture**

Hofstede poetically defines culture as the “collective programming of spirits (=minds; *B.B.*) which separates the members of a group or a category of persons from others.” (Hofstede, 1994, p4).

Others such as Schein (1985) point out that “Culture is the way in which a group of people solves problems and reconciles dilemmas”.

Over and above that, culture is an enduring phenomenon. (Robey, 1994, pp. 23-37) Over a period of time useful behaviours, values and artefacts become institutionalised and incorporated as part of cultural traditions. (Herbig, 1994, p. 83)

### **2.1 Organisation culture**

The relationship between the culture and functioning of organisations on the social level has been a recurring theme in social sciences for over 50 years (Denison and Mishra, 1995). Organisational researchers have also addressed the relationship between culture and functioning (Ott, 1989).

Organisational culture is the shared values, beliefs, norms, expectations and assumptions that bind people and systems together. It gives people a sense of identity; facilitates commitment, initiative, communication; and provides a basis for stability, control and direction (Weiss, 1996)

Tichy (1982, p 63) defined organisational culture as the “normative glue” that holds an organisation together. Saffold (1988) further states that “organisational culture permeates organisational life in such a way as to influence every aspect of the organisation”

It has been suggested that culture effects such outcomes as productivity, performance, commitment, self-confidence, and ethical behaviour (Deal, 1982; Denison, 1984; Ouchi,

1981; Posner, 1985). Peterson and White (1992) posit that it is the employees perceptions of their work-culture and -climate that influence their motivation and thus leads to changes in the work environment that may result in increased employee satisfaction and productivity.

While organisations may develop a relatively homogenous culture, unique and divergent subcultures may evolve for different departments or subgroups within the organisation (Gregory, 1983). The culture of a group, according to Schein (1985), is a pattern of shared basic assumptions that the group learned as it solved its problems of external adaptation and internal integration, that has worked well enough to be considered valid and, therefore, to be taught to new members as the correct way to think, and feel in relation to those problems. From this definition Schein posits that nothing is culture unless it has some level of structural stability. This means that culture is not only shared, but deep and stable, less conscious and therefore less tangible and less visible. Achieving this deep and stable belief is what gives credence to culture. According to Smircich (1983) culture conveys to employees a sense of identity, facilitates the generation of commitment to something larger than the self, and enhances social system stability, as well as guiding and shaping behaviour.

The identification of sub-cultures in an organisation implies the ability to show the similarity of cultural values within a group of individuals (Hofstede, Neuijen, Ohayv & Sanders, 1990) Sub-culture qualifies a group. Even if members have slightly different cultural values inside the group, they are closer to each other than those of other groups. In this case study we cannot show that values are really shared, due to the properties of the case study Further explanation of these properties can be found in Chapter 3. However there is a difference between the corporate organisation culture and the culture as present at the research site. During the preliminary work, we discussed artefacts of the organisation plant with employees. Artefacts such as open workspaces and the need to pay for coffee in order to reduce costs, are examples of the visible corporate culture. The value of these corporate artefacts appeared not to be shared by the employees. Interviews uncovered that there was a much stronger sense of belonging to the research site than to the corporate company. This was exemplified by values ascribed to the research site. These values were not thought to be values of the corporate company. Further, when employees were asked to tell stories about the corporate company, miscommunication and long-distance between branch-offices were mentioned frequently. In order to get representative data overseas branch-offices are not included in the case study presented later on in this paper.

## 2.2 Values

Organisational culture is often defined in terms of shared meanings, patterns of beliefs, rituals, symbols, and myths that evolve over time, serving to reduce human variability and control and shape employee behaviour in organisations (Denison, 1990).

According to Katz and Kahn (1978) the three fundamental mechanisms for reducing variability and instability of social systems are (1) environmental pressures or task requirements in relation to needs (2) shared values and expectations (3) rule enforcement. The first and third mechanisms are essentially structural, although environmental pressures can be cultural as well. However, shared values and expectations reflect a cultural mechanism.

Rokeach (1973, p.5) describes a value as an “enduring belief that a specific mode or conduct or end-state of existence is personally or socially preferable to an opposite or converse mode of conduct or end state of existence”.

Richie (2000) goes even farther: “organisational culture maintains its influence over its members through the development of values acceptable to the organisation.”.

A distinction can be made between individual and organisational values. Individual values suggest the way individuals ought to behave (Ravlin & Meglino, 1987) just as organisational values suggest the way organisations expect their members to behave (Schein, 1985). As individuals adhere to and are rewarded by organisational expectations, they may find that they are unable to separate organisational expectations from their own expectations.

As group members begin to share a similar view of the organisation’s values, they also begin to maintain similar automatic processing of organisational information concerning important work-related events (Sylvester et al, 1999). This could possibly mean that more information needs to be distributed through the organisation, if perceptions on organisation values differ very widely. This is kept in mind during the research and will be discussed in the suggestions for further research. (However no hard judgements will be made in this investigation.)

A shared understanding of a behaviour-reward relationship allows group members to respond similarly to routine work demands, and this sense of shared meaning increases the effectiveness of worker interaction (Louis, 1980; Schein, 1985; Sathe, 1985). In the context of this research, this implies a natural structure of, for example a shared prioritisation of tasks (formal and non-formal tasks<sup>1</sup>) could be found, if there is a shared understanding of the

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<sup>1</sup> Formal tasks are technical project tasks that are identified by the company's HRM software program. Non-formal tasks are tasks such as meetings, reading e-mail and helping others, that employees are expected to do but

behaviour-reward relationship. It also further implies that people react according to the way they are measured, which was also mentioned in the chapter about the Theory of Constraints.

Chatman et al (1998) suggests that as individuals perceive more differences between each other, they tend to have less personal interaction. Organisations depend on member interaction for the efficient and effective operation of the work group. Therefore a similar view of an organisation's values is necessary for enabling the operations to become efficient and effective.

This research uses the Cultural Values Card Game, which is described in paragraph 3.6. The game filters values perceived by individual employees. Once the employee has identified the values he ascribes to his organisation, these values can be used in an interview to find out how the employee thinks they can be of influence on organisational design parameters. Of course a certain caution is needed when using a game to identify them. If the employee already knows what the subject of the interview is, his choice of values can be biased by this fact. The limitations of using the Cultural Values Card Game are further described in the chapter about methods. Limitations found during the investigation are discussed in the chapter with conclusions.

### **2.3 Organisational Change and Culture**

As mentioned in the previous chapter, there is a tendency towards globalisation. The use of the Internet has grown explosively and still is, communicating with others from all over the world is getting less and less expensive. Companies expand globally through mergers and acquisitions, and more often people in different countries work for the same corporate company. Besides, many management processes lose their effectiveness when cultural borders are crossed. This is due to the fallacy that there is one best way to manage a company and not taking into account the effects of national culture (Trompenaars, 1998, p5).

The topic of organisational change often presents two contradictory images. The first one, the "glue paradigm" is used as a compelling case for organisational culture being considered a central aspect of organisational change. This perspective typically introduces culture as a holistic concept to help managers conceptualise the organisational systems they have created, to understand the natural and social environments to which they are adapting,

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are not identified by the HRM software program.

and to see the link between individual behaviour and organisational contexts (Kotter,1992; Hofstede,1980; Schein, 1992).

The second image of culture presents culture as much less central to the change process. Culture is merely a “marginal” explanation for what has happened, one that we use when we don’t know the real answer or when we’ve already exhausted all the other important explanations (Abegglen, 1985; Treacy, 1995). To managers the marginal perspective inevitably means that culture is something that is “nice to have”, but clearly not a high priority. The academic literature has often helped support this viewpoint by focusing on issues of epistemology over substance and by expressing insights in a form that is not always useful to managers who are searching for leverage during the change process (Denison 1996; Brannen, 1999)

Business leaders, consultants, and academics have oftentimes seen that success doesn’t hinge on any one reward system, training program, or strategic plan. They now realise that true success stems from the comprehensive effects of an organisation’s culture and the rigorous, system wide implementation of strategic change (Jeuchter, 1998).

Such implementations target more than structures, policies and systems, more even than mission, set-values and goals. An exhaustive approach goes to the heart of an organisation; the attitudes, habits, and expectations of all individuals from the top management to the work floor. In order to make the implementation of a strategy work and provide sustainable performance, an organisation’s culture and people have to be fully prepared and aligned to support the strategic change.

Denison (2000) points out the following useful lessons when trying to make culture relevant to the change process:

- 1 To provide a leverage for organisational change, the insights of culture research must be presented in a form that makes sense to members of the organisation. The concepts and analytic strategies must be relevant to the narrow range of priorities of these members. They must be present in a style and form that they are as instrumental as they are. The rich scholarly literature may be very useful for generating insights, but it is often not so useful for expressing those insights in a way that leads to action.
- 2 Contemporary work on organisational culture has taken a somewhat cognitive orientation (Geertz, 1973; Weick 1979). This perspective focuses on the assumptions and beliefs held by organisational members and their expression through language and symbolic meaning. One interesting example of the influence of the cognitive

perspective among culture researchers can be drawn from Schein's well known model of the levels of organisational culture, presented in figure 2.1

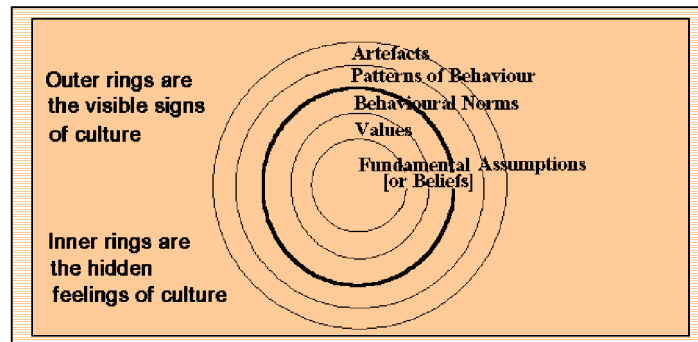


Figure 2.1 Layers of Culture by Denison, Rousseau (1990, figure 5.1, p158)

Schein's approach divides culture into three levels. This has influenced a generation of culture researchers to think in terms of distinct levels of culture: fundamental assumptions, values and artefacts. Though this model does in some ways present a systems perspective on culture that allows us to understand a set of interrelated concept, it has also tended to lead researchers to take the idea of 'levels of culture' a bit too seriously and often made it harder to see the linkage between levels. This approach also tended to emphasise the search for understanding at the cognitive level and to de-emphasise the more visible levels of culture. One example of the tight linkage between underlying assumptions, values and artefacts comes from Michael Rosen's article 'breakfast at Spiro's.' (Rosen, 1985). This article describes the annual party at a successful American advertising agency. The garish display of wealth, the lavish bonuses, and an opulent setting all build to a climax as aspiring junior partners are awarded the ultimate gift – a fine silk French-made *Hermes* men's necktie. The *Hermes* tie reveals that style and panache are as important as wealth and success – an important set of values that bind the firm together. The insights about the culture come not from the analytic distinction between the different levels, but in the realisation that assumption, values, and artefacts all fit together. Thus, the more powerful approach to take when trying to create organisational change is one that links underlying assumptions with values, behaviour and visible manifestations. It is also important to display a keen knowledge and regard for the visible manifestations of culture, in hopes that this will lead to a better understanding of the underlying values and assumptions that they represent. Reasoning back from the visible manifestations back to the



underlying assumptions creates far more leverage for organisational change than starting with the assumptions themselves.

- 3 The organisational culture literature has often argued strongly for the uniqueness of organisations and has been less comfortable with a comparative approach to research and action (Martin 1992; Denison 1996). For most managers the assertion that all organisations are unique undermines the importance of culture. Even if there are many aspects of organisational culture that cannot be compared, when the objective is to use culture as a lever for change, it is important to begin by focusing on aspects that can be compared. Schein's model helps to illustrate it can be quite difficult to make generalisations about organisational culture when dealing at the level of basic underlying assumptions or with visible manifestations such as artefacts. Many authors have argued persuasively however that organisations can be compared at the 'values' analysis. Perhaps the most interesting example of the power of using a comparative approach that focuses on values, has been the cross-cultural work of Hofstede and Trompenaars (Hofstede, 1980a; Trompenaars 1994). The approaches taken by Hofstede are well accepted in the field of international business and have had a significant impact on practising managers. Thus the lesson seems to be that a comparative approach to studying culture is not only viable, but that it is particularly valuable when the purpose is to motivate change.
- 4 Using culture as a key lever for organisational change requires a persuasive way to frame the problem for managers. It must address their legitimate concerns about the instrumental value of cultural change. Three approaches seem to help according to Denison (2000): First, making managers aware of the evidence that links culture and performance; second, helping them to understand the impacts, both positive and negative, that culture had on their own business and Third, discussing culture using language that makes sense to managers and can be quickly linked to their own behaviour.
- 5 Studying organisational cultures focuses attention on both meaning and survival. As the example of the 'Hermes tie' shows, symbols convey meaning about both integration and adaptation, often at the same time. Getting to know the symbols can increase the leverage for change. Denison (2000) states that 'Organisational change requires change in both the meaning system and the adaptation system and these changes are always expressed in terms of the symbols and language of the organisation..'. While these symbols may not be apparent to an outsider, members of

an organisation can translate the insights of an outsider into a system of symbols that has meaning in local organisational culture. This can also be a powerful source for change. To create change, it is also important to focus on the internal contradictions and paradoxes that exist in any organisation. All organisations face contradictory demands; speed and quality, global and local focus, individual and team rewards, and integrating the old and the new are just a few of the contradictions organisations face. Approaching the culture of an organisation through observation rather than measuring it was already emphasised by Mintzberg (Schein, 1996). Denison (2000) states observation is related in many ways with the rich set of trade-offs that an organisation has developed over time to help resolve basic underlying contradictions. First it helps to focus the discussion of the culture on an examination of the underlying contradictions and key trade-offs. Second, it helps to distinguish different subgroups and sub-cultures and the sources of conflict on key organisation issues. Third it helps to focus attention on how key-underlying contradictions can be re-conceptualised in the future.

The reason for pointing out these observational lessons is that, while organisational change is not possible without culture change, cultural issues are nonetheless frequently neglected during change process. All too often, good ideas that have been developed in the academic culture literature are not positioned in a way that follows the idea to contribute to understanding and managing the change process. Using these lessons can help to create the level of access necessary to influence the change process and allow for further learning in the future.

As a last remark Denison (2000a) states that “the depth of the analysis is critically important in any organisational change process.” The use of these lessons therefore relies on clinical insights that are a part of any successful organisational change process.

## **2.4 Cultural values and the Cultural Values Card Game**

The case study presented later on in this research uses the Cultural Values Card Game, which was used by Rowe & Struck (1999) at a company within the same branch. This paragraph will explain more about the specific cultural values and the research questions that arise from

combining the Cultural Values Card Game, with the organisational design parameters we abstracted from our study on constraint management.

Hofstede (1980, 1983) identified Power Distance, uncertainty avoidance, and Individualism versus collectivism and masculinity versus femininity as 4 dimensions of cultural values. This work is certainly one of the most well known pieces on culture and was used by Rowe & Struck as a starting point for their research on the analysis of cultural values. The two latter dimensions are very classical in organisation theory. They describe whether one is self- or group-orientated and whether the job is task- or relation-orientated.

The concept of uncertainty avoidance used by Hofstede has been severely criticised. Therefore Rowe & Struck use the concept of Flexibility. In addition to Flexibility they added a fifth dimension to cultural values corresponding to the willingness to take risks as opposed to being cautious (O'Reilly et al, 1991), that they called Entrepreneurship. They also tried to introduce a possible sixth value with the idea of innovation versus stability (Burns & Stalker, 1961). Though the dimensions of Entrepreneurship and innovation were somewhat correlated in their study, these dimensions could prove valuable when used to investigate the relationship between the practice of multitasking and cultural values, and the relationship between resource management and cultural values. The last dimension that was added, is called Reactivity. It describes a time orientation on decision making. Both dimensions used in the Cultural Values Card Game describe a way of reacting on and operating with tasks. Therefore it can provide interesting data for this case study. The seven categories of value-dimensions and the items used in the Cultural Values Card Game can be found in figure 2.2.

## **2.5 Research questions and justification of Values Card Game use**

In this research we want to investigate relationships that can be found between cultural values and TOC organisational design parameters. We want to investigate if the Cultural Values Card Game by Rowe & Struck can be used to conduct “interesting” perspectives when used in interviews. Interesting perspectives in this case means those perspectives, that can lead towards a better understanding of organisational culture and the Theory of Constraints management philosophy. Further interesting perspectives are also those perspectives able to offer possible solutions to specific problems faced by specific organisational change at the research site from a cultural point of view. Interesting perspectives are finally also those perspectives that imply further optimisation of the Cultural Values Card Game. Consequently, if most of the perspectives that emerge from the game are not interesting in

either case, it can be argued if the Values Card Game is a useful method for seeking relations between cultural values and organisational design parameters.

<b>Categories</b>	<b>Items logically positively related to the category</b>		<b>Items logically negatively related to the category</b>	
<b>REACTIVITY</b>	<b>Action</b> Preferring Action; acting quickly	<b>Speedy Decisionmaking</b> Being quick to take advantage of an opportunity which presents itself	<b>Reflecting</b> Not leaping in without thought	<b>Analysing</b> Analysing the situation before taking action
<b>ENTREPRENEURSHIP</b>	<b>Risk</b> Willing to take risks	<b>Daring</b> In order to succeed, you have to dare	<b>Caution</b> Being Careful and trying to minimise exposing to risk	<b>Foresight</b> Taking precautions to avoid unpleasant surprises
<b>INDIVIDUALISM</b>	<b>Individualism</b> Insisting on your own personality rather than adapting to the group	<b>Personal Objectives</b> Giving priority to personal goals	<b>Compromise</b> Seeking a compromise in the interest of the group	<b>Social Interaction</b> Being sociable and fitting with the group
<b>FLEXIBILITY</b>	<b>Flexibility</b> Being able to adapt the procedures to the situation	<b>Simplicity</b> Doing without ceremony and Formality	<b>Organisational Framework</b> A well thought out organisational framework ensures a good use of resources	<b>Rules and Procedures</b> Strictly respecting the rules and regulations avoids many problems
<b>INNOVATION</b>	<b>Innovation</b> Looking for progress and new ideas	<b>Change</b> Welcoming change favourably	<b>Continuity</b> Wishing to preserve what is as it has always worked	<b>Stability</b> Wishing to avoid ruptures and changes which can disturb the work process
<b>TASK ORIENTATION</b>	<b>Accomplishment</b> Working hard and achieving set targets is an essential source of well-being	<b>Recompenses</b> A financial award is favourable to an increase in leisure time	<b>Recognition</b> Valuing the contributions and the qualities of each individual and never ignoring the human factor	<b>Personal Dignity</b> Respecting the rights of the individual and their personal dignity
<b>POWER DISTANCE</b>	<b>Subordination</b> Conforming to the point of view of a superior in order to avoid conflict	<b>Differentials</b> Those who have more responsibilities have the right to certain advantages	<b>Conflict</b> Not avoiding conflicts with superiors in the hierarchy	<b>Equality</b> Everybody has the same rights without regard to their position

Fig. 2.2 Set of 28 cards describing cultural values

The organisational design parameters have been specified in chapter 1. It is very important to recognise that this research is an explorative study. Specifications of the research question posed in the introduction result in Q1, Q2, Q3 and Q4. However these are provisional, since little is known about the relationship between the Theory of Constraints and Organisational Culture. To make the specified research questions better manageable, provisional assumptions, that appear to be possible, have been made about the relationship between the TOC organisational design parameters and the Cultural Values Card categories. The final results are presented in Chapter 4.

Q1	What relationships can be found between multitasking and the cultural values used in the Values Card Game?
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Multitasking means executing more than one task at a time. Typical characteristics of multitasking are: Try to give everybody what they want (p. 6), extra setting up time due to switching from one task to another (p. 7) and the fact that people are used to change. Looking at these characteristics, the provisional assumptions are: (1) *High Reactivity* because changing from task to task implies action and less time to think about one single task; (2) *Low Individualism* since multitasking means giving everybody what they want and helping out others; (3) *High Flexibility* since one has to change from one routine to another; (4) *High innovation* since people are used to change in a multitask environment.

Multitasking is not per se associated with either high or low Entrepreneurship since different types of reasoning are possible. For example, multitasking is associated with high Entrepreneurship if it is a risk to stop performing your task since you might not get your first task done in time (accomplishment). The other way round is also possible: Multitasking is associated with low Entrepreneurship if it is a risk to keep performing your own task while this means your position as a group member comes at stake (Social Interaction).

Q2	What relationships can be found between the segmentation of projects/tasks and the cultural values used in the Values Card Game?
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The level of segmentation of projects or tasks means how much a project is split up into different parts performed by different people. Characteristics of segmentation are: (1) the higher the level of segmentation the more people are involved in the project. (2) A higher the level of segmentation increases the need for communication lines. (3) The Theory of Constraints poses that the level of segmentation should be aligned to the bottleneck to make the business perform optimally.

According to these characteristics the following provisional assumptions can be made: (1) High segmentation is associated with *low Reactivity*, since splitting up projects to different people means less room for action (communication lines have to be respected) and actions have to be analysed before they are executed, in order not to disturb the process. (2) High segmentation is associated with *low Entrepreneurship* splitting up a project also leaves less room to take risks and it gives people the opportunity to hide behind the rules to minimise risk. (3) High segmentation is associated with *low Individualism*, since the splitting up needs people to work like teams. (4) High segmentation is associated with *low Flexibility*, since routines and rules are necessary to make the next worker in line understand what the previous one has done. (5) High segmentation is associated with *low innovation* since it is more difficult to look for progress when you have the overview of only a small part of the project.

Q3    What relationships can be found between measurements/the measurement-system and the cultural values used in the Values Card Game?
---

Critically looking at the measurements can clarify why managers and employees make certain decisions even if those decisions do not benefit the production process (p.8) This sentence implies that people are assumed to act according to the way they are measured.

Paragraph 1.7 sums up the characteristics of good and bad measurements. Looking at the characteristics of *good measurements* provisional assumptions can be made: (1) Good measurements are associated with *low Reactivity*, they make people stop and think before they undertake an action. (2) Good measurements are associated with *low Individualism* since they drive collaboration between functions and people to reach a global goal. (3) Good measurements are associated with *high Flexibility* since they drive continuous improvement and have a simple impact on throughput, investment and operating expense. (4) Good measurements are associated with a *high level of innovation* since they drive continuous

improvement. (5) Good measurements are associated with *high Task Orientation* since none of the characteristics is directed towards the recognition of individuals and the characteristics focus on achieving certain sets of targets (throughput or global goal for instance). (6) Good measurements are associated with *low Power Distance* since they drive everybody to think about customer benefits and competitive advantage, thereby assuming that the point of view of each individual is equally important.

Looking at the characteristics of *bad measurements* the provisional assumptions are: (1) Bad measurements are associated with *high Reactivity*, action is preferred to analysing since local optimisations are easier generated than global optimisation and automation is a bigger consideration in choosing measurement than improving the deeper cause-effect relationships. (2) Bad measurements are associated with *low Entrepreneurship*, because they breed an attitude of keeping the status quo. (3) Bad measurements are associated with *low Flexibility* since they breed an attitude of maintaining the status quo. (4) Bad measurements are associated with *low innovation* because they do not encourage continuous improvement and create an attitude of complacency. (5) Bad measurements are associated with *low Task Orientation* because they include no or little accountability.

Q4    What relationships can be found between (human) resource management and the cultural values used in the Values Card Game?
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Next the characteristics of good (human) resource management are described according to the Theory of Constraints (see also paragraph 1.5). (1) Good resource management tries to balance the work in progress. (2) Good resource management prevents people at the constraint resource from getting overloaded with work. (3) Good human resource management takes into account that there some tasks don't have a clear commitment to delivery date (such as providing education to a trainee, or attending a meeting) but do take time.

These characteristics lead to the following provisional assumptions: (1) Good resource management is logically associated with *high Reactivity* since it tries to balance work in progress instead of putting new tasks in the production row, without analysing the situation. (2) Good resource management is logically associated with *low Entrepreneurship* since it tries to minimise risk by balancing the work in progress. (3) Good resource management is associated with *high Flexibility* because it is about adapting the workflow to the situation. (4)



Good resource management is associated with *high innovation* to create balanced work in progress and elevate the constraints. (5) Good resource management is associated with *low Task Orientation* because it takes into account that employees perform tasks that are not directly set towards achieving formal targets, but towards valuing the qualities of the individual and the personal rights.

As said before, this research uses the Cultural Values Card Game to gain insights into the relationship between TOC organisational parameters and cultural values. Denison has also developed an organisation culture-framework. This framework uses 4 main dimensions, which are further specified per dimension. Using a standardised survey, through all layers of the organisation can collect data for the model. The reasons for using the Values Card Game instead of Denison's model are: We think the model is quite complicated for managers to use (see appendix A) this can prohibit participants to gain a direct insight and therefore they might need a translator of the models into concrete problem solving. This being said it comes as no surprise to us that Denison himself owns a consulting company. Unnecessary complication of a model is in violation with the first useful lesson Denison (2000) states.

The model uses a standard survey. This is argued by Trompenaars (1998) and shown by the early research of Hofstede (1980a) national culture differs per country. People who fill out the survey will read it partly by inherently using their national culture as a background to give meaning to the words used in the survey. The survey may therefore be not applicable for use in countries where different meaning is assigned to some of the words used. A handicap of using a survey is that the different meanings do not come to the surface immediately. Therefore it's possible that conclusions drawn from the survey are not correct.

The model is not specified to go directly to the core problems that a company, that uses it, faces. Rather, first the relationships between the dimensions, as a result of the surveys, need to be identified.

We argue that the values perceived by members of the organisation can be quite different, due to their place in the organisation, but also due to an interpretation of the survey (this argument is fortified by the results from the interview case study). Different perspectives on the cultural values of the organisation are accumulated and can lead to a distort perception of "the real" perceived organisational values. In turn that too can lead to incorrect conclusions, although they may seem convincing and are partly echoed by many people of the organisation.

We further argue that Denison's model used together with a survey rather than interviews, does not utilise the large source of knowledge and creativity that can be used to provide solutions from inside the organisation. We mentioned this feature in the introduction of this thesis.

Due these reasons we decided not to use Denison's model for obtaining information about relationships between cultural values and the TOC organisational design parameters. The advantages and limiting disadvantages of the Cultural Values Card Game will be described in the results and conclusions of this paper.

The next chapter will provide the basic assumptions for this research, as well as an explanation of the methods used for the case study, and the Cultural Values Card Game.

### **3. Method**

#### **3.1 Basic assumptions**

This research is designed as an interpretative case study to generate qualitative data for analysis and interpretation. Interpretative research is considered to capture the ontological assumption, that the researched organisational structure elements are, for most part, socially constructed. This means, they are open to various interpretations by both actors and by researchers (Orlikowski & Baroudi, 1991). This assumption is consistent with the contemporary thinking about organisational structures. Although organisations have material properties and consist of real actions, socially constructed reality consists of social meanings that for the most part cannot be defined objectively or precisely. Accordingly the interpretative methodology was designed to draw subjective understandings from the stories told by organisational members. This epistemological approach is appropriate to the nature of the problem and the research question sought to address (Walsham, 1996).

Moreover, it is acknowledged that we provide our own interpretation of organisational realities and is therefore not value-free (Orlikowski & Baroudi, 1991). Generation of knowledge was initiated and we co-operated with organisational members in interviews (Deetz, 1996). Therefore our biases are stated, to the extent that we are aware of them. Our value perspective is coloured by education on Information Systems, Logistics Management, and Psychology courses taken, at the University of Amsterdam.

#### **3.2 Research Site**

The research was performed at the Research and Development site of Lucent Technologies in Hilversum, The Netherlands. The two departments used for this research, consisted of about 150 people, most of them engineers. Two years ago (1999) they started to use TOC to increase productivity. The organisation was explained by a project-manager using the following levels:

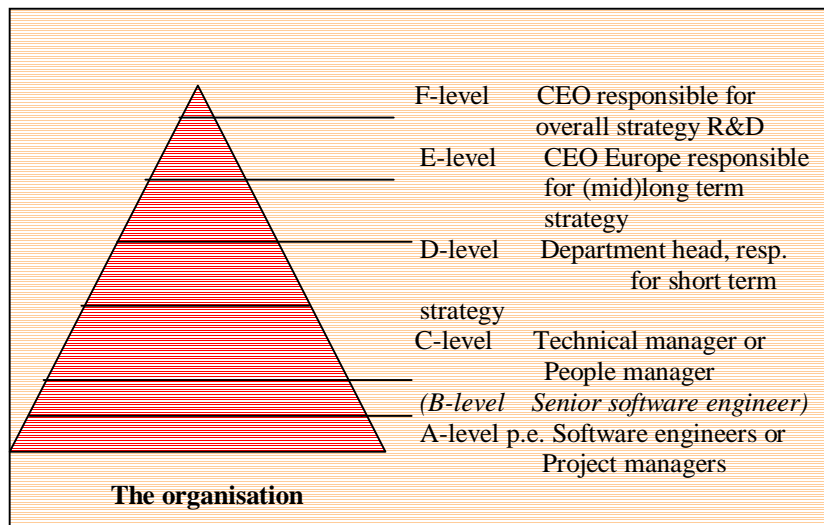


Figure 3.1

He said that there were more and higher levels ‘maybe even up to a Z-level’, but the levels mentioned in figure 3.1 are the most important levels when looking at R&D.

This research is directed towards and held among A-, (B-), C- and D-level employees. In order to obtain permission for doing the research, meetings were attended, interviews at D-level (and at the C-level for project-managers) were held in which a concept of the research was shown and the managers were asked about their views. After that, a more specified conceptualisation of the research was presented to all C- and D-level managers. Permission to perform this research was given by all C- and D-level managers. They asked their employees to co-operate in this research, as far as possible.

This, and the fact that people at the R&D departments are eagerly curious by nature, resulted in wide support from most employees for this research. Only a few people had no time to get involved. Of course the fact that everybody was very willing, is not a guarantee for a successful research. Therefore it was stated clearly to the participating employees, what the purpose the research served. That is, to contribute to the well-functioning of their research site. It was also stated that the provided information would not be handed over to their superiors. Rather an analysis of all the information would be provided. This helped prevent their answers to be influenced by fear of misuse of their information. The specific research questions were not stated, to prevent that the respondents would give answers they think would help the researcher with her university-research.

While in the midst of the data collection, something worth mentioning happened. Lucent’s overall strategy in lowering costs also hit R&D Europe and especially the

Netherlands. 900 people in the Netherlands were told that they would lose their job most likely by the beginning of September. All 150 employees of the departments researched got this message. To most of them this came as a shock; most employees had worked there for 15 years or more. For the research, this also had consequences. Employees that had co-operated before the reorganisation message had co-operated, keeping in mind that the research could contribute to the well functioning of their research site. This was the reason why they gave answers as close to their perception of 'the real situation' as possible. Now that the CEO gave the message that the whole site would be transferred to low-cost countries such as Poland and China, probabilities of getting unbiased information diminished. To be able to complete this research, we therefore stopped doing interviews immediately, and figured out the following strategy.

Since most employees had been working at Lucent for quite some time, it can be assumed they had little feeling with the labour market. This research was aimed at the worth of using the 'Cultural Values Card Game' when looking at the use of certain TOC-design-parameters. This made it possible to enthusiast people to co-operate in the research. In their digital newspaper an article was placed, related to cultural values and questions that might be asked when they applied for a job. It was stated that the interviews could possibly help them in forming clear answers to questions such as 'In what sort of cultural environment have I worked? In what sort of environment do I prefer to work? What did I do to get as close to the environment I prefer, in the environment I worked in?'" These questions together with the questions about the TOC-design-parameters created the environment in which people were motivated to give useful information. In-depth interviews were held with eleven people this way. To be able to use this information, a comparison was made between information before and after the 'reorganisation-message'. This is further explained in the paragraph about the data analysis.

### **3.3 Research Strategy**

The research strategy performed is that of an interpretative case study. The distinguishing Characteristic of a case study research is described by Yin (1994) as "an attempt to examine a contemporary phenomenon in its real-life context, especially when the boundaries between phenomenon and context are not clearly evident" (p. 59).

The case study performed was performed at both C-level, since the managers at that level were to implement the TOC principles, and the A/B-level, since the engineers would notice the work environment changes of the transition that took place. The table below shows the topics that were addressed in the interviews as well as the sizes of the sample and the populations.

<b>Interviews with</b>	
<p><b>Managers</b></p> <ul style="list-style-type: none"> <li>• C-level</li> <li>• Cultural Value Game</li> <li>• Personal data</li> <li>• Segmentation of tasks/projects</li> <li>• Resource management</li> <li>• Change in general</li> <li>• Measurements &amp; system</li> <li>• Sample of 8 managers</li> <li>• Population of 10 managers</li> </ul>	<p><b>Engineers</b></p> <ul style="list-style-type: none"> <li>• A/B-level</li> <li>• Cultural Value Game</li> <li>• Personal Data</li> <li>• Segmentation of tasks/projects</li> <li>• Resource management</li> <li>• Change in general</li> <li>• Multitasking</li> <li>• Sample of 10 engineers</li> <li>• Population of 125 engineers</li> </ul>

Table 3.1

More exactly the topics with engineers and managers consisted of:

- The Cultural Values Card Game
- Personal data
- Segmentation of projects/tasks and the relationship with the chosen cultural values
- Resource management and the relationship with the chosen cultural values
- Change in general and the relationship with the chosen cultural values

When looking at table 3.1 a few remarks have to be made:

1. Resource management at the research site was different for each department investigated. The first department used a classical style of resource management, using specialised teams, each with its own manager and with every engineer assigned to projects. The other department used resource management based on the TOC principles. This form of resource management was translated into a resource pool, consisting of one resource manager and a few specialists who were not assigned to projects, but remained free to perform a consultant role for the other engineers. Each form of resource management was

represented by about half of the sample of engineers. This revealed any differences or similarities in perception of resource management by both parts of the sample, thus making it possible to fortify a few conclusions. The two forms of resource management will return in the results and conclusions of this research.

2. The interviews at a management level also contained questions about, measurements, the measurement-system and the relationship with the chosen cultural values. The full topics list can be found in appendix B.
3. Since C-level managers told that they were measured by, and held accountable for the amount of multitasking and reducing multitasking in their teams, it was decided not to use that subject with the C-level managers to avoid positively biased answers, and also to keep an atmosphere of trust. That is, not giving the impression of spying for the D-level managers.
4. The interviews with engineers also contained questions about multitasking and the relationship with the chosen cultural values. The full topics list can be found in appendix C.
5. The careers of the engineers depended mainly on the score they got when measured by their superiors. It was therefore assumed that the answers they would give about measurements and the measurement system, would be directed towards their own personal interests and goals. It was decided not to use these questions to avoid biased answers.
6. The sample of engineers interviewed was chosen in the following way. Four types of tasks were selected, that occurred the most and also showed progress-problems when looking at the data. Next, people who had almost finished or just finished one of the four task types were asked to participate. One engineer per task type per department and one engineer per department who had done a lot of different types of tasks were used. This amounted to ten in-depth interviews with engineers from a total amount of 125 people the two departments covered. One department consisted of 60 people that fit the prescription of this research; the other department consisted of 65 people.

### **3.4 Data Collection**

In order to understand the organisation and how to study it, the following preparations were made. Firstly several meetings of the two departments were attended. Secondly, interviews were held with actors at a management level. Thirdly a special presentation was given for the

C-level, in order to explain to them what the purpose was in doing a research at their teams. On the advice of a department head, it was explained to the C-level managers how the organisation was viewed in this research. It was stated that a complex system of different factors influences the progress a software development project could make (fig 3.2).

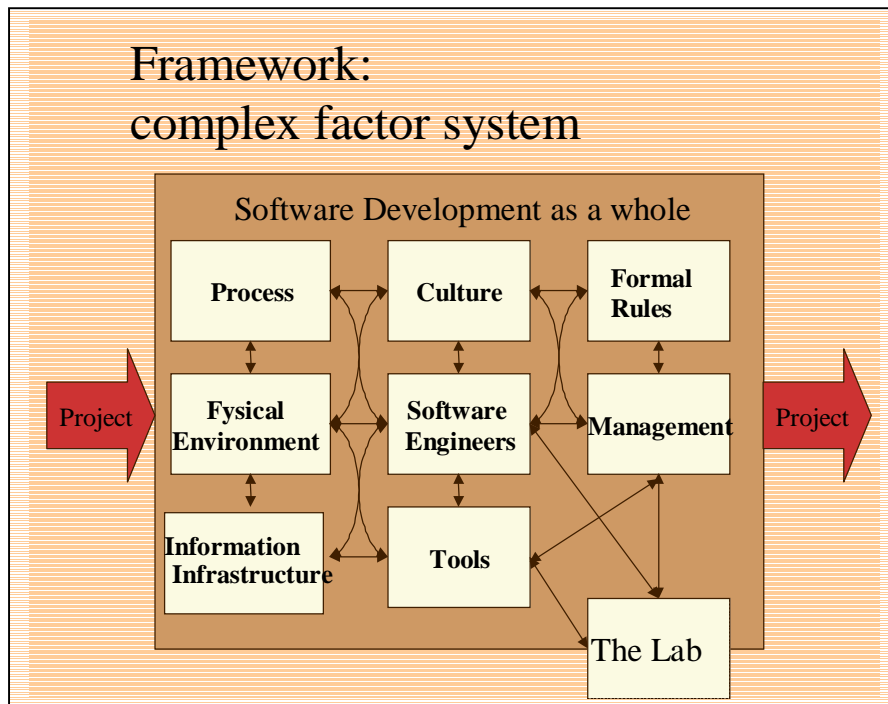


Figure 3.2

The preparation was necessary to appreciate the organisational context of Lucent Technologies. During the two months (from July to August 2001) in which all the interviews were conducted, time between interviews at the research site was used to wander around, have lunch there, read memo's and bulletins and work in an assigned office. This allowed the researcher to appreciate the professional jargon, the many abbreviations, and the local meanings of particular words. It was also an ideal way to observe organisational members in a variety of situations (staff meetings, informal encounters between co-workers, coffee breaks), and to experience at first hand some of the events mentioned during interviews. By maintaining a presence at the research site the trust needed to investigate more sensitive areas in subsequent interviews was developed. Except for one employee, who did want to do the interview but was too frustrated by the reorganisation decision the company had made, this method turned out to work as was hoped for. People asked voluntarily to participate in the research, and the interviews were satisfying for the research purposes.

### 3.5 Limitations of qualitative research



When performing qualitative research a variety of limitations can be acknowledged. The limitations acknowledged in this research are:

1. First the choice of respondents can negatively influence the quality of the collected information. The respondent can, whether on purpose or not, 'colour' the information in order to make the reality look more like he/she would like it to be. Also, important information could be left out if the interviewee fears that business or personal interests could be harmed.

In order to remove or decrease this quality problem, the interviewees were asked about both the existing situation and the desired situation. Furthermore answers of interviewees from the same department or interviewees who execute the same sort of tasks can be 'mirrored'. This makes it possible to look for discrepancies to obtain a more subtle view on the presumed and expected relational patterns.

Concerning the quality problem, the fact that the perceptions of the respondents are central, could be addressed. The research is about their ideas, their views, and their feelings, norms and values. The reality of the interviewee is the central starting-point. This implies that the information provided by the respondents will be put forward as a 'fact'. Reading the memo's and bulletins and being present at the research site further completed the image forming of the information collected.

2. Second, there is the issue on how valid the answers of the interviewees and respondents are. It's possible that the asked questions are pleurae-interpretable to the recipient. Also, within one organisation different answers to a question are possible. To what degree is the function or role of the recipient co-determining for the answers to the questions?

In this research this validity problem can be reduced, by striving for clear and non-ambiguous questions and by asking people if the interpretation of their answers was correct.

3. Third, problems can arise when analysing the obtained information. The analysis in this research is mainly concerned with relating collected information and data. Conscious or unconscious, certain information can be made explicit, that is, connected with the character and choice of the questions and used analysis. The interpretations of the researcher are therefore also subjective.

To reduce this problem, it was tried to make the researchers own implicit viewpoints explicit to the interviewees. During the interview the researcher tried to be as value

free as possible. By using the snowball effect, viewpoints of interviewees were integrated (of course interpreted by the researcher, this has to be acknowledged) in interviews that followed. This was done by asking the next interviewees in how far they thought a viewpoint (of a former participant) would be shared by other employees from the same department. In order to verify the abstractions from the interviews a member check was intended (Hutjes, 1996, p57), that is, respondents were allowed to make comments on writings on their interview, by submitting the writing by e-mail to the interviewees after the interviews.

4. Last, there is the problem of generalising the research results. Choosing a case study to perform this research implies that limitations to generalise the research results have to be acknowledged. In each phase there will be specific actor- and system-tied situations and circumstances. As mentioned by Hutjes (1996, p. 60) for the specific report written for Lucent Hilversum, this is not a problem, since that report is concentrated on an analysis of concrete situations. For the research on the usefulness of the methodology, drawing general conclusions should be done carefully. It also has to be realised that this research can only be seen as a first, intensive, but without doubt explorative research.

As stated before, the purpose of this research is not to generalise or make the conclusions for this organisation applicable to every organisation. Rather it is to provide a frame of mind for future empirical research about the relationships between TOC design-parameters, the cultural values an organisation faces and the unique situation the organisation is in. The methodology is called useful when it can obtain organisation specific knowledge that can lead to a better usage of the parameters and the circumstances a specific organisation is in.

### **3.6 The Cultural Values Card Game procedure**

The Cultural Values Card Game data was filed in an Excel sheet. It states who and how many times an item (for items and category-dimensions see figure 2.2) had been chosen as most or least applicable.

Each of the seven category-dimensions of cultural values was measured by four items. The selection process works with a forced Q-sort method with a balanced block design (Olson, 1968). This method makes participants sort statements into a forced-normal distribution. The

cards were dealt without a specific order. The selection process took the respondents about ten minutes. The selection method is described below.

The 28 ‘Value’ cards are shuffled and spread out on a table. The participants are then asked to divide the deck in two parts, one with “the cultural values most applicable to the organisation (Lucent Hilversum) with all its employees as it is observed by the participant” and one with “the cultural values least applicable to the organisation (Lucent Hilversum) with all its employees as it is observed by the participant”. Then the participant is again asked to divide each pack of 14 cards into one with “the cultural values most applicable to the organisation” and one with “the cultural values least applicable to the organisation”. Then, “the 3 cards most applicable to the organisation with all its employees” (envelope 6) had to be chosen from the pack with the 7 cards most applicable to the organisation. Finally “the 3 cards least applicable to the organisation with all its employees” (envelope 1) had to be chosen from the pack with the 7 cards least applicable to the organisation. The selection process is shown in figure 3.4.

The seven category-dimensions of the Cultural Values Card Game were added to the data in the Excel sheet. Scores were assigned to the item-cards and their envelope number. For items logically positively correlated to the value category-dimension the scores (0; 0.5; 1; 1.5; 2; 2.5) were assigned to envelope numbers (1; 2; 3; 4; 5; 6) respectively. Conversely for items logically negatively correlated the scores (2.5; 2; 1.5; 1; 0.5; 0) were assigned to envelope numbers (1; 2; 3; 4; 5; 6) respectively. The goal of this research was not to get quantitative statistical data. Rather it is to get an insight into the relationships of the Value Game data with answers and statements uttered in the interviews to explore how and if the Cultural Values Card Game method can be useful in showing relationships between cultural values and the chosen TOC parameters. The scores obtained by the game were therefore only used to support statements likely to be applicable or not applicable apparent to the participants. The conclusions and recommendations of this research will deal with the implications that statistical use of the Cultural Values Card Game could have for researching organisations.

To support the statements, mean scores for both items and value category-dimensions were calculated and added to the datasheet. The results of this research show these scores depicted in graphs.

The process of summarising the results of the cultural values data is visualised below.

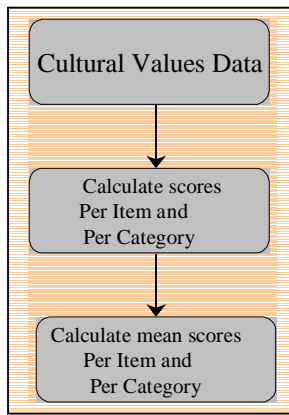


Figure 3.3

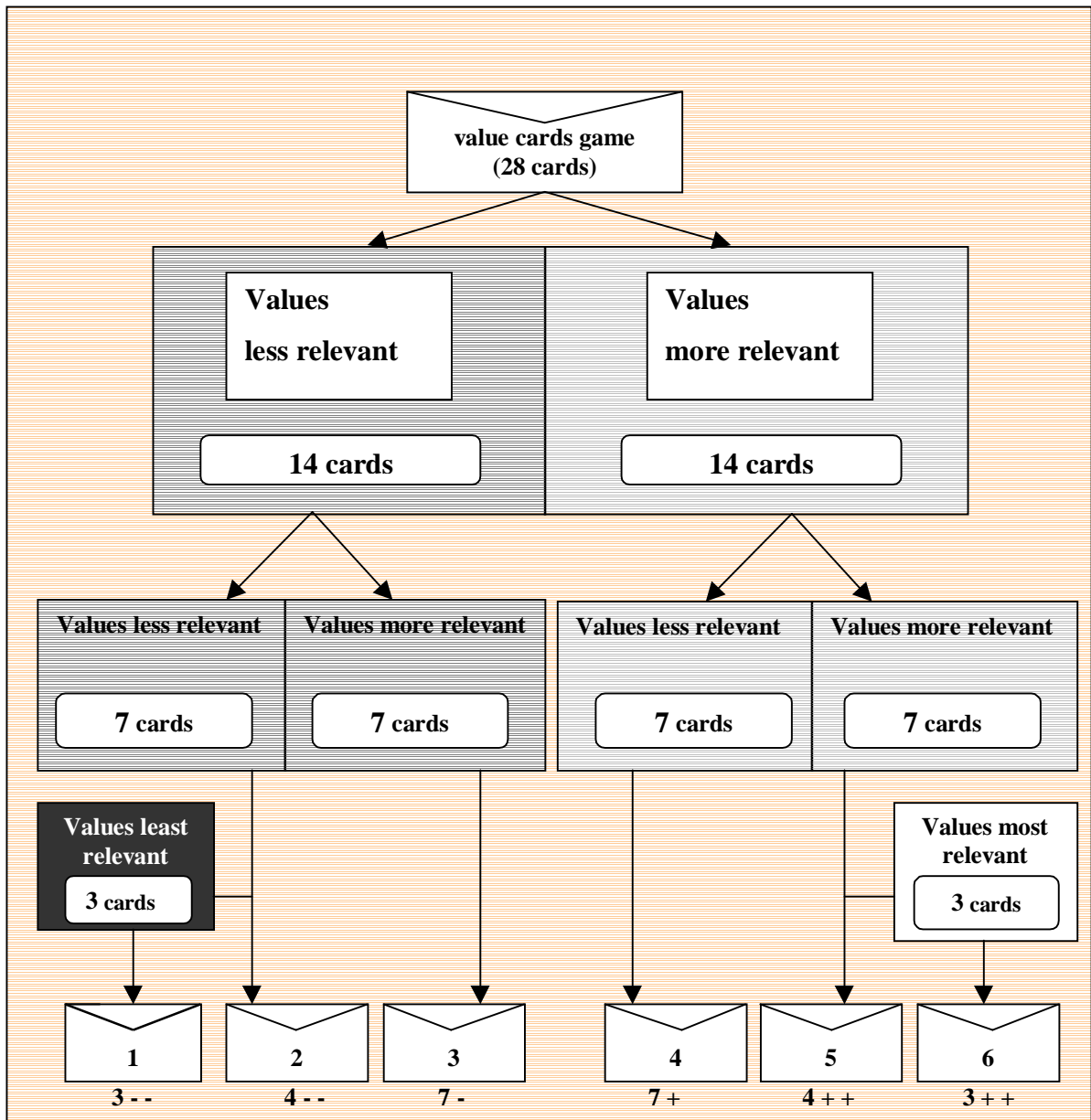


Figure 3.4 Values Card Game selection process

### 3.7 Data Analysis

In the interviews references were made towards real events. All collected stories however, were treated as interpretations of the respondents. In each of the steps described below, stories were treated as symbols of a socially constructed culture rather than objective properties of that culture. The approach was to look for similarities in the interpretations provided by the participants (Hutjes, 1996, p.62) as well as looking at and trying to find out the cause for extreme interpretations. This was done by asking questions specified about interpretations people gave. The method of critical cases (Hutjes, 1996, p.63) was used to make sure that the information received wasn't biased too much by the reorganisation- message. This means that, after excluding one interview because of frequently mentioned frustration by the respondent, the results of the Cultural Values Card Game before and after the 'reorganisation-message' were compared. The Cultural Values Card Game was chosen since the game gives clear statements about the organisation, and can be looked at in a nominal way. Overall, most of the results, both before and after the message, pointed in the same direction, that is either towards applicable or non-applicable to the organisation, whereas the company-situation in which the interviews were held was different. Therefore it can be assumed that the reorganisation-message did not bias the research negatively, as far as the Card Game is concerned. There was a consistent connection between the questions during the interview and the items chosen in the Cultural Values Card Game. Therefore, it will be assumed that the intention of respondents during the game was the same as during the interviews. The diagrams used for this assumption are presented in chapter 4.

For internal validity member checks were used. Participants were asked about statements of former participants. They were asked about a statement and what percentage of their colleagues would agree with the statement, in degrees of never (0% of their colleagues), seldom (10%), now and then (25%), regularly (50%), often (75%), most of the time (90%) and always (100%).

Reliability is the rate in which an observation remains stable at different measurements. In order to obtain a reasonable reliability, Yin (1984) advises to state the procedures used explicitly and to systemise them. This makes it possible for other researchers to follow the steps in collecting the 'evidence' and its use in the final 'argumentation' (Hutjes, 1996, p.59). Therefore the data analysis method is stated in the next alinea.

For the reliability of this research explicit data files were made in Excel, about the interviews and about the Cultural Values Card Game, as was already stated in the previous

paragraph. First the data of the interviews was ordered according to the topics spoken about. For every person, it was stated if the conversation on the topic was held before or after the reorganisation-message. Then answers to questions about the ‘Cultural Values Card Game’ were grouped towards the 28 items that were in the game. After that the value category was added for every answer. Figure 3.5 depicts how the data of the interviews is grouped.

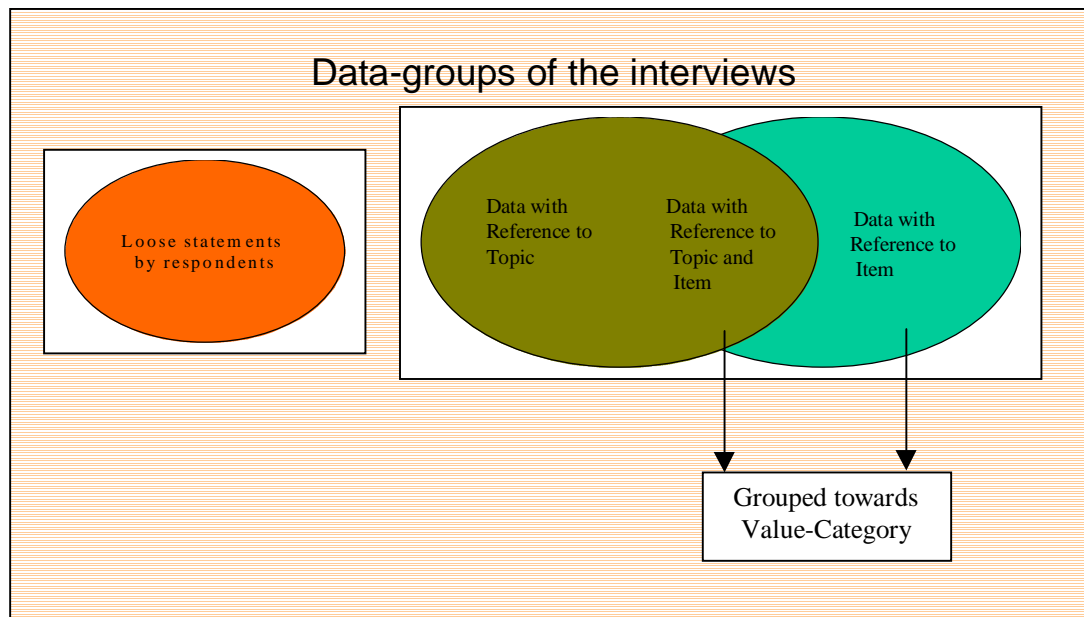


Figure 3.5

After that, all data was reviewed and, if necessary, added to another group of topics or items. To be certain the data was correctly grouped, two objective colleague researchers checked it. One researcher is in the last year of his study in Economics, and has followed courses about organisation structures. The other researcher is in the last year of his study Information Technology, and has followed courses about technical environments in specific. Adjustments were made where at least two out of three researchers thought it was appropriate.

After the first data grouping based solely on the describing of items without personal interpretation, the primary researcher and one of the colleague researchers performed the rest of the data grouping individually. This method was chosen based on the method of double coding, which makes two or more people code the data to see in how far they resemble each other. Double coding can be used as a control method on the reliability of the coding. In this research not only coding will take place by one other researcher, but also the outcomes (relationships) to which the other way of coding leads.

Both researchers used different methods of grouping the data. The first reason to do this was to see if there were similarities in outcomes between the two forms of grouping and

analysing. Similarities can fortify the conclusions about these groups. The second reason to do this was to make possible relationships that the first method might not show, visible.

The primary researcher used the method of grouping in heuristic classes, which is also advised by the traditional qualitative researcher Spradley (1979). This means that statements were grouped according to semantic relation (s) (see figure 3.6).

	<b>Semantic Relationships Used</b>	<b>Form of the statement</b>	<b>Example</b>
Describing	Classification	X is a type of Y	Entrepreneurship is a type of Value Category
	Hierarchy	X is a part of Y	task A is part of a project
	Cohesion	X is related to Y	Resource pools are related to Broader knowledge
Explanatory	Causality	X causes Y	Collectivism makes people help others
	Functionality	X is important for Y	Courses are important to gain knowledge

Figure 3.6

After this the research questions from paragraph 2.5 were revisited and questions based on the groupings and the research questions were formed. From the results possible relationships between Value Card Items and the TOC organisational design parameters were deduced.

The colleague researcher who studies Information Technology used the gathered data as an explicit starting point. This alternative finds its root at the ideas of *the discovery of grounded theory* by Glaser and Straus (1967). The statements were all individually analysed and the researcher chose to make groups of the data within each of the data groups shown in figure 3.5. The formed groups show similarities that repeatedly occurred in the statements told by different people. Similar statements made by one person were grouped and counted as one statement. After these groups were formed, he compared groups to look for relationships. He compared the Data referring to topics with the Data referring to topics and items, and with the Data referring to items. He also compared Data referring to topics and items with Data referring to items (see figure 3.7 for a simplified visualisation of the procedure). In box 3.1 the other researcher states his full procedure and problems he faced.

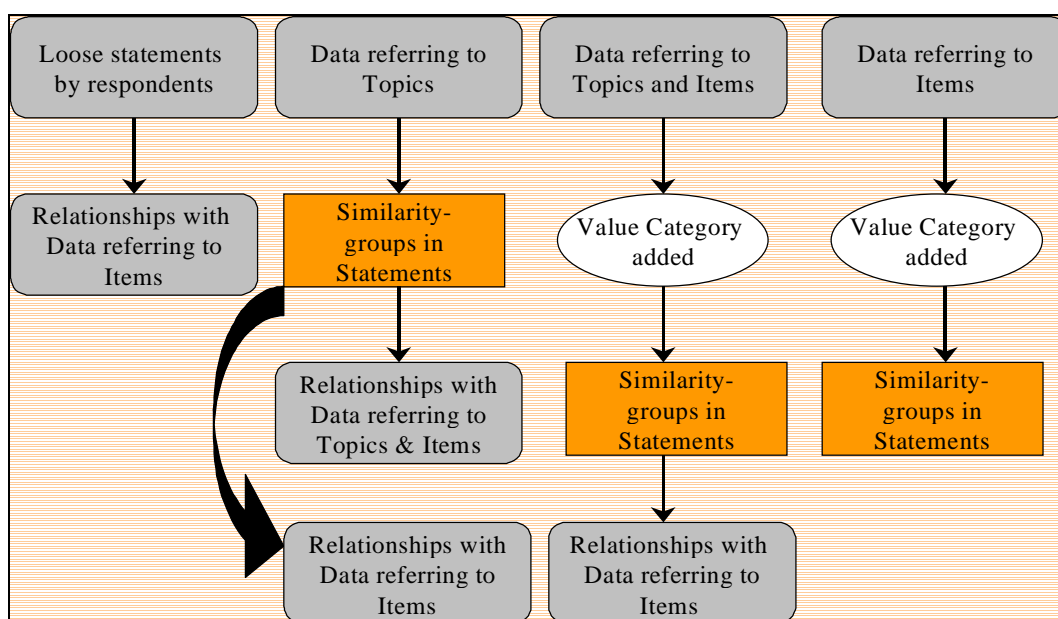


Figure 3.7

### ***Method***

The secondary researcher not has experienced the research site and participants, and does not have a complete picture of the context of the interview. This ensures that the conclusions of the secondary analysis will be independent of those drawn by the primary researcher, but this also implies that a different strategy is to be followed in the analysis.

This strategy differs in that, (1) the analysis is conducted without taking the research questions into account, as was done by the primary researcher, and (2) the method of analysis is based on interpretation and comparison of the structured data rather than understanding and reasoning about the data in its context.

The main idea behind the method is that a group of similar statements can be classified according to some common semantic element. All statements on the data can be grouped this way, into more general statements. These statements may be used as a summary of the data and by comparing these statements, relations can be discerned that may not be obvious in the data itself.

This method is applied to each of the data groups collected by the primary researcher: loose statements, Data referring to Topics, Data referring to Topics and Items and Data referring to Items. Statements within each group are first compared and classified, resulting in a set of new, generalising statements. To do this, combinations of statements are compared in a structured way. The categorisation of the data by Topic and Item is essentially ignored, although in some cases this categorisation was considered in order to be able to interpret the statement. Also, statements between topics or between items are typically not related, allowing the researcher, with some precaution, to skip combinations.



The Loose Statements data set, although containing some similarities, could not be categorised because the context of these statements is very wide; that is, subjects are almost unrelated. Either a large number of classes would result, or each classification would be so abstract that it would be without meaning. These statements have not been compared directly with those in the other data groups. Instead, these and the Statements referring to Topics have been compared to the results of the Values Card Game.

Also, Statements referring to Items only are difficult to categorise because they have been collected as comments on the interviewee's choice of Items. These statements are hard to categorise under a different semantic context than that which is already given: the Values Card Game item. This given categorisation will be used to compare statements from this data group with generalising statements from the other data groups. Since the data in this data group cannot be captured in generalising statements, it will be categorised by cultural context; that is, what part of culture or what part of the organisation they refer to. From this classification, we may find additional clues to where the cause of problems lies and phenomena found in statements and generalisations from other data groups.

### Box 3.1 Procedure secondary researcher

Afterwards both researchers discussed and compared their coding-process and outcomes with each other. A diagram of the data analysis as a whole is presented in appendix D.

It has to be recognised, although the method consists of orderly steps taken to reduce the data to the relevant themes, the approach is essentially interpretative rather than positivist. The results will be presented and discussed in the next chapter based on the analysed data and the results of the Cultural Values Card Game.

## **4 Results and Discussion**

The previous chapters investigated different aspects of a presumed relationship between the chosen TOC Organisational Design Parameters and the values of the Cultural Values Card Game. Chapter one showed a summary of the different aspects written about the Theory of Constraints. The Theory of Constraints philosophy combined with a scientific orientation on Organisational Culture appeared to be a merely unexplored research-field. Though many articles can be found about the Theory of Constraints and cultural change, nearly all of them stay on the surface and forsake to acknowledge the complex categories Cultural Values are composed of.

In this Chapter the results of the interviews will be summarised and compared with the results of the Cultural Value Game data. Although the case study at the research site can only be explorative and descriptive, it is useful to examine which provisional assumptions from paragraph 2.5 can be related to the results. The examination leads to a previously non-described relationship between Cultural Values and the TOC Organisational Design Parameters. Paragraph 4.1 presents the results of the Cultural Values Card Game. Paragraph 4.2 presents the results of the in-depth interviews and the relationship with the results of the cultural values card game. Final conclusions, limitations of this research and suggestions for further research are presented in chapter 5.

### **4.1 Results of the Cultural Values Card Game**

As mentioned before, the goal of this research is not to provide quantitative statistical data. However the method Rowe and Struck used to quantify the data they collected will also be used in this paragraph. The argument that justifies the use of this method is, that adding scores to the data provides a deeper understanding of which elements the participants chose, and in how far they agreed with each other on items being more or less relevant.

The results provide mean scores “before” and “after” the reorganisation-message and the overall mean score. Furthermore if the cards would have been randomly picked, the random-mean score per item would be  $1,25 (7/28*1 + 7/28*1,5 + 4/28*0,5 + 4/28*2 + 3/28*0 + 3/28*2,5)$ . This score was used as the y-axis in the diagrams of this chapter to show how

much each of the items differs from that mean score. The highest and lowest scores to obtain in the game were 2,5 and 0 respectively. Although we worked with a population of 150 people and only had a sample of 18 participants, the majority of the results pointed in the same direction. Some scores are quite close to the mean of 1,25 while others differ significantly. Mean scores ‘before’ and ‘after’ mainly pointed in the same direction, though sometimes a bit more or less extreme than the sample ‘before’ the message. Items will be regarded as more likely to be true than others if they have (1) a mean score that differs more than 10 percent from the random-mean of 1,25, which means they have to be lower than 1 or higher than 1,5 and have (2) mean scores ‘before’ and ‘after’ that point in the same direction from the random-mean

The results yielded by the Cultural Values Game are presented not only in the seven categories mentioned in figure 2.2 but are also presented item for item. This because (1) It is in our interest to obtain information that can provide interesting relationships with regard to Cultural Values, the Theory of Constraints parameters and the Cultural Values Card Game, which can be done more accurately if the individual items are also studied; (2) Some categories appeared to be quite near to the random-mean (see category Entrepreneurship) but when the mean scores were conducted for the items individually it became obvious that items positively related with the category and items negatively related with the category, neutralised the category mean score.

Next the graphics will be depicted. Remarks were added where necessary. At the end of the chapter the remarks are summarised in tables.

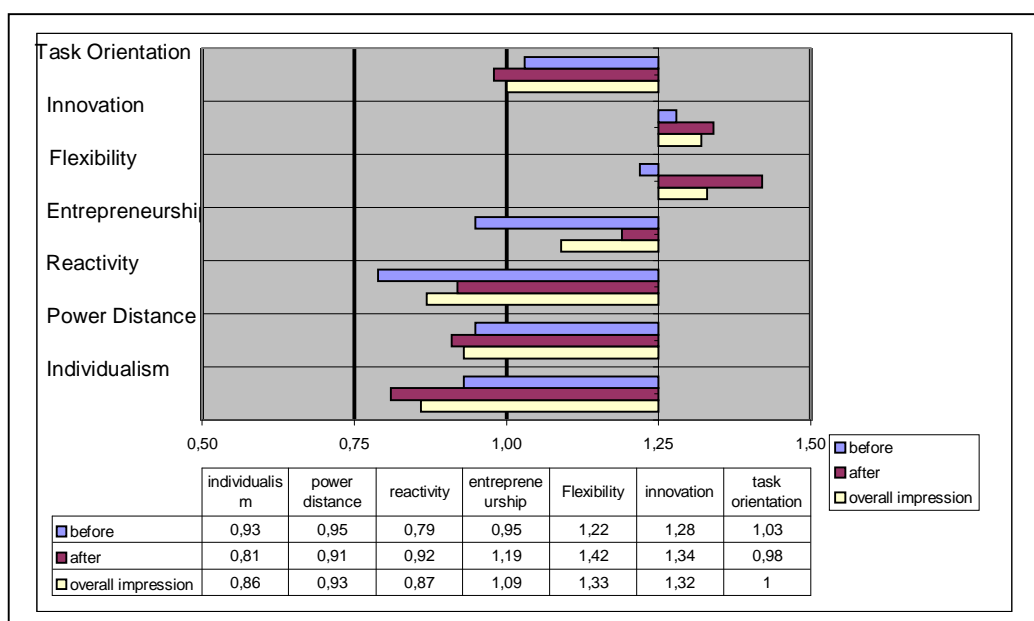


Figure 4.1

The Diagram in figure 4.1 depicts the categories and their mean scores with respect to the random-mean score. The graph shows that Innovation, Flexibility and Entrepreneurship are within the 10 percent boundaries. They can therefore not be regarded as more likely to be true than other categories. Task Orientation although after the reorganisation message slightly lower than 1 is within the boundaries with its' before and overall score and can therefore also not be regarded as more likely true than other categories. The other three categories, Reactivity, Power Distance and Individualism are lower than 1, and have scores that point in the same direction. This means that the sample of interviewees agree in their opinion that Reactivity, Power Distance and Individualism are less applicable to their organisation with its employees than the other categories.

The next graphs show the results of the categories individually and a reaction is given about the assumptions made in paragraph 2.5

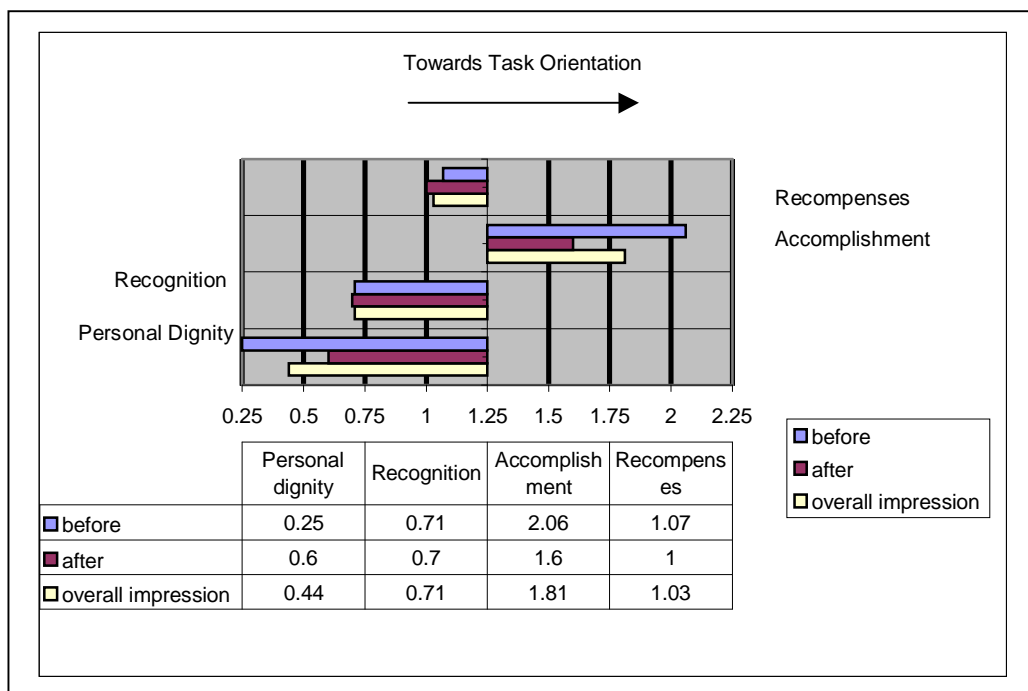


Figure 4.2

Figure 4.2 shows that the results of Personal Dignity, Recognition and Accomplishment Are either below 1 or higher than 1,5. Personal Dignity and Recognition are both negatively related to the category, whereas Accomplishment and Recompenses are positively related to the category. To clarify this the negatively related value item-labels are

shown on the left side and the positively related item-labels are shown on the right side of the graph.

Personal Dignity and Recognition are regarded as applicable to the organisation, though Personal Dignity shows a backsliding after the reorganisation. Accomplishments also fall back after the reorganisation, but can still be regarded as applicable since its scores are higher than 1,5.

One logical explanation for the backsliding could be that people felt they lost a bit of their respect and had less motivation to accomplish things after the reorganisation message. Another explanation could be that the sample was relatively small. This last explanation is an explanation that is valid for all other items as well.

With the four parameters in paragraph 2.5 also a few provisional assumptions were made about the parameters and their relationship to the categories.

Good measurements (in general and measurements that make TOC function in specific) are associated with a high Task Orientation since none of the characteristics of good measurements is directed towards the recognition of individuals and the characteristics of the measurements focus on achieving certain sets of targets (throughput or global goal for instance). This sample has a significantly higher score for Accomplishments than for Recompenses (in fact, later on it is said that the engineers prefer free time to more salary). This is an advantage to TOC since it is in line with the TOC way to measure focused on achieving certain targets.

This sample also has a score lower than 1 for both Recognition and Personal Dignity. This may be a disadvantage to the measurements TOC would like to see. In an environment where personal dignity is important there are bound to be some measurements directed towards Recognition of people. If the environment is also based on Personal Dignity and Recognition, those measurements might become one of the more inherent or “obvious” measurements.

Good resource management (according to TOC) is provisionally associated with low Task Orientation because it takes into account that employees also perform tasks that are not directly set towards achieving formal targets, but towards valuing the qualities of the individual and the personal rights. TOC sees it as the task of the resource manager to find (and or make) the equilibrium between formal targets and tasks and non-formal tasks. The scores of Recognition and Personal Dignity imply that an average manager at the research site

would be able to acknowledge the non-formal tasks. Resource management is therefore enabled by these two items in this case. It has to be recognised of course that low Task Orientation is only one of the many aspects that implies good resource management.

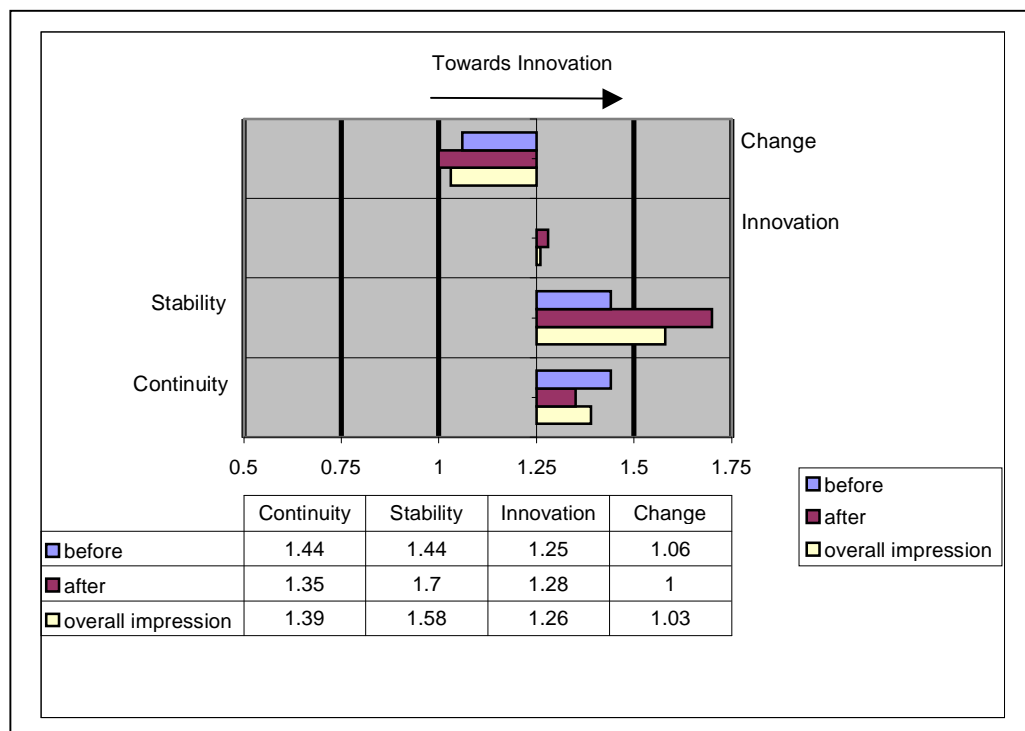


Figure 4.3

Where innovation as a category is within 10 percent of the mean, something different appears when depicting the items that together form Innovation. In Figure 4.3 it appears that stability, which is negatively related to innovation grows with more than 10 percent after the reorganisation message. One explanation is that the employees found themselves in an unstable situation after the message. Although within the 10 percent boundaries it's also clear

that the participants see Stability and less applicable to their organisation and its people than for example the item Innovation.

Except for Stability-after-the-message, all scores in the sample can be found between 1 and 1,5. Therefore no assumptions can be mentioned about the four parameters and the category Innovation.

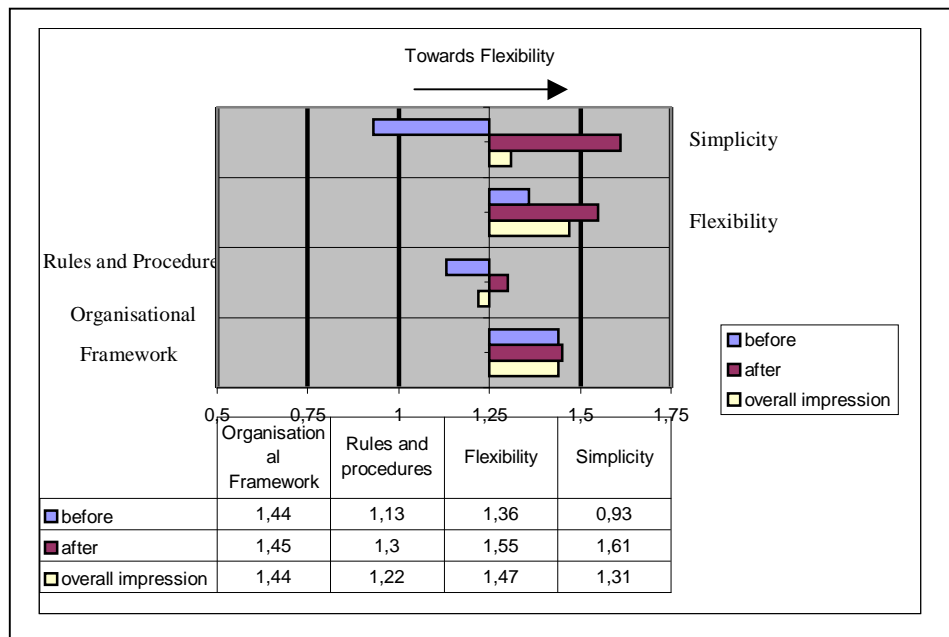


Figure 4.4

Flexibility as a category stayed between the scores 1 and 1,5. One remarkable result is seen in Figure 4.4 where Simplicity was found a lot more applicable after the reorganisation message than before. The research ascribes this change to both the clearness with which the message was given by the CEO (this was mentioned by several employees) and the fact that the message itself seemed a “simple” solution to the employees. The Organisational Framework, which is negatively related to the category, shows “non-applicability” to the organisation and its employees.

Except for the shift in Simplicity all scores in the sample can be found between 1 and 1,5. Therefore no worthwhile arguments can be mentioned about the four parameters and the category Flexibility.

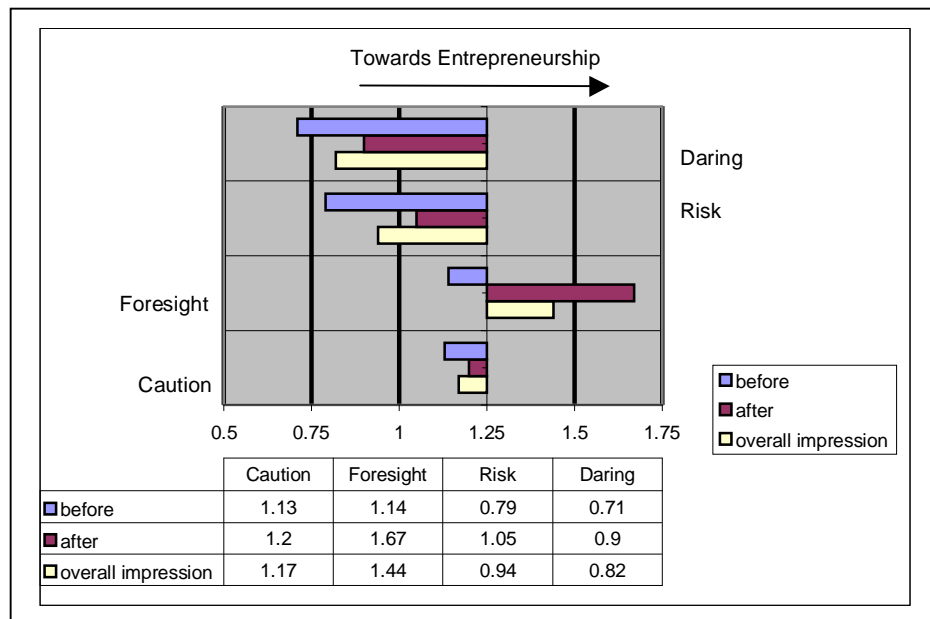


Figure 4.5

Though as a category Entrepreneurship stays between the boundaries of 1 and 1,5, This graph shows that Daring and Risk appear less applicable to the organisation and its employees. Foresight made quite a shift towards less applicable after the reorganisation message (and therefore towards Entrepreneurship). One possible explanation is an often-heard phrase after the reorganisation message, that they could have seen this coming a few years ago.

Entrepreneurship is related to segmentation. Segmentation needs to be adjusted to the resources and the bottleneck according to TOC. But there is no direct advice whether low or high segmentation is preferable. High segmentation is associated with low entrepreneurship because splitting up a project also leaves less room to take risks and it gives people the opportunity to hide behind the rules to minimise risk. According to the Values Card Game sample, there should be statements about minimising risk in relationship with statements about segmentation.

Bad Measurements are associated with low Entrepreneurship, because they breed and attitude of keeping the status quo. In the sample this should reflect in statements about ‘keeping things the way they are’ and a lack of statements referring to risk-taking to achieve a goal.



Good Resource Management is logically associated with low Entrepreneurship since it tries to minimise risk by balancing the work in progress. Since the category in the sample is associated with a low Risk Item and a low Daring Item, this should be reflected in statements that refer to undertaking action to balance work in progress and statements that refer to minimising risk within projects.

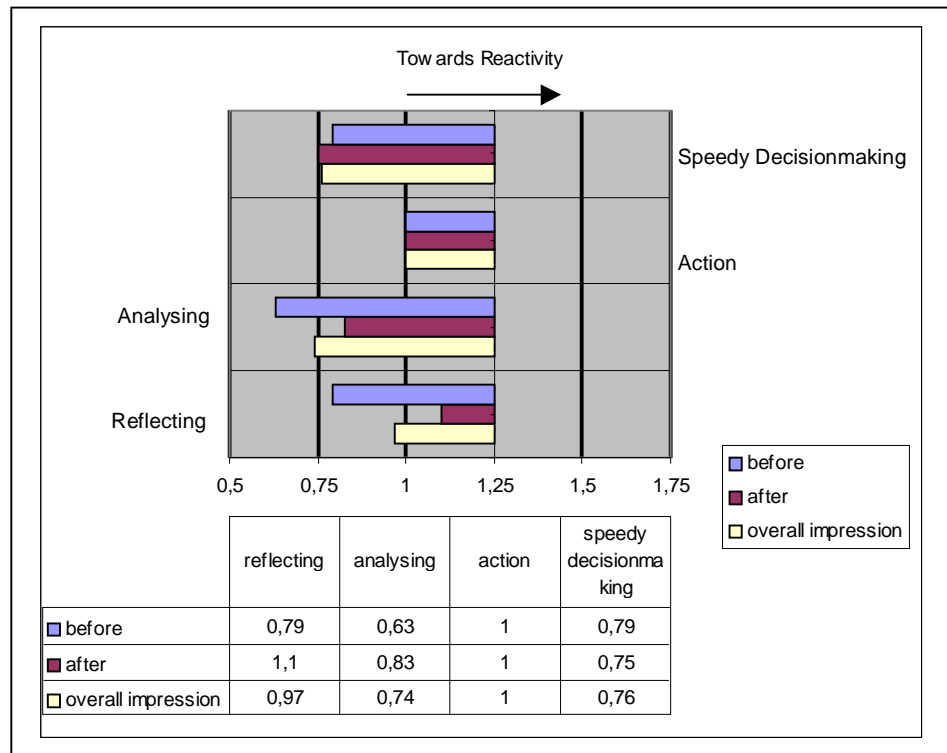


Figure 4.6

All of the scores in the category Reactivity are below the random-mean of 1,25. Analysing and Reflecting appear to be applicable to the organisation and its employees, whereas Action and Speedy Decisionmaking appear not to be applicable.

One of the provisional assumptions made about the four TOC design parameters is that multitasking can be associated with high reactivity, because changing from task to task implies action and less time to think about one single task. Since low multitasking is preferred by TOC, the low reactivity score of the sample should appear to make them prefer non-multitasking to multitasking, if there are no important other factors that influence their decisionmaking of course. Accordingly statements about multitasking should be able to provide more clues.

High segmentation is also associated with low reactivity, since splitting up projects to different people means less room for action (communication lines have to be kept up) and actions have to be analysed before they are executed, in order not to disturb the process. The low Reactivity score of the sample therefore implies that high segmentation is possible with regard to the way actions are undertaken. Further statements from participants can substantiate this assumption.

Good measurements are associated with low Reactivity; they make people stop and think before they undertake an action. If this is likely to be true, statements from participants should confirm this view, since the sample showed a low Reactivity score.

Good resource management is logically associated with low Reactivity according to TOC, since it tries to balance work in progress instead of putting new tasks in the production row, without analysing the situation. Since the sample showed a low Reactivity score, statements made by participants should be positive about this TOC aspect for this assumption to be likely to be true.

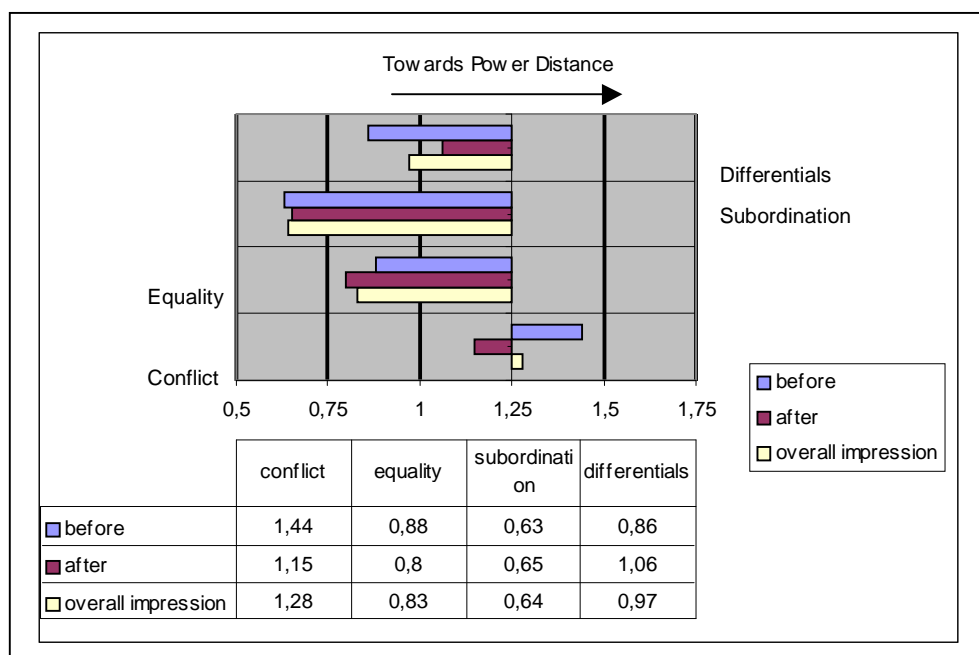


Figure 4.7

The category score of Power Distance is on the left side of the random-mean (see figure 4.1). Subordination appears not to be applicable to the graph in figure 4.7. On the other hand Equality appears to be applicable. These results of these two items fortify each other.

A provisional assumption about good measurements (according to TOC principles) is that they are associated with low Power Distance. They drive everybody to think about

customer benefits and competitive advantage, thereby assuming that the point of view of each individual is equally important. The results of the sample enable the usage of these so-called good measurements. Probable non-applicability of subordination clears the way for points of view that can lead to more customer benefits and competitive advantage. The probable applicability of Equality makes sure that points of view of lower employees are regarded with the same yardstick as those of higher employees. Therefore giving each opinion a fair chance. If the assumption is valid, this should result in statements about involvement of employees in making decisions, or at least the fact that the employees would value such involvement. Also a lack of statements pointing in the opposite direction should be expected. A final thought, to make assumption more solid, a lack of statements about employees admiring their superior because of his position, is assumed.

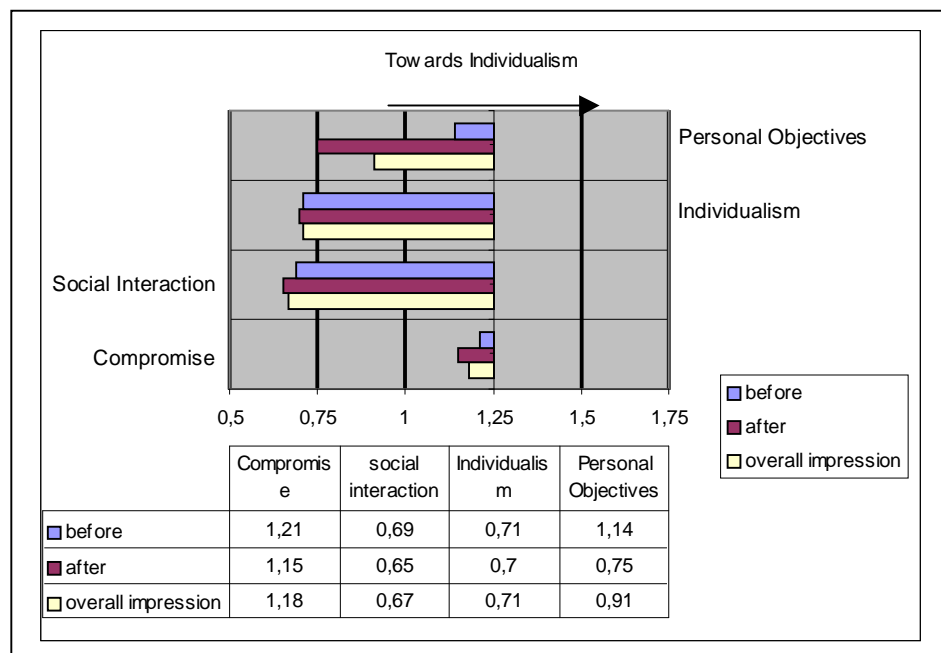


Figure 4.8

Figure 4.8 shows that within the last category all scores can be found to the left of the random mean. The item Individualism (not the category, but the item) which is positively related to its category has mean scores of less than 0,75 which indicates that this item probably does not apply to the organisation and its employees. Social Interaction, which is negatively related to the Individualism category, appears to be applicable when looking at the sample scores. Finally, the lack of personal objectives has grown with 0,39 after the reorganisation message. The researcher ascribes this score change to the underlying message (that the CEO also spoke about) “We all have to accept this action in order to keep the company alive”.

One general remark can also be made. In this case three out of four items (Individualism, Social Interaction and Compromise) have 'before' and 'after' scores with nearly the same score-mean. This further affirms the reliability of the sample taken. This can also be mentioned about items in other categories.

Multitasking is associated with low individualism since one of its characteristics mentioned is "giving everybody what they want and helping out others". High social interaction implies that one knows more people than when there is situation of low social interaction. High social interaction is therefore associated with a higher chance that someone asks another person to help him out, threshold is lower than with low social interaction. Low individualism implies that people see themselves more as part of a group than as individual personalities. This also lowers the threshold. These two items are factors that increase the level of multitasking. If the assumption is valid, statements about both functioning as a group and highly valuing social interaction should go hand in hand with a situation of high-level multitasking in the organisation. On the other side there should be a lack of statements that refer to personal goals and conflict within the group (N.B. this does not refer to statements of conflict between groups, e.g. between a group and their superiors or between departments).

High segmentation is associated with low individualism, since splitting projects up increases the need for teams. Functioning as teams is easier when employees have the intention to adapt to the group and to be sociable. The results point therefore towards a situation where segmentation will form no problem with respect to team-formation. Or may be even to a situation where one is accustomed to high segmentation. Consequently to make the assumption valid, the results should lack negative statements about the segmentation level. This alone however can not be seen as enough proof of segmentation being associated with low individualism. No other ways to validate this assumption were found. Therefore this assumption will be dropped for the time being.

Good measurements are associated with low individualism since they drive collaboration between functions and people to reach a global goal. Low individualism can therefore be seen as an advantage for good measurements to be constructed and executed. To validate this assumption, statements should reflect on (a) constructed measurements that have the characteristic of driving collaboration between functions and people to reach a global goal, or (b) preferring execution of those measurements that have the characteristic mentioned. On the other hand there should be a lack of statements that reflect the usage of, and disliking towards measurements, that do not drive collaboration to reach a global goal

A summary of the results of the Values Card Game and the provisional assumptions and statements that have been made with respect to the characteristics of the TOC are shown per parameter in the tables below. The next paragraph will show the results of the in-depth interviews.

<b>Multitasking</b>		
<b>Category, towards: high/low/undecided</b>	<b>Provisional Assumptions aggravated to the results of the Values Card Game</b>	<b>Statements that subscribe to the provisional assumption and statements that contradict the provisional assumption</b>
Reactivity, low	Multitasking can be associated with high reactivity, because changing from task to task implies action and less time to think about one single task	Since low multitasking is preferred by TOC, the low reactivity score of the sample should appear to make them prefer non-multitasking to multitasking, if there are no important other factors that influence their decisionmaking of course. Accordingly statements about multitasking should be able to provide more knowledge about this issue.
Flexibility, undecided	High flexibility since one has to change from one routine to another;	Flexibility and its items stayed between 1 and 1,5. Therefore statements about flexibility with regard to multitasking that could point to wards high flexibility are not enough agreed upon by other participants. Therefore they cannot lead to solid conclusions about either the sample or the population.
Innovation, undecided	High innovation since people are used to changes in a multitask environment.	Innovation and its items stayed between 1 and 1,5. Therefore statements about Innovation with regard to multitasking that could point to wards high Innovation are not enough agreed upon by other participants. Therefore they cannot lead to solid conclusions about either the sample or the population.
Individualism, low	Multitasking is associated with low individualism since one of its characteristics mentioned is “giving everybody what they want and helping out others”.	<p>Subscribing: statements about both functioning as a group and highly valuing social interaction should go hand in hand with a situation of high-level multitasking in the organisation.</p> <p>Subscribing: On the other side there should be a lack of statements that refer to personal goals and conflict within the group (N.B. this does not refer to statements that conflict between groups, e.g. between a group and their superiors or between</p>

		departments).
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Table 4.1

<b>Segmentation</b>		
<b>Category, towards: high/low/undecided</b>	<b>Provisional Assumptions aggravated to the results of the Values Card Game</b>	<b>What can subscribe to or contradict the provisional assumption?</b>
Entrepreneurship, low	Segmentation needs to be adjusted to the resources and the bottleneck according to TOC. Therefore there is no direct advice if low or high segmentation is preferable. High segmentation is associated with low entrepreneurship because splitting up a project also leaves less room to take risks and it gives people the opportunity to hide behind the rules to minimise risk.	Subscribing: There should be statements about minimising risk in relationship with statements about segmentation.
Reactivity, low	High segmentation is associated with low reactivity, since splitting up projects to different people means less room for action (communication lines have to be kept up) and actions have to be analysed before they are executed, in order not to disturb the process.	The low Reactivity score of the sample therefore implies that high segmentation is possible with regard to the way actions are undertaken. Further statements from participants can substantiate this assumption.
Flexibility, undecided	High segmentation is associated with low flexibility, since routines and rules are necessary to make the next worker in line understand what the previous one has done.	Flexibility and its items stayed between 1 and 1,5. Therefore statements about Flexibility with regard to segmentation that could point to wards high Flexibility are not enough agreed upon by other participants. Therefore they cannot lead to solid conclusions about either the sample or the population
Innovation, undecided	High segmentation is associated with low innovation since it is more difficult to look for progress when you have the overview of only a small part of the project.	Innovation and its items stayed between 1 and 1,5. Therefore statements about Innovation with regard to segmentation that could point towards high Innovation are not enough agreed upon by other participants. Therefore they cannot lead to solid conclusions about either the sample or the population.
Individualism, low	High segmentation is associated with low individualism, since splitting projects up increases the need for teams. Functioning as teams is easier when employees have the intention to adapt to the group and to be sociable. The results point therefore towards a situation where segmentation will form no problem with respect to	The results should point towards a situation where segmentation will form no problem with respect to team-formation. Or may be even to a situation where one is accustomed to high segmentation. Consequently to make the assumption valid, the results should lack negative statements about the segmentation

	team-formation.	level. This alone however can not be seen as enough proof of segmentation being associated with low individualism
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Table 4.2

<b>Performance Measurement</b>		
<b>Category, towards: high/low/undecided</b>	<b>Provisional Assumptions aggravated to the results of the Values Card Game</b>	<b>What can subscribe to or contradict the provisional assumption?</b>
Task Orientation, High	Good measurements (in general and measurements that make TOC function in specific) are associated with a high Task Orientation since none of the characteristics of good measurements is directed towards the recognition of individuals and the characteristics of the measurements focus on achieving certain sets of targets (throughput or global goal for instance).	<p>Subscribing: Statements about measurements that refer to recognition of individuals.</p> <p>Subscribing: Statements that focus on achieving certain sets of targets</p>
Task Orientation, Low	This sample also has a score lower than 1 for both Recognition and Personal Dignity. This may be a disadvantage to the measurements TOC would like to see. In an environment where personal dignity is important there are bound to be some measurements directed towards Recognition of people. If the environment is also based on Personal Dignity and Recognition, those measurements might become one of the more inherent or "obvious" measurements.	Subscribing: the importance of measurements directed towards the recognition of people and the importance personal dignity and importance
Entrepreneurship, Low	Bad Measurements are associated with low Entrepreneurship, because they breed and attitude of keeping the status quo.	Subscribing: this should reflect in statements about "keeping things the way they are" and a lack of statements referring to risk-taking to achieve a goal.
Reactivity, low	Good measurements are associated with low Reactivity, they make people stop and think before they undertake an action	Subscribing: statements from participants should confirm this view, since the sample showed a low Reactivity score.
Power Distance, Low	Good Measurements are associated to low Power Distance. They drive everybody to think about customer benefits and competitive advantage, thereby assuming that the point of view of each individual	Subscribing: this should result in statements about involvement of employees in making decisions, or at least the fact that the employees would value

	is equally important. The results of the sample enable the usage of these so-called good measurements.	such involvement.  Subscribing: Also a lack of statements pointing in the opposite direction should be expected.  Subscribing: to make assumption more solid, a lack of statements about employees admiring their superior because of his position, is assumed.
Flexibility, undecided	Good measurements are associated with high flexibility since they drive continuous improvement and have a simple impact throughput, investment and operating expense.	Flexibility and its items stayed between 1 and 1,5. Therefore statements about Flexibility with regard to measurements that could point to wards high Flexibility are not enough agreed upon by other participants. Therefore they cannot lead to solid conclusions about either the sample or the population
Innovation, undecided	Good measurements are associated with a high level of innovation since they drive continuous improvement.	Innovation and its items stayed between 1 and 1,5. Therefore statements about Innovation with regard to measurements that could point to wards high Innovation are not enough agreed upon by other participants. Therefore they cannot lead to solid conclusions about either the sample or the population.
Individualism, low	Good measurements are associated with low individualism since they drive collaboration between functions and people to reach a global goal. Low individualism can therefore be seen as an advantage for good measurements to be constructed and executed.	Subscribing: statements should reflect on (a) constructed measurements that have the characteristic of driving collaboration between functions and people to reach a global goal, or (b) preferring execution of those measurements that have the characteristic mentioned.  Subscribing: On the other hand there should be a lack of statements that reflect the usage of measurements, and disliking towards measurements, that do not drive collaboration to reach a global goal

Table 4.3

<b>Resource Management</b>		
<b>Category, towards: high/low/undecided</b>	<b>Provisional Assumptions aggravated to the results of the Values Card Game</b>	<b>What can subscribe to or contradict the provisional assumption?</b>
Task Orientation, Low	Good resource management (according to TOC) is provisionally associated with low	Subscribing: The scores of Recognition and Personal Dignity imply that an average manager at



	Task Orientation because it takes into account that employees also perform tasks that are not directly set towards achieving formal targets, but towards valuing the qualities of the individual and the personal rights	the research site would be able to acknowledge the non-formal tasks
Entrepreneurship, low	Good Resource Management is logically associated with low Entrepreneurship since it tries to minimise risk by balancing the work in progress	Subscribing: this should reflect in statements that refer to undertaking action to balance work in progress and statements that refer to minimising risk within projects.
Reactivity, low	Good resource management is logically associated with low Reactivity according to TOC, since it tries to balance work in progress instead of putting new tasks in the production row, without analysing the situation	Subscribing: statements made by participants should be positive about this TOC aspect for this assumption to be likely to be true
Flexibility, undecided	Good resource management is associated with high flexibility because it is about adapting the workflow to the situation.	Flexibility and its items stayed between 1 and 1,5. Therefore statements about Flexibility with regard to resource measurement that could point to wards high Flexibility are not enough agreed upon by other participants. Therefore they cannot lead to solid conclusions about either the sample or the population.
Innovation, undecided	Good resource management is associated with high innovation to create balanced work in progress and elevate the constraints.	Innovation and its items stayed between 1 and 1,5. Therefore statements about Innovation with regard to resource management that could point to wards high Innovation are not enough agreed upon by other participants. Therefore they cannot lead to solid conclusions about either the sample or the population.

Table 4.4

## 4.2 Results of the in-depth interviews

The statements from the in-depth interviews have been grouped (categorised) and analysed by the primary researcher and a secondary researcher. Full result-lists from both researchers can be found in appendix E. This paragraph will deal with the final results and the relationships found by the primary and the secondary researcher. The results in relationship to the assumptions made in paragraph 2.5 are shown from paragraph 4.1. to paragraph 4.14. On page 57 the results and relationships between the categories and the TOC design parameters are summarised. The final conclusions by research question are dealt with in Chapter 5.

### 4.2.1 The low Reactivity score and multitasking

Assumption about statements to be found: People prefer non-multitasking if there are no important other factors that influence their behaviour.

Groups of statements found:

- The drive for accomplishment helps to avoid multitasking.
- The people are very analysing, which helps avoid multitasking.
- There is ad hoc work (e.g. reviews) that has to be done.
- Working as a team is important.
- People help other people because they see themselves as part of the group, and out of respect for their colleagues. This contradicts the preference of people for non-multitasking
- Three implemented zones of how critical a task is (green, yellow, and red) help to structure multitasking by stating explicitly when it is possible to help others.
- Priorities must be set to reduce multitasking and management should control multitasking.
- Measurement influences workers behaviour.
- Multitasking may be controlled by social interaction.
- Multitasking may be controlled through cultural values.
- Employees are measured by goals and objectives, but set their priorities according to whether time is critical or not.
- No statements were found with a preference for multitasking.

These groups imply that there may be a disliking towards multitasking, due to the preference for analysing and accomplishing objectives. But social interaction and helping others is important. This can be a reason for multitasking. At the research site the management structured this, by making the necessity of finishing a task explicit.

In this case the grouped statements fortify the assumption about statements to be found. Thereby making the assumption about low Reactivity and multitasking more solid.

#### **4.2.2 The low Individualism score and multitasking**

Assumptions about statements to be found: (1) statements about both functioning as a group and highly valuing social interaction hand in hand with a situation of high multitasking in the organisation. (2) A lack of statements is referring to personal goals and conflict within the group.

Groups of statements found:

- Resource pools (the new situation that does not work with permanent groups) lack team spirit whereas specialist teams have team spirit.
- People should be united in projects.
- Employees like social interaction and dislike formalities but this leads to multitasking and a less effective process.
- Statements referring to items in the category Individualism and Task Orientation confirm employees' valuing personal values and social interaction.
- Statements referring to situations confirm social interaction is important.
- People have a preference for rescuing-a-project at the last minute due to recognition.
- People are used to compromise and think that is the way to make the right decision. (Compromise is an item negatively correlated to the category Individualism)

There are groups of statements found that refer to valuing social interaction. There are also statements preferring functioning as a group. However no statements referring to a high

level of multitasking are found. Therefore functioning as a group and social interaction can not be directly related to a situation of high multitasking. This could be further investigated by addressing other forms of data.

Other interesting statement groups that were found are the preference for compromise to make decisions and the preference for rescue actions. The first is an explanation for the lack of statements referring to in-group conflict. The second is an explanation for the lack of statements referring to personal goals; there is a preference for rescuing someone from your team. The second assumption is therefore also confirmed by the groups of statements.

### **4.2.3 The low Entrepreneurship score and segmentation**

Assumption about statements: There should be statements about minimising risk in relationship with statements about segmentation.

Groups of statements found:

- One person mentioned there are a lot of small projects that can be treated as a whole
- The situation is: the processes are rigid and it's not possible to go around them
- One person said a project gets split up to achieve accomplishments.
- The rules and procedures are kept in mind when a project is split up.
- There is a need for more and more effective communication
- Limited freedom in structuring the process
- Statements referring to items in the category Flexibility confirm limited freedom.
- People don't like to take risks, maybe something Dutch
- Knowledge can limit risk.
- Social interaction leads to a less effective process

First of all there are only few statements about segmentation. Also statements about Reactivity and Task Orientation are therefore posed in this list to form a judgement about the assumption about the statements. There are a lot of statements that refer to minimising and disliking risk. Without more information about the segmentation of projects no conclusions can be made concerning low Entrepreneurship in relation to segmentation. If the projects are

split up in small parts, the way they are split up is caused by the rules and procedures that the company has.

#### **4.2.4 The low Reactivity score and segmentation**

Assumption about statements: They should confirm that high segmentation is possible with regard to the way actions are undertaken.

Groups of statements found:

- The situation is: the processes are rigid and it's not possible to go around them
- One person said a project gets split up to achieve accomplishments.
- The rules and procedures are kept in mind when a project is split up.
- Limited freedom in structuring the process
- Statements referring to items in the category Flexibility confirm limited freedom.

Looking at these statements that refer to segmentation and the way actions are undertaken, the assumption about the statements is confirmed. This therefore strengthens the existence of a relationship between low Reactivity and segmentation.

#### **4.2.5 The low Individualism score and Segmentation.**

Assumptions about statements: (1) statements point towards a situation where segmentation will form no problem with respect to team-formation. (2) Consequently to make the assumption valid, a lack of "negative" statements about the segmentation level.

Groups of statements found:

- Team spirit is important
- Social interaction is important
- Social interaction leads to a less effective process

- Little Individualism is positive for segmentation
- One advice is, be sure to make people get recognition for what they do.
- There is a tendency towards adapting to a group.
- People like to be specialised (people with different specialisms can do 'one' part in a project)
- No 'negative' or 'positive' statements about segmentation were found

The first assumption is confirmed by the importance of being a team, the preference for social interaction, which leads to a less effective process. The affirmation by participants that little Individualism is positive for segmentation and the preference to specialise oneself in one type of action. This confirms the assumption about the relationship between low Individualism and segmentation.

The second assumption is neither confirmed nor contradicted by statements from participants. Deeper investigation is therefore necessary to conclude anything sensible about this assumption.

#### **4.2.6 The high task orientated accomplishment score and performance measurement**

Assumptions about statements: (2) Statements focus on achieving certain sets of targets.

Groups of statements found:

- People value free time higher. This keeps them healthy
- People are measured through personal awards and certificates.
- People are measured by quality, progress and extra roles
- Objectives are put in personal objective lists
- People are treated with respect
- People are measured and rewarded on individual basis. They want that.
- People are measured and rewarded by goals and objectives, but they set their priorities according to whether time is critical or not.

The assumption is confirmed by the statement groups mentioned. However the statement is too general to conclude the relationship between this TOC organisational design parameter and high Task Orientation.

#### **4.2.7 The low task orientated Recognition and Personal Dignity scores and performance measurement.**

Assumptions about statements: If the importance of measurements directed towards the recognition of people and the importance of personal dignity is too high this could negatively influence the effectiveness of performance measurement.

No statements were found that could imply personal dignity has an effect on the way people are measured.

#### **4.2.8 The low Entrepreneurship score and performance measurement.**

Assumptions about statements: (1) statements about ‘keeping things the way they are’ and (2) a lack of statements referring to risk-taking to achieve a goal.

Groups of statements found:

- There is no different objective list each year.
- People dislike risk and like knowledge (and therefore specialisms)
- There is little conflict.
- The people are conservative ‘I’m fine right where I am’.
- There is much paperwork, due to rules and procedures.
- Simplicity would make people watch behind the rules quicker.
- People hide behind rules, these leave little room for discussion.
- Stepping into a team is a risk.
- The people are very analysing.

The statements confirm the first assumption. The second assumption does also hold true. Statements related to performance measurement are risk minimising (little conflict,

people hide behind rules). The statement groups therefore strengthen the provisional assumption.

#### **4.2.9 The low Reactivity score and performance management.**

Assumption about statements: statements from participants should confirm the view that people need to stop and analyse what they are doing through their measurements.

Groups of statements found:

- Each person has got a detailed objectives list.
- Compromising makes it more difficult to work according to the objectives list.
- People think all their action over very thoroughly
- People like well-grounded analysis
- People are influenced by the way they are measured
- People decide on performing a task by looking if time is critical or not.
- Working in a team secures that the right decisions are made.

The statements confirm that objectives list are well analysed. The need for compromise hinders right decisionmaking sometimes however. And in the end, decisions may still be delayed until time is critical.

#### **4.2.10 The low Power Distance score and performance measurement**

Assumption about statements: there are (1) Statements about involvement of employees in making decisions, or at least the fact that the employees would value such involvement. Also a lack of statements pointing in the opposite direction is expected. (2) To make assumption more solid, a lack of statements about employees admiring their superior because of his position, is assumed. However these assumptions cover only Power Distance and do not say anything about its relationship with performance measurement.

Groups of statements found:



- People set their objectives together with their superior
- It's easy to approach colleagues or superiors
- Conflict is almost a taboo in some teams
- Compromising (involving others) is done a lot and it slows down decisionmaking
- There is an attitude of let everybody think and give his or her opinion.

The involvement of employees in decisionmaking is confirmed by groups of statements by participants. There are a lot of these statements. There are not any statements that point in the other direction. The second assumption also holds true. Of 360 statements none referred to admiring a superior. However these statements groups do not point out the relationship between Power Distance and performance measurement. Therefore underlying assumption of a relationship between the parameter and the value category cannot be justified solely on these statements.

#### **4.2.11 The low Individualism score and performance measurement.**

Assumptions about statements: statements are expected about (1) constructed measurements that have the characteristic of driving collaboration between functions and people to reach a global goal, or preferring execution of those measurements that have the characteristic mentioned. (2) A lack of statements that reflect the usage of measurements, and disliking towards measurements, that do not drive collaboration to reach a global goal.

Groups of statements found:

- There are personal development measurements
- People are measured by quality and progress
- Measurements on quality and progress are far more often mentioned than the personal development measures.
- The resource pool workers (people from different specialisms in on big group) are less appraised and not a team.
- The people tend to adapt to their group. This makes them make decisions on behalf of their group.
- Advice from someone: Create a group where it's important to propose conflicts

against each other. This helps making the right decision based on arguments.

- Advice from someone: Make people only evaluate decisions to speed up decisionmaking

The assumption about the statements only appears to be true inside different groups. Therefore it depends on what how the group is defined. Different groups can make people try to reach group goals that do not contribute to the global goals. Good measurement objectives are therefore important.

#### **4.2.12 Low Task Orientation and resource management**

Assumption about statements: The scores of Recognition and Personal Dignity imply that an average manager at the research site would be able to acknowledge the non-formal tasks.

Groups of statements found:

- Everybody is treated with respect
- Do not refer to human resources as if they are machines

Both managers and engineers mention these groups of statements. These statements indirectly refer that a manager is able to acknowledge there are none formal tasks. More information is necessary though to substantiate this assumption.

#### **4.2.13 The low Entrepreneurship score and resource management**

Assumption about statements: There should be statements referring to undertaking action to balance work in process and statements referring to minimising risk within projects.

Groups of statements found:

- People dislike risk and take measures to reduce it, but the level of risk taking differs per group.
- To minimise risk, gain knowledge.
- Resource pools have been set up to balance work in process.
- Progress in projects is measured.

The assumptions are valid for this sample. Measures have been taken to balance work in process and to minimise risk in projects. This strengthens the provisional assumption that human resource management of the research site is associated with low Entrepreneurship.

#### **4.2.14 The low Reactivity score and resource management**

Assumption about statements: statements made by participants should be positive about analysing in relationship to managing resources.

No statements are found related to this assumption. Therefore no relationship can be assumed in this research.

#### **4.2.15 Summary of the results**

Table 4.5 summarises the existence of relationships between the Organisational Design Parameters and Cultural Values Categories. Descriptions can be found in the previous paragraphs related to them.

Of the twenty investigated relationships, eight relationships can be characterised as more or less probable relationships. Seven relationships have not been investigated since they appeared not to relate to the TOC Parameters. Four relationships are not completely confirmed due to data that was not available or accessible. Eight relationships were not further investigated since the Values Card Game did not point towards a preference for applicability or non-applicability.

<b>The assumed Relationships confirmed by the case study interview results</b>	<b>TOC Multitasking</b>	<b>TOC Segmentation</b>	<b>TOC Performance Measurement</b>	<b>TOC Resource Management</b>
Task Orientation	No relationship assumed	No relationship assumed	Possibly related	Relationship found
Innovation	Could not be checked in this research	Could not be checked in this research	Could not be checked in this research	Could not be checked in this research
Flexibility	Could not be checked in this research	Could not be checked in this research	Could not be checked in this research	Could not be checked in this research
Entrepreneurship	No relationship assumed	Possibly related	Possibly related	Relationship found
Reactivity	Relationship found	Relationship found	Relationship found	No relationship found
Power Distance	No relationship assumed	No relationship assumed	Possibly related	No relationship assumed
Individualism	Relationship found	Relationship found	Relationship found	No relationship assumed

Table 4.5

## **5 Conclusions and discussion about limitations of the research**

This paragraph will discuss the answers this research provides related to the research questions. The results presented in chapter 4 are combined in this chapter with data from the research site as far as possible. First limitations of the research and some general conclusions are discussed in paragraph 5.1. Then conclusions for every research question are discussed individually. Finally chapter 6 states some suggestions for future research.

### **5.1 Limitations of the research and general conclusions**

This research intended to identify the relationships between TOC organisational parameters and cultural values using the Cultural Values Card Game. Indeed some of the relationships have been identified by this research. This is discussed in the next paragraphs. This paragraph identifies some limitations of the research that came to our awareness while performing the research. It also provides some of the more general conclusions that followed from this research.

First of all, it is difficult to draw general conclusions from this case study. The Values Card Game has been used in a non-statistical way, while it was constructed for statistical use. We used it in a non-statistical way (1) to find out if this would lead to relationships between values and the organisational design parameters and (2) to find out if this could also provide useful information for managers at the research site. However until this day there has been no study that identified which cultural values correspond with the Theory of Constraints. To prove if the used method worked, it therefore would have been more secure to use our method to find relationships between organisational design parameters of an organisational theory that has been well tested on this subject. Still to be sure of somewhat solid results a double check was made. Firstly a check was made on the cultural values categories themselves, by checking if their mean score was below 1 or above 1,5 and secondly, two researchers grouped the obtained data individually. More specific information about these checks is stated in chapter 3.

Secondly, as mentioned in (2) in the section above, we used the Cultural Values Card Game because of its interactive aspect and because we hoped this would prove to be a well usable managerial tool. Our research data indicate that the Card Game does provide explanations for and solutions to managerial situations and behaviour of employees. To check the truthfulness of this indication, discussion with people from the research site was planned, however this was cancelled since the research site does not exist anymore.

Thirdly both researchers agree that grouping statements leads to somewhat arbitrary outcomes. Grouping means that some information will disappear in a group while other information will not. On the other hand by using qualitative data we were able to identify direct relationships without the need to completely translate the outcomes (mean scores) of the Cultural Values Card Game. This suggests justification of the use of such a qualitative research method.

Fourthly the Cultural Values Card Game uses categories (see page 25 for the complete list). The categories Innovation and Flexibility appeared non-usable according to the first check, their mean score was between 1 and 1,5. Valuable information is therefore perhaps left out of this research due to the way we generated our results.

Fifthly the sample for the Values Card Game was relatively small, eighteen people were used whereas the research site consisted of about 150 people. Had the sample been bigger, then perhaps Innovation and Flexibility would also have also pointed more towards applicable or not applicable. And could have also been discussed.

Sixthly this case study focused on a profit (as opposed to non-profit) service industry organisation. For this reason only Human Resource Management was investigated as a fourth parameter.

Finally the relationship between bad measurements and cultural values has only been further investigated where good measurements appeared not to have a relationship with a cultural value category. The reason is that good measurement and bad measurement have the opposite association with the cultural values.

Keeping these limitations in mind, some general conclusions are conducted from this research. These conclusions refer to the research as a whole. Specific conclusions with regard to the research questions are described in the next paragraphs.

Firstly the data the interviews provided indicates that the cultural values described in the Cultural Values Card Game are interpretable in different ways. No matter how specific the question “to split the cards up”, people all chose different cards for different reasons, aiming at the company, themselves or their co-workers. A large application of the Values Card Game

without supervision of, and interpretation of the outcomes solely by the researchers could lead to stereotypical outcomes and therefore stereotypical conclusions that do not add value to available scientific knowledge. This is a first indication that use of the Cultural Values Card Game in a statistical way is less usable, use of the Values Card Game in a qualitative way provides more useful information.

Secondly Reactivity and Individualism appeared more useful in this research than other values categories (see table 4.5 for a quick overview of relationships between the seven categories and the four parameters). Perhaps interesting is that these two categories are also identified by Hofstede, whereas the two categories that could not be used due to the first check (Innovation and Flexibility) are introduced by Rowe and Struck themselves using acknowledged literature of O'Reilly (1991) and Burns & Stalker (1961). This appears to be a first indication that the approved model they used should be looked at critically.

Thirdly, Task Orientation is a single category in the original Values Card Game, however in this study two different things occur. Firstly, a vast preference for personal dignity and recognition (according to the model negatively related to Task Orientation). Secondly a vast preference for accomplishments appears, which is positively related to Task Orientation according to the model. This implies that perhaps Task Orientation should not have these two elements opposed to one another. This appears to be a second indication that the model should be looked at critically. Therefore we briefly analyse the model in order to find possible other deficiencies.

The model in figure 2.2 (page 25) shows the seven categories and the 28 values related to the categories. Beneath each value a description is given to clarify what the value means. However some descriptions also seem to reflect personal opinions instead of being solely describing. We find them in two categories, Flexibility and Innovation. The personally toned descriptions are: (1) strictly respecting the rules and regulations avoids many problems and is thus negatively related to Flexibility. The word strictly could imply an exaggeration and thus adds a negative tone to the description. (2) Wishing to preserve what is as it has always worked is negatively related to innovation. This sentence implies a form of short-sightedness and thus adds a negative tone to the item.

A final point of criticism is that some value-items positively related to the categories literally have the same name as the categories themselves. This might make it easier for the participants to form groups before choosing items they think relevant and play the game accordingly, possibly leading to more obvious (and less interesting) answers.

On the whole conclusions point in the direction that the model needs to be further optimised. Furthermore usage of the model in a qualitative way added value in obtaining these conclusions and therefore could be seen as a first step in the right direction. Finally this case study provided information to further optimise the model, by providing information on the defined organisational parameters. The next sections discuss the specific conclusions for the four research questions.

## **5.1 The relationship between cultural values and multitasking**

The first research question and provisional assumptions aim to gain insight in the relationship between multitasking and the cultural values mentioned in the Cultural Values Card Game. As table 4.5 shows, relationships are found between Multitasking and Reactivity and Multitasking and Individualism.

The provisional assumption that non-multitasking is related to low Reactivity is strengthened by the results in paragraph 4.2.1. The results show that the people from the sample prefer not to multitask, due to their preference for analysis and their drive for accomplishing objectives. However, social interaction is important, as is helping other people out of a crisis situation. This implies that if multitasking occurs, it presumably occurs because of these two aspects.

The results in paragraph 4.2.2 strengthen the assumption that there is a relationship between low Individualism and high multitasking. Firstly valuing of social interaction is also found in the statements on Individualism. Secondly the preference for rescue actions also appears in the statements. And thirdly, functioning as a group is preferred and there is also a preference for compromises. However the assumption only holds true if there is actual high multitasking at the research site.

There are three hints that direct towards actual high multitasking at the research site. Firstly, the first incentive for this research was the assumption of a senior project-manager that had the suspicion that, although the TOC principles had been implemented in his departments, people still practised multitasking. Secondly, in the interviews people told that they had turned a bit indifferent towards the TOC method since they had been on a critical single-tasking job constantly. Thirdly, several reports about the progress status of projects indicated that less progress was made, then presumed possible. Although these hints



individually do not lead towards any conclusions, by appearing together they make it credible that there may indeed be a high level of multitasking.

Unfortunately the relationship between Flexibility and Multitasking and Innovation and Multitasking was not investigated because the Values Card Game did not point in a specific direction. Further investigation is necessary to indicate how these two value categories are related with multitasking. For now the assumption that multitasking is associated with high Flexibility and the assumption that multitasking is associated with high Innovation can not be confirmed nor contradicted.

## **5.2 The relationship between cultural values and segmentation**

The second research question and provisional assumptions aim at a broader understanding of the relationship between cultural values and segmentation. Table 4.5 shows that relationships are found between Reactivity and segmentation and between Individualism and segmentation. A first remark to be made is that there were only few statements related to this parameter.

The results in paragraph 4.2.4 affirm the provisional assumption that high segmentation is associated with low Reactivity. High segmentation supported by statements about segmentation and low Reactivity that confirm the research site has a lot of rules and procedures and keeps these in mind when splitting up a project. The low Reactivity score (mainly the overall preference for analysis) supports low Reactivity being the actual case.

The provisional assumption, that low Individualism enables high segmentation, is supported by the results of paragraph 4.2.5. One group of answers states that little Individualism has a positive effect on dividing up projects. This positive effect may be further specified by groups of answers that point in the direction of the importance of social interaction and the team spirit together with the tendency to adapt to a group. Although it can be neither confirmed nor contradicted that there was a lack of ‘negative’ statements about the actual segmentation level, due to lack of questions about this parameter, we believe the provisional assumption is sufficiently backed up by the results.

Paragraph supports the provisional assumption, that low Entrepreneurship is related to segmentation, though not sufficiently. The assumption is strengthened by groups of

statements referring to a preference of minimising and disliking risk. There are only few statements found referring to low Entrepreneurship and to segmentation. Therefore the assumption is possibly true, but further investigation is needed to confirm this.

Unfortunately the relationship between Flexibility and Segmentation and Innovation and Segmentation was not investigated since the Values Card Game did not point in a specific direction. Further investigation would be necessary to indicate how these two value categories are related with segmentation. For now the assumption that segmentation is associated with high Flexibility and the assumption that segmentation is associated with high Innovation can not be confirmed nor contradicted.

### **5.3 The relationship between cultural values and measurements**

The third research question and provisional assumptions addressed the relationship between performance measurements and cultural values. Table 4.5 shows that there are relationships found: (1) Possibly between performance measurement and Task Orientation (2) possibly between performance measurement and Entrepreneurship, (3) between performance measurement and Reactivity, (4) possibly between performance measurement and Power Distance and (5) between performance measurement and Individualism.

The results affirm the provisional assumption of a relationship between performance measurement and high task orientated accomplishment. However the way the statements were observed was too general (N.B. by seeing if measures aim at achieving certain sets of targets). All performance measurements mentioned in the interviews were aimed at achieving targets. At least to the research site this is an inherent aspect of their measurement-system. We believe that achieving certain targets is an inherent aspect to all measurements. The observed high Accomplishment score is therefore possibly an enabler of a good measurement system. Until further investigation we can only mention that the provisional assumption is possibly true.

There is one result that affirms the provisional assumption that low Entrepreneurship is related to performance measurement. A group of statements confirms that there is a tendency towards ‘keeping things the way they are’. This strengthens the provisional assumption. Although groups of statements refer to minimising risk and no statements refer to

taking risk, these statements are not told in the context of performance measurement. Further investigation is needed to provide more information.

The results in paragraph 4.2.9 point in the direction of the provisional assumption: a relationship between the low Reactivity and performance measurement. The statements confirm the existence of well-analysed objectives lists. People prefer analysing before making a decision. This strengthens the provisional assumption. However the need for compromise hinders right decisionmaking sometimes, and in the end decisions may still be delayed until time is critical.

The results do not affirm the provisional assumption of a relationship between a low Power Distance score and performance measurement. Statements about the involvement of employees in making decisions strengthen the provisional assumption. There are no statements about the admirability of a superior. Therefore this can't be used as an argument. To find out whether there really is a relationship, more information about performance measurement is needed. A comment of a respondent, that the only difference between managers and engineers is the difference in salary, may indicate that there is indeed a relationship between performance measurement and Power Distance. However until further investigation we can only conclude that measurement and Power Distance are possibly related.

The results affirm that there is a relationship between low Individualism and performance measurement. Groups of statements reflect that measurements have the characteristic of driving collaboration (e.g. making a quality product together) are preferred, but there is only collaboration inside groups. Therefore low Individualism does not necessarily have a positive relationship with good measurement. It only indicates a willingness to work with such measurements as long as one feels part of a group.

Unfortunately the relationship between Flexibility and performance measurement and Innovation and performance measurement was not investigated because the Values Card Game did not point in a specific direction. Further investigation is necessary to indicate how these two value categories are related to performance measurement. For now the assumption that performance measurement is associated with high Flexibility and the assumption that performance measurement is associated with high Innovation can not be confirmed nor contradicted.

#### **5.4 The relationship between cultural values and resource management**

The fourth research question and provisional assumptions aim at the relationship between resource management and the cultural values mentioned in the Cultural Values Card Game. Table 4.5 shows relationships are found between Entrepreneurship and resource management and between Task Orientation and resource management.

The results in paragraph 4.2.13 affirm the relationship between low Entrepreneurship and resource management. Measures have been taken to minimise risk in projects and to balance work in process. This strengthens the provisional assumption.

The results in paragraph 4.2.12 indicate a relationship between low Task Orientation and resource management. There are no statements referring to the acknowledgement of non-formal tasks by managers, possibly due to the fact that no questions were asked about this in the interview. There is a group of statements that imply the human dignity-view is important when managing resources. This strengthens the provisional assumption.

Unfortunately the relationship between Flexibility and Multitasking and Innovation and resource management was not investigated because the Values Card Game did not point in a specific direction. Further investigation is necessary to indicate how these two value categories are related with resource management. For now the assumption that resource management is associated with high Flexibility and the assumption that resource management is associated with high Innovation can not be confirmed nor contradicted.

## **6 Suggestions for future research.**

The conclusions in chapter 5 also lead to some suggestions for future research, which are stated next.

- The Cultural Values Card Game, proved somewhat useful in identifying and describing relationships with TOC parameters and the effects these relationships have on the conduct of people in the organisation or the organisation as a whole. However in its current state the Card Game-method was time consuming and still left some parts undiscovered. Future research about the relationship between TOC organisational design parameters and cultural values appears interesting, although regarding its current state, we might prefer to use a different method to conduct the research.
- The limitations mentioned in paragraph 5.1 suggest that, future exploration of the Card Game-method, should be done with organisational design parameters that have already been related to certain cultural values. A search for such organisational parameters would then be desirable.
- If future research is done with the same method (the Cultural Values Card Game method, in a non-statistical way) it is suggested that explorations of the method are done at real organisations to substantiate or contradict the existing results. Since part of the usefulness of the Game lies in providing explanations and solutions to managerial problems and employees' behaviour.
- To provide more solid arguments for some of the provisional relationships, information other than the data accessible is elementary. In a possible next research we would search for such information in a scientifically correct way, since now it depended on what was available when the results were conducted. However this has been an explorative research, which justifies, that the need for some forms of information has not been foreseen.
- Finally, the Task Orientation category-items provided useful information but as a category remained between the 1 and 1,5 boundaries. The results indicate that Personal Dignity and Recognition and Accomplishment do not exclude one another. Therefore further research is suggested about whether Task Orientation should remain one category in the Card Game.

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## Appendix A

### **The Denison Organisational Culture Survey**

The Denison Organisational Culture Survey, developed by Daniel Denison and William S. Neale, provides a way to link organisational culture to tangible bottom-line performance measures such as:

- profitability
- quality
- innovation
- market share
- sales growth
- employee satisfaction

Based on over 15 years of research involving over 1,000 organisations, Dr. Daniel Denison, formerly of the University of Michigan Business School, and currently Professor of Organisational Development at IMD - International Institute of Management Development in Lausanne, Switzerland, has studied the cultures of high and low-performing organisations. He has found that the following four culture traits can have a significant impact on organisational performance:

- involvement
- adaptability
- consistency
- mission

Traditionally, organisational culture surveys have taken a behavioural approach ([see Model Comparisons](#)) making it difficult to link the results back to business. This survey enables leaders, key stakeholders and employees to understand the impact their culture has on their organisation's performance and learn how to redirect their culture to improve organisational effectiveness.

The Denison Organisational Culture Survey has 60 items that measure specific aspects of an organisation's culture in each of the four traits and twelve management practices identified in Dr. Denison's research. Individual surveys are collectively tabulated into a graphic profile that compares your organisation's culture to that of higher and lower-performing organisations. Repeated use of the Denison Organisational Culture Survey provides a measure of the organisation's progress toward achieving a high-performance culture and optimum performance. The survey and the prescriptive suggestions are written in easily understood business terms, making it a powerful and user-friendly tool.

Completion Time for Survey: 15 minutes

**Weak Performing Companies**  
Composite of Companies  
with ROI of 9%



**Strong Performing Companies**  
Composite of Companies  
with ROI of 30%



**Applications**

- Benchmark your organisation’s culture to other cultures in higher and lower-performing organisations.
- Administer the survey to various business units and departments to examine sub-cultures within the organisation.
- Incorporate with existing employee opinion surveys to add value and impact.
- Measure an organisation’s existing culture and predict its impact on performance.
- Implement suggested action steps for tangible performance improvement.
- Determine organisational development and training needs necessary for culture change.
- Used to help manage the merger & acquisition process.

**How It Works**

*Survey Instrument* - each participant fills out an individual survey, either electronically or paper & pencil, which is returned for confidential input into your company’ s data file.

*Summary Report* - Provides a graphic profile, line-item feedback, and prescriptive guidelines for change to assist in an action planning process.

*Electronic Copies* - A majority of our customers prefer receiving their reports from us electronically. They are able to download for free all reports and print as many copies as needed.

*Costs* - The Denison Organisational Culture Survey has been priced in a way to allow for a wide range of use within organisations of all sizes. Please call or send an e-mail for detailed information about pricing.

*Facilitator’ s Guide* Provides administrative guidelines including background information on the research, a discussion of various applications, description of higher and lower-performing companies, and suggestions on how to develop an action plan. (Cost: \$125.00 each)

*On-line capability* - The Denison Organisational Culture Survey and the Denison Leadership Development Survey are available on-line. If your employees don’ t havèinternet access, we can also make it available on your organisation’s intranet.

*Customisation* - Organisations are able to add customised questions to the surveys that allow them to capture information unique to their situation such as: questions pertaining to employee’ s understanding of a merger or acquisition, new compensation system, or any new policy, procedure or initiative. Also, some organisations prefer to combine the Denison Organisational Culture Survey with an annual employee opinion or employee satisfaction

survey. We are able to work with them so that the survey has one look and feel so employees are not burdened with completing more than one survey.

*Translations* - The Denison surveys are available in several languages, including Dutch, French, German, Italian, Portuguese, Spanish, Arabic, Japanese, Korean and Hebrew.

## Appendix B

### Interview topics list C-level managers

- Play Values Card Game
  - Why did you choose these cards?
  - Personal description (age, office years, function)
1. Is your performance measured in any way?
  2. Does this influence the decisions you make?
  3. State examples
  4. What are the advantages of specialised teams?
  5. What are the disadvantages of specialised teams?
  6. How do the chosen cultural values relate to specialised teams?
  7. What are the advantages of using a resource pool?
  8. What are the disadvantages of using a resource pool?
  9. How do the chosen values relate to the use of a resource pool?
  10. What are the advantages of TOC/CC until now?
  11. What are the disadvantages?
  12. Which advantages should TOC/CC be able to achieve in theory?
  13. What would it take to achieve this?
  14. How does Concerto help you to make good decisions?
  15. What could make Concerto function better?
  16. What are the disadvantages of a software-system like Concerto?
  17. What is the influence of the chosen 6 value items on a software system as concerto? (Does it contribute to the use of concerto? Or otherwise?)
  18. How can the 6 chosen items influence behaviour when implementing a change?
  19. How can these 6 chosen items influence behaviour of people when projects are split up?

## Appendix C

### Topics for engineers:

- Play the Cultural Values Card Game
- Why did you choose these values?
- Personal description (age, office years, function)
- Task related progress issues that engineers mentioned

State for each issue how often it occurs in your department (issues are mentioned on next page).

Never - seldom - now and then - regularly - often - most of the time - always

- How often do you now work on more than one formal task? How many tasks normally?
- Are there any relationships between multitasking and the chosen cultural values? Please state them.
- How long would you prefer to work on one task if this implies that you cannot perform non-formal tasks as meetings, training or vacation?
- How long do people work on the critical chain at the moment?
- What are the advantages and/or disadvantages of specialized teams
- Are there any relationships with the cultural values you chose as most and least applicable?
- What are the advantages and/or disadvantages of a resource pool?
- Are there any relationships with the cultural values you chose?
- Projects and tasks are split up in a certain way, what can you say about this looking at the value card game?

## Appendix D

### **Issues Result Form: 16 out of 18 people responded**

#### **Progress issues mentioned by respondents**

##### **Communication problems**

- Lack of background information
- Communication problems due to remote testing
- Discussion with other team to reach an agreement

##### **Human resource problems**

- Taking over a task when it was almost finished
- Developers were transferred
- Holiday
- Interworking between two areas, but person from other area was only available significantly later
- Long illness, someone else did the execution of the task during that time

##### **Lack of right information for the task**

- No data design available (RTP)
- No FSD available (RTP)
- Redesign of design written by a contractor (Design)
- Requirements were not sufficient to understand functionality (Design)
- Bad definition and missing requirements found during design
- FSD and GSM specifications were not clear while writing the design
- Design was not finished (SW)

##### **Expertise problems**

- Inexperience with tools (RTP)
- Lack of lab experience (FT)
- FT is not my task (FT)
- New area to learn (SW)
- Lack of knowledge (SW)
- My first GSM feature (Design)
- Inexperienced in writing a design (Design)

##### **Multitasking**

- Need to spend time on other tasks as well (RTP consultant at resource pool)
- Interruptions that need to be taken care of (RTP)
- Multitasking when it really wasn't appropriate (Design)
- Multitasking (SW)

##### **Lack of availability of the Lab and/or testing machines**

- Availability of Lab time (FT)
- Availability of the Lab (FT)
- Prototyping required but good ODD not available (Design)

##### **Set up problems**

- Set up problems for feature test SU (FT)
- Setting up the lab environment to test the features (FT)

## Appendix E

### **Results second researcher**

(A). Analysis of data referring to Topics resulted in the following generalising statements, each capturing a set of statements from the data set:

1. More knowledge needed in resource pools
2. Resource pools need broad base of wide features
3. Resource pools lack team spirit and co-operation
4. Resource pools lack management
5. Resource pools are flexible and availability is high
6. Specialist teams are effective
7. Knowledge spreads slowly in resource pool
8. Availability of specialists is low
9. Specialist teams have team spirit
10. People should be united in projects
11. management must control multitasking
12. disturbances lead to multitasking
13. must set priorities to reduce multitasking
14. quality is measured
15. measurement influences workers
16. people value free time and appraisal
17. progress is measured
18. goals and objective measurement
19. other measurement

(B). Analysis of data referring to Topics and Items resulted in the following generalising statements, each capturing a set of statements from the data set:

1. people are measurement and rewarded on individual basis
2. need more and more effective communication



3. time is critical over reaching goals and objectives
4. There is limited freedom in structuring the process
5. Multitasking may be controlled through social interaction
6. Multitasking may be controlled through cultural values
7. Specialists have more social interaction than TS people
8. There is a desire for more appreciation and informality
9. Resource pools are more flexible and organised, but less efficient than specialist teams

(C). Analysis of data referring to Items yields a categorisation into cultural and organisational elements. The categories listed below indicate what is given in statements from the data as the cultural or organisational cause for a particular item being very much applicable or very much not applicable to the organisation.

1. no cause
2. strategic management
3. national culture
4. project management
5. organisational culture
6. individual values
7. a personal belief
8. engineers and developers
9. a company fact

For each item category, the most frequently indicated causal context from the list above is given:

<b>Item category</b>	<b>Causal context category</b>
Entrepreneurship	Organisational culture, project management
Flexibility	Organisational culture
Individualism	Organisational culture
Innovation	Organisational culture
Power Distance	Organisational culture
Reactivity	Project management and organisational culture

From (A) and (B), generalising statements have been selected that share common subject, and have been compared. Statements that support each other have been combined into more general or more reliable statements. The original statements from the data from are considered in reformulating the new statements. This results in:

1. Employees want to be rewarded on an individual basis, and they value free time and appraisal. They are rewarded this way.
2. Employees like social interaction and dislike formalities, but leads to multitasking and less effective process.
3. Employees are measured by goals & objectives, but they set their priorities according to whether time is critical or not.
4. Resource pool workers are less appraised, not a team and less effective. But their availability is high.
5. Specialists are highly regarded an efficient, but also less available.
6. There is a lack of individual attention and guidance from the management
7. There is a lack of management and organisational framework in resource pool.

Generalising statements from (A) have been checked against Statements referring to Items.

Generalising statements that are confirmed or contradicted by this data are associated with the predominant items or item categories to which the statements refer. The following statements are confirmed and associated with Items:

1. Lack of team spirit in resource pools is contradicted by statements referring to items in category Individualism. However, the latter refer to the culture in the whole organisation, instead of resource pools only.
2. Flexibility of resource pool is contradicted by statements referring to items in category Flexibility. However, the latter refer to the culture in the whole organisation, instead of resource pools only.
3. Team spirit in specialised teams is confirmed by statements referring to items in categories Individualism and Task orientation

4. That employees value free time and appraises, is confirmed by statements referring to items in categories Task Orientation and Power Distance.

Generalising statements from (B) have been checked against Statements referring to Items. Generalising statements that are confirmed or contradicted by this data are associated with the predominant items or item categories to which the statements refer. The following statements are confirmed and associated with Items:

1. Need for more open and more effective communication is confirmed by statements referring to items Simplicity and Rules & Procedures.
2. Limited freedom in restructuring the process is confirmed by statements referring to items in category Flexibility.
3. Employees valuing personal values and social interaction is confirmed by statements referring to items in category Individualism and Task Orientation.

Loose Statements and Statements referring to Topics have been compared to results of the Value Card Game. No significant amount of contradicting statements has been found for any of the value items of the game. In particular, the scores for the items Flexibly, Personal Dignity, Social Interaction and Analysing are well supported by the statements.

## *Multitasking*

According to the inductive categorisation of collected data the following questions were formulated.

- 1.1 What is the situation participants face with regard to multitasking at the research site according to statements referring only to multitasking
  - Setting priorities is related to the experience you have as a developer, you learn to set priorities
  - everyone is on the critical chain constantly, this makes people act a bit indifferently
  - TOC made multitasking visible to our people, and visibility is the first step to reducing it.
  - Reviews cause disturbances for my engineers
  - You can't avoid doing the reviews, they have to be done eventually
- 1.2 What are the participants behaviour and personal points of view with regard to multitasking according to statements referring only to multitasking
  - Setting priorities is related to the experience you have as a developer, you learn to set priorities
  - Good communication is important
  - I always go to GWO meetings
  - I can work 2 weeks on a critical task constantly
  - Working as one big team is important
  - I could work on one task for about 3 or four weeks , it depends on how exiting the task is, and how stressy
- 1.3 What explanations are given for the situation and behaviour mentioned at 1.1 and 1.2 according to statements only referring to multitasking
  - everyone is on the critical chain constantly, this makes people act a bit indifferently
  - I think in TS dept you can multitask in a structured way
- 1.4 *How do the participants relate multitasking to value items*
  - 1.4.1 What is the situation participants face according to statements regarding value items related with multitasking
    - I always solve adhoc work, and there will always be adhoc work
    - for multitasking one has to be more flexible, our process is not flexible so this has a negative effect on multitasking
    - there are a lot of interruptions that influence the work process
    - The last 4 years there has been a lot of turnover in personel
  - 1.4.2 What are the participants personal points of view according to statements regarding value items related with multitasking
    - I always solve adhoc work, and there will always be adhoc work
    - If someone asks a question I too would want it to be answered
  - 1.4.3 What explanations are given for the situation and behaviour mentioned according to statements regarding value items related with multitasking

- Personal dignity and Social Interaction: If someone asks a question I too would want it to be answered
- Preference to Analyse should help avoid multitasking but often the pressure to help others is too high
- Rewarding people (recognition) if they have ' not' done something is hard because of the admiration for rescuers. (people who help out others)
- Recognition is an important business feeling "I can solve anything, bring it to me"
- Our preference for Reflection should help avoid multitasking but often the pressure to help others is too big
- Accomplishment avoids multitasking, if you' re in the green zone you help people in the red zone.
- Lack of the item Individualism makes people help other people as primary task
- The lack of a clear Organisational Framework makes more multitasking possible
- Social Interaction and personal dignity imply multitasking
- Recognition makes "rescue actions" more favourable and people fight crises

1.5 What are the relationships between statements regarding value items with multitasking and statements regarding only multitasking

1.5.1 What are the similarities between statements regarding value items with multitasking and statements regarding only multitasking

1.5.2 What are the differences between statements regarding value items with multitasking and statements regarding only multitasking

Q1 What relationships can be found between multitasking and the value items used in the value card game

According to the research question and the categorisation of the collected data the following complementary questions were added

1.6 What reduces multitasking according to statements regarding only multitasking

- TOC made multitasking visible to our people, and visibility is the first step to reducing it.
- I think in TS dept you can multitask in a structured way
- be clear how non-multitasking is rewarded
- Teleworking works great for the people who don' t want to be disturbed

1.7 What reduces multitasking according to statements regarding value items related with multitasking

- for multitasking one has to be more flexible, our process is not flexible so this has a negative effect on multitasking
- Our preference to analyse should help avoid multitasking but often the pressure to help others is too big
- reward people if they have 'not' done something, but that is hard because of the admiration for rescuers. (people who help out others)
- Is an important business feeling "I can solve anything, bring it to me"
- Our preference to reflection should help avoid multitasking but often the pressure to help others is too big
- physically separate people to prevent "rescue actions"

1.8 Which of the statements that referred only to items (see appendix G) correspond with any of the statements about multitasking

1.9 Which of the statements that referred only to items (see appendix G) contradict with any of the statements about multitasking

### *Segmentation*

According to the inductive categorisation of collected data the following questions were formulated.

1.10 What is the situation participants face with regard to segmentation at the research site according to statements referring only to segmentation

- There are a lot of small projects now that can be treated as a whole, I prefer less splitting

1.11 What are the participants personal points of view with regard to segmentation according to statements referring only to segmentation

- I would prefer less splitting up (same person as 1.1)

1.12 What explanations are given for the situation mentioned at 1.1 according to statements only referring to segmentation

- No explanations were given

1.13 How do the participants relate segmentation to value items

1.13.1 What is the situation participants face according to statements regarding value items related with segmentation

- the processes are rigid, you can't go around them
- Rules and procedures, there were a lot but some three years ago the rules got less important

1.13.2 What are the participants personal points of view according to statements regarding value items related with segmentation

- You could split up 5<sup>E</sup> into smaller pieces (not by same person as 1.1)
- 1.13.3 What explanations are given for the situation and behaviour according to statements regarding value items related with segmentation
- Little Individualism is positive for segmentation
  - A project gets split up to achieve Accomplishments.
  - The Rules and Procedures are kept in mind when splitting up a project
- 1.14 What are the relationships between statements regarding value items with segmentation and statements regarding only segmentation
- 1.14.1 What are the similarities between statements regarding value items with segmentation and statements regarding only segmentation
- 1.14.2 What are the differences between statements regarding value items with segmentation and statements regarding only segmentation

Q2 What relationships can be found between segmentation and the value items used in the value card game

According to the research question and the categorisation of the collected data the following complementary questions were added

- 1.15 What reduces or enhances segmentation according to statements regarding only segmentation
- Resource pool, loose the idea of own features, get the idea of own project
  - I think it would be a good thing to let people come together if they' ve done a project well, this will create more overall colleagues
- 1.16 What reduces or enhances segmentation according to statements regarding value items related with segmentation
- You could split up 5E into small parts
  - Little individualism is positive for segmentation
  - Be sure to make people get recognition for what they do, therefore they need to be tracked by someone
- 1.17 Which of the statements that referred only to items (see appendix G) correspond with any of the statements about segmentation
- 1.18 Which of the statements that referred only to items (see appendix G) contradict with any of the statements about segmentation

### *Performance Measurement(system)*

According to the inductive categorisation of collected data the following questions were formulated.

1.19 What is the situation participants face with regard to Performance Measurement(system) at the research site according to statements referring only to Performance Measurement(system)

- our people value free time higher than earning more money. This keeps them healthy
- our proces makes quality our most important role
- All managers replied that their behaviour is set by the way they are measured
- networkbuild made it possible to anticipate on peoples holidays
- everyone uses different performance measurement measures
- I am measured by goals
- I' ve got operational measurements
- I' m measured by maximum amount of tasks less than 5 days progress
- I' m measured by personal development objectives
- I am measured by Progress
- I am measured by quality
- I am measured by extra roles
- I am measured on progress
- We have got exact lists, which say what our objectives are in a year.
- We make our objectives together with our superior
- JH makes manager capable of estimating performance better
- The objectives set are adjusted to the circumstances

1.20 What are the participants personal points of view with regard to Performance Measurement(system) according to statements referring only to Performance Measurement(system)

- our people value free time higher than earning more money. This keeps them healthy
- Appraisels are very important to us, and in our company
- JH makes manager capable of estimating performance better

1.21 What explanations are given for the situation and behaviour mentioned according to statements only referring to Performance Measurement(system)

- our processes makes quality our most important role
- All managers replied that their behaviour is set by the way they are measured
- TS the evaluation is less credible, influences motivation
- Quality makes me specialise people

1.22 How do the participants relate Performance Measurement(system) to value items

1.22.1 What is the situation participants face according to statements regarding value items related with Performance Measurement(system)

- There is a lot of "I' m fine right where I am" we are conservative
- We value team work and I think the moment you step in a team, you take a risk
- Makes people make less nett hours
- We are measured by our objectives



- On some points the company is cautious, especially towards the market it is treated as delicate
- In my department (projectmanagement) everyone has his own task. There are little groups measurements
- We only get measured really by awards and certificates

1.22.2 What are the participants personal points of view according to statements regarding value items related with Performance Measurement(system)

- There is a lot of "I'm fine right where I am" we are conservative
- We value team work and I think the moment you step in a team, you take a risk
- would make people watch behind formal rules quicker
- without formality we can get better results
- We're used to working hard
- there is too much paperwork and too many routines once one gets more responsibilities
- More guidelines and less mandatory objects would serve the company

1.22.3 What explanations are given for the situation and behaviour mentioned according to statements regarding value items related with Performance Measurement(system)

- Simplicity would make people watch behind formal rules quicker
- Little applicability of Recompenses makes people make less nett hours
- Accomplishment, Action and Recognition make us use time (the schedule) as the most important rule instead of cost
- Our drive for Accomplishment and recognition explains why we don't have a different objectives list each year
- Analysing Compromise and Reflecting make it less possible for us to act according to the objectives-list we have
- Few Differentials. We have a quite smooth distribution the only difference is in the salary you earn
- We have a lot of formal Rules and Procedures, this makes it possible to hide behind them and leave little room for discussion
- Little applicability for recompenses explains why we work separate from each other
- This makes it less possible for us to act according to the lists

1.23 What are the relationships between statements regarding value items with Performance Measurement(system) and statements regarding only Performance Measurement(system)

1.23.1 What are the similarities between statements regarding value items with Performance Measurement(system) and statements regarding only Performance Measurement(system)

1.23.2 What are the differences between statements regarding value items with Performance Measurement(system) and statements regarding only Performance Measurement(system)

Q3 What relationships can be found between the Performance Measurement(system) and the value items used in the value card game

According to the research question and the categorisation of the collected data the following complementary questions were added

- 1.24 Which of the statements that referred only to items (see appendix G) correspond with any of the statements about Performance Measurement(system)
- 1.25 Which of the statements that referred only to items (see appendix G) contradict with any of the statements about Performance Measurement(system)

### *Resource Management*

According to the inductive categorisation of collected data the following questions were formulated.

- 1.26 What is the situation participants face with regard to Resource Management at the research site according to statements referring only to Resource Management.
- Resource pools make it possible to have a more flexible workforce
  - Resource pools make it possible to use the employees more flexible
  - At the resource pool dept is more to manage, projects and people separate, not managed on specialisation-niche
  - Resource pools are less quick in developing specialistic knowledge
  - The supervisor of the resource pools is less known
  - The Resource pool has a broader basis of people, therefore broader knowledge
  - In resource pool dept there' s a consultant free for questions
  - In the resource pool dept there is less coaching of individuals
  - At the resource pool dept there is more staffing free for projects
  - At the resource pool dept it' s not possible to use the specialists
  - At the resource pool dept there is a lack of home feeling to my opinion
  - At the resource pool dept. the primary knowledge base is not completed yet
  - At the resource pool dept. There is still no best fit method for the engineer most appropriate to use for a project
  - At the resource pool dept, we use our resources somewhat more efficient now
  - The specialist advantage of specialist teams is not that big, since there are also of shifts of specialists
  - At the specialist teams there is lower distance between people
  - I think the specialists make it possible to reach the objectives, and to work under time-pressure
  - At the specialist teams there are more group-feelings
  - At the specialist teams there are more specialised people
  - The specialist teams are less flexible
  - In practice other people first have to be taught before they can help you out in specialist teams
  - In specialist teams the pressure on specialists is very high, they get a lot of questions and projects
  - In specialist teams it' s clear who' s got what expertise
  - In specialist teams there is a functional contactperson

- In specialist teams a new project can be started only with a few people due to the specialisation
- In specialist teams the specialisation reflects in less development
- At specialist teams there are less resources available
- At specialist teams the specialist is not available for answering questions (cause he's in a project himself)
- At specialist teams there are more people direct available due to their known specialisms
- At specialist teams there is more team feeling
- With specialist teams it depends on the team-leader if he makes something of it
- ❖ At the resource pool and at the specialist teams. There are a lot of different expertises to specialise in

1.27 What are the participants personal points of view with regard to Resource Management according to statements referring only to Resource Management

- At the resource pool dept there is more to manage, projects and people separate, not managed on specialisation-niche
- At the resource pool team it doesn' t work to have one resource manager, not the way it' s done now
- The resource pools should go together with knowledge management to make it a succes
- Resource pools are less quick in developing specialist knowledge
- At the resource pools the supervisor is less known
- At the resource pools working together is more difficult
- At the resource pools lack of home feeling to my opinion
- The specialist advantage at the specialist teams is not that big, since there are also of shifts of specialists
- At the specialist teams there is a lower distance between people
- Specialists make it possible to reach the objectives, and to work under time-pressure
- At the specialist team there is a larger feeling of responsibility

1.28 What explanations are given for the situation and behaviour mentioned according to statements only referring to Resource Management

No explanations

1.29 What are the Ideals people think they can achieve with resource pools

- Resource pools make it possible to spread knowledge and expertise easier
- Resource pools make it possible to have a more flexible workforce
- In the resource pool dept everybody can work on every project
- At the resource pool dept there is always a resource available
- The resource pool dept has flexible workforce
- Resource pools make it possible to use the employees more flexible
- Using resource pools makes it possible to broaden knowledge areas

1.30 How do the participants relate Resource Management to value items

1.30.1 What is the situation participants face according to statements regarding value items related with Resource Management

- the Organisational Framework is better practised at the resource pool dept

- The resource pool has a more flexible use of workforce
- The Specialist teams create more social interaction
- Holland has consensus culture
- The resource pools have made better use of change
- At the resource pool with each task an objective was set, my impression is that people like that
- At the resource pool need some manager, make sure they have one
- At the specialist teams personal dignity is used more positively in than with the resource pools
- At the resource pools dept people just as everyone want to specialise in something
- At the specialist teams, study gets stimulated, people listen to what you have to say, but most of the time it doesn' t get executed
- At the specialist teams now sometimes left doesn' t know what right is doing, this disrupts Innovation.
- Equality. At the specialist teams people with more knowledge are not equal to others
- The specialist teams are less Flexible
- Innovation does get stimulated, practicing own ideas isn' t always possible
- ❖ At both teams there is a lack of Subordination, and few levels, do what you want to do, ideas get discussed, conflicts are not avoided
- ❖ At both teams the people are quite flexible
- ❖ At the resource pools people shift slowly from neutral to positive Change.
- ❖ Continuity, is unknown. One hardly knows how it went the time before

1.30.2 What are the participants personal points of view according to statements regarding value items related with Resource Management

1.30.3 What explanations are given for the situation mentioned at 1.1 according to statements regarding value items related with Resource Management

1.30.4 What explanations are given for behaviour according to statements regarding value items related with Resource Management

1.31 What are the relationships between statements regarding value items with Resource Management and statements regarding only Resource Management

1.31.1 What are the similarities between statements regarding value items with Resource Management and statements regarding only Resource Management

1.31.2 What are the differences between statements regarding value items with Resource Management and statements regarding only Resource Management

**Q4 What relationships can be found between Resource Management and the value items used in the value card game**

According to the research question and the categorisation of the collected data the following complementary questions were added

- 1.32 What advisory statements have been made regarding only the Resource Management data
- 1.33 What advisory statements have been made by the data that contains value items related as well as the topic Resource Management
- 1.34 Which of the statements that referred only to items (see appendix G) correspond with any of the statements about Resource Management.
- 1.35 Which of the statements that referred only to items (see appendix G) contradict with any of the statements about Resource Management.

## Appendix G

Groups of statements made by the primary researcher based only on item context

### Statements Told only in item-context, referring to situations

Entrepreneurship	Risk	Risk is not applicable to us, maybe it's something typically Dutch, maybe we're used to our strait-jacket
Entrepreneurship	Foresight	The company lacks foresight as I see it, the strategy keeps changing
Entrepreneurship	Daring	Level of daring is very different per group
Entrepreneurship	Daring	You have to take risk to achieve something, but in our company that doesn't happen often
Entrepreneurship	Daring	We wait too much until something happens at the e-level
Entrepreneurship	Daring	I see too little conflict
Flexibility	Simplicity	Simplicity, I noticed that less formalities do get recognition
Flexibility	Simplicity	The company does give a lot of certificates
Flexibility	Simplicity	Overall the people working at Lucent like simplicity, so we should be able to undertake action fast...
Flexibility	Simplicity	Our company-leader is a straight forward man
Flexibility	Simplicity	We are straight forward
Flexibility	rules and procedures	We have a lot of rules and they are "ingebakken"
Flexibility	rules and procedures	We are tied to the mother company
Flexibility	rules and procedures	rules en procedures are there less, on influence of filling your timing better
Flexibility	Organisational Framework	There is a bad organisational framework, the management structure doesn't function
Flexibility	Organisational Framework	Improvement can only happen slow
Flexibility	Organisational Framework	People adjust to the existing status quo too much
Flexibility	Organisational framework	there has been a lot of change, but also a lot from the past has been preserved
Flexibility	Organisational framework	especially the organisation above the groups isn't thought through
Flexibility	Organisational Framework	They have tried a lot of different frameworks, but there hasn't been one good stable system
Flexibility	Flexibility	Everyone needs a little push, but then they are quite flexible
Flexibility	Flexibility	This should help making faster decisions but I don't observe that
Flexibility	Flexibility	If a product is needed fast it can be done fast, processes can be adjusted
Flexibility	Flexibility	We had a big book full of all the procedures that we obliged ourselves to do
Flexibility	Flexibility	We work with a very complex system, that's why expertise is important to us
Flexibility	Flexibility	We are not flexible enough
Individualism	Social interaction	Social interaction is ME, and my colleagues too
Individualism	Social interaction	We have got a team spirit p.e. EDR people from abroad get helped
Individualism	Social interaction	It's important to stand out clearly on a social level
Individualism	Individualism	I think we take individualism too little into account, often certain people have to learn small jobs while there is already so much knowledge around
Individualism	Individualism	We see ourselves as a group, and we adapt to the group
Individualism	Individualism	We adapt, a different point of view is not utterly appreciated
Individualism	Individualism	We sometimes do lose our "own" feelings
Individualism	Compromise	It seems like we want everybody to agree with our decision before we make it, which is difficult since we all have different meanings
Individualism	Compromise	we have a consensus culture, so when you are specialised, you can make your point heard
Individualism	Compromise	We think if we compromise we take the right decision

Individualism	Compromise	The opposite is true, compromise makes group objectives vague p.e.
Individualism	Compromise	We compromise a lot
Individualism	Compromise	We only act if it's to the benefit of the whole group
Innovation	Stability	The environment doesn't provide stability, but we are used to that
Innovation	Innovation	I always have a few ideas to solve a problem and it's possible to try them at the same time. The more I know about the project the better I can adjust my problem-solving
Innovation	Innovation	We have one department completely dedicated to innovation
Innovation	Innovation	The legacy system was never adjusted
Innovation	Innovation	We lack innovation mainly on the technical level
Innovation	Innovation	We try to make improvements in the process
Innovation	Continuity	Continuity is a little appropriate to us, but I wish it wasn't like that
Innovation	Change	There are too little change agents
Innovation	Change	the tactic for change was not chosen
Power Distance	Subordination	The manager gets a lease car and a higher salary, but doesn't have a private parking space
Power Distance	Subordination	Subordination is higher in other countries, this makes the hierarchy sometimes hinder the productivity
Power Distance	Subordination	Subordination is not really applicable to my environment
Power Distance	Subordination	Subordination is applicable to the production environment
Power Distance	Subordination	We don't avoid criticism
Power Distance	Equality	It's easy to approach a colleague or superior
Power Distance	Conflict	Conflict is almost a taboo
Reactivity	Speedy decision making	We're bad in speedy decision making but 5 ESS is so big that it's not possible to avoid the rules and go faster
Reactivity	Speedy decision making	Speedy decision making never occurs, this explains why we don't use our opportunities optimally
Reactivity	Speedy decision making	The process (5ESS) makes our organisation bureaucratic, too much is often at stake to try something out of the blue
Reactivity	Speedy decision making	Slow decision making because of the necessary budgets, accountability, the contract basis, the formal money-flows internally
Reactivity	Speedy decision making	Also our thirst for compromises, slows the process of decision making
Reactivity	Speedy decision making	We're good in studying but bad in action (speedy decision making)
Reactivity	Reflecting	We think all our actions through very thoroughly
Reactivity	Reflecting	We tend to over-analyse
Reactivity	Reflecting	We need the feeling that we have made the right decision that's why we appreciate teamwork so much
Reactivity	Analysing	On business level we are quite direct, but on other levels we wait to see which way the cat is going to jump
Reactivity	Analysing	The company didn't analyze the decisions they made the last few years
Reactivity	Analysing	The people are very analysing, it's part of the product we make
Reactivity	Analysing	We tend to over-analyse
Reactivity	Analysing	We need the feeling that we have made the right decision that's why we appreciate teamwork so much
Reactivity	Analysing	Analysing is applicable to us
Reactivity	Analysing	We're good in studying but bad in action
Reactivity	Analysing	we like well grounded analysis
Reactivity	Action	we lack action
Task Orientation	Recompenses	In the past one could get presents
Task Orientation	Recompenses	We try to avoid overtime as much as possible
Task Orientation	Recompenses	We think free time more important than money
Task Orientation	Recompenses	We have a lot of free time and I like that
Task Orientation	Recognition	Everybody is treated with respect
Task Orientation	Recognition	We look at results, accomplishments.
Task Orientation	Recognition	recognition is important, more women could add to that
Task Orientation	Personal dignity	Sometimes isn't recognised as important

Task Orientation	Personal dignity	The learning curve is slow, making decisions yourself takes time
Task Orientation	Personal dignity	personal dignity, need for people not to have the idea that they are machines
Task Orientation	personal dignity	Personal dignity is very important in our groups, we are all different and we respect each other
Task Orientation	Personal dignity	We are very social
Task Orientation	Personal dignity	It' s possible to talk anything over
Task Orientation	Accomplishment	Accomplishment makes people want to do their job and not go with change

### Statements told only in Item-context, referring to a personal point of view

Entrepreneurship	Risk	In my opinion the management team doesn' t take risks, and that' s the same with the employees
Entrepreneurship	Foresight	The company lacks foresight as I see it, the strategy keeps changing
Entrepreneurship	Daring	You have to take risk to achieve something, but in our company that doesn' t happen often
Entrepreneurship	Daring	We wait too much untill something happens at the e-level
Flexibility	Simplicity	Our company-leader is a straight forward man
Flexibility	Simplicity	We are straight forward
Flexibility	rules and procedures	If we follow the rules and act cautious we avoid problems and keep stability
Flexibility	Organisational Framework	There is a bad organisational framework, the management strucure doesn' t function
Flexibility	Organisational Framework	Improvement can only happen slow
Flexibility	Organisational Framework	People adjust to the existing status quo too much
Flexibility	Organisational framework	especially the organisation above the groups isn' t thought through
Flexibility	Organisational Framework	They have tried a lot of different frameworks, but there hasn' t been one good stable system
Flexibility	flexibility	Everyone needs a little push, but then they are quite flexible
Flexibility	Flexibility	We are not flexible enough
Flexibility	Flexibility	We only go against procedures when something has already gone wrong
Individualism	Social interaction	Social interaction is ME, and my colleagues too
Individualism	Social interaction	Social Interaction is very important to me
Individualism	Social interaction	I' t important stand out clearly on a social level
Individualism	Individualism	I think we take individualism too little into account, often certain people have to learn small jobs while there is already so much knowledge around
Individualism	Individualism	Sometimes I get the feeling that the group is kept together to avoid risks
Individualism	Individualism	We adapt, a different point of view is not utterly appreciated
Individualism	compromise	It seems like we want everybody to agree with our decisiopn before we make it, which is difficult since we all have different meanings
Individualism	compromise	We only act if it' s to the benefit of the whole group
Innovation	Stability	Stability is what we want but it doesn' t happen
Innovation	Innovation	I always have a few ideas to solve a problem and it' s possible to try them at the same time. The more I know about the project the pbetter i can adjust my problem-solving
Innovation	Innovation	We lack innovation mainly on the technical level
Innovation	Change	There are too little change angels
Innovation	Change	the tactic for change was not chosen
Innovation	Change	The organisation is too conservative to make changes
Power Distance	subordination	We don' t avoid criticism
Power Distance	Equality	It easy to approach a colleague or superior
Power Distance	Conflict	Conflict is almost an taboo
Reactivity	Speedy decision making	Also our thirst for compromises, slows the proces of decisionmaking



Reactivity	reflecting	(reflection) certainty about the chosen strategy path is an advantage to our people I think.
Reactivity	reflecting	We tend to over-analyse
Reactivity	reflecting	We need the feeling that we have made the right decision that's why we appreciate teamwork so much
Reactivity	analysing	On business level we are quite direct, but on other levels we wait to see which way the cat is going to jump
Reactivity	analysing	The company didn't analyze the decisions they made the last few years
Reactivity	analysing	The people are very analysing, it's part of the product we make
Reactivity	analysing	certainty about the chosen strategy path is an advantage to our people I think.
Reactivity	analysing	We tend to over-analyse
Reactivity	analysing	We need the feeling that we have made the right decision that's why we appreciate teamwork so much
Reactivity	action	we lack action
Reactivity	Action	The c-level managers don't decide quickly
Task Orientation	recompenses	We think free time more important than money
Task Orientation	recompenses	We have a lot of free time and I like that
Task Orientation	Personal dignity	Sometimes isn't recognised as important
Task Orientation	Personal dignity	The learning curve is slow, making decisions yourself takes time
Task Orientation	personal dignity	Personal dignity, I think it's in contrast with the lack of individualism
Task Orientation	Personal dignity	It's possible to talk anything over

### Statements told only in Item-context, explanation related

Entrepreneurship	Risk	Risk is not applicable to us, maybe it's something typically Dutch, maybe we're used to our strait-jacket
Entrepreneurship	Risk	Because we don't like risk, we always crave for knowledge
Entrepreneurship	Daring	You have to take risk to achieve something, but in our company that doesn't happen often
Flexibility	Simplicity	Overall the people working at Lucent like simplicity, so we should be able to undertake action fast...
Flexibility	Simplicity	Simplicity should make it easier to start conflict
Flexibility	rules and procedures	If we follow the rules and act cautious we avoid problems and keep stability
Flexibility	Organisational Framework	There is a bad organisational framework, the management structure doesn't function
Flexibility	Organisational Framework	an organisational framework helps when creating change
Flexibility	Flexibility	This should help making faster decisions but I don't observe that
Flexibility	Flexibility	If a product is needed fast it can be done fast, processes can be adjusted
Flexibility	Flexibility	We work with a very complex system, that's why expertise is important to us
Flexibility	Flexibility	When you are flexible you go against procedures you think are wrong
Flexibility	Flexibility	The organisation is conservative and therefore not flexible
Individualism	individualism	We see ourselves as a group, and we adapt to the group
Individualism	compromise	we have a consensus culture, so when you are specialised, you can make your point heard
Individualism	compromise	We think if we compromise we take the right decision
Individualism	compromise	The opposite is true, compromise makes group objectives vague p.e.
Innovation	Stability	The environment doesn't provide stability, but we are used to that
Innovation	Innovation	lack of innovation works against changes
Innovation	Innovation	I always have a few ideas to solve a problem and it's possible to try them at the same time. The more I know about the project the better I can adjust my problem-solving
Innovation	Innovation	Innovation should make it easier to start conflict
Innovation	Innovation	Innovation should make it easier to make decisions
Innovation	continuity	Continuity makes us avoid conflict
Innovation	Change	The organisation is too conservative to make changes

Power Distance	Subordination	Subordination is higher in other countries, this makes the hierarchy sometimes hinder the productivity
Power Distance	equality	equality works against concerto
Reactivity	Speedy decision making	Speedy decisionmaking Never occurs, this explains why we don' t use our opportunities optimally
Reactivity	Speedy decision making	The proces (5ESS) makes our organisation bureaucratic, too much is often at stake to try something out of the blue
Reactivity	Speedy decision making	Slow decisionmaking because of the nescessary budgets, accou8ntability, the contract basis, the formal money-flows internally
Reactivity	Speedy decision making	Also our thirst for compromises, slows the proces of decisionmaking
Reactivity	reflecting	We need the feeling hat we have made the right decision that' s why we appreciate teamwork so much
Reactivity	analysing	We need the feeling hat we have made the right decision that' s why we appreciate teamwork so much
Task Orientation	Accomplishment	Accomplishment makes people want to do their job and not go with change

### Statements told only in Item-context, referring to solutions

Flexibility	Organisational Framework	an organisational framework helps when creating change
Individualism	Individualism	I think we take individualism too little into account, often certain people have to learn small jobs while there is already so much knowledge around
Individualism	compromise	don' t seek compromise! Create a smaller team structure with delegates to achieve something
Individualism	compromise	Create a group where it is important to propose conficts against each other
Individualism	compromise	You could make a group evaluate changes in stead of asking them before acting
Innovation	Innovation	I always have a few ideas to solve a problem and it' s possible to try them at the same time. The more I know about the project the pbetter i can adjust my problem-solving
Innovation	Innovation	To create innovation select a couple of people to think together
Power Distance	subordination	make everybody know about your plans
Reactivity	Speedy decision making	We may at some points, create an environment around this rigid environment to create room for more speedy decisionmaking
Reactivity	reflecting	(reflection) certainty about the chosen strategy ath is an advantage to our people I think.
Reactivity	analysing	certainty about the chosen strategy ath is an advantage to our people I think.
Reactivity	analysing	analysing, make sure you have a good fundamented story when you want to achieve something
Reactivity	analysing	make everybody know about your plans
Reactivity	analysing	give feedback
Task Orientation	Recognition	recognition is important, more women could add to that
Task Orientation	Recognition	Let everybody think, and let them all speak
Task Orientation	Personal dignity	personal dignity, listen to what the people have to say