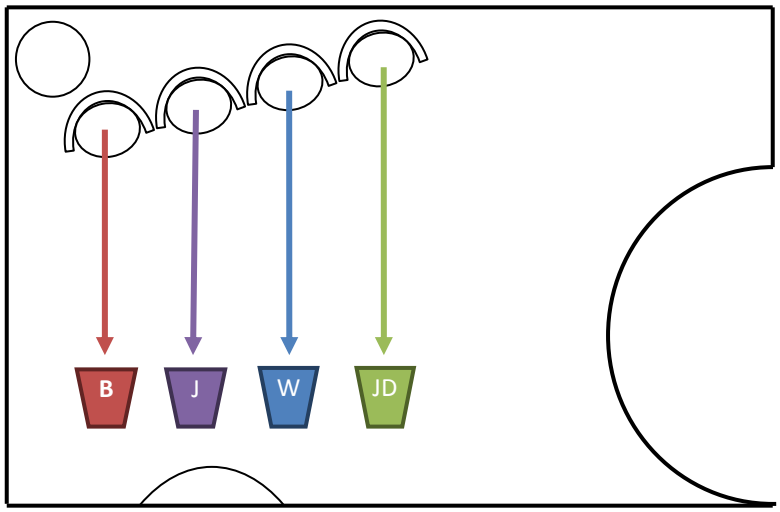
LEADING ORGANIZATIONAL IMPROVISIATION

AN EXPLORATION OF THE INFLUENCE OF LEADERSHIP STYLE ON ORGANIZATIONAL IMPROVISATION.



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PREFACE

This thesis began as a dream at the end of 2008. The dream was to be able to attain my Master's degree by researching my passion, improvisational theatre. Although this dream suffered rejection on more than one occasion and sidesteps had to be made during the process, the dream came true in the end. The topic of this thesis is improvisation and its research method is even based on theatrical improvisation.

I am indebted to many people who helped my dream come true. First of all, I would like to thank my supervisors, Klaasjan Visscher and Yfke Ongena from the University of Twente and Carla Wijers of TSM Business School, for giving me the freedom to fulfill the dream. Special thanks go to Klaasjan for his encouragements and, once again, patience. The conversations I had with Carla extended far beyond my thesis alone and have been very inspirational and educational.

It is said we are all dwarfs, standing on the shoulders of giants. That is especially true in my case and I would like to extend the greatest gratitude to my giant: Moes Wagenaar. She devised the research method I based my research on, provided critical feedback when I needed it and played the part of director and empress in the theatrical simulation.

The theatrical simulations would not be possible without nine performers who happily played the parts I gave them, without knowing what they were really doing. Jochem, Bart, Wendy, Michael, Marijn, Jasper, Joren, Anke and Anton have made me laugh dozens of times, even when I saw the simulations for the umpteenth time. I hope this thesis explains what they have been doing and why their role was so vital.

I would not have gotten far without people who had the patience to listen to my raw ideas so that I could polish them. At TSM, I would like to thank Ernst, Peter and Dick. I would also like to thank my family and, after they were done performing, Jochem and Bart for the countless times I called on their help. The last person to help me with my thesis was Philip, who made my English readable and free of misteaks.

Finally, for her never wavering support and care, Anne, who had to settle for other forms of entertainment when I was working on this dream. She even went so far as to renovate our house almost singlehandedly while I was putting the final touches on the thesis you are about to read.

In honor of all these people this thesis has been written in the plural form.

- Gijs van Bilsen
August 2010

MANAGEMENT SUMMARY

USING THEATRICAL IMPROVISATION TO RESEARCH ORGANIZATIONAL IMPROVISATION

Organizational improvisation is defined as 'conception as planning unfolds', meaning that thinking and doing happen simultaneously. Improvisation happens under conditions of uncertainty, ambiguity and time pressure. We will place our research in a context of new product development (innovation), because the conditions occur often in this context.

Our focus is on the role of the leader in an improvisational process. To research this we have chosen two leadership styles that should be beneficial to improvisation; servant leadership and rotating leadership. To get a clear view of the effects of these leadership styles, we have contrasted them with directive leadership.

Servant leaders lead from a low status rather than a high status. They lead by doing menial tasks and asking questions. Servant leaders are focused on getting the best out of their followers, instead of focusing on the results. Rotating leadership is team leadership. In rotating leadership the team member with the most capabilities to handle a certain situation will become the leader. When a new situation arises, another team member can take over the leadership role. A directive leaders takes all decisions himself and directs his followers to perform specific tasks.

To lead organizational improvisation, a leader has to make a synthesis between freedom and control. The team members need freedom to be able to have their input in the process, but the process needs to be controlled so that the improvisation does not get out of hand and the outcome is beneficial for the organization. Freedom and conflict with each other, but are both necessary for improvisation. We want to know if and how the leadership styles solve this paradox. Besides this we want to know if the leadership style positively affect the quality of the process and the product of improvisation.

To research the effect of these leadership styles, we use a method called theatrical simulation in the hyper reality. The method has its roots in philosophy and this is the first time it is used outside of philosophy. Theatrical simulation means we simulate reality with performers. The advantage of using performers is that it is possible to regulate personality and behavior within the simulation. Hyper reality means that the simulation takes place in an abstract, artificial reality that enlarges visible effects and shows the process in 15 minutes rather than hours of even days.

We have transformed all factors influencing organizational improvisation into an environment, relations and rules. The environment is medieval Europe, where guild masters make innovative products for their empress. The different relations symbolize the leadership styles. Directive leadership is portrayed by one guild master and three apprentices, servant leadership is translated as one abbot and three guild masters. Rotating leadership consists of four guild masters that all have the same status. The performers were given additional rules to accurately portray the leadership styles.

Our results indicate clearly that both servant and rotating leadership can handle the paradox between freedom and control. Servant leadership employs indirect control, which is not felt as control by the team members, so they still have their freedom. Rotating leadership gave all team members the possibility to control the process, but to take the freedom to experiment as well. Rotating leadership had the best scores on the quality of improvisation. The scores of servant leadership were also positive. Directive leadership could not, as we expected, deal with the paradox and had a negative effect on the quality of improvisation.

We discovered that attitude had a large effect on improvisation. Directive leadership leads to a natural negative attitude and servant leadership naturally lead to a positive attitude. A positive attitude is important for improvisation, as it determines how team members react to the uncertainty that is part of improvisation. A positive attitude makes team members regard uncertainty as an opportunity, rather than a threat.

SAMENVATTING

IMPROVISATIE GEBRUIKEN OM IMPROVISATIE TE ONDERZOEKEN

Dit onderzoek gaat over organisatorische improvisatie, wat gedefinieerd is als 'het tegelijkertijd gebeuren van planning en uitvoering' oftewel tegelijkertijd denken en doen. Improvisatie gebeurt als de omgeving gevoelens van onzekerheid, ambiguïteit en tijdsdruk veroorzaakt. Wij onderzoeken improvisatie binnen innovatie omdat de gevoelens vaak voorkomen tijdens innovatie.

Onze focus ligt op de rol van de leider in het proces van improvisatie. Om dat te onderzoeken hebben we twee leiderschapstijlen uitgekozen die een positief effect zouden moeten hebben op improvisatie: dienend leiderschap en roterend leiderschap. We hebben deze twee stijlen gecontrasteerd met een derde stijl; directief leiderschap.

Dienende leiders leiden vanuit een lage status in plaats van een hoge status. Zij leiden door het uitvoeren van kleine klusjes en door vragen te stellen. Dienende leiders proberen het beste uit hun volgers te halen, in plaats het beste resultaat te bereiken. Roterend leiderschap is team leiderschap waarbij het teamlid met de meeste capaciteiten voor een bepaalde situatie de leiding neemt. Als een nieuwe situatie zich voordoet, kan een ander teamlid de leiding nemen. Een directieve leider neemt alle beslissingen zelf en draagt zijn volgers op bepaalde taken op.

Om organisatorische improvisatie te leiden moet een leider een synthese maken tussen sturing en ruimte. Teamleden hebben ruimte nodig om hun ideeën kwijt te kunnen, maar het proces moet gestuurd worden zodat het niet uit de hand loopt. Het proces moet uiteindelijk wel leiden tot een goed product voor de organisatie. Ruimte en sturing conflicteren met elkaar, maar ze zijn beide noodzakelijk voor improvisatie. Wij hebben onderzocht of, en zo ja, hoe de leiderschapstijlen deze paradox oplossen. Daarnaast willen we kijken of de leiderschapstijl een positief effect hebben op de kwaliteit van het proces en het product.

Om dit te onderzoeken maken wij gebruiken van een onderzoekmethode die wij theatrale simulatie in de hyperrealiteit noemen. Deze methode is ontworpen voor de filosofie (waar hij FLITS heet) en dit is de eerste keer dat de methode buiten de filosofie wordt toegepast. Theatrale simulatie wil zeggen dat wij de werkelijkheid simuleren met behulp van acteurs. Het voordeel hiervan is dat we persoonlijkheid en gedrag kunnen veranderen zoals wij dat willen. Hyperrealiteit betekent dat de simulatie plaatsvindt in een abstracte, kunstmatige werkelijkheid dat bepaalde effecten uitvergoot (aandikken) en een proces dat normaal uren of dagen duurt in een 15 minuten kan laten zien (indikken).

We hebben alle factoren die improvisatie beïnvloeden vertaalt in een omgeving, in relaties tussen mensen en in regels. Samen vormen zij de simulatie. De omgeving zijn de late middeleeuwen, waar gildemeesters innovatieve producten maken voor een keizerin. De relaties symboliseren de leiderschapstijlen. Zo wordt directief leiderschap uitgespeeld door een gildemeester en drie gezellen. Dienend leiderschap wordt verbeeld door een abt en drie gildemeesters en tijdens roterend leiderschap zijn vier gildemeesters samen verantwoordelijk voor het innovatieve product. De acteurs hebben hiernaast nog extra regels gekregen om de stijlen accuraat uit te kunnen beelden.

Onze resultaten laten duidelijk zien dat dienend en roterend leiderschap de paradox tussen ruimte en sturing aankunnen. Dienend leiderschap gebruikt hiervoor indirecte sturing, wat door teamleden niet aanvoelt als sturing, zodat ze nog steeds de ruimte hebben. Roterend leiderschap geeft alle teamleden de optie om het proces te sturen, maar laat hun ook de ruimte om te experimenteren. Roterend leiderschap heeft de beste invloed op de kwaliteit van improvisatie, gevolgd door dienend leiderschap. Directief leiderschap kon niet omgaan met de paradox en had een negatief effect op de kwaliteit van improvisatie.

We hebben ook ontdekt dat de attitude, of emotie, van de leider een groot effect heeft op improvisatie. Directief leiderschap was van nature negatief en dienend leiderschap was van nature positief. Een positieve attitude is belangrijk voor improvisatie omdat het bepaalt hoe teamleden reageren op de onzekerheid die improvisatie opwekt. Een positieve attitude zorgt ervoor dat teamleden onzekerheid als kans zien in plaats van een bedreiging.

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1 INTRODUCTION

In business it is essential to be able to cope with unexpected events and unanticipated opportunities (Moorman and Miner 1998a). These events and opportunities happen more often as the organizational environment changes faster and faster under the influence of, for example, technological developments and changing consumer behavior (Weick 1993a).

In the past decades, a new way of coping with these events and opportunities has been studied by a growing number of scholars. This new way is organizational improvisation. Organizational improvisation is defined as "*conception of action as it unfolds, by an organization and/or its members, drawing on available material, cognitive, affective and social resources"* (Pina e Cunha et al. 1999, p. 302). Organizational improvisation makes it possible to react to events immediately, without the need for a carefully designed plan that takes time to devise.

Organizational improvisation is a relatively new research field. The first articles dedicated to it were published in the late 1980's and early 1990's. These articles used jazz improvisation as a metaphor for improvisation in organizations and looked at how lessons from jazz could be implemented to the advantage of organizations (Bastien and Hostager 1988; Weick 1993a). Later the jazz metaphor was supplemented with lessons from theatrical improvisation (improv) (Johnstone 1987; Vera and Crossan 2004; Vera and Crossan 2005). Some scholars have also done empirical research to study how organizational improvisations occurs in practice (Moorman and Miner 1998a; Moorman and Miner 1998b; Pina e Cunha et al. 2003; Leybourne 2006; Akgün et al. 2007). Finally, a number of articles link organizational improvisation with other research fields such as creativity, organizational learning and memory, spontaneity, intuition, time, bricolage and crisis management (Moorman and Miner 1998b; Pina e Cunha et al. 1999; Chelariu et al. 2002; Kyriakopoulos 2004; Crossan et al. 2005; Leybourne 2006; Akgün et al. 2007; Kamoche and Pina e Cunha 2008).

The subject of leadership has received very little attention within improvisation literature, with only one article completely devoted to it (Pina e Cunha et al. 2003). Pina e Cunha et al. (2003) found that the main problem for improvisational leaders is handling the paradox that arises from improvisation in an organizational context. An improvisational process, at least in theatre and jazz, is focused on the process, not on the outcome (Johnstone 1987; Bastien and Hostager 1988; Vera and Crossan 2004). In contrast to other art forms, the main goal of improvisation is the process of creativity, not the result of creativity such as paintings or a scripted play (Vera and Crossan 2004). Organizations, however, are focused on the outcome; they have to produce something that adds value for their clients, or otherwise they have no right of existence.

Leading improvisation also requires a focus on the process. Within the improvisational process there are two opposing powers at work. On the one hand, the people in the process require freedom to improvise; freedom to experiment, freedom to fail and freedom to discover new ways of doing things. However there are drawbacks to improvisation that need to be controlled. Also, if the leader does not have control, the people might resort to inactivity or routine behavior. Because improvisation is focused on the process, but an organization is focused on the outcome, leaders will also try and control the improvisational process and steer it in a direction they think is good for the organization. Now, leaders face the paradox that they want to control the process, but have to allow freedom for the people in the process as well.

To make sure we address this paradox in this thesis, we will investigate the quality of the process of organizational improvisation (how well people improvise) and the product quality (how good the output is). We will try to contribute to the scientific literature by providing better insight into how a leader can cope with the paradox within organizational improvisation. We will do this by simulating different leadership styles in a context of improvisation and researching the relationships between leadership style and improvisation on the one hand and the relation between process quality and product quality on the other hand. We will also differentiate leading improvisation from related constructs; leading innovation and leading creativity.

To acquire insight to the context of improvisation, we will look at the antecedents of organizational improvisation, for which there has been a lot of attention in the literature. Miner et al. (2001), for example, research when improvisation happens in new product development and Pina e Cunha et al. (1999) review the research field up to 1998 to determine when organizational improvisation happens. The authors focus mainly on understanding when improvisation occurs and when improvisation is advantageous for an organization.

1.1 NEW PRODUCT DEVELOPMENT TEAMS

For our research, we will focus on New Product Development (NPD) teams. NPD is a category of innovation that deals with the innovating tangible products as opposed to services. An NPD environment is the context in which improvisation has the most the most documented benefits. Several articles have used NPD teams or innovation teams as an environment for describing organizational improvisation (Moorman and Miner 1998a; Kamoche and Pina e Cunha 2001; Miner et al. 2001; Akgün and Lynn 2002; Kyriakopoulos 2004; Vera and Crossan 2005; Akgün et al. 2007). In the innovation literature there are also several articles which mention improvisation (Weick 1993b; Eisenhardt and Tabrizi 1995; Brown and Eisenhardt 1997; Brown and Eisenhardt 1998). Some advantages that are proposed are that improvisation quickens the innovation process, allows for more creativity and stimulates organizational learning.

We focus on teams because these are a good units of analysis. There are a limited number of parties (the team members and the leader) directly involved in a team. NPD teams can and often do act as a separate part of an organization (O'Reilly and Tushman 2004) and can therefore be analyzed separately from other parts of an organization, without oversimplifying the reality. Fewer involved parties means that the analysis is less complex. Also, if there are fewer parties involved it is easier to make an accurate simulation, as we are planning to do.

Finally, in an NPD team that is separate from the organization, the leader of that team has a lot of power to influence the context of his team, before and during the development process. This is important because it will allows us to look at the influence of the leader more clearly.

1.2 TSM BUSINESS SCHOOL

The research will be done for the benefit of TSM Business School. TSM offers a variety of educational management courses and programs to people who already have practical experience in a business context. These courses and programs are given to individuals and within organizations.

TSM has formulated four key subjects in which they want to excel: innovation, entrepreneurship, leadership and sustainability. They want to be known by these subjects in the market and also focus their teaching on these elements. One of the ways in which TSM tries to achieve this, is by facilitating research in these fields. This thesis focuses on two of the four points, innovation and leadership.

If the research succeeds in creating a way in which leaders can generate organizational improvisation on purpose, this will allow TSM to teach improvisation as a strategy for dealing with innovation.

1.3 RESEARCH QUESTIONS

So, our focus is on the role a leader has on organizational improvisation within a NPD team. We will research the effects of leadership style. This leads to our main research question:

"How does leadership style influence organizational improvisation within a NPD team?"

In order to come to a thorough understanding of the influences, we will first address the context for improvisation. Then we will establish that there is a connection between leadership style and organizational improvisation and explore the variables within that relationship. Finally we will posit what the ideal leadership style for overcoming the paradoxical nature of organizational improvisation is.

1. *In what context is organizational improvisation possible?*
2. *Is there a connection between leadership style and the quality of organizational improvisation?*
3. *How can the connection between leadership style and organizational improvisation be explained?*
4. *How can leadership help solve the paradoxical nature of organizational improvisation?*

We use the term 'connection' in sub questions 2 and 3 to differentiate from the terms 'correlation' and 'relationship', which have additional meaning in scientific literature. We do not seek to find and prove a statistical significant correlation, but are rather interested in an exploration of the connection between organizational improvisation and leadership style, supported by statistical analysis.

1.4 STRUCTURE

In our theoretical framework (chapter 2) we will first determine what organizational improvisation is. As a part of that we will look at its advantages and, maybe even more importantly, when it is advantageous. The larger part of the theoretical framework consists of the conditions for improvisation. Here we will make a difference between the conditions that affect the incidence and the quality of improvisation. Finally we will discuss different leadership styles and their theoretical effect on improvisation.

In chapter 3, Methodology, we will explain our research method. This method is experimental itself. In short, we will use theatrical performers to research the effects by running simulations in the hyper reality. Hyper reality is a reality that enlarges observable effects and shortens the time it takes to complete the processes we are researching. The rationale behind this method is called abductive reasoning (as opposed to inductive and deductive) and it is based on the philosophical research of Wagenaar (2008). In chapter 3 we will also discuss the operationalization of our concepts and the measurements we need to reach an answer to our research question.

Chapter 4 will discuss the analysis of the simulations in the hyper reality. Here we will answer our sub-questions and work towards a conclusion, which will be reached in chapter 5. In chapter 5 we will also discuss the implications and limitations of our findings and propose recommendations for further research.

2 THEORETICAL FRAMEWORK

So, this thesis is about organizational improvisation, but what is organizational improvisation exactly, what are the advantages and what factors influence it? We will answer this question by exploring the current scientific literature on organizational improvisation.

We will first elaborate on the definition of organizational improvisation given in chapter 1: "*conception of action as it unfolds, by an organization and/or its members, drawing on available material, cognitive, affective and social resources" (Pina e Cunha et al. 1999, p. 302).* Pina e Cunha et al. (1999) see improvisation as a process where conception (or planning) and action (execution) happen simultaneously. In this process it is possible for planning to inform execution and vice versa, creating a cyclical relationship that can go so quick it is no longer separable from each other. They also add the notion of bricolage to the definition. Bricolage is using the resources that are at hand, rather than collecting specific resources. Resources are often regarded as tangible items, but Pina e Cunha et al. use the term in the broadest sense possible, by including cognitive (or rational), affective (or emotional) and social (or relational) resources

Beside this definition, there are two other, often cited, definitions. The first definition was created by Moorman & Miner (1998b, p.698) and states that improvisation is: *"the degree to which composition and execution converge in time*". The second definition is taken from the work of Vera and Crossan (2004, p.733) who base their definition on improvisational theatre: *"the spontaneous and creative process of attempting to achieve an objective in a new way"*.

Moorman & Miner (1998b) emphasize the temporal aspect of improvisation: they say that something is improvisation if composition, or planning is close to execution in time. Vera & Crossan seemingly do not mention the temporal, simultaneous or bricolage aspect of improvisation at all, but focus instead on improvisation as a process and the goal of that process.

However, the term spontaneous covers the temporal and simultaneous aspect of improvisation, because it means: *"done without having been planned […] in advance"* (http://www.websters-online-dictionary.org/definition/spontaneous, accessed on 20-07-2009). Bricolage is also implied in this definition, because if a person takes action spontaneously he will have to work with the resources at hand.

After spontaneous, we see the word *creative*. Together with the *new way* in which an objective is achieved, this notion emphasizes that improvisation cannot simply be repeating past actions, but rather the combination and adjustment of past actions or the development of new ones. The words *process of attempting to achieve an objective* emphasize that improvisation does not have to result in the objective being achieved. Improvisation is more about the process than about the outcome of the process.

2.1 ADVANTAGES AND RELATED CONSTRUCTS

Organizational improvisation is theorized to have many advantages. It shares advantages with the related constructs of creativity, innovation and adaptation and has an empirically researched positive effect on speed to market and new product success. Proposed additional advantages include an increase in organizational learning, incremental organizational change and better team work and motivation for teams (Moorman and Miner 1998a; Pina e Cunha et al. 1999; Akgün and Lynn 2002; Chelariu et al. 2002; Akgün et al. 2007; Leybourne 2007).

2.1.1 RELATED CONSTRUCTS

As some of the advantages of organizational improvisation stem from the similarities and differences with creativity, innovation and adaptation, we will discuss these first. The main difference between creativity,

innovation and adaptation is the focus on novelty. Creativity is only about absolute novelty, the creation of something entirely new to the world. Innovation is mainly about relative novelty, the creation of something new to the situation or to the creator, but can be absolutely novel too. Adaptation does not necessarily have to be novel, organizations can adapt to their environment by doing something they already know. Adaptation can also be about relatively or absolutely novel solutions (Pina e Cunha et al. 1999; Pina e Cunha et al. 2003).

Improvisation shares the focus on novelty with innovation and creativity. As we can see in the definition of Vera & Crossan, improvisation is a process attempts to achieve something in a new way. This novelty can either be absolute or relative.

There are two striking differences between improvisation on the one hand and creativity, innovation and adaptation on the other hand. The first is that the process of improvisation is always a synthesis between planning and acting and can happen spontaneously. Processes of innovation and creativity can be planned in advance. Even adaptation can be planned, for example by working out scenario's of how the environment might change and how the organization should react if that happens. The spontaneity of improvisation is caused by, as we will explain in paragraph 2.2, feelings of uncertainty, ambiguity and urgency. When people are faced with these feelings, planning is no longer an option.

If we look at innovation, creativity and adaptation as actions then these constructs also become improvisation if the actions are not planned in advance, but thought of during the process. Then, these constructs come under the definition of improvisation: "the conceptions of action as it unfolds" (Pina e Cunha et al. 1999, p. 308). In Figure 1 the differences and overlap between these constructs are made visual.

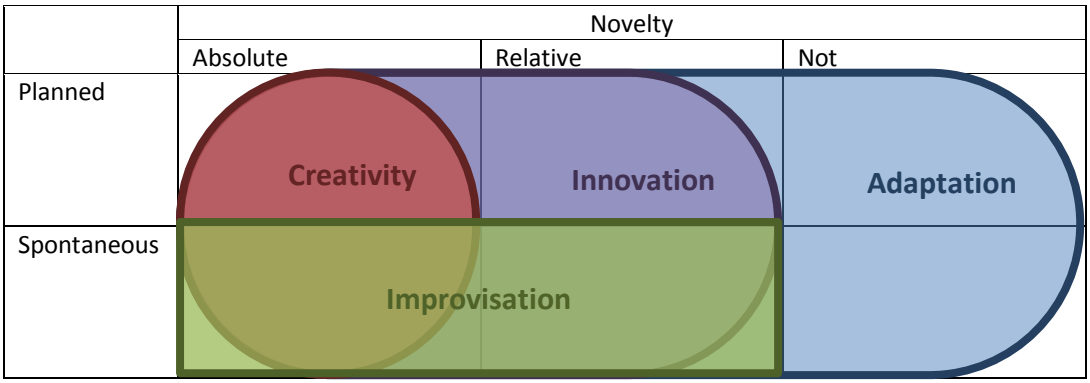


Figure 1: Improvisation and its related constructs, divided by novelty and spontaneity

The second striking difference is that improvisation is the only construct that focuses on the process rather than the outcome of the process. This means that improvisation seeks for novelty in the process and does not guarantee a good or novel result. Since innovation is not only the invention but also the implementation of an idea, the result focus of innovation is apparent from its definition. Creativity always has a divergent and a convergent phase (Byttebier and Vullings 2007), so although there is a large amount of freedom during the process, the goal of creativity is the result. Adaptation is focused on the result because it is born out of a desire to adapt to the world, which is the goal. The difference between the concepts is shown in Figure 2.

Our focus is improvisation, but within new product development, which is a sub construct of improvisation. Because improvisation overlaps when it is novel and spontaneous, we focus on that part of innovation. However, even when innovation happens spontaneously, it still has a product focus and is therefore different from improvisation.

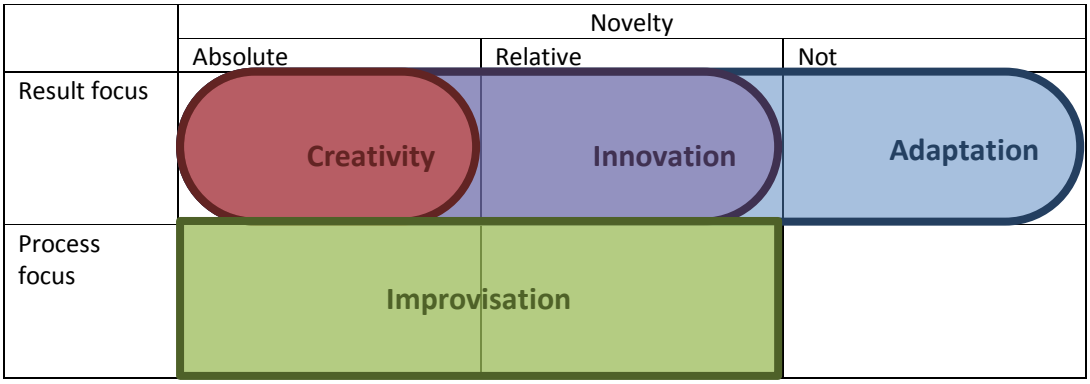


Figure 2: Improvisation and its related constructs, divided by novelty and focus

We theorize that spontaneous innovation can ultimately have a product focus, while having a process focus during episodes of improvisation. When planning and execution converge in time (Moorman and Miner 1998a), planning informs execution and execution informs planning. For this so-called feedback loop to happen, someone has to be entirely focused on the process of improvisation. When someone thinks about the product as it should be, he can no longer execute at the same time and the feedback loop is broken. At that moment there is no improvisation.

Our research will therefore focus on improvisational processes within new product development, which can also mean episodes of improvisation in a larger process of innovation. To see the effects of leadership style on improvisation within innovation, we will research both the process and product of improvisation.

2.1.2 ADVANTAGES

Because improvisation is spontaneous, one advantage is its ability to react to its environment without planning. This happens often in turbulent and complex environments. Because improvisation does not have to wait until the ideal resources and circumstances are available and because planning and execution happen simultaneously, speed is also an advantage (Crossan et al. 1996; Pina e Cunha et al. 1999).

Akgün and Lynn (2002) have researched the effect of improvisation on speed to market and have found a positive, significant relationship in turbulent environments. This finding matches a study by Eisenhardt and Tabrizi (1995) that shows that an improvisational or experimental strategy is better for speeding up new product development.

Speed can also be reached in different ways; for innovation and adaptation this is done by designing processes in such a way that every part is done as efficiently as possible, which is called compression (Eisenhardt and Tabrizi 1995). This requires careful and extensive planning the first time, after which processes can be run through very quickly. This approach, however, is only suitable for tasks where there are no unexpected complications. Improvisation allows people to make sense of unexpected changes quickly, which sets it apart from other methods of speeding up innovation.

Creativity hinges on moments of insight and cannot be sped up by doing everything as efficiently as possible. It is possible to speed up creativity through certain techniques, such as brainstorming (Osborn and Faickney 1953), which lays down rules to generate creativity or TRIZ (Altshuller et al. 1999), which gives an overview of solutions that can be combined with the situation. These techniques are however only an aid to creativity and do not guarantee a faster or better result.

Other research shows advantages in new product success, learning, organizational change, motivation, and teamwork. New product success, defined as meeting or exceeding managerial, profit and market expectations

(Akgün et al. 2007), has been shown to be indirectly affected by team improvisation. Improvisation has a positive and significant effect on information and knowledge implementation, which has a positive and significant effect on new product success.

Information and knowledge implementation refers to the extent to which a team incorporate lessons learned and problems solved during the NPD process into the new product (Akgün et al. 2007). Information and knowledge implementation is, in other words, the exploitation of knowledge. Exploitation of knowledge is the final step of learning. In its entirety, learning is the discovery, retention and exploitation of knowledge (Chelariu et al. 2002). "Improvisation is a circular process of learning occurring through moving and processing information, acting on that learning and as a result learning more" (Chelariu et al. 2002, p.142).

Because improvisation leads to learning more about the project undertaken, new product success is higher. The improvisational circular process of learning can have big effects on an organization; because of its circular nature, learning about small changes can lead to more changes, and many of changes lead to an incremental organizational change that can have big effects (Pina e Cunha et al. 1999).

Finally, improvisation can increase motivation and team work. Because somebody immediately acts on ideas, there is a high level of individual feedback, which, according to Hackman and Oldman's model increases motivation (1980). Improvisation is also more dependent on persons than on structures and techniques. Because of this, the positive feeling from solving a problem or capitalizing on an opportunity is contributed entirely to a person and not to the organizational structures. If a problem is solved or an opportunity capitalized on by a team, this positive feeling not only heightens individual motivation, but also teamwork (Pina e Cunha et al. 1999). A further stimulant to this positive feeling is derived from sensemaking. Improvisation allows a person to make sense of his environment in a short amount of time. The understanding that is given by sensemaking heightens positive feelings and motivation (Weick 1993b).

In order to make all the advantages of organizational improvisation clear, we have described a hypothetical new product development process below.

Within the company Beans & Co, a new product development team is working on a new coffeemaker that can make luxury coffee for a low price . Everything goes as planned and the team works according their normal processes of planning first and acting later.

The team leader then receives a report that one of their competitors is almost ready to introduce a similar product. What's more, the competitor's product has some additional features that theirs don't have. At this point , the team leader decides that improvisation is the best course of action: to introduce their product first and develop additional features as they go along.

The team leader conveys his sentiments to his team and they start improvising. One person is testing the machine by putting pads into place and turning the machine on. While doing this, he discovers he can do it faster by leaving the lid half open and sliding the pads into place without having to open and close the lid. A second person sees this and quickly devises of an automatic inserting system so that people only have to push one button if they want coffee. The team is so enthusiastic about this that they all become more motivated and start working together more and combining ideas.

Because of the time pressure, the team uses an injection molding technique to make their machine, instead of assembling parts. This technique is later carried over into the actual production and is implemented on the factory floor.

At the end of a frantic period of development, the team have produced a new coffeemaker with just one button, two weeks ahead of schedule. They are better motivated and have achieved an insight which is also valuable to another part of the organization: production.

2.1.3 WHEN IS ORGANIZATIONAL IMPROVISATION EFFECTIVE?

If we look at the long list of advantages of organizational improvisation and the very positive example, we can wonder why improvisation is not the standard way of doing things in organizations. The advantages of improvisation are of course more nuanced. There are negative aspects of improvisation, such as increased anxiety, biased learning, opportunity traps and addiction to improvisation (Pina e Cunha et al. 1999).

Increased anxiety comes from not knowing what problems or opportunities will arise and only having available resources to work with. Biased learning happens when a solution encountered in an improvisational process is generalized and used in circumstances where it is not applicable. Opportunity traps occur when an organization fails to exploit the ideas obtained during improvisation. And the positive feeling associated with improvisation can lead to an addiction to improvisation. This is bad because improvisation is not effective in every situation and does not always lead to the envisioned, positive outcomes.

The main reason for this is that improvisation is focused on the process and not on the outcomes. In improvisational theatre, a performer cannot focus on the result, but has to focus on the process of creation. According to Drazin improvisation involves *"'engaging in creative acts, regardless of whether the outcomes are novel, useful, or creative"* (1999, p.287).

Improvisation is also equivocal, meaning that it is dependent on the circumstances whether it has positive or negative effects (Vera and Crossan 2004; Vera and Crossan 2005). As we have already mentioned when describing the advantages of improvisation, a turbulent and complex environment is such a circumstance. Other circumstances in which improvisation is a positive force are, for example, time pressure, an experimental culture and the right leadership style. These circumstances are also antecedents for improvisation. In the next section we will give more attention to these and other antecedents.

2.2 INFLUENCING FACTORS

In order to answer the first sub question, *in what context is organizational improvisation possible*, we will look at the factors that influence the incidence of improvisation. Since Pina e Cunha et al.'s (1999) literature review over a decade ago, there hasn't been a dedicated attempt to list all factors, although the knowledge base in the literature has progressed a lot.

Because we are looking at the paradox of giving freedom to the process of improvisation and controlling the outcome of improvisation, we will not only look at the incidence of improvisation, but also on the quality or effectiveness of organizational improvisation. To give this overview structure, we differentiate the factors according to their source; environmental, organizational, team and individual factors.

2.2.1 ENVIRONMENTAL FACTORS

The question 'when does organizational improvisation happen?' is usually answered by stating that improvisation is a reaction to an unexpected event. Besides unexpected, the event also has to be unplanned (Pina e Cunha et al. 1999). Natural disasters are mostly unexpected, but the reaction to them is planned. There are formal regulations and handbooks on how to deal with them and the people that have to react may have had training on how to deal with the event.

Pina e Cunha et al. (1999) argue that an unexpected and unplanned for event does not automatically trigger improvisation. In order to trigger improvisation an event must also be perceived as important and within the action span of the person or organization reacting to it. In the case of a natural disaster in the city of

Amsterdam, the mayor of Amsterdam will perceive the event as important and within his action span, while the mayor of another city might perceive the event as important, but not within his [1] action span.

An unexpected and unplanned events do not always have to be disasters or problems. Unanticipated opportunities can be a cause for improvisation as well (Miner et al. 2001). To put it generally, if there is an unexpected mismatch between expectations and perceived or enacted environmental conditions, improvisation can occur to mend this mismatch (Pina e Cunha et al. 1999). Environmental conditions in which this mismatch frequently occurs are complexity, turbulence and time pressure.

Complexity leads to ambiguity. Individuals have to deal with too many or too few interpretations of a situation (Vera and Crossan 2004). By improvising, people act and then make retrospective sense of their experience, so that they can act again (Schon 1983; Crossan et al. 2005). In a complex environment, improvisation will therefore be preferable to planning and then acting.

Crossan et al.(2005, p. 138) explain the effect of turbulence on organizational improvisation as follows: *"While the execution of an experiment usually involves an iterative cycle (Thomke, 1998) of design, build, run, and analyze steps, as environmental turbulence increases these four phases start to overlap and to be executed simultaneously [...]. Under these circumstances, experiments are no longer planned and controlled, but become improvisational."* This is because of the uncertainty that turbulence triggers. The uncertainty forces people to adjust all phases as soon as new information comes in and execute the phases simultaneously.

Another effect caused by environmental factors is time pressure and the accompanying sense of urgency for those involved. Because improvisation is the convergence of planning and execution in time, it can lead to a reduction in the time used for an action and therefore it is a way of dealing with time pressure. An example of this is that NPD teams have to respond in the moment when an unanticipated opportunity arises. If they do not do this, they lose the opportunity. The urgency of the situation may lead to an improvisational response (Vera and Crossan 2004). Pina e Cunha et al (2003), in their article on improvisational leadership, posit a sense of urgency as the key factor to trigger improvised action.

To summarize, there are three environmental factors, complexity, turbulence and time pressure, they lead to ambiguity, uncertainty and urgency, which trigger improvisation. However, they only lead to this when there is a feeling of ownership and importance. If a person is confronted with an issue that is complex, in a turbulent environment and is under time pressure, he will only respond to the issue when he perceives the issue to be his problem (ownership) and when he attaches value to overcoming the issue (importance).

The environmental conditions do not influence the quality of improvisation directly, because they only serve as triggers to improvisation and do not govern how well people improvise.

2.2.2 ORGANIZATIONAL FACTORS

The previous antecedents all looked at the effect of the environment on the incidence of organizational improvisation. There are a number of antecedents that look at the effect of organizational measures on the incidence of improvisation. One of these measures is the experimental culture of an organization. An experimental culture is a culture that promotes action and experimentation as a way of understanding reality (Pina e Cunha et al. 1999; Pina e Cunha et al. 2003). In order to achieve such a culture, competent mistakes have to be tolerated or even promoted (Johne and Storey 1998). Competent mistakes are mistakes that are born out of novel ideas and not out of bad execution (Pina e Cunha et al. 2003). In an experimental culture,

[1] For the sake of readability we will use the male form when referring to persons that may be either male or female.

team members should experience a feeling of trust that their ideas will be accepted by their fellow team members (Johnstone 1987; Vera and Crossan 2004). This trust positively influences the incidence and quality of improvisation.

Coupled with an experimental culture, there needs to be a minimal structure. This implies that improvisation does need a structure to occur. This can be seen in both jazz improvisation and theatrical improvisation. In jazz improvisation, the structure of a song is the framework wherein jazz musicians can freely improvise and let their creativity flow (Barrett 1998). In theatrical improvisation, there are similar structures that are agreed on beforehand. These structures, called games, provide a shared understanding of the possibilities, limitations and the goal of the scene that is improvised (Johnstone 1987). It is because of this combination of a shared understanding and the freedom to act within a structure that improvisation can occur.

In business, minimal structures can be achieved through invisible controls, clear goals and, arguably, short-term milestones. Invisible controls are controls which do not restrict the creativity and spontaneity of improvisation. Clear goals provide a sense of direction (the shared understanding) to participants in an improvisation process. Short-term milestones also contribute to the shared understanding and keep the sense of urgency needed for improvisation going. Too many short-term milestones, however, might however restrict participants in their freedom (Pina e Cunha et al. 1999).

There is some empirical evidence (Akgün and Lynn 2002) that shows that clear goals limit the incidence of improvisation. This happens when goals are too detailed, for example when product features are already described in the goal. Instead, there should be a broad and dynamic goal that does provide a sense of direction, but does not provide restrictions to the team (Aaker 1998). This broad and dynamic goal should still be clear to all members of a team.

A subject of much debate within the improvisation literature is the effect of organizational memory on the incidence and quality of improvisation. Individuals have memory, but larger entities such as teams and organizations also have memories. Organizational memory consists partly of procedures and stored knowledge and partly of the memory of the individuals who are a part of the organization (Moorman and Miner 1998b).

Memory will enable people to fall back on existing solutions to a problem rather than improvising. Therefore strong memory, experience or expertise is a negative antecedent to improvisation (Moorman and Miner 1998a; Pina e Cunha et al. 1999; Akgün and Lynn 2002; Vera and Crossan 2005). However, the combination or adjustment of knowledge, procedures or previous experiences into something new, is improvisation and therefore strong memory, experience or expertise is a positive antecedent (Brown and Eisenhardt 1998; Leybourne 2006). In theatrical improvisation, this technique is called ‘drawing on ready mades’, meaning that players use previously used routines in new ways to enhance improvisation (Vera and Crossan 2004).

In order to try and solve these conflicting opinions, Pina e Cunha et al. (1999) come to the following: *“Our contribution to the untangling of this paradox lies in affirming that, although organizational memory in fact hinders improvisation, this can be severely attenuated if the organization can build the necessary will to depart from current grammatical forms and use their elements to create new routines as action is unfolding.”* Akgün et al. (2007) call the will to depart from memory 'unlearning' and do indeed find a positive correlation between team unlearning and team improvisation. So organizational memory negatively affects the incidence of improvisation, unless there is a will to depart from memory when necessary.

The influence of memory on the quality of improvisation is equally debated. The arguments in favor of a positive relationship say memory can be used as a reservoir of knowledge that can be freely used to recombine and associate on ideas to form new ones (Moorman and Miner 1998b). In empirical investigations however, this relationship has not been proven and actually points toward a negative effect of knowledge (Miner et al. 2001; Vera and Crossan 2005). This negative effect is usually found when memory is

conceptualized as formal memory. In organizations this usually means standards, rules or procedures. These rules restrict creativity instead of stimulating the recombination of knowledge. To conclude, formal memory has a negative effect on the quality of improvisation; informal memory has a positive effect.

Similar issues to memory are discussed for real-time information. Although real-time information should improve the incidence of improvisation in theory (Moorman and Miner 1998a; Vera and Crossan 2004; Vera and Crossan 2005), The theory is that real-time information leads to awareness of the internal and external environment so that more unexpected events are observed, which triggers improvisation.

However, empirical evidence has not yet found a significant positive relationship and the results even point toward a negative relationship. (Moorman and Miner 1998a; Akgün and Lynn 2002). In empirical research in NPD teams, the flow of real-time information to NPD teams led teams to be more busy with processing the information than with improvising (Akgün and Lynn 2002). Therefore, awareness of events in the internal and external environment is good, but collecting or processing this information should not be left to the NPD team.

Vera & Crossan (2005) translate the theatrical technique of awareness to *"an infrastructure that provides teams with relevant real-time information"* (p. 208). The word 'relevant' suggests that someone or something collects processes and selects the information before passing it on to the NPD team. The quality of improvisation is helped because the basic repertoire, much like with informal memory, is broadened.

2.2.3 TEAM FACTORS

We already saw that an experimental culture can foster trust within teams. Trust is a very important part of improvisational processes, but since it is connected with multiple factors (i.e. experimental culture, team work) on multiple levels and cannot be generated easily, we will not include it in our list of factors directly.

Team work in improvisation is enhanced by collaboration and agreement. Collaboration means that you can trust your team members to help you out when necessary. Furthermore, team members develop a 'feel' for each other; they instinctively know how other team members are going to react and they can act upon this instinct. Agreement means that team members not only accept each others' ideas, but also support them and enhance them with their own ideas (Vera and Crossan 2004). In improvisational theatre this is called 'Yes-anding'. When an performer comes up with a new idea during a scene, the other performers need to accept this idea as true and build on it. Akgünn & Lynn (2002) have shown that greater team work increases the likelihood that a team will improvise. This is also true for team stability. If the composition of a team is stable, the necessary factors for trust can be formed, increasing the incidence and quality of improvisation.

Besides team work, the leadership style is an important factor too. There are three leadership styles put forward as having a positive influence on the incidence and quality of improvisation: rotating leadership, or servant leadership (Pina e Cunha et al. 1999; Vera and Crossan 2005) and improvisational leadership (Pina e Cunha et al. 2003), which is the integration of oppositional leadership styles such as autocratic versus democratic and people-oriented versus task-oriented leadership styles. Rotating leadership is advantageous because it allows the person with the most skills to assume leadership when an unexpected problem or opportunity arises. The role of a serving leader is to support the team members in reaching their maximum effectiveness and to support the organizational goals, focusing the attention of the team upon the goal, as described by the factor minimal structure. We will revisit leadership style more extensively in section 2.4.

The last major team factor influencing organizational improvisation is diversity. As in innovation, diversity, either in gender, age, ethnicity, character traits and function leads to a broad skill base that allows the team to make new combinations of existing knowledge (Brown and Eisenhardt 1997).

2.2.4 PERSONAL FACTORS

Besides the aforementioned expertise, other individual characteristics have a large effect on improvisation. These individual characteristics are creativity, spontaneity, intuition and flexibility. Training or experience in improvisation is another factor that increases both the incidence and the quality of improvisation. These factors influence the incidence because people who have these characteristics take to improvisation more easily (Vera and Crossan 2005). It has got a very large effect on the quality of improvisation. The reason for this can be seen in the definition of Vera & Crossan (2004), who see creativity and spontaneity as part of improvisation. People who are good at these things will therefore be good at improvisation too. If a person can improvise well, either by talent or training, the quality of improvisation will be higher (Pina e Cunha et al. 1999; Vera and Crossan 2004; Vera and Crossan 2005).

Being experienced, or having expertise in the work at hand influences improvisation in the same way as organizational memory. People will more easily fall back on experience rather than improvising if they have more experience. However, this effect can be reduced if people actively decide not to go for existing solutions. Experience and expertise do lead to more effective improvisation because it gives people a broader repertoire to improvise on (Kyriakopoulos 2004; Leybourne 2006).

An overview of all factors is shown in table [X].

	Factors	Effect on incidence	Effect on Quality
Environmental	Complexity ➔ Ambiguity	++	
	Turbulence ➔ Uncertainty	++	
	Time pressure ➔ Urgency	++	
Organizational	Experimental culture	++	++
	Minimal structure	++	++
	Memory	--	-/+
	Real-time information	-	++
Team	Team work	++	++
	Team stability	+	+
	Leadership style	+	++
	Diversity	?	+
Personal	Spontaneity	+	++
	Creativity	+	++
	Flexibility	+	++
	Intuition	+	++
	Training	+	++
	Expertise	-	++
	Experience	-	++

2.3 THE PARADOX BETWEEN FREEDOM AND CONTROL

Before moving on to focus on leadership style, we will first delve deeper into the paradox between freedom and control. As we discussed in our introduction, it is this paradox that a leader has to solve in an improvisational process . This paradox is very old, and the extremes are sometimes called by different names

such as structure and steering or autonomy and space. Over time, this paradox has been dealt with in a number of different ways.

Scientific Management (Taylor 1911) for example, dealt with the paradox by giving all control to management and leaving workers in unfreedom. The solution of the paradox was to choose one extreme and implement it rigorously. Another way of dealing with the paradox is to view it as a continuum between the extremes and try to determine the ideal place on that continuum for a given situation. This became known as the contingency approach (Lawrence and Lorsh 1967) or the law of situation (Follett 1940).

A third way of dealing with paradoxes is to solve them by integrating the extremes by synthesis. For example, Clegg et al. (Clegg et al. 2002; Vieira da Cunha et al. 2002) call this the relational approach and it seeks to keep the extremes intact, while taking the relationship between the extremes seriously (Clegg et al. 2002, p. 489). In other words this means that a solution to a paradox should not merge, compromise or choose between extremes, but should allow them to exist in a bi-directional relationship (meaning both extremes influence each other equally) and look for a synthesis that emerges between the two extremes (p. 495).

Improvisation is a relational solution to another paradox; the paradox between planning and acting. In this solution, both planning and acting are allowed to exist equally and influence each other. The synthesis between them is improvisation, which allows simultaneous planning and acting, where planning informs acting and acting informs planning. Therefore, improvisation combines planning and acting without replacing either of them. Visually, this relational solution looks like this (Figure 4):

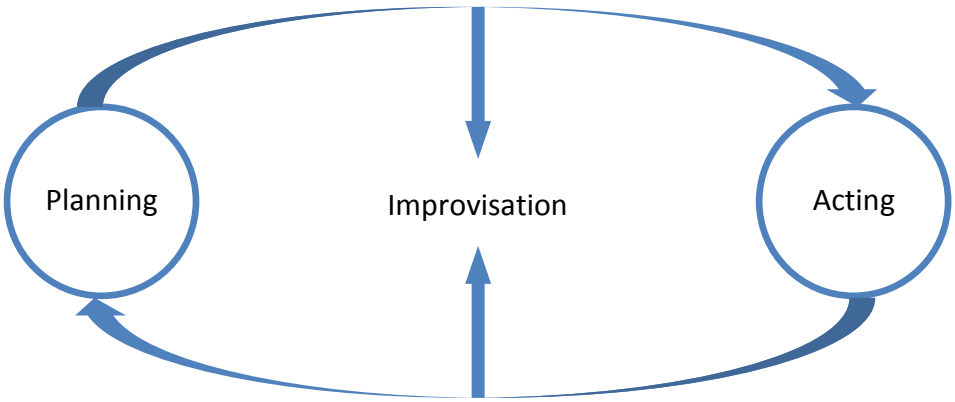


Figure 4: A Relational approach to the planning/acting paradox (Clegg et al. 2002, p. 489)

It is precisely because improvisation is rooted in a paradox that leading improvisation is paradoxical as well. Planning is thinking of ways to achieve a desirable outcome and requires a different, more controlling leadership then acting, which needs a leadership style that allows freedom for people in the process (Barrett 1998). Because both planning and action happen simultaneously in improvisation, a leader has to be able to display both leadership styles at once. In our research we will look for a leadership style that has the ability to solve this paradox through the relational approach; by keeping the extremes intact and honoring the relationship between the extremes.

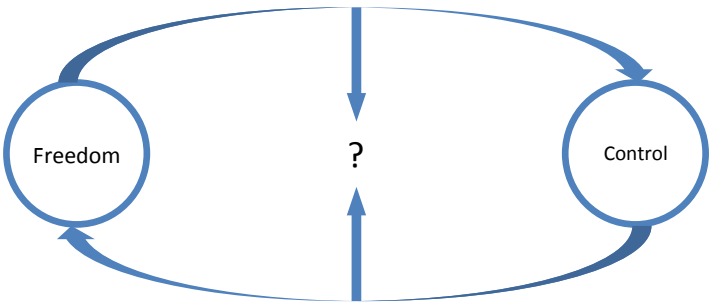


Figure 3: The paradox that we want to solve

2.4 LEADERSHIP AS THE FOCUS

On to our main subject, leadership style. There is only one article that specifically deals with leadership and improvisation based on empirical research; Pina e Cunha (2003). Other articles (Bastien and Hostager 1988; Eisenberg 1990; Weick 1993a; Weick 1993b; Crossan et al. 1996; Pina e Cunha et al. 1999) also visit the topic of leading improvisation, but deal only with metaphors (such as jazz) and conceptual theories.

Because of the scarcity of articles focusing on leadership and improvisation, we will first look at how leadership affects the related subjects of creativity and innovation. These effects have been researched much more intensely and provide a good starting point to discuss leading improvisation. In our analysis and conclusions we will also add to the scientific knowledge by describing how leading improvisation differs from leading creativity or leading innovation. For now, we will use the work of Mumford et al. (Mumford 2000; Mumford et al. 2002; Mumford and Licuanan 2004) and the special issues of The Leadership Quarterly on leading innovation and creativity (Volumes 14 & 15) as a source for our starting point.

2.4.1 CREATIVITY, INNOVATION AND LEADERSHIP

First, we want to know whether the presence of a leader is necessary and has positive effects on innovation and creativity. The presence of an identifiable leader has been shown to lead to clear objectives, high levels of participation, high emphasis on excellence in work and high support for innovation (West et al. 2003). These are all mediating conditions for more innovation. So we do know that there is a clear connection between leadership and the amount of innovation, but because of the amount of mediating conditions we do not know how leadership influences the amount of innovation.

This result was found in the context of process innovation in health care teams, but is supported by other research. Hunt et al. (2004) use an orchestra as an analogy for creative organizations and point to the importance of the conductor as a leader. Elkins' and Keller's (2003) findings suggest that the presence of a leader is associated with project success in a Research and Development context. They find that a transformational leadership style works best in this context.

Transformational leadership focuses on encouragement and motivation, which is one of the most important traits a creative person needs to have (Amabile 1997). Transformational leadership consists of idealized influence, inspirational motivation, intellectual stimulation and individual consideration (Avolio et al. 1991). Or, in more basic terms, charisma, vision, encouragement and support.

Mumford & Licuanan (2004) do not believe that transformational leadership is the ideal leadership style for creativity. They argue that creative people already have a high, intrinsic motivation. The leader's role should therefore be more focused on channeling the motivation towards organizational goals instead of motivating already motivated people. Another downside of transformational leadership for creativity is the emphasis on vision. The creative freedom of people is limited by too much emphasis on the leader's vision.

Integrative leadership is put forward as a better alternative for leading creativity and innovation. It consists of three aspects: idea generation, idea structuring and idea promotion. The leader's role in idea generation is supporting ideas and granting people freedom to pursue generated ideas. In the aspect of idea structuring, a leader should provide goals, select the most worthwhile ideas and guide people on the technical and organizational parts of the idea. Idea promotion puts the leader in a persuasive mode, where he should gather support for the idea in the rest of the organization (Mumford et al. 2002).

The paradox between freedom and control can be seen in this tripartite leadership style. Mumford et al. (2003) acknowledge this and propose shifting leadership style depending on the phase a creative or innovation

process is in. However, as the phases sometimes overlap, they suggest the use of leadership teams, with multiple leaders who are each strong in a particular leadership style.

The idea behind integrative leadership can be applied to organizational improvisation as well, only with the phases of planning and acting. The solution of having multiple leaders is viable in improvisation. However, because the phases overlap at some times, the multiple leaders would have a hard time seeing what style is needed when. They would have to complement each other constantly without contradicting each other.

We have now seen two leadership styles for creativity and innovation, but because improvisation differs from these constructs, leadership styles will also be different. In section 2.1.1 we found that improvisation differs because it has a process focus and because it is always spontaneous. The process focus is already apparent in the paradox, as it requires giving freedom to the team members in the process. But besides this, a process focus also means that a leader should control certain negative aspects of the process focus. These negative aspects are the aspects we mentioned in section 2.1.3: increased anxiety, biased learning, opportunity traps and addiction to improvisation. That improvisation happens spontaneously is the cause of two of these aspects, increased anxiety and opportunity traps.

To summarize, leading improvisation differs from leading innovation or leading creativity because the different roles a leader has to play have to be played simultaneously instead of sequentially, and the leader has to focus on minimizing the negative aspects stemming from the spontaneity and process focus of improvisation.

Armed with this knowledge about leadership, we can now turn to leadership styles for improvisation. We will focus on the leadership styles that are named in the organizational leadership literature: improvisational leadership, servant leadership and rotating leadership. We will explain why these leadership styles are beneficial to improvisation and how they compare to leading innovation and creativity.

2.4.2 IMPROVISATIONAL LEADERSHIP

Pina e Cunha et al. (2003) developed a leadership style they call improvisational leadership. This style is based on being able to *make a synthesis among apparently, conflicting or dissonant styles such as planning and acting behaviors, directive and permissive styles, providing guidelines, rules and procedures, while allowing individual discretion for goal attainment* (p. 39). This style is also based in the contingent leadership approach that seeks to give a specific leadership style for different situations. It expands on the contingency theory by stating that multiple styles have to be executed at the same time.

Besides the synthesis of conflicting styles, social construction by the leader is important. This means that a leader can socially construct a situation as being urgent, complex or ambiguous. By doing this, a leader can stimulate the incidence of improvisation even If there is no environmental antecedent for it. According to Pina e Cunha et al. (2003) the leader should also take special care to foster an organizational climate that allows an experimental culture and has minimal structure.

Improvisational leadership goes even further than integrative leadership, because different aspects have to be present at the same time, in the same leader. If somebody is capable of doing this, this could be a very effective leadership style. However, in another publication that Pina e Cunha co-authored (Vieira da Cunha et al. 2002) the authors call putting two contradictory ideas into thought and practice, at the same point in time, 'a challenge'. They quote F. Scott Fitzgerald, according to whom “to be able to do so is the nature of true genius” (Vieira da Cunha et al. 2002, p. 33). Although the authors do not totally agree with this statement, it does show that putting this leadership style into practice requires enormous skill as a leader. Improvisational leadership does not directly address how to minimize the negative aspects of improvisation, although this can be another task that has to be executed simultaneously with the other leadership roles.

We think that improvisational leadership is theoretically a good construct. It solves the paradox between freedom and control by keeping both poles of the paradox intact and looking for a synthesis, as the relational approach dictates. However, the synthesis that Pina e Cunha et al. found is so complex and hard to implement in practice, that we do not believe the paradox is solved in a satisfactory manner that can be used by a leader leading improvisational processes. We will therefore continue looking for other leadership styles that allow the extremes of the paradox to exist and are also are viable in organizational practice. We will compare our leadership styles with improvisational leadership in our discussion at the end of this thesis.

2.4.3 SERVANT LEADERSHIP

Servant leadership was first formulated by Greenleaf (1970) as a new leadership style that emphasized that leaders should be servants first and leaders second. Servant leaders should share their vision, build credibility and trust and give service to their followers (Farling et al. 1999). Servant leadership has many links with transformational leadership, but while transformational leadership focuses on the organization and the outcomes of a process, servant leadership focuses more on the followers (Sendjaya et al. 2008). Because of this, servant leadership is better suited for improvisation, which has a focus on the process instead of the outcome.

Instead of direct leadership , a servant leader acts more as a steward; he is responsible for his followers and the results they achieve, but he gives them room to achieve these results on their own and supports them by helping them with menial tasks and building a shared vision and commitment (Pina e Cunha et al. 1999).

Servant leadership can also attenuate the negative effective effects of practicing improvisation by taking responsibility for the well-being of followers (Pina e Cunha et al. 2003). Leaders can take this responsibility by doing some tasks that followers find too difficult or tasks they actively dislike. A servant leader can further the well-being of followers by asking the right questions, so that the followers come to the right conclusions themselves, instead of being told what the right solution to a problem is.

We believe that servant leadership might solve the paradox between freedom and control because of the combination of giving room to achieve results on their own and the control of asking questions and taking over difficult or disliked tasks. This leads to our first hypothesis:

> Hypothesis 1a: Servant leadership is able to solve the paradox between freedom and control.

We are also interested whether the solution of the paradox through servant leadership actually has a beneficial effect on improvisation. Therefore we will measure the quality of improvisation in our research. We believe servant leadership will have a positive effect on the process of improvisation, because the team members have the freedom to use their own input and are supported in their actions by the leader. The quality of the outcome will be high, because team members can use their creative potential and the leader can steer the outcome in a positive way by asking questions. This translates into our next two hypotheses.

> Hypothesis 1b: Servant leadership has a positive effect on the quality of the process of improvisation.

> Hypothesis 1c: Servant leadership has a positive effect on the quality of the product of improvisation.

2.4.4 ROTATING LEADERSHIP

In a rotating leadership style, the team member who is most capable of handling a certain situation will become the leader. This means that there can be several leaders during a NPD process. That rotating leadership is relevant to improvisation can be seen in both jazz and improvisational theatre. In jazz (Bastien and Hostager 1988) leadership of the song that is played, shifts from one player to the next. Usually there is a solo by one player, and at the end of that solo the other players follow the soloist lead in developing the song further, until a new player takes the lead. In improvisational theatre (Johnstone 1987; Crossan et al. 1996) the focus can shift from performer to performer as the scene progresses. It is the role of the other performers to support this focus and build on the input of the performer who has the focus.

In organizations the reason for rotating leadership can be found in contingency leadership theory, which states that a strong leader should emerge in unexpected situations. This need becomes even more pressing when that situation is urgent and complex (Pina e Cunha et al. 2003). The strong leader must be capable to deal with the current situation and can therefore be a different person depending on the need.

Rotating leadership can easily be combined with integrative leadership. It allows for a team to become their own leadership team, with different persons taking a different aspect of the integrative leadership upon them. This combination can be agreed upon beforehand, when team members discuss who will pay attention to which aspects. The rotation of leadership can also happen naturally. If a team member has a sudden insight for example, he can take the lead in explaining his idea and letting the group act upon it. Another example might be that a team member thinks the group is deviating too much from the original objective and steers the process back to that objective.

Rotating leadership has the power to solve the paradox between freedom and control by giving every one full freedom and making them responsible for controlling the objective at the same time.

Hypothesis 2a: Rotating leadership is able to solve the paradox between freedom and control.

Rotating leadership will have a positive effect on the process of improvisation, because the team members have the freedom to use their own input and can build on each other's input. The quality of the outcome will be high, because team members can use their creative potential and each of the team members can take the responsibility to improve the outcome.

Hypothesis 2b: Rotating leadership has a positive effect on the quality of the process of improvisation.

Hypothesis 2c: Rotating leadership has a positive effect on the quality of the product of improvisation.

2.4.5 A CONTRASTING LEADERSHIP STYLE

We have now seen three leadership styles (servant, rotating and improvisational leadership) that should, theoretically, have a positive effect on improvisation. However, if we only take into account styles that influence improvisation positively, we cannot determine whether leadership style has an effect at all. Therefore we will introduce another leadership style that should have a negative impact on improvisation and provides contrast.

The leadership style we have chosen for this is directive leadership. A directive leader is a leader who makes the decisions himself and directs his followers to perform specific tasks (Bass and Bass 2008). The directive leader uses a large amount of control to reach the objective of the organization. We have chosen directive leadership because it is not only a clear contrast to the servant, rotating and improvisational leadership styles, but also because directive leadership can be easily taught to performers. Furthermore, it has a visible effect in short processes and it is a leadership style which is often seen in business practice (Bass and Bass 2008).

Directive leadership does not solve the paradox as it only focuses on control without giving freedom to team members. It will have a negative effect on the process of improvisation, because it focuses only on control. The quality of the outcome will be low, because the only the leader has control over the ideas that will be developed. The team members do not have the freedom to use their creative potential.

Hypothesis 3a: Directive leadership is not able to solve the paradox between freedom and control.

Hypothesis 3b: Directive leadership has a negative effect on the quality of the process of improvisation.

Hypothesis 3c: Directive leadership has a negative effect on the quality of the product of improvisation.

We have now given separate hypotheses for the effects of a leadership style on process and product. We have hypothesized that a leadership either has a positive effect on both process and product or a negative effect on both. We are interested in the relationship between the process quality and product quality as well. If we measure this relationship separately, we might reach conclusions on the relationship between improvisation and innovation. Therefore our final hypothesis is:

Hypothesis 4: Process quality will positively correlate with product quality.

3 METHODOLOGY

The research method that we will use in this research is an unorthodox research method, *theatrical simulation in hyper reality*. In this chapter we will go through every aspect of this research method, from the basis of simulation in the natural sciences and philosophy to its use in the social sciences and the specific role of theatre in the simulation.

In order to explain the separate aspects clearly, a short description of the final research method is needed to understand how the separate parts make a whole. For this research, improvisational performers will play out short simulations of a New Product Development process in a context that is placed outside the normal, concrete reality. This hyper reality, as we call it, will be an empire in medieval times where guild masters and apprentices produce innovative products for their empress.

In this chapter we will make clear what this method entails and why we have chosen it. We start by explaining the method of simulation in its different forms and then move on to specifics of theatrical simulation and its validity. After that we will operationalize the concepts we found in the theoretical framework and finally we will discuss how we will gather and measure our data.

3.1 SIMULATION AS A RESEARCH METHOD

Research can be done on three levels: abstract, concrete and artificial. Abstract research focuses on theory and is achieved through induction, concrete research focuses on empiricism and is achieved through deduction, and artificial research focuses on simulation and is achieved through abduction (Wagenaar 2008). In other words, a focus on theory is a focus on **what should be**, a focus on empiricism is a focus on **what is** and a focus on simulation is a focus on **what could be**.[2].

Most research is theoretical or empirical, but there is a well-established tradition of simulation research. Oftentimes this is computer simulation, in which a set of rules is programmed into a computer model and researchers can adjust the variables they are researching in order to observe how the model reacts. Computer simulation has two phases. In the first phase the rules of the simulation, called microscopic rules, are tested to see whether the model reflects the reality, or macroscopic behavior. If the macroscopic behavior in the simulation is the same as in the reality, the microscopic rules are correct. After this, the second phase consists of changing the conditions within the simulation to do exploratory research (Wagenaar 2008).

In social sciences, simulation is often used as a tool for learning and knowledge development (Inbar and Stoll 1972). According to Hartmann (1996) simulation allows scientists to "*imitate one process by another process*" (p. 77). He recognizes five functions of simulation in research.

1. Simulation as a *technique* to explore detailed dynamics of a real process,
2. simulation as a *heuristic tool*, to help in developing models, hypotheses or new theories,
3. simulations as a *substitute* for an experiment that is impractical in the real world,
4. simulation as a *tool* for experimentalists that can support experiments and
5. simulation as a *pedagogical tool*, for use in instructing students. (pp. 84-91)

The emphasis in this research and main reason for the use of simulation is function number three, substitution for an experiment that is impractical in the real world. In order to achieve this, we will explore the dynamics of the NPD process (function 1), with the goal of developing theory (function 2). This is done in the same way as

[2] For a complete description of the intricate relationship between abduction, deduction and induction, we refer to Wagenaar, 2008.

in computer simulation. We will first test whether our simulation (constructed with microscopic rules) shows the right macroscopic behavior. To do this, we will test whether our hypotheses are supported by our findings. The second phase is an experimental phase, where we can change some parts of the simulation and look for reasons why the hypotheses can be supported. If the hypotheses are supported in the first phase, this is valuable, because we know our simulation is constructed properly and that the method is a viable method to do research. The second phase is valuable because we can add insights to the literature on improvisation and leadership.

3.2 THEATRICAL SIMULATION

Translated from computer simulation to simulation with theatrical performers, simulation research consists of laying down rules that govern the roles of the performers, the relationship between the roles and the situations or environment in which the roles are played (Klabbers 1999). These rules show the great advantage of simulation; they give the researcher a large amount of control. It is not only possible to influence the environment, but also the characteristics of an individual by letting an performer play a role. Making the rules is vital for this research, because the rules determine how the reality is modeled in the simulation. Once the simulation is modeled, we can observe how the performers act within the freedom left by the framework.

Our performers are improvisational performers who are used to working within a framework. These frameworks are called 'games' in improvisational theatre. A game is a collection of rules that determines the shape of an improvisational scene. The content of the scene is usually suggested by the audience, after which the performers deepen these suggestions into a story (Johnstone 1987). The suggestions in this research will be thought of beforehand so that the content can be controlled.

The large amount of control that theatrical simulation gives to the researcher is one the reasons to use it as the research method for this thesis. By using performers we can influence factors that cannot be influenced in normal empirical research, such as personality and, indeed, leadership style. The other reason is that theatrical simulation can show a process that takes several hours or days in fifteen minutes. Because improvisational performers do not work with real materials but rather mime the product they are making, there is no reason to perform all of the actual work, but key points in the process are played out. As experienced improvisational performers know, actions that are interesting for an audience are those involving the relationship between roles or actions that somehow go wrong. Therefore these are the actions that will occur the most in theatrical simulation.

Besides the short amount of time it takes to study one process, another advantage is that the effects that have the focus are enlarged. Normally this is due to dramatic necessity; improvisational theatre is meant to entertain an audience and relationships and mistakes are more entertaining than everyday actions (Johnstone 1987). The focus on specific events is a large advantage for our research, which focuses on the relationship between leader and team member, but it can be detrimental to the validity of other research that focuses on all aspects of a process (Wagenaar 2008).

Simulations take place in an artificial reality that tries to mirror the concrete reality. Theatrical simulation takes place in a hyper reality that enlarges key parts of the concrete reality. The rules, relationships between roles and the environment will all be used to put a focus on the key parts that we are interested in. Before we can operationalize these parts into a detailed simulation, we first have to look at the demands that are placed upon the simulation. We will look at scientific demands of validity and logistical demands (e.g. time and location).

3.2.1 VALIDITY

For the scientific demands, we will use the types of general validity as described by Shadish et al.'s (2002), coupled with Raser's (1969) types of validity in simulation research. We will briefly discuss all types and then translate them into demands for our operationalization.

Statistical conclusion validity deals with the correlation of cause and effect. It seeks to answer two questions, (1) do cause and effect correlate with each other and (2) how strongly do they correlate with each other (Shadish et al. 2002). In this qualitative research, statistical conclusion validity is only important for determining whether cause and effect correlate.

Internal validity expands on statistical conclusion validity by determining whether cause preceded effect in time and by determining that there are no other possible explanations for the correlation between cause and effect (Shadish et al. 2002). In this research we will look whether cause precedes effect in time. This means that we want to know whether leadership makes for good or bad improvisation or that the quality of improvisation can influence leadership style. We believe both can be true, as a bad improvisation will force a leader to take action, but that leadership has a much greater influence on improvisation than vice versa. It will not be possible to eliminate all other possible explanations for the correlation. We will not test all variables that can influence the generation of organizational improvisation, but have selected the variable leadership style for in-depth study, so that we can discover how the relationship between leadership style and organizational improvisation works.

External validity is concerned with whether an observed relationship is also true in other conditions, such as settings and persons (Shadish et al. 2002). Our research resembles psychological laboratory research, in that it seeks to understand human behavior within a abstract context. The importance and application of external validity is highly debated in literature about psychological laboratory research. We side with Berkowitz and Donnerstein, Kruglanski or Postman who argue that laboratory research can be used to test theoretical hypotheses, which can be considered externally valid, rather than the probability or magnitude with which these effects occur (Berkowitz and Donnerstein 1982).

The fourth type of validity, and the most important one for this research, is construct validity. *Construct validity* deals with how the sample particulars (the persons, settings, treatments and outcomes involved) reflect the constructs that are researched. In theatrical simulation, the question we have to ask is whether the roles that performers play and the rules of the simulation represent the constructs (improvisation, NPD teams) we want to observe.

Raser's four criteria of validity in simulation research overlap with Shadish et al.'s criteria, but also give guidelines of how to build up a simulation.

The first criterion, *psychological reality,* deals with how realistic a simulation is to the participants. In theatrical simulation, this criterion is not about creating a setting that participants accept as real or life-like, but about creating a setting in which performers can immerse themselves. This also depends on the quality of the performers, as beginning performers generally have more difficulty in immersing themselves than more experienced performers. The performers themselves also contribute to this in theatrical simulation, whereas in normal simulation it is more up to the researcher to make a believable setting.

Structural validity deals with the congruence between elements such as performers, information and so on in the artificial reality and concrete reality. Structural validity of Raser overlaps with the construct validity of Shadish et al. If the structural validity is correct, all aspects of the simulation will match with each other.

The third validity type, *process validity,* focuses on the congruence between processes that can be observed in the artificial reality and concrete reality. If this is done right the external validity will probably be better. We will pay special attention to this factor, because a congruence between the process of organizational and

theatrical improvisations will allow us to use theatrical improvisation techniques as measurement and draw conclusions for organizational improvisation.

The final validity criterion, *predictive ability,* is a test of the external validity and concerns the ability of the simulation to reproduce historical outcomes or predict future ones (Raser 1969; Peters et al. 1998). As with process validity, our research in the hyper reality makes this criterion less important for our own research.

To conclude, because of the nature (explorative, qualitative, theatrical) of this research, we will focus on the aspects of validity as presented in table [x].

	Type of validity	Use in research
Shadish	**Statistical conclusion validity**	Correlation of cause and effect
	Internal validity	Time order of cause and effect
	External validity	Theoretical translation to business practice
	Construct validity	Operationalization of constructs
Raser	**Psychological reality**	Immersion of performers
	Structural validity	Congruence of simulation elements
	Process validity	Mirroring the process of theatrical with organizational improvisation
	Predictive ability	None

In plain terms, the validity demands are as follows:

The simulation has to show that leadership style affects improvisation and that leadership style precedes improvisation in time. The rules and framework of the simulation must reflect the used constructs as accurately as possible and form a consistent whole in which the performers can immerse themselves. The process should mirror the concrete reality and the outcomes of the simulation have to be translatable to the concrete reality.

3.2.2 LOGISTICAL DEMANDS

The advantage of theatrical simulation is that a process that normally takes days can be observed in minutes; this means we can observe multiple processes in the course of our research, but we too are restricted by time confinements. Because improvisational theatre is a demanding exercise, performers cannot act consistently for more than two hours.

For our simulation we need performers who have a long experience with improvisation, so that we know they are capable of improvisation and can study the effects of leadership. Also, performers with a lot of experience will not find it difficult to act in a hyper reality that is different from the concrete reality. We have stipulated that all performers who participate in our research should have at least four years of experience in improvisation. Because we only have the funds to work with volunteers, there are not a lot of performers available and each performer can only be expected to participate in a number of sessions. We are therefore limited in the number of simulations we can do.

Our research design consists of six two-hour sessions, with four performers in each sessions, drawn from a pool of nine volunteers. In every two-hour session there is time for an extensive warming-up (20 minutes), an instruction of the performers in the form of the exercises (40 minutes), time to play out two or three simulations (40 minutes) and an open-ended interview with the performers (20 minutes).

We have chosen to simulate one leadership style per session. We do this so that we can focus the exercises on the leadership style of that session. Besides, since the general mood of one simulation can leak over into the next simulation, we would also see some effects of the leadership style done in the first simulation appear in the second and third simulation.

3.3 THE CONCEPTS

Before we describe the simulation in detail, we will first look at the concepts from our theoretical framework to decide which are suitable for use in the simulation. We will look at the factors influencing improvisation and the leadership styles.

Of the influencing factors for improvisation (reprinted here) we will not use organizational memory because it does not have a proven positive effect on the incidence or quality of improvisation. We will also exclude diversity from our simulation. This could be easily simulated (by adding character traits or a cultural background to a role), but it would influence the actions of an individual performer, which could mean that an effect we are seeing does not stem from leadership style, but from the imposed background.

	Factors	Effect on incidence	Effect on Quality
Environmental	Complexity ➔ Ambiguity	++	
	Turbulence ➔ Uncertainty	++	
	Time pressure ➔ Urgency	++	
Organizat	Experimental culture	++	++
	Minimal structure	++	++
	Memory	--	-/+
	Real-time information	-	++
Team	Team work	++	++
	Team stability	+	+
	Leadership style	+	++
	Diversity	?	+
Personal	Spontaneity	+	++
	Creativity	+	++
	Flexibility	+	++
	Intuition	+	++
	Training	+	++
	Expertise	-	++
	Experience	-	++

Table 1: Effects of factors on improvisation

3.4 THE SIMULATION

We will present the simulation outside-in, first the environment, then the roles, or characters, and relationships and finally the rules. The simulation or 'game' as it is called in theatrical improvisation, that we will use is called *The emperor's new clothes*. This game, specifically designed for our simulation, features an empress (in this case: the director) who orders guild masters to make a new product for her. The game features guild masters, apprentices and an abbot to portray the different leadership styles and will be facilitated by the director and the researcher.

The game is designed in such a way that the process of theatrical improvisation mirrors the process of organizational improvisation. The design incorporates multiple measures in order to make sure that the theatrical improvisation displays the same process as organizational improvisation. First of all, we have given the performers and the characters they play the same objective, to create an object for the empress. Normally

the objectives of a performer and his character differ; the performer is trying to achieve a scene that is enjoyable to watch, while character has his own motives, such as capturing the magic sword or wooing the girl of his dreams. The performers in a scene know that conflict and obstacles that have to be conquered make for an enjoyable performance, although this is not for the beneficial to the character. Similarly, a scene about a dictator (the archetypical directive leader) can be very enjoyable to watch (meaning the process of theatrical improvisation is done right) although the characters experience many difficulties from the dictator (meaning the process of organizational improvisation is done wrong). By giving the performers and their characters the same objective, the processes will also be done the same way.

Secondly, organizational improvisation is measured by the convergence of planning and execution in time (Moorman and Miner 1998a). Since the entire scene is done in approximately fifteen minutes, planning and execution are automatically close to each other. We have strengthened this effect by giving the performers the command of 'feedback' during a simulation. Upon hearing this command, the performers will create a problem or opportunity related to the task they are doing at that moment. Because the performers react to these problems or opportunities within seconds, we can assume that organizational improvisation takes place.

Lastly, some of the influencing factors that we include in the simulation have their own equivalent in theatrical improvisation. Experimental culture, real-time information, expertise and teamwork are the organizational equivalent of agreement, awareness and collaboration (Vera and Crossan 2004). This means we can measure these factors in theatrical improvisation and draw conclusions on organizational improvisation. Besides these factors, we cannot prove that theatrical improvisation will always mirror organizational improvisation. This will stay an assumption.

3.4.1 THE GAME

As we said, the objective of the game is to make an object for empress. This can be a set of clothing, as the name of the game suggests, but also another object like a suit of armor, a toy for the empress' son, a vehicle, or even a defense system for the castle. To simulate new product development, this object has to be innovative, which is operationalized by giving the performers two or more opposite demands, such as a suit of armor that is light & womanly but also protective and fierce. All innovative assignments can be found in paragraph 3.5.

The game is organized into different phases according to the description of the design process by Visscher & Fisscher (2009). We have done this so that we can create different rules for the performers in different phases. The different phases are: Framing, exploring and assessing, reframing, exploring and assessing and deciding.

The game starts with the empress explaining to the performers what their objective is and the leader summarizing the objective in his own words. The performers will then decide on a course to follow to achieve the objective (framing). The largest portion of the scene is taken up by the performers making the object (exploring) and reacting to arising problems or opportunities caused by the 'feedback' command (assessing). Exploring and assessing follow each other in cyclical fashion. During improvisation, this cycle will be gone through so fast the difference between them will blur. We will therefore treat exploring and assessing as one phase.

During the simulation, the empress will drop in to see the progress and give additional demands, which will force reframing, where the performers decide on a new course to deal with the additional demands. After this the performers will explore and assess again, followed by a final phase of deciding, where the performers decide if their object is good enough for the empress.

Normally, such a process is entirely cyclical and how the cycle is gone through is not determined beforehand. But because we want the simulations to be similar, we have determined the order of the process, thereby making it linear, as depicted in Figure 5

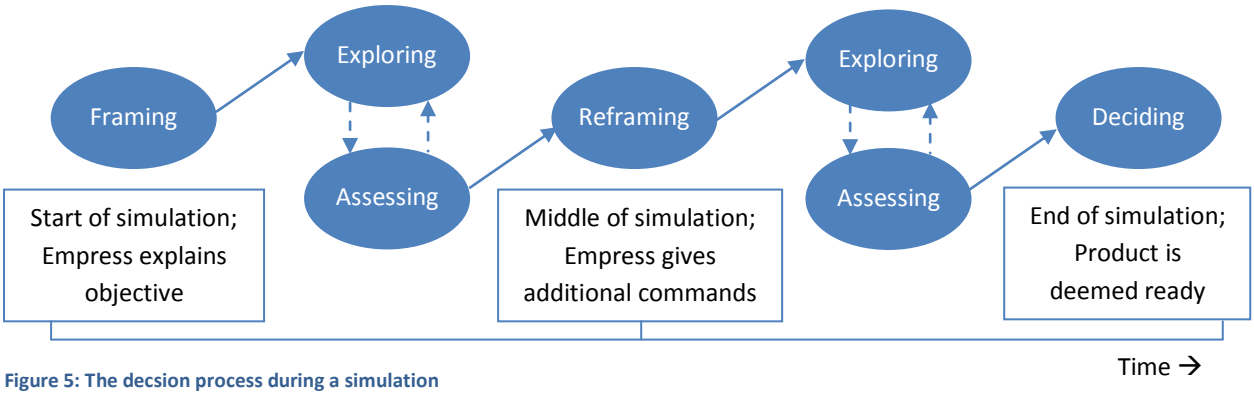


Figure 5: The decsion process during a simulation

3.4.2 THE ENVIRONMENT

The environment we use is medieval times, specifically the guilds in the late middle ages. We do this because performers, like all other people, have pre-existing notions about the context they deal with. These notions should not confuse the context but rather strengthen it. Therefore it is important that performers have a shared understanding of the context. Simple historical contexts have this power . Because all the performers involved received similar education and have a shared cultural background (Dutch), their mental images are the same for simple historical facts. If we had used modern organizations as a context, the diverse understanding (some performers don't work in an organization yet, others do) of this context would have confused matters.

The environment also contributes to the organizational factor of minimal structure. In terms of bricolage, performers have unlimited freedom, because they can mime any resource they want to. By placing the simulation in a specific environment, the resources that can be mimed are limited by what is logically available in this context. In our simulation, modern machines are therefore not available.

3.4.3 ROLES AND RELATIONSHIPS

The roles and relationships should simulate the different leadership styles. The biggest challenge is to condense the theoretical concepts of the different leadership styles into a small number of instructions to the performers. We do this by trying to capture as much of the leadership style as possible in the roles that we assign the performers. We will then add instructions for the most relevant concepts that cannot be captured in the role. The small number of instructions is necessary, because the performers playing the leaders have to focus their attention on the progress of the simulation.

The roles of the team leader and team members are based on characters common in the medieval times we are portraying. The commonly held conceptions for these characters will provide a good basis for the performers to play their roles. In order to guide the performer portraying the leader further, he will be given two additional instructions to clarify the leadership style. The first instruction, the behavior that leaders should have during the exploring and assessing phase, is grounded in scientific sources that have specifically focused on behavior. We will discuss these sources shortly. The second instructions covers how decisions should be reached in the group. Decisions will be made at different moments in the simulation, based on the different phases described in section 3.4.1.

THE ROLES

We will start with directive leadership. Directive leadership is the most basic style that a leader can have: 'I tell you what to do and you do it'. Especially in a hierarchical society such as medieval Europe, this leadership style is common. The style is also the most common in exercises about status, an important part of improvisational theatre (Johnstone 1987). Performers will therefore have no problem in portraying a directive leader.

In our simulation, we define the directive leader – team member relationship as the relationship between a guild master and his apprentices. The guild master is a figure of power and he decides what needs to be done for his apprentices. The apprentices are expected to follow the instructions of the guild master, but are knowledgeable enough to be able to do things on their own.

For servant leadership we have chosen an abbot to lead a team of guild masters. There is no apparent hierarchy between an abbot and a guild master, both have the same hierarchical status, but with a different focus. The abbot, as a spiritual person, has the perception of gentleness, which suits the servant leader.

For rotating leadership a team of four guild masters will work together. One of the guild masters (the leader) is appointed spokesman, but without any special powers. All characters will have the same hierarchical status and each guild master can choose his own expertise as he wants.

DECISION STYLE

The moments when a decision will be made are framing, reframing and deciding. For these phases we will instruct the leaders to act as is described by Bass' descriptive model of leadership styles that focuses on decision making (Table 2). For directive leadership the decision style is also directive. Rotating leadership is characterized by equality (Bastien and Hostager 1988; Pina e Cunha et al. 2003) and uses a participative decision style. A servant leader places him or herself in a subordinate position to the group, which translates to a delegative decision style (Stone et al. 2004).

Decision style	Corresponding leadership style	Definition
Directive	Directive	You tell subordinates what to do and how to do it. You initiate action. You tell subordinates what is expected of them, specifying standards of performance and setting deadlines for completion of work. You exercise firm rule and you ensure that they follow prescribed ways of doing things. You also ensure they are working to capacity, reassigning tasks to balance the workload.
Consultative		You tell subordinates what to do, but only after discussing matters with them first and hearing their opinions, feelings, ideas and suggestions.
Participative	Servant	You discuss and analyze problems with your subordinates to reach consensus on what to do and how to do it. Decisions are made by the group as a whole and your subordinates have as much responsibility for decisions as you do. They participate as equals in decision making.
Negotiative		You employ political means and bargaining to gain desired ends, making political alliances, promising subordinates rewards for meeting expectations, releasing information to suit your interests, maintaining social distance, 'bending' the rules, encouraging subordinates to compete, and 'selling' decisions to them.
Delegative	Rotating	You describe the problem or need and the conditions that have to be met, and you make suggestions, but you leave it to subordinates to decide what to do and how to do it.

Table 2: Leadership styles according to Bass & colleagues, as published in *Theory and practice of leadership* (Gill 2006)

BEHAVIOR

The second instruction, the behavior that leaders should have during the exploring and assessing phase, is grounded in scientific sources that have specifically focused on behavior. For directive leadership, the behavior that leaders should show is: “letting subordinates know what they are expected to do, scheduling and coordinating work, giving specific guidance, and clarifying policies, rules, and procedures.” (House 1996, p.326).

Rotating leadership, as described in the organizational improvisation literature, does not have such a clear description of the behavior, but we do know the rationale for rotating leadership. If a task is complex and time is short, a team member can make a more effective contribution if he takes the leadership role to apply his knowledge and skill. This way he can move the action along directly, instead of discussing it first as a consultant to the leader (Pina e Cunha et al. 1999). If we translate this to behavior, we give an instruction to the entire group that they can use their ideas immediately, regardless of their role.

Servant leadership literature has many descriptions of behavior. The problem that faces us is that these descriptions are often very lengthy and include a lot of different aspects. They range from a subdivision into five aspects (Farling et al. 1999) to nine attributes with an additional eleven accompanying attributes (Russell and Stone 2002) to 12 aspects with over 100 behavioral measures (Page and Wong 2000). Because it is not possible to burden an performer with so many instructions, we have chosen to turn to an exercise from improvisational theatre that places the performer in the mood of servanthood. The performer portraying the leader can only ask questions during the moving phase. By doing this he empowers the team members. Besides this, we have instructed the leader to carry out any menial task for the team members.

To summarize, the roles, decision style (during framing, reframing and deciding) and behavior (during exploring and assessing) are presented below.

Directive leadership will be played out by one guild master and three apprentices. The leader will receive the following additional assignments:

- (Re)framing: Decide the course on your own, divide the task as you see fit.
- Exploring and assessing: Check if everything goes according to plan and give commands to adjust where necessary.
- Deciding: Decide by yourself whether the objective has been reached and let the team member make the last-minute adjustments if you think this is necessary.

Servant leadership will be played out by one abbot and three guild masters. The leader will receive the following additional assignments:

- (Re)framing: Ask for input from the team about the course and delegate tasks based on the team members' own preferences.
- Exploring and assessing: Take over small tasks and only ask questions about the way in which a task is handled
- Deciding: Let the team members decide whether the objective has been reached in a satisfactory manner.

Rotating leadership will be played out by four guild masters. The leader and team members will receive the following additional assignments:

- (Re)framing: Determine the course you are going to take together and choose the task that you think you are best suited for.
- Exploring and assessing: Carry out your own task and support each other if necessary.

- Deciding: Decide together whether the objective has been reached in a satisfactory manner.

All the roles will be instructed that they do have the knowledge to add value to the process and solve any issues they encounter. They will be instructed that they should all be involved in achieving a good result, thereby giving them a sense of importance and issue ownership.

3.4.4 RULES

The rules of the simulation are meant to put all (remaining) influencing factors into the simulation. Rules are there to give each simulation the same starting point. We will measure the different effects leadership style has on the influencing factors during the simulation.

We begin with the organizational factors, experimental culture, minimal structure and real-time information. In chapter 2 we have seen that an experimental culture comes from promoting action, tolerating competent mistakes and trust. Because we want to vary the leadership style, the leader cannot be instrumental in making the culture experimental. The empress will therefore have the task to do this. The empress will make a speech to the performers before they set to work on their given task. Some key phrases in this speech are listed in table [X].

One of the concepts that achieve minimal structure, a broad and dynamic goal that is clear to all team members, is also present in the empress' speech. She defines the goal of the team in broad terms. For example, the goal she sets is to make a set of clothing that will impress her husband and that is suitable to wear at court. The empress will not make goals that are too specific such as: make a dress out of silk. A broad goal will ensure that the performers (the team members) have enough room to come up with their own solution.

The other concept of minimal structure, invisible controls, is present by delimiting the actions of the performers by bricolage and logic. Although the theatrical improvisation is normally limited by the imagination of the performers, we will instruct the performers to only play out actions that can be logically done in the setting that they are playing in. For example, the setting is a shed in the woods outside the castle of the empress in medieval times in western Europe. The performers only have access to materials logically available (bricolage) in a shed in a forest and are subject to the cultural values of the time. This instruction to the performers will be supervised by the director and researcher, who will stop the simulation if an action is not in context any more.

We will not use the last concept that is theoretically part of a minimal structure, short-term milestones, as they restrict the freedom of the performers and the short time span of the individual simulations in hyper reality make them unnecessary. It will be possible that the leaders incorporate short-term milestones in the process.

Another rule that we incorporate into the simulation is feedback. The performers are given feedback on their actions or give feedback on their own actions. Examples of this are that the alloy of two metals proves unstable or that a wall made with cement falls down. The goal of giving feedback is that not everything goes as planned, so that performers will have to deal with unexpected events. This increases the turbulence for the performers and also presents the performers with real-time information, which is the final organizational factor.

The factors on the team level, team stability and team work, are taken into consideration in the simulation, but are not translated into rules. This is because better team work and team stability cannot be faked, the maximum level is the level that the actors already have. Because all actors are used to playing in teams that

have been newly formed, we assume team work will be present and team stability will not affect the simulation much.

The personal factors that cover personality, creativity, spontaneity, intuiting and flexibility will all be present because we use performers who have received training in improvisation for several years. All of the performers have successfully done a beginners and advanced course in improvisation and have been admitted to the final course (very advanced). The performers have a minimum of four years of training. The average number of years of training is 7.5. In order to be admitted to the final course, a player's abilities have to be good enough that we can assume that the players have all of the needed personality traits for improvisation.

The last personal factors, experience and expertise, are work-related. We will instruct the performers that, no matter what role they play, they have enough expertise and experience with the assignment they are given, for them to offer their own ideas. For example, the apprentices are instructed that they are nearing the end of their apprenticeship and have learned the important aspects about their field of work.

Finally, the input of the process has to be present. Once again, the empress is instrumental in creating these feelings. In his speech before the assignment he will stress the urgency to the team members. Uncertainty will be created by the feedback given to the performers and the announcement that the emperor can, at every time during the process, check up on the progress and make new demands. Ambiguity is triggered by having to deal with too many or too few interpretations of a situation. This is established by the broad goal (which gives multiple directions for the solution) and the setting in which the players act (which offers as many interpretations as the imagination and logic allows). It is the goal of the leader to sustain the input feelings. The phrases that the empress will use are recorded in .

Phrase	Concept
You are my best people and I know you will make me proud.	Trust
I don’t mind any mistakes, but you will have to give your best effort to the task.	Competent mistakes
The most important thing is to produce an actual product, not just plans.	Promote action
This assignment is very important to me and I will reward you greatly if you succeed within our limited time.	Urgency
I will check in on your progress several times during the process and possibly change the goal as I see fit.	Uncertainty

Table 3: Phrases used by the empress at the beginning of a simulation

If we take all the rules together, we get the following table (Table 4). In this table we reiterate all factors from Table 1, with their corresponding sub factors and we summarize the rules we have described in the previous paragraphs.

	Factors	Sub factors	Use in simulation
Environment	Issue ownership		Instruction to performers
	Sense of importance		Instruction to performers
	Complexity	Ambiguity	See minimal structure
	Turbulence	Uncertainty	Feedback, Empress' speech
	Time pressure	Urgency	Empress' speech, length of simulation
Organizational	Experimental culture	Promoting action	Empress' speech
		Tolerate mistakes	Empress' speech
		Trust	Empress' speech
	Minimal structure	Broad, dynamic goal	Empress' demands
		Invisible controls	Bricolage with logic as a limit
	Memory		Not part of simulation
	Real-time information		Feedback command
Team	Team work		Based on team work of performers
	Team stability		Based on team stability of performers
	Leadership style	Directive, (re)framing	Decide and divide tasks alone
		Directive, exploring/assessing	Check and command adjustments
		Directive, Deciding	Decide and command adjustments
		Servant, (re)framing	Ask input
		Servant, exploring/assessing	Do small tasks and ask questions
		Servant, deciding	Let team members decide
		Rotating, (re)framing	Decide together
		Rotating, exploring/assessing	Support each other
		Rotating, deciding	Decide together
	Diversity		Not part of simulation
Personal	Spontaneity		Based on personality of performers
	Creativity		Based on personality of performers
	Flexibility		Based on personality of performers
	Intuition		Based on personality of performers
	Training		Based on training of performers
	Expertise		Instruction to performers
	Experience		Instruction to performers

Table 4: Operationalization of theoretical concepts

3.5 SIMULATIONS IN PRACTICE

We have now described the theoretical foundations and design of our simulations. We will now describe the actual sessions in terms of logistics, exercises and experiments that we did.

3.5.1 INNOVATIVE ASSIGNMENTS

The innovative products that the team members had to create were based on assignments given by the empress at the start of the simulation. Each leadership style had at least two different assignments so that a player would never play the same assignment twice. All the assignments are written out below and summarized in Figure 6.

- For simulation 1.1 and 5.1 (directive): Make a toy for the eight-year-old son of the empress. It has to be a warlike toy, as the son likes that, but the empress wants the toy to give a peaceful message as well.
- For simulation 1.2 and 5.2 (directive): Make a jewel for the fiancée of the empress' older son. As the fiancée is the princess of a hostile empire, the jewel has to be very beautiful, but slightly ridiculous on second sight.
- For simulation 2.1 and 6.1 (servant): Make a throne that shows the power of the empress but also allows for a connection with the common people.
- For simulation 2.2 and 6.2 (servant): Make (a scale model of) new defensive works. The defensive works have to be strong, but should be inconspicuous as well, so the common people won't panic as they find out we are preparing for war.
- For simulation 2.3 (servant): Make a buffet that caters to the wishes of the noblemen of this medieval empire, but make it vegetarian as well.
- For simulation 6.3 (servant): Design a way of allowing the army to pitch their camp quickly when marching to the front.
- For simulation 3.1 (Rotating): Make a sewage system for the empress' castle that is both cheap and requires little upkeep.
- For simulation 3.2 and 4.1 (Rotating): Make a suit of armor for the empress that is both protective and strong as well as becoming and womanly.
- For simulation 4.2 (Rotating): Make a means of transport for the empress that is elegant, spacious enough for her wardrobe and that is able to fend off attacks from highwaymen.

3.5.2 LOGISTICS

Our aim in planning our simulations was that each performers should only play every leadership style a maximum of one time. This was our priority because the performers could form an opinion about the leadership style during a session that could influence their behavior if they were placed in a simulation with the same leadership style again. We were able to do this on all occasions, except one. In session five one of the performers could not make it to the session and a last minute decision was made to ask one of the other performers to substitute for him.

This choice did have an effect on other decisions. Because we had to take the schedules of all the performers into consideration, it was not possible to divide the performers evenly across all sessions so that performers would not play together all the time. It was also not possible to decide the order of the sessions. The first three sessions were done in the order o f directive, servant, rotating and the last three sessions were performed in an order that was determined by which performers were available. Between the first and last three sessions there was a hiatus of 2.5 weeks during which the first sessions could be studied and additional interventions or adjustment to the exercises could be planned.

In every session, we did at least two simulations. In some sessions, there was time for an additional short simulation. These sessions were not scored regarding the quality of the theatrical process and the product because they were shorter and sometimes cut short by the director. We did use the remarks about these scenes made by the performers after the simulation. We did additional simulation in both sessions about servant leadership (2 and 5) and a benchmark simulation without any leaders.

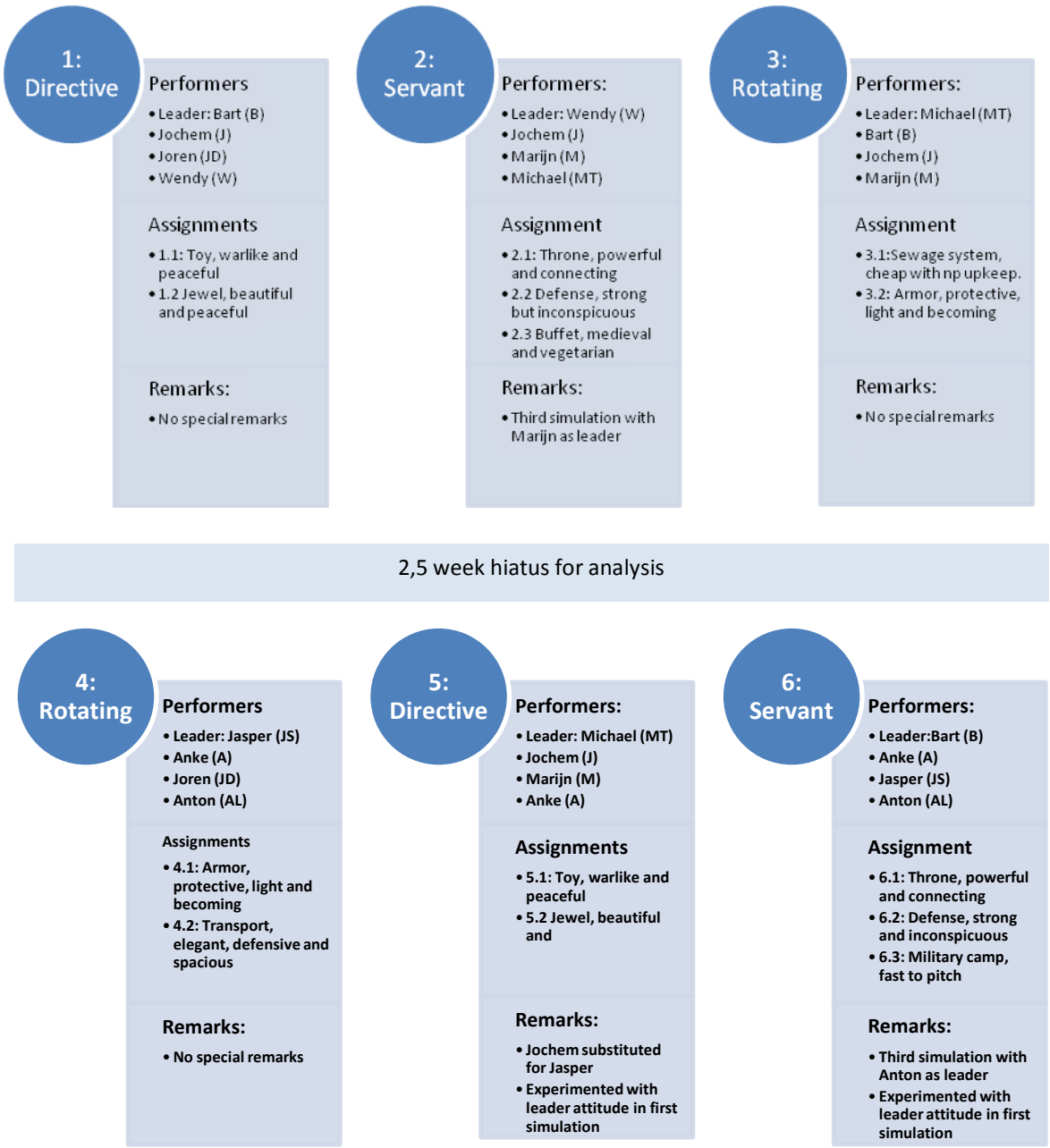


Figure 6: An overview of all simulations

3.5.3 EXERCISES

During the sessions, the performers were prepared for the simulations by multiple exercises. First, the performers warmed up with some simple exercises to clear their heads of their daily routines and concentrate on the task at hand. The second series of exercises focused on miming (depicting an object through gestures; the performers are still allowed to talk). The performers would first mime an object as realistically as possible, then mime the process of making an object accurately and finally mime the process of making accurately, make a realistic mistake and solve that mistake.

In improvisational theatre, every action is mimed. There are no props available except for chairs. In our simulation, miming is even more important because the we seek to simulate a new product development process. In order for performers to see what other performers are doing, the performers will have to mime all objects, such as the tools they are working with and the product itself, realistically. The process of making a

product also has to be accurate too so that multiple performers can work together in that process. During these exercises, the performers also learned how to give feedback on their own actions on command.

The final exercise was a leadership exercise. In order to test whether we saw the right leadership style, we gave the leader his instructions and let the performers prepare their workplace: clean up, put their tools in order, et cetera. If the leadership style was executed to our satisfaction, we would move on to the first simulation. If we saw things we did not like, we would instruct the performers to change this, say there has been a storm and let the performers prepare the workplace again. An example of this was during the first servant leadership session. Because the servant leader placed herself below the performers in terms of hierarchy, she had such a low status that she was effectively ignored by the performers. We put this right by instructing the performers to give the leader the final word in all decisions, even if this meant she just recapped the decision made by the performers.

3.5.4 EXPERIMENTING WITHIN THE SESSIONS

As we have discussed in paragraph 3.1, we can experiment within our simulation after we have seen the expected macroscopic behavior. We have therefore adjusted two simulations (simulation 5.1, directive leadership, and simulation 6.1, servant leadership) to test for an insight that presented itself during the first sessions: leader attitude. We saw that a leader automatically became negative when being a directive leader and positive when being a servant leader. In order to test this, we have instructed the leaders in these simulations to act an opposite attitude than the one we saw earlier.

3.5.5 PHYSICAL SETTING

The simulations were carried out in the large conference room at TSM Business School. The stage has one plant (marked by the circle in the upper left corner) a large semi-circular wall (lower right corner) and the edge of the conference table (lower left corner). Four chairs have been placed on the stage and can be used by the performers. The performers are depicted as colored trapezoids with their initials inside it, the smaller end of which depicts the way they are facing. The performers' movements are depicted by arrows with the same color as the trapezoid. Red is always the leader and the other colors are distributed randomly. The stage plan is shown in Figure 7, with a grey area that marks the view of the camera filming the simulations.

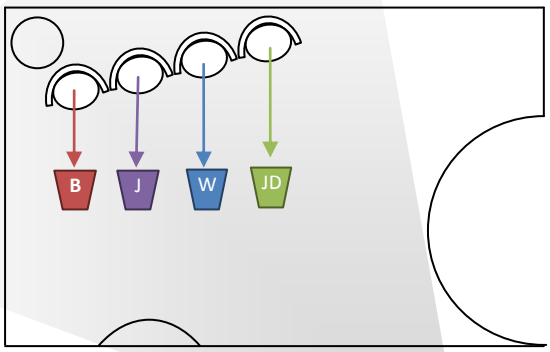


Figure 7: The stage as seen from above

3.6 DATA COLLECTION

Now that we have our method in place, the last step is determining how we are going to collect relevant data to base our results on. We will used three ways of data collection. Firstly, we let two independent observers score the quality of improvisation in the simulations. Secondly, we had an open interviews with the performers at the end of each session. Finally, but most importantly, we looked for interesting effects in the simulations themselves.

In order to analyze all data, the simulations and interview were videotaped and transcribed. In this thesis we use excerpts of the transcription to illustrate arguments. The simulations and therefore the transcriptions are in Dutch, but the excerpts have been translated into English. We translated all the sentences into clearly

readable language, even though in fluid conversation, words are sometimes omitted by the performers and colloquialisms that cannot be easily translated are used.

To support our hypotheses, we want to know whether leadership style influences the quality of improvisation. We will therefore need a way to measure the quality of improvisation. We have chosen to look at the quality of theatrical improvisation, coupled with the quality of the product made during the improvisation. Theatrical improvisation is not the same as organizational improvisation, but we assume the processes mirror each other in our simulation.

This assumption is based on several arguments. First of all, some key factors influencing the process mirror each other. Vera & Crossan (2004) even based the factors of experimental culture, minimal structure, real-time information and organizational memory on four important theatrical techniques; agreement, awareness, use of ready-mades and collaboration, which have been described in detail in chapter 2.

The most important argument is that the objective of the performers was to make a product for the empress, not to play an enjoyable scene. If the performers were trying to play a qualitatively good scene, they might instigate conflicts on purpose because of their dramatic value. Because their focus is on making the product, conflicts can arise from the process of making the product naturally. As long as all performers work towards the common goal and not hinder this goal because that might make a scene more enjoyable, we feel safe to say that the quality of theatrical improvisation and organizational improvisation are the same.

We will also score the quality of the result, the product, of the process of organizational improvisation. Quality is always subjective. It can be measured by objective criteria, but even then an observer might find that the quality is lacking. Take for example the Jabulani ball, which was used in the 2010 football World Cup. This ball meets all the extensive criteria put forward by the FIFA, but it's quality is still regarded as low by players.

The same can be said for improvisation. Although there are a few descriptions of which criteria qualitative improvisation should meet, these do not necessarily describe the real quality of improvisation. We have therefore asked two independent observers with the same background in improvisational theatre (trained at the same improv association) and the same amount of experienced (minimum of four years, admitted into the very advanced course) to evaluate the quality of the improvisational process and the product.

They did this by looking at the videos made of the sessions. After each simulation they scored the session on a 5 point scale where 1 was very bad quality, 2 bad quality, 3 neutral, 4 good quality and 5 very good quality. To gain a common understanding and eliminate the extremes of inter-observer subjectivity, they discussed all scores that were more than one point apart. After the discussion one or both of the observers could change their score.

Because we base our measurement on an assumption and on the opinion of our observers, we only use the scores as support for our qualitative analysis of the simulation and comments of the performers. The comments of the performers were taken from open interviews at the end of each session. In these interviews the performers were asked how they felt about the simulations they played and what stood out for them. Based on their answers, further questions were asked for elaboration.

4 ANALYSIS

In this chapter, we will try to make our research come alive. The main part of our data consists of video material of the simulations we did with the performers. We will present this material as selected transcripts in which certain interesting phenomena become clear. The transcripts will be complemented by remarks made by the actors after the simulations. Finally, we will look at the scores of our observers and see how the quantitative data matches the qualitative data.

In our analysis we will look at the scores of the ten simulations that we did not experiment with. We will discuss whether and how the conclusions fit with our hypotheses and the paradox between freedom and control. After we have discussed the hypotheses, we will use our data and the experiments we performed to gain new insights into the process of leading organizational improvisation.

4.1.1 DIRECTIVE

During the directive leadership sessions we saw very strict leaders and little team work between the team members. One performer said about the interactions with the leader: "*There was almost no possibility for discussion with the leader, he gave little freedom for this.*" Another performer replied to this by saying that "*You get constant instructions, there is very little freedom to make suggestions of your own and participate in the thought process.*" A player commenting on the directive style in the fifth session said: "*If I don't do [what I'm told], I have to watch over my shoulder to see if the leader is coming to say something about it. He keeps us under his thumb.*

We did indeed often see the physical act of looking over one's shoulder to the leader. This gesture was repeated on more than one occasion in both directive sessions and it was often accompanied by a look of fear. Below are two instances of this gesture.

*Simulation 1.2, directive leadership. Assignment: Make a jewel that is beautiful and ridiculous. Leader: **B**. Timestamp: 37:35*

[J and W have been told off for using clay to make the jewel earlier in the scene, after reframing, they start making a new jewel.]

W: I'll throw this one out. **J:** Shall I get new clay to make a mold? **W:** CLAY?! Yeees? [J&W look toward B, who is sitting at the rear of the workshop]. **J:** Do we use clay or not? **B:** A mold made by clay is good, just don't make the jewel out of clay.

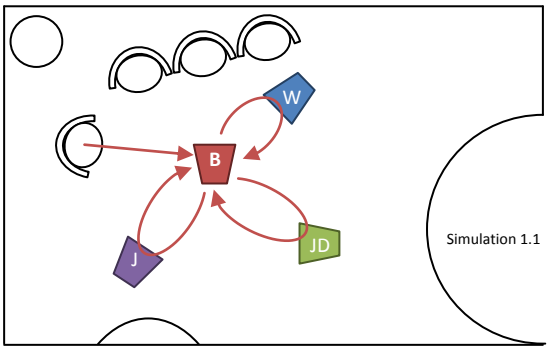
*Simulation 5.1, Directive leadership. Assignment: Make a toy that is both warlike and peaceful. Leader: **MT**. Timestamp: 08:07*

*[**M** is just done making a puppet representing a princess and is instructed to put it away somewhere safe.]*

*[**M** puts the princess in a box that is too small and the head breaks off. **M** freezes and looks over his shoulder to **MT**, the leader.] **M:** Hehe, everything is just fine here, all is well. I'll just put the puppet in this box.*

Simulations lead by a directive leader exhibit the least amount of team work of all simulations. We can visualize this by a view from above. The effect is most striking in simulation 1.1, where the team members (J, W and JD) each position themselves on a corner of the stage and spend almost all their time in that corner, facing away from their fellow team members. The leader (B) starts the simulation lazily sitting in a chair and then moves to the middle, occasionally going to the team members to check up on them. In other directive

simulations, we saw the same pattern, although sometimes two team members would cluster together to work on one project.



The physical set up was initiated by the directive leaders, who gave each of the players different tasks. Because the leader was the natural contact person, the team members did not seek each other out and the task differentiation continued during most of the scene. The set up enabled the leader to hold a lot of control over his team members; their actions could easily be monitored from his central position and he could easily step in if something went against his wishes, as is apparent from the following transcription.

Simulation 1.1, directive leadership. Assignment: Make a toy that is warlike and peaceful. Leader: ***B****. Timestamp: 15:37*

[After a long silence in which the team members are all working and ***B*** *is watching them.]*

B *[to* ***JD****]: What color is it going to be in the end?* ***JD****: I don't know, I haven't thought of that yet.* ***B****: Make it brown, a nice brown. Like a wild stallion.*

JD *[as an aside, to the audience]: I'm making a horse, a wooden horse, made of ebony. I like ebony, it smells so good. It has a very relaxing effect. If the empress' son smells it, he'll become relaxed, peaceful. Alas, it had to be made brown! I wonder what he [****B****] is going to say, because if you throw paint over the ebony….*

In this example it also becomes clear that the directive leader, by imposing his idea on the project of a team member, negates any input of the team member. This is an example of 'blocking' as it is called in theatrical simulation. The leader of this simulation later said: ""*As a leader the control you have is fantastic.*" But the control lead to negative effects for the team members, as evidenced by these quotes: "*With [directive leadership] you don't have any input of your own and you have the feeling that you don't matter."* Or: "*The teamwork [during the directive leadership session] wasn't very smooth because the leader was there to say 'do this, do that'." And: "with [directive leadership] we would all look to the leader and not think creatively."*

But some players did praise some positive aspects of control. "*[It's easier because] the leaders tells you what to do and you do it. If it goes wrong, it's not your problem, the leader will solve it."* It was also noted that *"[directive leadership] was pleasant because one person said 'I want this, this and this'. Although it did have a negative effect on the mood."* Theatrically there were also advantages: "*You did what the leader told you and then you could start playing [meaning: making the scene interesting]."*

To conclude, we have noticed that directive leadership allows for a large amount of control for the leader, without the possibility of input by the team members. Some team members liked this, as the task became easier because they weren't required to think, but others felt their presence didn't matter. There were few instances of team work, because the majority of communication went through the leader. Team members generally had negative comments about the simulation.

4.1.2 SERVANT LEADERSHIP

In the servant leadership simulation there was more team work and input from the team members, although the servant leaders felt that they lacked control on some occasions.

Controlling the simulation through questions did work, but it was not always easy according to the servant leaders. One said: "*Sometimes [asking questions] worked well; if people had strange thoughts, I could straighten them out. However, normally you use logic to ask questions. [… In a theatrical setting] it is harder to steer using questions."* Another servant leader said: *"This style gave a lot of freedom to others, so that I got the feeling I got walked over easily."* That the technique of asking does give the leaders a certain amount of control, and gives team members the freedom to have their own input, is aptly portrayed in the following excerpt.

> *Simulation 2.1, servant leadership. Assignment: Make a throne that emphasizes the empress' power while allowing a connection with the commoners. Leader:* ***W****. Timestamp: 28:19*
>
> ***W****: I think we're almost ready. Are you ready?* ***M****: Yes, we'll keep that stool like this.* ***W****: Is it as you wanted it to be?* ***J****: I'm happy. Originally I thought we should create more distance, but I think this fits better with the empress' wishes […]* ***M****: I think the distance is becoming very small […]* ***W****: Why do you think the distance is small?* ***M****: Because of the materials. The top is so nice, but the bottom has become rickety.*
>
> ***MT****: I think it's perfect, 2 by 2,5 feet.* ***M****: I'm sure he'll fit in the room.* ***MT****: It's nice and big at the top and stable too, it won't fail.* ***W****: To summarize, J and MT think it's good and M, you're not completely satisfied. Isn't there something small you can adjust so you support the decision as well?*
>
> ***J****: If we make the seat out better quality material, paneling made of lacquered wood?* ***M****: That might do it.* ***J****: That way it's more fancy.* ***M****: Or maybe we should do it in purple?* ***W****: Okay..but…what did the empress say about purple?* ***M****: She didn't like it* ***W****: Would you do it in purple then?* ***J****: I would do the lacquered wood in its natural color.* ***M****: Then it's still brown, but less lowering.* ***W****: Then I propose to make the seat […]* ***MT****: I've got one here.*

The team members also noticed the effect of servant leadership, as can be seen in the following quotes on different topics.

- On the input of the leader: "*When she made a decision, it was immediately noticeable and it was pleasant. You can go on faster and it brought the leader back into the scene and the process. If she made a decision, she had input, which the rest of the simulation lacked."*
  And: "*With [servant leadership] there was somebody who kept you thinking by asking questions. This had a positive effect on the mood of the scene and on the product.*"
- On the assertiveness of team members: "*With [servant leadership] the leader is almost unnecessary, [you feel like] I'm going to do my own thing and everything I say is taken into consideration."*
- On creative input of the team members: "*With [servant leadership] we would think creatively."*
- And finally, on team work: "*[Servant leadership] was much easier [than directive leadership] because you built on each other. It is much easier to get somewhere."*

We see the controlling effect of the leader, but are confronted with the feelings of the servant leaders who felt they lacked control. We therefore theorize that the control of servant leaders is mainly indirect control. This resembles the influencing factor of 'invisible control' which is part of minimal structures (described in paragraph 2.2.2). We also see indirect control in how the leader physically steers the team. One example was when a leader asked a team member to accompany another team member, whom he did not trust with the

task he was doing. In the following example we see that the servant leaders encourages team work by physically getting players together.

*Simulation 2.1, servant leadership. Assignment: Throne, powerful and connecting. Leader: **W**. Timestamp: 18:55*

*[**M** has made two samples of the back of the chair, one red and one purple and cannot decide on the color]*

***W**: Why don't you ask your colleagues and then decide? [**W** physically pulls J towards M, MT follows] [**M** explains his problem to J and MT]. […] **J**: Yes, I would choose the red. **MT**: Yeah, yes.*

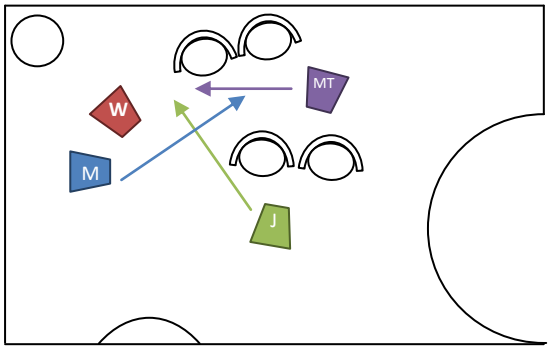


Figure 8: Stage plan of a moment from simulation 2.1

Concluding, we can say that servant leadership gives freedom to the team members while being able to steer the simulation through indirect control. Team work was encouraged by the leader and the team members generally had positive feelings about the simulation.

4.1.3 ROTATING LEADERSHIP

Rotating leadership was oftentimes characterized by a large amounts of team work, but our most interesting finding was a clear difference in how the performers perceived the quality of the first rotating leadership session (simulations 3.1 and 3.2) and the second rotating leadership session (simulations 4.1 and 4.2). This is best characterized by the following two performers who looking back on all the simulations they played: [**B:**] *"I think the [first rotating leadership session] went well."* [**A:**] *"Really? Our [second rotating leadership session] was ****** [really bad]."*

Before discussing how freedom and control related to rotating leadership, we will first detail the differences between the simulations. The main reason for the difference in perception is the overall negative attitude in the entire session and the process quality of simulation 4.2. In session 4, the performers developed a negative attitude towards each other and towards the task and the empress in the leadership exercise. In the leadership exercise, all performers primarily focused on getting their own tools in order. This lead to irritation, because people postponed supporting the other performers while getting their own affairs in order. This is exemplified in the following quote:

Leadership exercise session 4, rotating leadership,. Assignment: clean the workplace Timestamp: 04.40

***A:** [to JD] JD, I've got a lot of [your] needles. **JD:** Ah, how nice.*

***JS:** Does anybody have some leather? **JD:** Just a moment, first the needles. […] **JS:** I'll look for it on my own. [starts rummaging through stuff]*

***JD:** No, watch out! **JS:** Yeah, well, just put your stuff in the right place. I'm getting so tired of this. **JD [irritated]:** If you have some patience, you'll get your leather in a moment.*

The irritation continued within the simulations:

> *Simulation 4.1, rotating leadership. Assignment: Make an armor that is both protective, light and becoming. Timestamp: 23.40*
>
> **JD:** Sorry, I made a very nice cap. It was here a minute ago. Did anyone happen to use it, as a dishcloth maybe? **A:** You lost the cap? **JS:** Do you mean the leather cap? **JD:** Yes. **JS:** Oh, that leather cap. **JD:** Yes.
>
> **JS:** Well, I needed something to light the fire to melt the titanium and eeuhm… **JD:** let me guess, it burned. […] **JS:** Well, I might have accidentally burned it. **JD:** That's very annoying, how can we…
>
> **JS:** I can make a helmet. **A:** Yes a helmet, made of titanium. **JS:** I'm not going to use titanium again! **A:** I don't care, you caused the problem, you solve it. **AL:** You'll have to explain it [to the empress]. **A:** This isn't my problem.

Simulation 4.2 had the second worst process quality score of all simulations. Simulations 3.1, 3.2 and 4.1 had the best process quality scores of all simulations. The difference we see between these simulations is that in simulation 4.2 everybody retreated to their own area of expertise and did not take the leader role. This leads us to conclude that we did not see rotating leadership, but instead a lack of leadership. And from this we learn that rotating leadership can only work well if the team members dare to take and release the leadership role and allow others to do the same.

In rotating leadership, control can exist next to freedom because everybody can steer the process as a leader. In a leaderless setting there is an utter lack of control, which is detrimental to the outcome. As one performer remarked about this: "*We weren't able to finish [the product], we kept on making and making and nobody stood up to [take charge].*"

When asked about the quality of the scene, one performer gave the following answer: "*I had the feeling that nothing happened. Nothing was brought together, although somebody was supposed to take charge. I have the feeling that didn't happen*." Another performer supported this conclusion: "*Nobody took the lead, we all had the same status and a different expertise [and we stuck to that].*"

The other simulations did exhibit rotating leaders. During the first rotating session there were numerous occasions on which somebody assumed leadership, which was accepted by the others. Simulation 4.1 had fewer moments of rotating leadership than 3.1 and 3.2, but it still had those moments. One moment when leadership was present was when the team flocked together around one central task. This lead to a moment of high process quality, where one team member even literally sacrificed himself for the objective. Performer A takes the leadership role by executing the ideas of the others and encouraging them to act out their ideas to their end (excerpt on next page).

During simulations 3.1 and 3.2, the leadership mostly alternated between performers B and MT (who was appointed spokesperson). This is congruent with the offstage personalities of the performers. J also takes leadership when faced with a problem he discovered. Only M doesn't take leadership. Afterwards he said: "*I actively tried to stay below MT, because he was appointed spokesperson*."

Simulation 4.1, rotating leadership. Assignment: Make an armor that is both protective, light and becoming. Timestamp: 27:00

[Feedback command for **A**, who is sewing the leather armor]. **A:** I put the needle right through my nail. **AL:** But [the blood] does suit [the armor]. **A:** Beautiful, I'm dripping spots of blood on it. **JD:** spots! **AL:** It sparkles! **A:** I don't know what it is, but my blood genuinely sparkles. **JS:** Do we have to use blood in everything we make?

AL: Does anybody have a knife? **A:** Yes, I have knife, come on, come here [Hacks into **AL**'s outstretched hand]. **AL:** Ouch! **A:** Wow, amazing. Look, guys. **JS:** We need tears! Blood, sweat and tears! **A:** Come on then, cry! [slaps him on the head]. **JS:** Ouch!

JD: Guys, if you don't mind I'll start with tomorrow's orders [sneaks away to his chair].

A: [to JS] Come on, cry, cry. You're father beat you too, right? **JS:** Yes! **A:** I thought as much. J**S:** And my grandmother died! **A:** I thought as much. And your grandfather too.

AL: [with this dying breath] It was a pleasure working with you. **A:** Oh god.

We can see the team work of rotating leadership in the stage plan from simulation 3.1 (Figure 9). In this simulation, like in simulation 3.2, all performers clustered together around a single object and only moved away to get something and move back again. Because of this physical placement, the performers were able to confer a lot and add ideas to the input of other performers. In effect, they were all fully responsible for any part of the product that they made. This is a good example of agreement, which is one of the four factors of good improvisation (Vera and Crossan 2004).

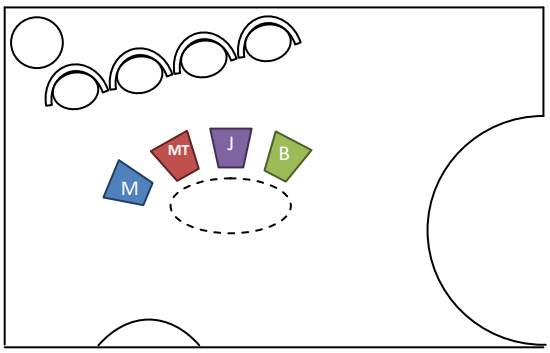


Figure 9: Stage plan for simulation 3.1

So, rotating leadership gives the performers the freedom to complement each other, but it also allows them to take command of the process and steer it away from an undesirable outcome. This can be seen in the following example:

Simulation 3.2, rotating leadership. Assignment: Make an armor that is both protective, light and becoming. Timestamp: 29:50

[The actors are making the chest pad for the armor]

[…] **MT**: Those golden points are interesting too. **J**: With the points in the front. **MT**: I'm going to get some gold that we can melt. **J**: Why don't we use a funnel as a mold? **B**: A large funnel then. **J**: I've got two identical funnels here, so we can make them at the same time. Let me just close them up.

B: Shall we make them a bit rounder? It looks kind of funny and I only meant it as a joke. **MT**: Then we'll just round them off. **B**: A bit more round. **M**: Can't we make a them in a flower shape? **B**: I like that. Shall we make a flower shape gentlemen? **M**: Like a carnation or a daffodil. **MT**: Isn't that too womanly? **J**: A bit too girly, I think. **MT**: It should still be an armor. **M**: Let's make sunflowers then! **J**: Then it becomes a hippy armor. **B**: Upside down tulips? You still have a cuplike calyx shape. **MT**: I can live with that. **M**: Okay! **MT**: I'll file them in the right shape.

Summarizing, we can say that rotating leadership allows for a great amount of control and freedom and generates good team work. This style does have the risk of falling into anarchy, where there are no leaders: no control and little team work. The leadership style therefore drew very different statements from the performers, both positive and negative.

4.1.4 QUANTITATIVE ANALYSIS

Now that we have presented our qualitative data, we will look at how our quantitative data complements our findings. Firstly, we present the different leadership styles' scores on process and product quality (Figure 10). If a leadership style scored a three on the scale, it was deemed to have a neutral effect (neither negative nor positive) on the quality of improvisation. A score above three indicates a positive effect of the leadership style and a score below three indicates a negative effect.

	Directive	Servant	Rotating
Process	2.33	3	3.38
Product	2.83	3.75	3.88

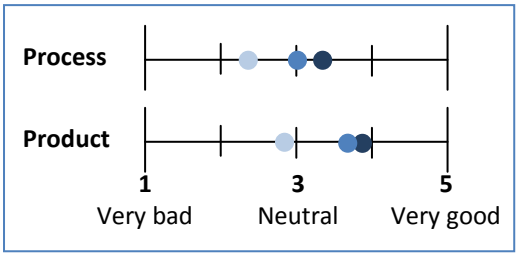


Figure 10: Process and product scores according to leadership style

We see a negative effect for directive leadership style (light blue), where both the process and product quality score less than a three. Servant leadership (blue) scores neutral for process quality and positive for product quality. Rotating leadership (dark blue) scores positive for both process and product quality.

We can perform a statistical analysis of these hypotheses if we compare leadership styles with each other. The most relevant data are presented in Table 5; an entire overview of the scores and statistical computations is shown in appendix A. These are the results of a paired T-test with a 95% confidence interval and a significance level of $p \leq 0.05$ (two-tailed).

Measure	Relation	Mean difference	Significant?
Process	Directive leadership - Servant leadership	-0.5*	**No** (p = 0.214)
	Servant leadership - Rotating leadership	-0.54*	**No** (p = 0.169)
	Rotating leadership - Directive leadership	+1.04**	**Yes** (p = 0.032)
Product	Directive leadership - Servant leadership	-1**	**Yes** (p = 0.050)
	Servant leadership - Rotating leadership	-0.04*	**No** (p = 0.912)
	Rotating leadership - Directive leadership	+1.04**	**Yes** (p = 0.041)

Table 5: Statistical comparison of leadership styles

* $p > 0.05$

** $p \leq 0.05$

Table 5 shows that rotating leadership scores significantly higher than directive leadership in both process and product quality and that servant leadership scores significantly higher than directive leadership in product quality. There is a suggestion that servant leadership scores higher than directive leadership in process quality and that rotating leadership scores higher than servant leadership in process quality. The final suggestion we can draw from the data is that servant leadership and rotating leadership are not clearly different from each other in product quality.

We have also performed a correlation test and a paired T-test (95% confidence interval, significance level of $p \leq 0.05$ (two-tailed)) for process quality and product quality. From this we learn there is no clear correlation (mean difference is -0.075 which is not significant as $p = 0.727 > 0.05$) between process and product quality. We do see that process quality scored consistently lower than product quality (mean difference of 0.79, which

is significant as $p = 0.012 \leq 0.05$). This does not give any indication of the relationship between process and product quality, but rather indicates how the observers valued the products

made in hyper reality. Concluding our statistical analysis, we have found that our inter-observer reliability is good (Table 6). This is partially so because we gave the observers the possibility to change their scores after discussing them.

Measure	Cronbach's Alpha[3]
Process	0.904
Product	0.882

Table 6: Inter-observer reliability

4.1.5 HYPOTHESES

Now that we have our qualitative and quantitative data, we can see if our hypotheses are supported. The hypotheses have been reprinted below:

Hypothesis 1a: Servant leadership is able to solve the paradox between freedom and control.
Hypothesis 1b: Servant leadership has a positive effect on the quality of the process of improvisation.
Hypothesis 1c: Servant leadership has a positive effect on the quality of the product of improvisation.

Hypothesis 2a: Rotating leadership is able to solve the paradox between freedom and control.
Hypothesis 2b: Rotating leadership has a positive effect on the quality of the process of improvisation.
Hypothesis 2c: Rotating leadership has a positive effect on the quality of the product of improvisation.

Hypothesis 3a: Directive leadership is not able to solve the paradox between freedom and control.
Hypothesis 3b: Directive leadership has a negative effect on the quality of the process of improvisation.
Hypothesis 3c: Directive leadership has a negative effect on the quality of the product of improvisation.

Hypothesis 4: Process quality will positively correlate with product quality.

Whether we accept hypotheses 1a, 2a and 3a, depends on our qualitative data. Hypotheses 1b, 2b, and 3b will be determined by our quantitative data and qualitative data together. Hypotheses 1c, 2c, 3c and 4 depend only on our quantitative data.

The conclusion we have drawn from our data in section 4.1.2 shows that freedom and control can be brought into synthesis by the indirect control of a servant leader. Although a servant leader does not always feel in control, he can exercise control. It is exactly because a leader does not feel in control that the team members do not feel controlled, but have the freedom to act instead. This confirms hypothesis 1a.

Hypothesis 2a can also be confirmed, although because for different reasons. Rotating leadership gives the entire team the possibility to exercise control over the process, and gives the team members the freedom to put in new ideas and build on those of others. The synthesis made in rotating leadership is that mulptiple roles of a leader can be fullfilled simultaneously by different team members. This is only possible if team member are able and willing to take and release the leadership role that a process needs.

For directive leadership, our results indicate that, although the directive leader had a great amount of control, there was little freedom for the team members. Directive leadership therefore does not make a synthesis, but chooses one extreme of the paradox over the other. Hypothesis 3a is therefore confirmed.

Hypothesis 1b is not significantly supported by our quantitative analysis. We do see a suggestion that the hypothesis might be true. Our qualitative data also point in the direction of a positive effect of servant

[3] The reliability is considered good enough if Cronbach's Alpha is higher than 0.7

leadership on process quality, as both team work and perceptions of the process by the team members are positive. We conclude that this hypothesis can be tentatively accepted.

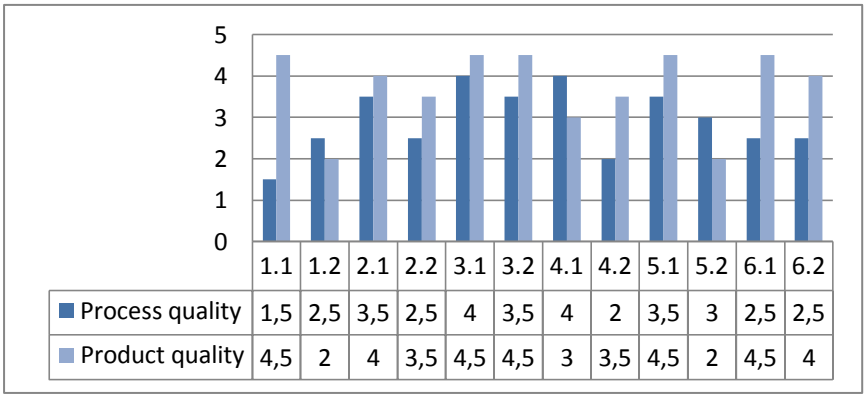
Hypothesis 2b is supported by our quantitative analysis, with a significant difference with our contrasting leadership style and an average score well above three. Our qualitative data gives us ambivalent results, with one session being very high in team work with very positive perceptions and one sessions with fewer instances of team work and negative comments. However, in the latter session, rotating leadership was actually replaced by the absence of leadership. We will accept this hypothesis, but note that rotating leadership does have dangers that need to be overcome before it works as it should.

The results show a negative impact of directive leadership on process quality. The average score was the lowest of all the leadership styles and well beneath a neutral score. There was very little team work and the overall sentiment about the simulations was negative. This means hypothesis 3b is confirmed.

Both servant and rotating leadership score above a three, which represents neutral, and both score significantly higher than the contrasting style, directive leadership, which indicates that hypotheses 1c, and 2c can be accepted based on the statistical analysis and scores.

Directive leadership scores only marginally lower than neutral (2.83). As hypothesis 3c is about leadership affecting product quality negatively, we do not think our results are strong enough to support it wholly. However, because there is a visible effect and a significant difference with the other styles, we do accept it tentatively.

Hypothesis 4 is not supported; we did not find a correlation between process quality and product quality. As is evident in Graph 2, which displays all the scores of our observers, there frequently was a large gap between the process quality and product quality of a given simulation.



	1.1	1.2	2.1	2.2	3.1	3.2	4.1	4.2	5.1	5.2	6.1	6.2
Process quality	1,5	2,5	3,5	2,5	4	3,5	4	2	3,5	3	2,5	2,5
Product quality	4,5	2	4	3,5	4,5	4,5	3	3,5	4,5	2	4,5	4

Graph 1: All scores

Hypothesis	Supported?
1a	Yes
1b	Tentatively
1c	Yes
2a	Yes
2b	Yes
2c	Yes
3a	Yes
3b	Yes
3c	Tentatively
4	No

This concludes the first part of our research. By researching the hypotheses and finding that most of them are supported, we have not only added to the scientific knowledge base that is already available on the effects of leadership on improvisation, we have also established that our simulation accurately resembles the processes we are researching, thereby substantiating the validity of theatrical simulation in hyper reality.

In the second part of our research, the strength of our method comes to bear, as we can easily explore why our hypotheses are supported. We have already done this for the paradox between freedom and control, but there are other factors that affect the relationship between leadership and improvisation. In the following paragraphs we will look at these factors.

4.2 BEYOND THE HYPOTHESES

When looking beyond the hypotheses, we will first explore what other factors influence the connection between leadership and improvisation from the data we already presented. After that we will present an experiment we were able to do during the simulations. Finally, we will zoom in on some aspects of the simulations to gain additional insights.

4.2.1 WHO IMPROVISES? STATUS, ISSUE OWNERSHIP AND EXPERTISE

We already mentioned the team work factor and we found that in directive leadership and a lack of leadership, there is little team work because everybody is busy with his own project. Although it is possible to reach individual improvisation in this way, collective improvisation with its added benefits of building up ideas of other team members is impossible in these settings. But there is a difference here that goes further than acting collectively or individually.

Directive leadership encourages inactivity from team members. The gesture of looking towards the leader when something goes wrong shows that a team member does not take the initiative to solve the problem, but rather depends on the leader to solve it for them. This had to do with status, issue ownership and expertise and comes down to the question: 'who improvises?'.

In teams with a directive leader, the only person improvising is the leader. The leader devises the design and when problems occur, the team members do not feel responsible for the problem: they do not have issue ownership. The directive leader uses his own expertise to solve the problem and gives instructions to a team member to carry out his solution. Team members are not challenged to cooperate and use their creative potential. The product or outcome of the process is therefore dependent on the expertise and creative power of the leader alone. This is supported in the different scores on product quality in the same session. Because the product quality is only dependent on one man, the quality will stand or fall with how good the idea of that one man is.

Session	1.1	1.2	5.1*	5.2
Product quality score	2	4.5	4.5	2

Table 7: Product quality scores of directive leadership

* Done by a positive directive leader, see § 4.2.2

We might even say there is no improvisation whatsoever under directive leadership. Because the directive leader does not actually take action, but rather delegates the action to the team members, there is a clear difference between planning and execution, or conception and action. According to our definition this is not improvisation at all. It certainly isn't collective improvisation.

In a team with a servant leader, the team members do improvise. The leader adopts a lower status than the team members. By doing this he makes the team members responsible for the problems so that they can use their expertise and creative potential for the product and issues. The leader focuses his energy on supporting the team members, but he can add suggestions of his own, to make the team members shine. This is apparent in the following excerpt:

*Simulation 6.2, servant leadership. Assignment: Defensive works that are strong and inconspicuous. Leader: **B**. Timestamp: 22:30*

[The team is making a catapult that shoots ckickens filled with pitch]

JS: We need a coop so that the chickens can go outside, being cooped up inside is not pleasant for them. Eeuhm, on the wall would be a nice spot. **B**: Is it an idea to put them somewhere where chickens are present more often? **AL**: Behind the wall. **JS**: In front of the wall. **A**: At the battlements. **B**: Where can you often see chickens? **A**: on the ground. **AL**: In the forest. **B**: In the forest? Where do you go for eggs? **JS**: To the forest, for the feral chickens. **A**: To Mary. [...] she lives in the village. **B**: Shall we put the chicken coop in the village? […] **JS**: Okay, but then the enemy can just go around it. **B**: What would you do? Is it an idea to put the coop on the courtyard? **JS**: yes, for example. And then shoot them over the wall **B**: (simultaneously) Then we shoot [makes shooting noise] them over the wall. What do you think of that?

In this example of the framing phase in a process, we see that the leader (B) encourages new ideas and critical analysis of them by asking simple questions. He also comes up with his own ideas, but gives the final say to the team members.

In theoretical descriptions of servant leadership (see theoretical framework), an important aspect of a servant leader is that a servant leader has to have a vision and gently steer the process towards attaining that vision. This was not included in our simulation and where the servant leaders did have a vision, they found it very hard to steer the process towards it. We believe that servant leaders have much more indirect ways of steering a process in the concrete reality.

In a team that uses rotating leadership, everyone improvises. If the leadership is truly rotational, everybody feels responsible for the process, the product and possible issues that arise. Everybody has the status to step forward as the leader and everybody is prepared to adopt a lower status when somebody else assumes the leadership position. Leadership is often taken when a person feels he has the most expertise on a given subject.

The fact that it was possible that one team (simulation 4.2) reverted to a leaderless style means that the instructions were not clear. However, it is interesting that it happened as it shows an effect that can very well be present in the concrete reality. If a team chooses to adopt a rotating leadership style and treat each other as equals during the improvisational process, the danger exists that nobody takes the leadership role. If this happens, everybody retreats to his own expertise and doesn't take ownership of issues outside of his expertise.

4.2.2 LEADER ATTITUDE AND EMOTIONAL CONTAGION

The separation of the first three and last three sessions by a hiatus for analysis, gave us the ability to look for interesting effects we could experiment with to gain more understanding. The main effect we researched in this way was the effect of leader attitude on the quality of improvisation.

From the first session on, we saw that the attitude, or emotion, of the leader had a large effect on the mood and emotions of the other performers and this influenced the quality of the improvisation. In the first three sessions (in the order directive, servant, rotating) we said nothing about attitude or mood to the leaders or performers. The leaders would portray the attitude that they felt to be best suited to the leadership style they played. The directive leader was very gruff and negative towards the team members, the servant leader very soothing and positive and during the rotating leadership all team members had a very positive attitude towards each other.

Because of the lack of a formal leader in rotating leadership, we did not experiment with the fourth session, although this session did prove the large effect mood and emotion could have. We intervened in the first simulations of session 5 (directive leadership) and 6 (servant leadership). The leader was instructed to play the first simulation with a different attitude than the leadership we saw in the first three sessions, before the hiatus. For the second simulation the leader was instructed to play the leadership as he would do it naturally. An overview of the attitude of the leaders (natural or instructed) can be found in Table 8. There was a clear attitude in all simulations, except 6.2, where the attitude varied. When everything was going according to plan, the leader was positive, but when he was faced with a decision he did not support, he got negative. This might be because he fell back on the character that he played in the first simulation, where he was instructed to be negative. This table also gives the group attitude during rotating leadership, when there was no formal leader.

Session		Style	Leader Attitude	Natural / Instructed
1		Directive	Negative	Natural
2		Servant	Positive	Natural
3		Rotating	Positive	
4		Rotating	Negative	
5	5.1	Directive	Positive	Instructed
	5.2	Directive	Negative	Natural
6	6.1	Servant	Negative	Instructed
	6.2	Servant	Varying	Natural

Table 8: Leader attitude for directive and servant leadership

We begin by analyzing the scores of the different sessions, presented in Table 9 and Figure 11. We have excluded simulation 6.2 from these scores, because the effect of this simulation is not clear.

	Attitude	Directive	Servant	Rotating
Process	Positive	3.5	3	3.75
	Negative	2.33	2.5	3
Product	Positive	4.5	3.75	4.5
	Negative	2.83	4.5	3.25

Table 9: Scores by attitude

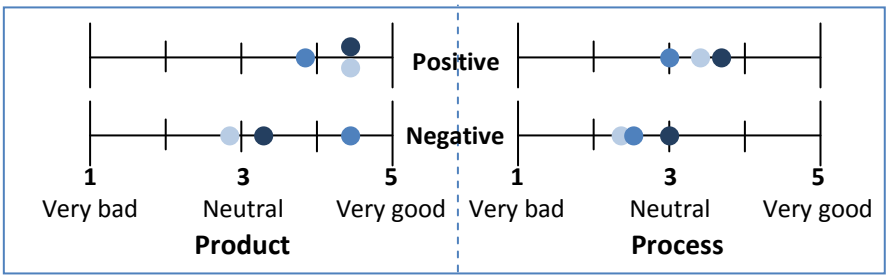


Figure 11: Scores by attitude

We see process quality is indeed affected by attitude, with all instances of positive attitude scoring higher than negative attitude (weighted average difference: 0.82). For product quality, this is also true for directive and rotating leadership, but not for servant leadership, which scores 0.75 points lower for the positive sessions. Because the negative servant leadership score is only based on one simulation, the weighted average difference is still 0.7 points in favor of positive attitude. Based on the scores, the effect is therefore still convincing.

The performers themselves also remarked upon the effect of attitude. An performer who had tried to adopt a positive attitude under a negative directive leader said: "*I tried to play a very happy apprentice, but that happiness was very hard to maintain. You have little freedom to be happy.*" The performer playing the leader agreed that he killed this input, figuratively speaking.

In the fifth session, the directive leader acted both a positive and a negative attitude. On the difference between the two he remarked: "*If I'm positive, I listen more to the team members. In the second [negative] simulation I squashed [their input].*" On the question of how the team members felt about the different attitudes, one performer answered: "*Because MT [the leader] went along with your ideas, there was a flow of ideas. Everyone started participating. In the second simulation I only focused on my own assignment.*"

For rotating leadership, everybody in the group felt the effects of attitude. In the positive session, the quality of teamwork was very high. "*We were very attuned to each other,*" said one performer after the session. Another said: "*This session was much more democratic when compared to the previous sessions* [negative directive, positive servant]." In the negative rotating session, the mood was described as very chaotic: "*I*

wouldn't want to work in this kind of company." Within the simulations, the mood became aggressive on several occasions, as can be seen by the examples in section 4.1.2.

The effect of attitude on process quality within servant leadership also showed in the comments made by the performers. One of them remarked: "*If you have an ally who is part of the team and who gives positive feedback, this helps you to be creative."* Another comment was: *"The mood was helped because somebody made sure that you kept on thinking. It also helped in making the product."*

The effect that a leader's attitude can influence the group attitude is known as emotional contagion. Emotional contagion is the automatic and unconscious transfer of emotions between individuals (Hatfield et al. 1994). This transfer of emotions can happen between team members, and between team members and team leader. The contagion effect from a leader to a follower is stronger because leaders are more prominent members of the team (Johnson 2008).

Positive attitude leads to a better process and product quality because positive emotions lead to upward spirals of individual and organizational functioning (Fredrickson 2003). The basis for this is the broaden-and-build theory which "suggests that positive emotions broaden people's mode of thinking and action, which, over time builds their personal and social resources. These resources, in turn, function as reserves that can be drawn on later to help people survive and thrive" (p. 163).

The broaden-and-build theory shares many similarities with improvisation. First of all, broadening and building resembles the technique of agreement (as described by Vera & Crossan (2004), see chapter 2). It is about accepting input from people and then supporting it and building on it. The Building of a reservoir of resources and using it resembles another technique, use of ready-mades, which is about drawing on previously learned resources. Positive emotional contagion can ultimately lead to periods of flow, an almost out-of-body-experience where everything just seems to happen by itself and which is the highest form of improvisation an performer can achieve (Johnstone 1987; Csikszentmihalyi and Csikszentmihalyi 1992).

4.2.3 IMPORTANCE OF ATTITUDE FOR IMPROVISATION

The proposition that positive attitude leads to better process quality and even product quality and that a negative attitude of the leader leads to less input from the team members, to chaos, and aggression and less teamwork may not be shocking or even new. However, it is important because attitude has a far greater effect on improvisation than on other constructs, such as innovation or creativity. In section 2.1.1 we saw that the main differences between improvisation and other related constructs are the spontaneous nature and focus on the process.

The spontaneous nature of improvisation is caused by feelings of uncertainty. These feelings are enhanced by the focus on the process, because the team members do not know where the process is going and experience uncertainty about the outcome of the process. The feeling of uncertainty can have a large impact on the process of improvisation.

If team members react negatively to uncertainty it leads to anxiety, fear and the possibility of failure, which in turn may lead to inaction. A positive response to uncertainty is also possible and will lead to hope and optimism. A person with a positive attitude is more likely to handle uncertainty in a positive way (Brashers 2001). Hope and optimism strengthen the positive attitude of the person and the likelihood that a person will handle future uncertainty more positively. This person will see opportunities rather than threats. Improvisation can even further enhance the positive attitude by the effect of immediately capitalizing on an opportunity and making sense, described in section 0.

For all this positivity to be unleashed, there has to be a start of positive attitude. Only then can positivity spiral into great heights. If there is no positivity, but a negative attitude, this too can spiral, only it spirals down, to cause even more negativity. We saw this in session 4, where the negative feelings only got worse over time and impacted on the process and product quality scores in the last simulation, 4.2. In situations where the leader had a positive attitude, this was the starting point for a positive spiral. To put it more generally; a positive leader will start the positive spiral because of emotional contagion and the way people react to uncertainty. We visualized this effect in Figure 12.

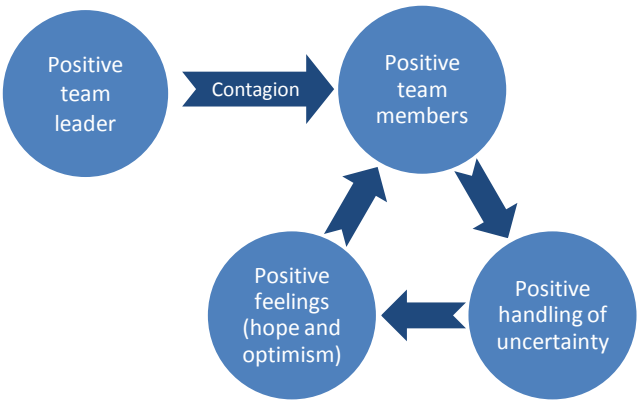


Figure 12: A positive leader is the starting point for a spiral of positivity

4.2.4 NATURAL ATTITUDE FOR EACH LEADERSHIP STYLE

Apart from the value of positive attitude for improvisation, we discovered another interesting fact about leadership style and attitude; a leadership style has a certain natural attitude associated with it. A directive leader would, if he was allowed to base his attitude on the leadership style, automatically revert to negativity. In simulation 2.1, 2.2, 2.3 and 6.3 we saw that the servant leader automatically took on a positive attitude. In 6.1 the leader was instructed to be negative and on 6.2 the leader sometimes fell back on the attitude he had in 6.1.

The effect can be seen in simulation 5.2. In the first minutes of the simulation, where the leader MT was instructed to base his attitude on the instructions for a directive leader, the following exchange happens.

> *Simulation 5.2, Directive leadership, negative attitude. Assignment: Make a jewel that is beautiful and ridiculous. Leader:* ***MT****. Timestamp: 21.34*
>
> ***A:*** *It seems like the fire has gone out [touches the embers]. Ouch, I burned my hand. I burned my hand, I burned my hand, I burned my hand.* ***MT:*** *[grabs A's hand and puts it in a bucket of water] Keep it there for five minutes.*
>
> ***M:*** *[to A] Are you okay?* ***A:*** *NO!* ***MT:*** *[to M] Yes, she's fine, back to work. [J comes to check on A, A falls over in pain, but MT puts J to work again.]*

MT later said: "*It was easier to play [a negative leader], I didn't have to listen to people. […] It is how I say it is, and it doesn't matter if the input of the players is good or bad*." The first directive leader, who also developed a negative attitude naturally, mentioned the same effect: "*The energy [of the scene] really matters, but this [negative] energy fits this style very good.*"

For servant leadership, the opposite effect was mentioned. The performer who lead the servant leadership simulation 6.3 mentioned: "*It was difficult to ask critical questions. I had the tendency to agree to everything, add something of my own and go ahead with the scene.*" The servant leader in session 2 described the character she assumed naturally as: "*Serene, calm, thorough and introverted.*" Both of these simulations resulted in a positive leader.

There are clear indications in the literature that servant leadership is naturally positive. Avolio and Gardner (2005) name servant leadership as one of the positive forms of leadership, together with transformational leadership, charismatic leadership and spiritual leadership. Servant leadership is naturally positive because it

has positive modeling (the leader acts as a role model) and a positive moral perspective (how a leader sees the world) as its core components. It is the only one of the positive forms of leadership that focuses using the strengths of team members positively within the organizational context.

For rotating leadership, as has been discussed on several occasions earlier in this chapter, we found that a positive attitude and good teamwork are connected. The performers in the positive rotating session three communicated a lot, built on each other's suggestions and remarked on themselves as being a team afterwards. The negative rotating simulation was characterized by a lack of communication. The performers remarked on the fact that they all did their own thing.

The findings on attitude present both a strong and a weak point in our research method. It was only possible to study these outcomes so clearly, because of the enlarging effects of hyper reality. The same effect can be used to disqualify the findings. It might be argued that a leadership style only has a natural attitude in theatrical simulation and not in the concrete reality. The preconceived notions that theatrical performers have of a guild master directing his apprentices might for example be that the guild master is always negative.

We argue two points to the contrary. First of all, we overruled the preconceived notion of the performer by instructing the directive leader to be positive. He could not sustain the positive attitude in the entire simulation and became negative on more than one occasion. Secondly, performers act out clichés (Johnstone 1987). A cliché is: *"something that has become overly familiar or commonplace"* (http://www.merriam-webster.com, visited on 12-08-2010). Clichés might be exaggerated, but are born out of the fact that they occur very often.

5 CONCLUSIONS

After researching the relevant literature, designing the simulation and analyzing the results, we can now answer our main research question: *"How does leadership style influence organizational improvisation within a NPD team?"* In this final chapter we will draw conclusions from the research, but we will also cover the limitations our experimental research design brought along and give recommendations for further research.

First of all, we have built on the proposition that improvisation requires a leadership that can handle the paradox between freedom and control. We examined how two leadership styles that are put forward in the scientific literature as advantageous for improvisation, rotating and servant leadership, deal with the paradox, and contrasted these two styles with directive leadership.

We saw that a directive leader has a large amount of control over his team members, but directive leadership doesn't allow any freedom for the team members. The directive leader could therefore very effectively steer the process of improvisation to a result he thought was good. The leader had to do this all on his own, because the lack of freedom inhibited the team members from making their impact on the process and the product. Consequentially, both process quality and product quality score low on average. The scores of product quality fluctuated according to how good the ideas of the lone leader were.

Servant leadership on the other hand did not allow much direct control of improvisation, which was difficult for the servant leaders in our simulations. The servant leaders used indirect control instead. This indirect control consisted of asking questions, encouraging team work and using team members to control each other. Indirect control left a lot of freedom for team members to use their own input. Team members could freely accept and build on each other's ideas to create better ideas. This showed in the scores, as servant leadership had a positive effect on product quality. Process quality was considered neutral by outsiders, but team members had positive perceptions of the process. Team work was also prominent under a servant leader.

Rotating leadership handled the paradox differently than servant leadership. In short, the entire team had the freedom to take control. Individual team members could step into the leadership role at times when they felt they had the most to offer to the process. They could also steer the process away from outcomes they considered unwanted. Rotating leadership therefore had the highest scores on both process and product quality. However, there is a catch. Rotating leadership only worked when the team members dared to take and relinquish leadership and also allowed others to take and relinquish the leader role. When this didn't happen, the team members withdrew to their own project and a rotating leadership simulation became leaderless.

When we delved deeper into leading improvisation, we found that the factors affecting whether people would improvise were status, issue ownership and expertise. During directive leadership, team members were awarded a low status. Because of this they felt any problem they encountered was not their problem, but the leaders'. This was strengthened because the leader overruled their expertise. We saw an opposite effect in servant leadership, where the leader sometimes assumed a lower status and lacked the expertise of the team members. However, a servant leader did have issue ownership because he felt responsible for the team members, the process and the product. In rotating leadership we saw that the person with the most expertise for a given situation took ownership and gave himself higher status as he took the leader role.

The conclusions regarding how servant and rotating leadership handle the paradox between freedom and control are new to the scientific improvisation literature, although it is based on a combination of writings from improvisation literature. In the second part of our analysis, we have found effects that are not already part of the scientific knowledge about improvisation.

The effects of leadership styles on attitude and of attitude on improvisation could be discovered through experimenting within the hyper reality. We found that leadership styles are naturally inclined towards a certain attitude. A directive leader will mostly be negative and a servant leader will mostly be positive. The effect of a positive attitude is remarkably large for improvisation. Team members are often faced with uncertainty, which can cause the very negative feelings of anxiety and fear when handled incorrectly. Reacting positively to uncertainty gives bigger positive feelings, creating a spiral of positivity. This spiral can be started by a leader who has a positive attitude, as his attitude will be copied by team members because of emotional contagion. In rotating leadership, the positive attitude has to come from the members themselves.

Based on the statements above we conclude that both rotating leadership and servant leadership are suitable leadership styles for improvisation. However, both have preconditions which should be taken into account. Rotating leadership shows the most promise in its effects on the quality of improvisation, but only when leadership is allowed to rotate and a positive attitude is kept throughout the process. Since this is difficult for teams inexperienced with improvisation and rotating leadership, servant leadership is more viable for most teams. The servant leader does have to be able to accept a lower status and the loss of direct control.

5.1 DISCUSSION

We have found that both servant and rotating leadership can handle the paradox between freedom and control and that the connection between leadership style and improvisation can be explained by status, issue ownership, expertise and attitude. These conclusions are new and relevant for organizational improvisation, but how do they compare to leading creativity and innovation and how do rotating leadership and servant leadership compare to improvisational leadership which, in theory, solves the paradox between freedom and control too?

5.1.1 SERVANT AND ROTATING VERSUS IMPROVISATIONAL LEADERSHIP

The main difference between improvisational leadership and the styles we researched, is that improvisational leadership remains abstract. It does not give any concrete suggestions on how to act. Improvisational leaders should combine multiple, possibly conflicting leadership styles simultaneously, but the improvisation leadership theory lacks an explanation of how a leader can do this. One way this combination can be reached, is by rotating leadership. The different team members can, either consciously or unconsciously, be busy with different processes. For example, two members can be busy with the product, while a third team member is evaluating its function against the objective they want to accomplish and the fourth team member is supporting the first two by making sure they have all the materials they need. Rotating leadership differs from improvisational leadership because it does not have to be executed by one leader, but will occur naturally as leadership shifts to different team members.

A servant leader will not combine different leader roles at the same time, but solves the paradox in a different way: by indirect control. Indirect control acts as the synthesis between freedom and control, as it does provides control, but is not perceived as control by the team members. Concrete ways of indirect control are asking questions, getting team members together and doing menial tasks that are part of a bigger task that needs doing. Another way of indirect control that was not part of this thesis is influence through the leader's vision and charisma.

5.1.2 LEADING IMPROVISATION VERSUS LEADING CREATIVITY AND INNOVATION

In our theoretical framework, we have pointed out the differences between creativity and innovation versus improvisation. But does leading improvisation differ from leading creativity and innovation? Because We have researched improvisation in an innovation context and we found that improvisation overlaps with innovation

and creativity. Therefore both servant and rotating leadership are viable leadership styles for creativity and innovation, but not all leadership styles that are viable for innovation and creativity are viable for improvisation.

A leadership style for improvisation has to be able to handle all aspects of innovation and be able to handle the additional aspects of a process focus and the spontaneous nature of improvisation. Besides this, we have seen that positivity is much more important for improvisational leaders than in the case of innovation or creativity.

5.2 EVALUATING THE RESEARCH METHOD

Our research method is based in the philosophical method called FLITS and this is the first time it has been applied outside of philosophy. We were drawn to this method because of the advantages of seeing larger effects in a shorter amount of time. In the course of our research, these advantages worked as we hoped they would work. Not only were we able to analyze twelve processes of organizational improvisation, we also saw enlarged effects that normally would have been much harder to spot. An example is the look of fear that team members directed towards a directive leader as a problem occurred. In the theatrical hyper reality, the emotion of fear was displayed visibly for on camera, while this emotion would normally be hidden to keep the leader from finding out.

Theatrical simulation in hyper reality has the most advantages when researching processes with a lot of interaction that normally take several hours or longer to complete. Processes where personality or characteristics are concerned can be best simulated using performers, because you have a larger control over the personality or characteristics.

By doing our research outside the field of philosophy and being able to duplicate most hypothesized effects, we have strengthened the value of this research method for philosophy and opened up new possibilities for its application in the social sciences. Below we have written out some guidelines for the effective use of this research method. Some of these guidelines were discovered through trial and error during our research.

5.2.1 CREATING AND EXPERIMENTING, A TWO STAGE PROCESS

The process of using a hyper reality for a research consists of two stages, creating it and experimenting with it. Creation starts with creating a list of factors that has to be included in the simulations and formulation of hypotheses about the relationship that is to be researched, based on literature or previous research. The factors have to be translated to rules, meaning a game, an environment, roles and relationships.

These rules have to be tested, first in one or more trial sessions, which are primarily meant to test the reactions of the performers to the rules. Once the performers exhibit the desired behavior, the second test consists of a large number of simulations that seek to confirm the hypotheses. If the hypotheses are supported in this stage (or there are good arguments why unsupported hypotheses do not threaten the process validity), the hyper reality can be accepted as mirroring the concrete reality.

Up until this point, the research will not have produced new insights, but will only have confirmed existing knowledge. Once the hypotheses are confirmed, the simulations that have been done should be carefully analyzed for interesting effects like mediating variables or striking behavior. These effects can be tested in the next series of simulations, that are concerned with generating new knowledge by experimenting within hyper reality. It is possible that this pattern of doing simulations, analyzing them, discovering new insights and experimenting to understand these new insights completely is repeated several times.

5.2.2 QUALITATIVE OVER QUANTITATIVE MEASURES

The most important information of a simulation lies in the qualitative analysis of interactions. However, it is possible to quantify the data as well. A prerequisite for this is that only the actions and perceptions of the characters are taken into account, not the actions and perceptions of the performers portraying the characters. The difference is that the characters are designed to simulate concrete reality and have a frame of reference that only can only be controlled and only exists within the simulation. Performers have their own frame of reference that probably does not coincide with the hyper reality or concrete reality you being researched. The only exception we can think of is our own research, where the research is on organizational improvisation and the performer's frame of reference is theatrical simulation. Even this similarity had to be supported by additional rules and cannot be definitely proven.

5.2.3 INSTRUCTING PERFORMERS

When instructing the performers to perform in a certain way, there are several characteristics of theatrical improvisation and its performers that have to be taken into account. First of all, improvising takes skill and concentration. This limits the ability of actors to remember and effectively play out multiple complex instructions. It is best if most rules are part of the environment of the simulation, rather than instructed to the performers.

Secondly, performers will always have their own background that determines how they play certain characters or how they act in a certain situation. In our research, we tried to eliminate the background by giving as simple and unambiguous an environment as possible. However, if one of the performers had dabbled in history and had a better or different understanding of the time period and environment (medieval guilds) we were using, this might have shown in the simulations.

The personality of the performers might also play a role. We saw that some performers were more naturally inclined to take the leadership roles than other performers. We had the luxury of knowing all the performers well. We consider all of them our friends and therefore we can make a good assessment of who should play what leadership role and can put effects we see into perspective. This effect is a lot smaller than it would be in the concrete reality, but it should still be taken into account. It can be solved by giving instructions to all performers involved, as these instructions can supersede personality traits.

Thirdly, if performers play multiple simulations in quick succession, effects from the first simulations might spill over to later simulations. In our research we saw this in session 5, where the servant leader was asked to be negative in the first simulation and natural in the second simulation. During the second simulation, we saw behavior that was exactly the same as in the first simulation. This might be the natural attitude, but it might also be the remnants of an instructed natural attitude.

Finally, the instructions should not reveal the exact concepts you are researching. If the performers are aware of the effects you are expecting to see, they might unconsciously adjust their behavior accordingly. Interviewing the performers about the experiences of their role can reveal interesting patterns suitable for further research through experiments.

5.3 LIMITIATIONS IN OUR RESEARCH

Besides general guidelines for this type of research, we want to bring some additional limitations of our research into the limelight. These limitations primarily had to do with how the performers reacted in and to the simulation. For example, one performer grew tired of the repetition of the exercises and simulations. When we discovered this, we replaced him for the final session in which he was scheduled to take part. But his

tiredness may have influenced the attitude in his last session (the fourth session with a rotating leadership style).

Similarly, we could not prevent one performer playing the directive session twice, although we do not believe this had large consequences. Also, although the group was homogeneous in its background (all trained by the same university theatresports association up to a similar level of competence), there was a difference in the length of time the performers had acted with each other. These effects were visible in the simulation. Performers who acted with each other often were drawn to each other in the simulation and performed better than those players who had little experience of acting together.

Finally, the performers commented on two difficult aspects of the simulation. The first was expertise. While it was not difficult to use imagined expertise, it was difficult for them to evaluate the suggestions based on imagined expertise by other performers. We tried to counter this by instructing the performers that their suggestions should logical and realistic, but within the hyper reality of the theatre, logic and reality are perceived differently. We believe this is a fundamental aspect of the simulation that cannot be eliminated.

The second difficulty for the performers was that all four performers were present on stage during the entire simulation. Within a normal theatrical improvisation setting, one performer sets the scene up; another enters the stage to begin an interaction. The other two performers only enter the stage when this is necessary for the quality of the scene. A scene with four performers can be very chaotic, especially if they each start doing their own thing, as happened in the fourth session.

5.4 RECOMMENDATIONS FOR FURTHER RESEARCH

We have several recommendations for further research. Firstly, the obvious recommendation would be to use the research method in other studies within the social sciences. We see a large opportunity to study complex interactions with greater ease by using theatrical simulation in the hyper reality. A second obvious recommendation is to prove our research in the hyper reality by empirical research in the concrete reality.

Especially the finding that a directive leadership often leads to a negative attitude and servant leadership to a positive attitude could be researched in detail. Furthermore, it would be interesting to test the difficulty of implementing the different leadership styles in organizations. We would recommend that improvisational leadership (Pina e Cunha et al. 2003) be tested in this research as well.

To advance research into organizational improvisation, we propose a research into the proactive use of improvisation. Using improvisation proactively can be done by changing the perceptions team members have of the environment. The environment does not have to be complex, uncertain and with time pressure, as long as it is perceived this way. Proactive improvisation can bring the advantages of improvisation to organizations and projects that are not in a dynamic environment.

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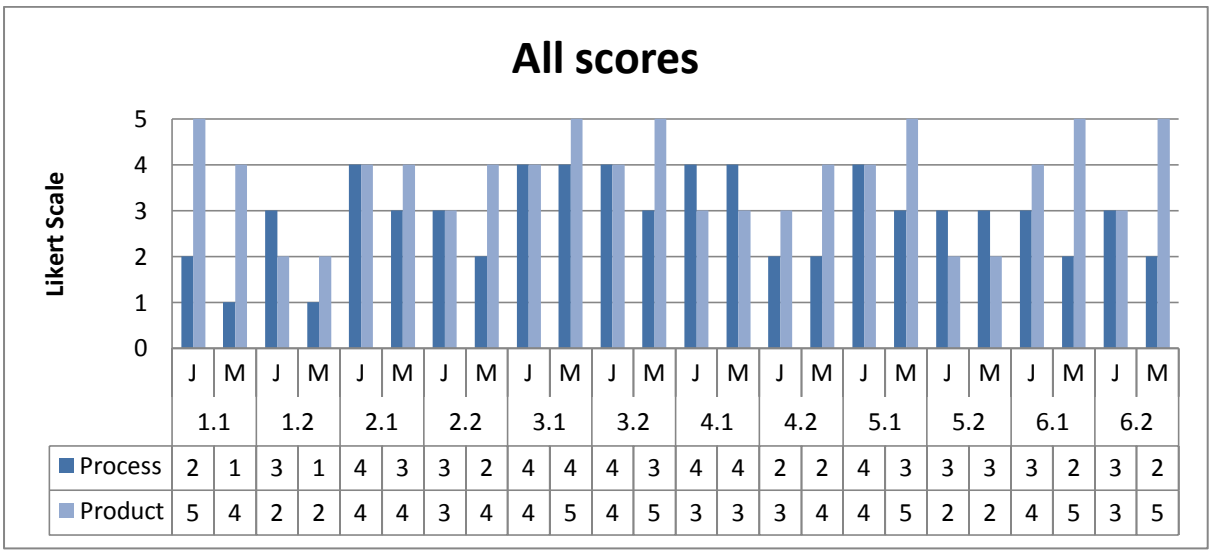
APPENDIX A: COMPLETE STATISTICAL ANALYSIS

For our statistical analysis, we have used SPSS, version 16. In this appendix all relevant statistical data has been published in its raw table form. We will explain what data underlies these data.

ALL SCORES

In Graph 2, all the scores are presented, separated by simulation (1.2, 1.2, 2.1 and so on) and observer (J and M). Of these simulations, we experimented with 5.1 and 6.1.



Graph 2: All scores

PAIRED T-TESTS

To compare leadership styles, we have did a paired T-test for all simulations without experimenting. Because we use four simulations of rotating leadership and only three simulations of servant and directive leadership, we have replaced the missing values with the mean of the present values. For servant leadership this mean is 3.83 and for directive leadership this is 2.83. The total number of scores (N) therefore comes to eight: four simulations with scores by two observers.

Paired Samples Test

		Paired Differences					t	df	Sig. (2-tailed)
		Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference Lower	Upper			
Pair 1	directief - dienend	-,50000	1,03510	,36596	-1,36536	,36536	-1,366	7	,214
Pair 2	dienend - roterend	-,54250	1,00167	,35414	-1,37991	,29491	-1,532	7	,169
Pair 3	roterend - directief	1,04250	1,10346	,39013	,11999	1,96501	2,672	7	,032

Table 10: Paired T-test for leadership styles

The paired sample T-test or process quality and product quality was done with all simulations, with N = 24 scores: 12 simulations and 2 observers. The test showed no correlation (Table 11), but did show that product quality was scored significantly higher (Table 12).

Paired Samples Correlations

		N	Correlation	Sig.
Pair 1	proces & product	20	-,049	,836

Table 11: Correlation between process and product quality

Paired Samples Test

		Paired Differences					t	df	Sig. (2-tailed)
		Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference Lower	Upper			
Pair 1	proces - product	-,7917	1,4136	,2885	-1,3886	-,1948	-2,744	23	,012

Table 12: Paired T-test process and product quality

For the inter-observer reliability test we used Cronsbach's Alpha. We compared the different scores for all simulations with each other. First we compared observer J's scores on process quality with observser M's scores on process quality (N = 12 scores each) (Table 13) and we did the same for product quality (Table 14).

J_Process – M_Process

Reliability Statistics

Cronbach's Alpha	N of Items
,904	2

Table 13: Reliability J_Process – M_Process

Reliability Statistics

Cronbach's Alpha	N of Items
,822	2

Table 14: Reliability J_product – M_product