Organizing for naval operations

Implementing mission command on board the Nansen-class frigates

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Acknowledgements

Abstract

The motivation for this dissertation was an empirical one; how to design an effective organization for the new state-of-the art Nansen-class frigates. There is, however, no official tool for designing and diagnosing the organization structure in the Norwegian Armed Forces. Having found Mintzberg's (1979) renowned configuration theory to be useful in a qualitative oriented study of leadership and organization on board the Oslo-class frigates that were to be replaced (Krabberød, 2002), it seemed reasonable to choose Mintzberg's theory in this study as well. Due to the heavy workload on board and in order to give timely feedback, time efficiency became an important parameter. It was thus decided to use a quantitative instrument for organizational diagnosis (Cummings & Worley, 2009). Surprisingly, it was hard to find a validated instrument based on Mintberg's theory. The one study that was found, in which Mintzberg's theory was operationalized quantitatively, was a test which concluded that Mintzberg's theory was invalid (Doty, Glick & Huber, 1993). Thus, a main concern in the dissertation is to discuss the validity of Mintzberg's theory with regard to diagnosing the organization on board the Nansen-class.

The Norwegian Armed Forces do have an official leadership philosophy, called mission command, which has become the benchmark for military leadership (Shamir, 2011). However, it is a leadership philosophy that was originally developed by and for the German army in the nineteenth century, and several studies have shown that emulating and implementing mission command in other organizations has been challenging (Johnsen & Lunde, 2011; Shamir, 2011; van Creveld, 1982). Thus, the other main topic in the dissertation is to discuss the relevance of mission command on board, and whether mission command may clash with the existing organizational culture.

In the introduction part of this dissertation, mission command is discussed in relation to Mintzberg's organizational framework and both theories are discussed in relation to the naval context. It is argued that mission command and Mintzberg's theory are complementary and thus should be fruitful for diagnosing the Nansen-class

organization. However, it is also argued that the organization culture aspect is not fully covered in Mintzberg's theory and that implicit leadership theory (Javidan, Dorfman, Howell, & Hanges, 2010) will be a functional supplement in that regard.

The *first* study in the dissertation investigated the degree of consensus on the validity status of Mintzberg's theory following the test by Doty et al. (1993) in which the theory was refuted. 319 pieces of research were reviewed and none of the works contained any discussion about the implications for Mintzberg's theory. Based on this review the study concludes that it seems reasonable to question the correctness of Doty et al.'s claim, that Mintzberg's theory is invalid. The *second* study in this dissertation presents new data and tests Mintzberg's theory using the same method as Doty et al. (N=385). Support for Mintzberg's theory was found in five of seven hypotheses tested. The main conclusion in study two is that Mintzberg's theory is partially supported. The *third* and final study in this dissertation explores how mission command fits crew members' implicit beliefs about what constitutes legitimate and effective leadership (N=174). The result of a simultaneous multiple regression analysis shows that the greater the task uncertainty, i.e. situations where mission command should be most relevant, the more the behavior of the preferred leader deviated from mission command. It is therefore argued that mission command is likely to challenge crew members' boundaries of individual comfort and that implementing mission command needs continuous attention.

In sum, the dissertation provides support for using Mintzberg's theory in future diagnoses of the Nansen-class organization and for implementing mission command as the leadership philosophy on board.

List of publications

Paper I

Krabberød, T. (2014): "*Standing on the shoulders of giants? Exploring consensus on the validity status of Mintzberg's configuration theory after a negative test.* Manuscript submitted for publication.

Paper II

Krabberød, T. (2014). *Testing Mintzberg's configuration theory*. Manuscript submitted for publication.

Paper III

Krabberød, T. (2014). Task uncertainty and mission command in a naval context. *Small Group Research*, 45(4), 416-434.

Contents

1.   Introduction

The purpose of this dissertation is to take a closer look at the human aspect of the organizational challenges facing Norwegian Nansen-class frigates. In 2000, Norway signed a contract with the Spanish shipbuilding company Bazan to build five new frigates to replace the more than 30-year-old Oslo-class frigates. The new frigates are named the Fridjof Nansen class: they are 134 m long and 31 meters tall, with a crew of 120 (www.forsvaret.no, downloaded December 5, 2011).[1] The frigates are flexible units with a great potential for participation in both national and international operations. (www.forsvaret.no). Following the imperative that public resources must be efficiently managed, the perhaps most obvious reason for studying the Nansen-class frigates is the economical, material aspect. The acquisition cost alone is calculated to be NOK 21 billion, or approximately 50% of the Norwegian defense budget. But, as Taylor (1911) famously remarked, one thing is the easy identifiable waste of material things, quite another is "awkward, inefficient, or ill-directed movements of men […] that leave nothing visible or tangible behind them, which may be the source of greater waste than material things" (p. 5). In line with Taylor, Miller, Greenwood, and Prakash (2009) argue that organizational design "lies at the heart of all organizational capabilities" (p. 274). However, several studies of military effectiveness have raised concerns about the lack of attention given to the human factor, emphasizing that material superiority alone is no guarantee for victory (Boyd, 1987; Richards, 2004; van Creveld, 1982). And, according to Spector (2001), this problem is especially noticeable in the naval domain.

When the first Nansen-class frigate entered the Oslofjord in 2006, it represented something genuinely new in the Norwegian Navy. In addition to being much more technologically advanced than the frigates that it replaced, the Nansen class is lean manned, with 40% fewer crew than other NATO warships of comparable size

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[1] The actual number for a given crew is classified information.

(Glassborow, 2006). Thus, in the words of the first commanding officer of a Nansen-class frigate:

> "It is a challenge to find out how to organize in the best possible way and how to reduce the number of decision-making levels within the crew; more responsibility at a lower level and fewer control functions. The ship is designed for this, and it requires a new way of thinking to make it work." (Flesland, 2006, p. 13)

This challenge was the starting point for this dissertation – how do you organize Nansen-class vessels? In order to successfully develop an organization, it is necessary to understand how the organization actually functions, to understand the challenges facing a particular organization and to know which variables to manipulate in order to improve (Christensen, Lægreid, Roness, & Røvik, 2007). Mission command, the main rationale for which is to decentralize decision-making, was implemented as the official leadership philosophy in the Norwegian Armed Forces in 1995 (Norwegian Armed Forces, 1995).[2] Consequently, mission command should be the principal answer to the commander's question of how to organize the Nansen-class frigates. However, even if mission command has become a "paradigm of and for excellence" among modern military personnel (Shamir, 2011, p. 5), several studies both in Norway and internationally have shown that implementing and institutionalizing mission command is a challenging and fragile process (e.g. Borgmann & Aronsen, 2005; Jacobsen, 1996; Krabberød, 2002; Muth, 2011; Nissestad, 2007; Shamir, 2011; van Creveld, 1982; Vandergriff, 2002). And a study published in 2011 concluded that mission command had not yet been fully implemented (Johnsen & Lunde, 2011)

One perhaps not so surprising finding in the literature on reorganization is that successful organizational development, that is, a lasting change in behavioral patterns,

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[2] In 1995 the philosophy was called "oppdragstaktikk" in Norwegian. In 2000, it was renamed "oppdragsbasert ledelse", which it has been called since (Norwegian Armed Forces, 2012, p. 6).

is a demanding task, and it is difficult to predict when to expect a development initiative to have taken effect (Christensen et al., 2007). However, an implementation process that has lasted more than 15 years begs the question of whether there might be some existing structural or cultural features that could be delaying the process.

A troubling aspect when it comes to using mission command as the norm for coordinating activities on board, which will be discussed in the introductory part of this dissertation, is that the leadership philosophy was developed by and for the German army to fight in Central Europe in the nineteen and early twentieth centuries (Shamir, 2011). Thus, from a contingency perspective (Scott, 2003, p. 96) it seems reasonable to ask whether mission command fits just as well in the naval context, on board a state-of-the-art frigate, as it has proven to do in a land-based, army context. One objective of the introductory part of this dissertation is to discuss the relevance of mission command in the naval context and on board vessels.

Thirty years after the publication of the classic book *The Nature of Managerial Work,* Mintzberg decided to revisit the subject. This decision resulted in a new book, *Managing*, in which he states that "form of organization proved to be the most prominent factor by far in understanding what the managers in this study did" (Mintzberg, 2009, p. 106), and micromanagement is therefore likely to undermine the work logic of an organization that is designed to utilize the expertise and tacit knowledge of professionals. Thus, being able to diagnose the organizational structure on board will be important in order to make the Nansen class effective fighting units, and it will be at the heart of this study.

There are, however, a vast number of theories available for analyzing organizations (Cummings & Worley, 2009). A much acclaimed theory of organizational design is Mintzberg's configuration theory (e.g. Fiss, 2011, p. 393; Groth, 2012, p. 9; Nesheim, 2010; Pollitt, 2005, p. 386). Mintzberg (1979) claims that this theory provides a framework for understanding the impact of organizational structure, how it actually functions, and how to design an effective organization. One strength of this theory compared to other classical works like Etzioni's (1961) *Modern*

organizations and Perrow's (1972) *Complex organizations* is that Mintzberg emphasizes the point that organizations actually produce something. Consequently, the operating core will be central in organizational analyses (Kalleberg in Nylehn, 2008, p. 112). Furthermore, Mintzberg's organizational concepts have been chosen to link mission command to more general organizational theoretical frameworks in three previous studies (Krabberød, 2002; Osinga, 2007; Shamir, 2011). Krabberød (2002) used Mintzberg's configuration theory in a qualitative study of the Oslo-class frigates that have now been replaced by the Nansen class, Osinga (2007) used Mintzberg in a discussion of strategy in military organizations, and Shamir (2011) used Mintzberg to relate coordinating mechanisms to mission command in a land warfare context. One of Krabberød's conclusions was that the theory provided a fruitful analytical framework for analyzing the frigates. It therefore seemed reasonable to use Mintzberg's theory as the diagnostic tool in this study.

On the other hand, Mintzberg's (1979) theory has also been criticized. On a general level, Donaldson (2001) has criticized the configurational approach, including Mintzberg's theory, as a problematic way of theorizing about organizations. A more specific critique of Mintzberg's theory is raised by Doty, Glick and Huber (1993), who tested Mintzberg's theory empirically on a sample of U.S. organizations. Their findings resulted in the quite surprising conclusion that Mintzberg's theory was invalid. However, the test did not have any effect on Mintzberg's own work (personal communication, August 7, 2012) and, as pointed out above, there are still researchers who acclaim Mintzberg's theory. In Nesheim's (2010, p. 66) words, it stands as a monument over organizational design literature. To identify the validity status of Mintzberg's theory, that is, to identify the research front in regard to this theory, will be a main objective of this study.

Another critique of Mintzberg's theory is that it is value free, that the cultural aspect is not covered in the theory (Jacobsen, 2004, p. 87). Organizational culture is an important aspect of organizational development (Christensen et al., 2007) and a cultural mismatch is a common explanation for why military organizations have not succeeded in implementing mission command (Muth, 2011; van Creveld, 1982;

Vandergriff, 2013). Mission command certainly has aspects that seem to fit well with popular culture, like entrepreneurship, showing trust, and decentralization of decision-making. However, as Foster (1988, p. 223) points out, assumption is unfortunately an inadequate foundation for a leadership philosophy. Such assumptions about a fit between a culture and a leadership philosophy must be scrutinized. This dissertation will look into this criticism and discuss whether there might be a possible mismatch between crew members' basic assumptions and the mission command philosophy.

Designing an effective organization on board is not a one-time endeavor, however. For one thing, the Nansen-class frigates, like most warships, are operated according to regular cycles: new personnel arrive, the crew train, the crew is evaluated and, if they pass the evaluation, they are declared operational. The crew then sails as an operational unit for a period before the cycle starts again. When a crew is declared operational, it is expected to be able to handle a wide range of tasks – from relatively simple peacetime missions like showing a presence in the North Sea to full-scale war (Norwegian Defence Staff, 2007). Even on routine peacetime missions, however, the crew must be prepared at all times for unexpected, complex, and threatening situations. The ocean environment itself is inherently hostile (Barnett, 2009, p. 13). The loss of the frigate HNoMS Oslo in 1994 and the burning down of the mine clearance vessel HNoMS Orkla in 2002 are examples of how operating a ship at sea is a continuous and demanding task (Barnett, 2009). If time permits, the crew is given special training before sailing off to participate in specific missions, such as the anti-piracy operation in the Gulf of Aden and the transporting of chemical warfare agents out of Syria. Thus, having efficient and valid instruments for diagnosing the functioning of the organization on board should be fruitful from a practical point of view.

Military organizations operate in a challenging environment that is primarily characterized by being uncertain, complex, chaotic, hostile, but also, predictable, even boring (e.g. Barnett, 2009; Boyd, 1987; Murray, 2011; Mæland & Brunstad, 2009; Norwegian Defence Staff, 2007; Norwegian Naval Academy, 2009; Palmer, 2005; Shamir, 2011; van Creveld, 1985). The dynamic interplay with creative opponents and

unpredictable occurrences, such as bad weather or engine failure, makes it necessary to think of organization not as a static outcome, but as a ceaseless process of change and adaptation (Murray, 2011). In the recent white paper "Competence for a new era", the need for adaptability is underscored repeatedly. Norwegian forces are expected to operate effectively in a highly dynamic world, and recent conflicts have illustrated that the armed forces must be able to man new operational structures swiftly and effectively (Norwegian Ministry of Defence, 2013). For instance, who had anticipated that the first operational deployment of the Nansen class would be to fight piracy?[3] Murray (2011) argues that, given the high degree of uncertainty that characterizes military operations, military organizations should be extremely good at adaptability. This means that continuous organizational development is a critical ability.

On the positive side, military organizations only occasionally need to practice the essence of their profession – the use of violence – but the flip side is that military organizations do not have much opportunity to practice their profession in real life. However, as Murray (2011) and others have noted (e.g. Gordon, 1996; Mintzberg, 1979), in peacetime military organizations tend to become highly bureaucratic organizations, an organizational structure that may not be that well-suited to the unpredictability that characterizes military operations.

1.1 The dissertation

> *"I believe that the best prescription comes from*
> *the application of conceptual knowledge about*
> *a phenomenon in a specific and familiar context."*
> *(Mintzberg, 1979, p. vi)*

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[3] Interestingly, the first operational deployment of a Norwegian naval vessel after Norway become an autonomous nation was in 1821, when Fredriksværn participated in the protection of merchant vessels in the Mediterranean (Grimstvedt, 2014). In a lecture at the Norwegian Naval Academy in 2000 William Lind speculated, to the audience's amusement, that the first mission the new Norwegian frigates would be assigned was to patrol against pirates.

The dissertation comprises three papers that discuss two fundamental aspects of organizing the Norwegian Nansen-class frigates, that is, leadership and organization design. My interest in this subject has its origins in using organization theory constructively in an essential part of the public sector: the armed forces and, more specifically, in a naval context. The focus will be on trying to analyze the interplay between context, leaders, and followers, which, according to Avoilo (2007), deserves more attention.

A constructive analysis means giving advice about which organizational structure a given organization should choose (Roness, 2005, p. 231). Organizational design is about prescribing variables that can be manipulated in order to achieve desired changes in an organization's decision-making behavior, i.e., the interplay between leaders, followers, and context. However, design seldom starts with a tabula rasa, and organizations do not easily adapt to shifting signals from their leaders (Christensen et al., 2007) Most organizations have a history and a culture, and are part of a culture; some organizational participants have achieved power, some have not, etc. Thus, it is assumed that the existing organizational structure will influence which kind of organizational design will be appropriate (Roness, 2005, p. 243). As van Creveld (1982) shows in his classic book *Fighting Power*, even if the U.S. Army had copied much of the German Wehrmacht's organization prior to the Second World War, including sending observers to participate in German exercises, the U.S. Army developed "an entirely different style of war" (p. 9). It is not enough to simply copy an organizational map and operating procedures, the critical factor is how the organization actually functions.

Organization matters, it influences how the organizational participants identify problems and how problems are solved, and it influences decision-making behavior and how people cooperate (Mintzberg, 1979). According to Flin (1996), "a surprising range of individuals may be required to act as the key decision maker in a crisis" (p. 1). Flin thereby presents an important argument for a decentralized organizational

structure for organizations that must be able to act effectively in such situations. The unifying problem formulation in this dissertation is:

- Diagnosing the Nansen-class frigate organization

Max Weber's description of the ideal typical bureaucracy is often used as an analytical tool when studying public organizations (Roness, 2005, p. 234). Military organizations are no exception to this. They are often described as classical bureaucratic structures, with specialized positions, stable superior-subordinate relationships, and actions governed by predefined rules as their most prominent characteristics (Jacobsen, 1996). However, it is possible to perceive many alternative kinds of organizational structures (Roness, 2005, p. 235). A quote from Krabberød's (2002) study of the older Oslo-class frigates, where an officer is asked to describe how he would characterize working on board, illustrates a complexity that seems to be at odds with a classic bureaucracy:

> *"It is like being a vegetable in a big stew. It consists of umpteen different vegetables where the main ingredient is the commanding officer. It is the most complex job situation I have ever been in. I have five different main tasks on board. I have five different superiors to relate to … Those five have different opinions of how I should perform my main tasks and it is impossible to become a specialist in every job, a lot is expected of you."* (p. 65)

Interestingly, this quote can be regarded as a lively description of a finding from Lang's (1965, p. 854) classic study "Military organizations", namely that crew members on board an American warship frequently erred in recognizing superior-subordinate relationships in their job situation or defined them incorrectly. One of the conclusions Krabberød (2002, p. 155) draws is that more perspectives than Weberian bureaucracy are needed to describe the structure on board a frigate.

One challenge when choosing perspectives is where to stop – how many perspectives are actually needed to analyze the organization in question (Jacobsen, 1992)? Mintzberg's (1979, p. 469) organization theory aspires to form a boundary within which real structures can be found, including bureaucracy. Thus, this theory should be exhaustive and thereby applicable to all kinds of organizations. Using Mintzberg's configuration theory as a tool for analyzing how the frigate's organization actually functions will be the topic in the first and second papers in this study.

From both a theoretical and practical point of view, it seemed fruitful to perform a quantitative analysis. Having found a theory relevant in an area based on an intensive, open, and inductive qualitative approach, as Krabberød (2002) did in the study of the Oslo class, the next step methodically would be to take a more extensive, deductive, and quantitative approach (Jacobsen, 2005). There was also a weighty practical argument for choosing a quantitative approach. It was seen as more efficient when it comes to giving timely feedback to the organizations (Cummings & Worley, 2009, p. 124).

One of the most influential thinkers on the basic processes in organizational development, Kurt Lewin (1945), stated that "Nothing is as practical as a good theory" (p. 129), and, as Mintzberg (1979) writes, "To me, good descriptive theory in the right hands is a prescriptive tool, perhaps the most powerful one we have" (p. vi). However, it is claimed that the results of empirical research on the effects of organizational design are still uncertain and incomplete (Christensen et al., 2007). Somewhat surprisingly, however, it turned out that it was not easy to find a validated questionnaire in which Mintzberg's theory is operationalized. Several organizational scientists have pointed out the somewhat paradoxical situation whereby, while Mintzberg's theory enjoys widespread popularity, there are surprisingly few studies in which the theory has been operationalized and explored as a quantitative analytical tool (Donaldson, 1996; Doty, Glick, & Huber, 1993; Meyer, Tsui, & Hinings, 1993; Miller, 1996; Strand, 2007).

After quite a few searches, including asking Mintzberg (2012, personal communication August 7, 2012), one study was found in which Mintzberg's configuration theory was operationalized and tested quantitatively. Rather unexpectedly, the study concludes that: "until other researches can provide empirical support for Mintzberg's work, we are unable to conclude that either the typology or the theory is valid." (Doty et al., 1993, p. 1243) . Thus, it was decided to take a step back and try to establish an idea of the validity of Mintzberg's (1979) theory. Is it a good theory? The first study explores the degree of consensus on the validity status of Mintzberg's configuration theory after Doty et al.'s test. The problem formulation in the first paper is:

- Is there consensus on the validity status of Mintzberg's configuration theory?

The aim of the second study is to pick up the gauntlet thrown down by Doty et al. (1993) – "until other researches can provide empirical support" (p. 1243) – and test Mintzberg's theory against data from the organizations in which it is planned to use the theory constructively, the Nansen-class frigates. Doty et al. (1993, p. 1210) tested Mintzberg's theory against data collected from top managers of organizations from a diverse set of industries. However, as several authors have pointed out, organizational participants may perceive the organizational structure differently and the top managers' perception may not be representative of the rest of the organizational participants (Mezias & Starbuck, 2003; Mintzberg, 1979; Schein, 2004).

Given that organizations consist of individuals enacting their environment (Weick, 1979), what the manager perceives may not be generalizable to what the rest of the participants perceive and how they enact their organizational environment. Christensen, Lægreid, Roness, and Røvik (2007) emphasize that it is "the interplay between individual factors and organizational conditions that must be analysed" (p. 2) and organization theory has been criticized for being too abstract and not reflecting people's actual experiences (Bechky, 2011).

However, it has been claimed that Mintzberg treats organizations as acting entities with "humanized capacities" (Chia, 2003, p. 119) and that he could therefore be criticized for neglecting the individuals acting in an organizational context. If the key assumption in organizational theory is that the organizational setting will influence how organizational participants act and think (Christensen et al., 2007, p. 1), it should be fruitful to explore how each of them perceives the organization they work in. As Christensen et al. (2007) emphasize, "the focus should be on how a 'living' organization operates in practice" (p. 9). After all, without individuals it is difficult to envisage an acting organization.

However, Christensen et al. (2007, p. 6) problematize the possibility of delimiting individual organizations in the public sector, specifying their goals and reading their results. They argue that exploring organizational structures in the public sector is like exploring a Chinese box and that the picture that emerges depends on which level you are studying. One interpretation of this claim is that it will be problematic to speak of *a* public organization. On the other hand, a vessel at sea is perhaps as close as one gets to a delimited organization. When the gangway is lifted, all that is needed to produce its output is supplied internally (Barnett, 2009). If it is possible to talk of *an* organization with *a* kind of structure, or in Mintzberg's terminology, a configuration, it seems reasonable to expect that you will find it on board a vessel. The question asked in the second paper is

- Is Mintzberg's configuration theory valid when tested on board a vessel?

In 2005, ten years after mission command was formally implemented, Borgmann and Aronsen (Borgmann & Aronsen, 2005, p. 63) found that only 23.2% of officers from operational units in the Royal Norwegian Navy expressed positive adherence to mission command principles. They concluded that a transformation is needed, not of organizational maps and formal procedures, but a transformation to "shape our minds". A lot of research on reforms in the public sector has pointed out that, if the

new ideas do not fit the ruling norms in the organization, i.e., what organizational members perceive as appropriate, the reform will be hard to implement (Christensen et al., 2007). The third paper in this study will explore how mission command fits crew members' implicit beliefs and assumptions about what counts as legitimate and effective and leadership. This paper has the following problem formulation:

- Is there a positive relationship between an increase in task uncertainty and appreciation of mission command?

1.2 Mission command: the organizational solution

> "It is scarcely surprising that the quest for certainty,
> given the practical and logical obstacles in its way,
> has been costly in every sense of the term."
> (van Creveld, 1985, p. 267)

A characteristic of the military profession is that is must solve tasks that are too extensive to be solved by one person alone (Norwegian Defence Staff, 2007). Thus, there is a need for coordination of individual efforts. Command is the term used by the military to describe efforts made to organize a military organization to achieve some aim or goal (Shamir, 2011, p. 16). Mission command is a certain way of coordinating these individual efforts at the group and organizational level.

Mission command is a leadership philosophy that has enjoyed near "mythical canonization" and it has been formally implemented by many modern military organizations (Shamir, 2011, p.5), including the Norwegian Armed Forces. It is claimed to be the historically most effective way (for land forces) of dealing with the

defining problem of military organization, uncertainty (van Creveld, 1985). In a treatise on military organization at sea, Palmer (2005) defines uncertainty as "imperfect correspondence between information and environment" (p. 319). For instance, where is the enemy? What will the consequences of my actions be? How much time do I have to make a decision?

When confronted with a task that entails uncertainty, an organization has two basic options: it can increase its information-processing capacity or it can design its modus operandi to enable it to operate on the basis of less information, that is, a higher level of uncertainty (van Creveld, 1985, p. 269). The problem with the first approach is that time is a limited and critical factor in military operations (Boyd, 1987), and trying to achieve a higher degree of certainty by collecting more information or by sending requests for clarification up the chain of command will be time-consuming. Mission command is a philosophy based on the second approach, willingness to live with greater uncertainty in order to save time (van Creveld, 1985, p. 270). However, uncertainty implies things being beyond our control, which normally generates anxiety (Schmittt & Klein, 1996, p. 63). Somewhat paradoxically then, mission command, which is claimed to be the historically most effective way of organizing for uncertainty, is based on something people are generally expected not to like, operating with greater uncertainty.

The doctrine of mission command is based on a command philosophy that was developed by and for the Prussian-German army in the early 1800's and was rediscovered in the 1980's by the U.S., British and Israeli armies (Shamir, 2011, p. 3). In the case of the Norwegian Armed Forces, interest in mission command began in the 1990's (Offerdal & Jacobsen, 1993). In the original Prussian-German version, the essence of mission command was to decentralize decision-making to the lowest organizational level; subordinates were told what was to be accomplished (their superiors' intention), and the rest was basically left up to them (Shamir, 2011, p. 14).

Decentralization was seen as the most effective means of ensuring continuous adaptation to unfolding events in a time-competitive environment. Waiting for higher

organizational levels to collect and analyze information and issue new orders for every unexpected situation slowed down decision-making. The most important objective of mission command is therefore to reduce the need for communication in the organizational hierarchy (e.g. Boyd, 1987; Richards, 2004; Shamir, 2011). The same logic has been adopted in the Norwegian Joint Operational Doctrine (Norwegian Defence Staff, 2007).

While ideas about what has come to be known as mission command were already being discussed at the military academy in Berlin, it was Preussen's defeat by Napoleon in the Jena-Auerstedt battles in 1806 that is normally said to be the starting point for a groundbreaking reorganization of how the Preussen army fought. From having trained the army to act like a gigantic machine in which each soldier and officer played his part in a preplanned, standardized drill controlled from above, it was recognized that organizing military units in war was too complex to be directed by one man at the top. There were too many exceptions, too many unpredictable situations to be coordinated by one brain. As formulated by Helmuth von Moltke, known as the father of mission command (Shamir, 2011, p. 36), "no plan of operation extends with any certainty beyond the first contact with the main hostile force" (Moltke in Shamir, 2011, p.38).

Moltke realized that there was a need for quick decisions and flexible plans, a greater degree of agility than was achievable when the whole organization was micromanaged and controlled by an almighty general at the top:

> "The advantage of the situation will never be fully utilized if subordinate commanders wait for orders…It will be generally more advisable to proceed actively and keep the initiative than to wait to the law of the opponent." (Moltke in Shamir, 2011, p.38)

It was to be expected that there would be a gap between what was planned and actual events. Responsibility for filling or utilizing this gap, i.e., to judge the situation and

take the initiative in line with the commander's intention, was decentralized, first to division commanders before finally being assigned to every soldier from the highest general to the lowliest private (Shamir, 2011, p.50).

It is important to stress that this is not some kind of anarchy, where everyone can chose the organization's goal, or mission. There was a high degree of discipline in this system; loyalty was shown to the intention behind the mission, not to preplanned ways of achieving the goal. The commander's intention was the coordinating mechanism. Subordinates were explicitly told what to do, not how to do it. This reform, which started in 1806, developed an army, the German army, which in the Second World War had "developed fighting power to an almost awesome degree" (van Creveld, 1982, p. 4). They had managed to combine Prussian discipline with a high degree of creativity. It is claimed that this is the only historically proved method of giving subordinates freedom to act on their own (Silva, 1989, pp. 6-7), and it has become the exemplar of military excellence in the modern military (Shamir, 2011, pp. 3-7).

However, as has been pointed out by several authors, trying to copy or simply translate a foreign historical concept involves challenges (e.g. Hughes, 2000; Shamir, 2011; van Creveld, 1982; Vandergriff, 2002). A lengthy description of how the essential norm of mission command is described in the Norwegian Armed Forces Joint Operational Doctrine (2007), seems justified:

"The fundamental command philosophy of the Armed Forces is mission command. This means that commanders at different levels give direction by stating what is to be achieved and why it is to be achieved. Within this framework, subordinates are basically then given the freedom to fulfill the task as they think best. This philosophy was chosen because it allows room for *initiative* to be exercised at all levels. Because its effects are inclusive and stimulate participation at all levels of the organization, it also provides the greatest *robustness* against the frictions of combat. Mission command is a philosophy which goes beyond the assignment of tasks and the allocation of

resources. The philosophy is about having a culture of professionalism and mutual trust." (p. 163)

Mission command was formally prescribed as the leadership philosophy for the Norwegian Armed Forces in 1995. It was implemented in Norwegian doctrine in order to improve performance in response to post-action learning. In Norway's case, it was the lessons learned after a tragic accident in 1986 in which 16 soldiers died that started the process of implementing mission command as the official leadership doctrine (Offerdal & Jacobsen, 1993; Official Norwegian Reports NOU, 1986, 1991).

1.3 Implementing mission command on board

"Nothing is sure in a seafight."
(Lord Nelson)

Even though mission command is implemented as the formal leadership doctrine in the Royal Norwegian Navy, it is hard to find research that has an explicit focus on the implementation and use of mission command on board vessels. The Norwegian doctrine for naval operations states that mission command is the basis for understanding leadership in naval operations (Norwegian Defence Staff, 2002, p. 47). However, what is meant by mission command, and why mission command is relevant in the naval context is not explicitly discussed.[4] The white paper "Lean Manning Concept", which describes the basic principles for manning Nansen-class frigates, states, in accordance with the naval doctrine, that mission command is a precondition

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[4] Mission command is not mentioned at all in the preceding naval doctrine, which was issued in 1994. However, the leadership principles described in the 1994 doctrine have much in common with mission command: emphasis on a sense of shared responsibility, mutual trust, common understanding of the mission (Norwegian Naval Staff, 1994, p. 25).

for a functional Nansen-class organization (Norwegian Frigate Service, 2004, p. 12). The reason is that mission command is a decentralized philosophy, which is required due to the challenges of operating a lean manned frigate. Like the naval doctrine, the white paper does not elaborate on other environmental aspects often mentioned in organizational design analysis, such as complexity, predictability, risk, etc.

The purpose of using the mission command philosophy is presented in the Norwegian joint operational doctrine, which provides guidelines for other national doctrines (Norwegian Defence Staff, 2000, 2007).[5] However, the joint operational doctrine is joint, that is, it describes a norm that should be applied in all branches of the armed forces. It prescribes a common leadership philosophy for air, army and navy units. As pointed out in the introduction, this raises the question of whether the organizational challenges are basically the same for an army unit fighting in Afghanistan and the crew of a Nansen-class frigate fighting submarines in the Atlantic Ocean. It is claimed that there are fundamental contextual differences between land and naval forces. One writer even claims that to embark on a ship is to enter another world (Barnett, 2009, p. 15),[6] a discussion neither the joint doctrine, the naval doctrine nor the "Lean Manning Concept" goes into.

Mintzberg (1979, p. 293) has noted that, just as "Paris has its salons of haute couture; likewise New York has its offices of 'haute structure'", and mission command is a popular recipe for organization in military organizations (Shamir, 2011). However, popularity is not an adequate argument and researchers have explicitly warned against jumping on the latest bandwagon, no matter how popular (Christensen et al., 2007, p. 181). On the other hand, researchers have identified that, for some organizations, it is important that the socially created norms for what is the proper design are reflected externally, regardless of whether the design actually contributes to

[5] The Norwegian Armed Forces Joint Operational Doctrine was first authorized in 2000 and published by the Norwegian Joint Headquarters. A new edition, 2007, was published by the Norwegian Defense Staff. The description of mission command is much the same in both publications.

[6] Air forces are omitted here since the mission command philosophy was developed for land forces. It is worth mentioning that an influential advocate of mission command, John Boyd, was a fighter pilot and used the logic to develop fighter tactics and planes, e.g., the F-16 (Osinga, 2007).

a more effective organization (e.g. Christensen et al., 2007; Mintzberg, 1979). Could it be that the navy, consciously or subconsciously, has adapted to institutional pressures and implemented the most fashionable leadership recipe without taking scientific rationale or best practice into consideration? In the literature on organizational development, such socially created norms are called myths (Christensen et al., 2007, p. 57). An indication that a concept is a myth is that top leaders talk about reform, but do little to make it happen (Christensen et al., 2007, p. 58).

In a review of the development of the three joint operational doctrines published in Norway between 1995 and 2007, Bjerga and Haaland (2012, p. 100) claim that "the revision process shows that importing NATO and U.S. language and concepts was given an overriding priority at the expense of developing a doctrine tailor-made for the challenges facing the Norwegian Armed Forces". From the naval perspective, one notable finding from the review was that inputs from ongoing naval operations were virtually nonexistent, and nor was the navy represented on the editorial board for the last revision of the doctrine (Bjerga & Haaland, pp. 94,100).

However, the fact that a leadership philosophy is fashionable does not automatically mean that it is an inappropriate philosophy (e.g Christensen et al., 2007, p. 170; Mintzberg, 1979, p. 294). At the institutional level, Norway is a small state and will be dependent on support from allied nations. According to Bjerga and Haaland (2012, pp. 85, 94,100), there are valid reasons for prioritizing having the same doctrine and using the same leadership philosophy as allied nations for interoperability or symbolic political reasons, or both, instead of developing a doctrine tailor-made for the Norwegian context. With regard to the last point, Bjerga and Haaland (2012, p. 100) explicitly argue that the relevance of the operational methods outlined in the doctrines is questionable, since they were developed specifically in the context of war and that peacetime activities are the primary concern of the Norwegian Armed Forces.

In contrast to Bjerga and Haaland's view, the white paper *Lean Manning Concept* (Norwegian Frigate Service, 2004, p. 26) states that operating the Nansen class is dependent on mission command, not only during conflict and in war, but also

in day-to-day peacetime operations. However, three years after the "Lean Manning Concept" was adopted, the relevance of using mission command was questioned in a lecture at the Royal Norwegian Naval Academy entitled "How to build a crew". In that lecture, the second in command of the first crew to man a Nansen-class frigate professed support for the fashionable hypothesis when, in answer to a question about whether mission command is relevant on board the Nansen class, he proclaimed that "Mission command is hyped!" (Karlstad & Krabberød, 2007, p. 52) The statement did, however, inspire a reflection, published in Tidsskrift for Sjøvesen, in which Karlstad, who made the statement, and Krabberød suggest that the statement is probably a result of an unfamiliar concept (Karlstad & Krabberød, 2007). Karlstad and Krabberød conclude, in line with the white paper, that mission command is a prerequisite for operating a Nansen-class frigate effectively.

However, except for the argument in the "Lean manning concept" that mission command is necessary because of lean manning, the search for a more thorough rational analysis, which could have identified the necessity of implementing mission command on board Nansen-class vessels, has proved unsuccessful. The myth perspective draws attention to situations in which members of organizations have become convinced by apparently scientific arguments about an organizational recipe's excellence or by the exemplary status the recipe has achieved in other organizations, only to later be disappointed when the adopted recipe failed to match expectations Christensen et al. (2007, p. 58). In addition, Christensen et al. (2007, p. 170) argue that myths may have an advantage over instrumentality. Thus, we need to take a closer look at the instrumental reasons for implementing mission command on board vessels.

1.3.1 The naval environment

The Norwegian Armed Forces, like other public organizations, carry out tasks on behalf of Norwegian society. The Armed Forces' main mission is to defend Norway and Norwegian interests and values against external threats and attacks, primarily from other states. The navy´s main role in this overall mission is to maintain sovereignty in

Norwegian waters, to contribute to sea control (securing a sea area for own operations) and sea denial (preventing an adversary from using the sea area) in times of peace, crisis, and war. However, as a result of a more and more interconnected ("globalized") world, the Norwegian government has decided that it will be in Norway´s interest to actively contribute to international peace and stability. Thus, the Norwegian navy must be prepared to participate in operations outside Norway's borders. (Norwegian Ministry of Defence, 2012).

The Norwegian Armed Forces Joint Operational Doctrine identifies three main categories of possible missions for a naval unit (Norwegian Defence Staff, 2007). First, there is the military aspect, that is, to be prepared for armed conflict. The military tasks are divided into *anti-air warfare*, which means removing the threat of air or missile attacks, *anti-surface warfare*, which means removing the threat from the surface, *anti-submarine warfare*, which means removing the threat from underwater vessels, *mine operations*, which means removing the threat from mines, and, finally, *amphibious operations*, which means operations in which the navy assists in getting land forces ashore. Second, the navy can be used to uphold law and order at sea, for example, by showing presence, carrying out surveillance and inspecting vessels. The third and final main category consists of providing aid, such as assisting vessels in distress or evacuation operations. Except from mine operations, the Nansen class frigates, as the largest units in the Norwegian Navy with the most comprehensive sensors, weaponry, and best endurance, are expected to be able to make major contributions in all these categories.

Instrumental reasoning focuses on seeing organizations as tools for achieving given goals. In military jargon, these goals are called missions. When an organization has a mission to solve, the question is how the organizational structure should be designed. (Christensen et al., 2007, pp. 20-35). A recent example of such a mission given to a Nansen-class frigate was to act as an escort vessel for the transport of chemical warfare agents out of Syria. According to the commanding officer of the first crew to be deployed on that mission, the crew had to prepare for handling a wide range of possible situations, indicating a high degree of uncertainty (www.forsvaret.no,

downloaded April 25, 2014). The degree of uncertainty is an important contextual aspect that should be considered when designing organizations (Christensen et al., 2007). An example from the Falklands war will be used[7] to illustrate the kind of situation a naval vessel must be prepared for. The example is from the fight to save the British warship HMS Glamorgan after it was hit by a missile. A missile or other kind of explosion on board is a realistic threat for the Nansen-class frigates on the Syria mission.

Early in the morning of June 12, 1982 during the Falklands war, a small "blip" appeared on the bridge radar on the British destroyer HMS Glamorgan. Thirty seconds later an Argentinian Exocet missile hit the Glamorgan and blew big holes in its superstructure. The following quotes are from the navigating officer's description of what followed.

'Oh shit,' I called the ops room on command open line, 'have you got that fast moving contact 020 at eight miles?' The principal warfare officer replied, 'It is a helicopter!' I replied 'It is moving too bloody fast!' and he responded that it was an aircraft. I immediately ordered, 'Starboard 35!' The helmsman replied, 'Port 35', applying port rudder. I literally screamed, ' NO! STARBOARD 35!' (Inskip, 2002, p. 157)

I had thought about reminding the ops room to fire chaff. They were a very competent team who knew more about threat reactions than me, but we had been targeted at a most inopportune moment, having just fallen out of action stations and it took the ops room a few seconds to settle. (Inskip, 2002, p. 158)

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[7] Reeve (2003) states that there is a "veil of invisibility over the face of naval battle... Naval combat is rapid. Its actions can be very fleeting and even in the age of modern sensors, highly unexpected. It can be over, literally, in a flash, leaving less of an actual event to create an impression on human memory.". Reeve further explains that, compared to land warfare, there are relatively few witnesses, one hundred percent losses of crew are not uncommon, and non-combatant witnesses are very unlikely, as is the presence of journalists.

I concentrated very hard on the turn, since I would need to reverse the wheel at precisely the right moment to steady on 190 degrees if we were to bounce the missile off the ship's side. With full rudder at 25 knots, exactly how many degrees before 190 should I order 'Port 20?' My mind failed to register that other lifesaving reactions had not taken place. No one had piped 'Brace, brace, brace'. (Inskip, 2002, p. 158)

The missile body penetrated the hangar door and hit the fully fuelled and armed Wessex helicopter inside. A second later, the helicopter blew up and a massive explosion, with accompanying fireball, erupted from the hangar […] the battle to save our ship had begun. (Inskip, 2002, p. 9)

Petty Officer Mike Wire was mustering the midship's section base team when he was thrown to the ground by the blast. When he collected his senses, he ordered the section base team to carry out a blanket search of the midship's section. As he proceeded to the fuel working space, he heard the pipe, 'Fire! Fire! Fire! – fire in the galley!' Seconds later another pipe, 'Fire! Fire! Fire! – fire in the hangar!' This was followed by reports of further fires in the machinery spaces. Many of these subsequent reports proved to be false, being made in response to smoke being drawn into compartments through the ventilation supply fans. It took a while to determine the extent of the damage and he felt the angle on the ship increasing all the time. He realized the dilemma. The firefighters were sinking the ship with their firefighting water, but if they did not cool the fire, it would spread and eventually reach a magazine. (Inskip, 2002, p. 173)

John's [leader of the damage control team] priority was to address the steadily worsening situation of the ship itself. There was flooding across the galley, across the dining halls, along 1 deck, 2 deck and 3 deck…This was almost identical to the scenario in the Manadon examination paper…The logical option was to abandon the section, since there was little hope of controlling the situation, but to John and many others, giving up was not an option. John's ingenuity and improvisation helped save the day. (Inskip, 2002, p. 169)

No one had the full picture at the time. (Inskip, 2002, p. 11)

More than four long hours after the first "blip" on the radar, at 10:54, it was logged that the fire was out and flooding pumped out. At 19:35, 13 crew members were buried at sea:

"…the bodies were slipped over the side from the quarterdeck. It was absolutely still apart from splash…splash…splash…splash…of our comrades." (Inskip, 2002, p. 181).

The ship was still at sea in the Atlantic ocean and at war. Glamorgan was the only ship to survive an Exocet attack. What happened was not a completely new situation, what Weick has called a cosmological episode where people "suddenly and deeply feel that the universe is no longer a rational, orderly system"(Weick & Sutcliffe, 2001, p. 105), a situation where one neither understands what is happening nor where to start building a new understanding. As Christensen et al. (2007, p. 180) expect of organizations that operate in contexts where risk is involved, the crew had procedures for quick and reliable actions that were relevant to the situation. The officer of the watch knew what he should focus on when maneuvering the ship when a missile was

incoming. There was a rehearsed drill for how people should prepare to meet the explosion, the "brace, brace, brace" command. The crew member responsible for damage control had had an almost identical situation in his examination at the naval engineering school.

However, the excerpts from the episode on board the Glamorgan also illustrate an important and unpredictable aspect. The missile alert came when the crew had just *decreased* their readiness (fallen out of actions stations), which they would not have done, of course, if they had been able to predict when the missile would come. Someone forgot to initiate the "brace drill". The episode shows individuals in different places in the organization who needed to trust their own judgment and take action. The situation did not exactly match the situation in the exam at the engineering school, and the damage control officer therefore had to improvise. Not to forget the consequences involved. And that no one had the total picture.

So, from an instrumental perspective, how should a Nansen-class frigate, which, among other things, must be prepared for the same kind of situation as the Glamorgan, be organized in order to fulfil its mission(s)? And is mission command the best leadership philosophy to coordinate activities in such a context? History has shown that warships have been commanded in many different ways (Palmer, 2005). That is not to say, however, that it is irrelevant how the crew is managed (Bachman, 1988; Espevik, 2011; Palmer, 2005).

Palmer (2005) concludes his review of command at sea by stating that uncertainty is just as prevalent at sea as it has been shown to be on land. Consequently, he suggests that a decentralized organization governed by principles like mission command should be preferred at sea. However, experienced Norwegian naval officers have expressed skepticism about the relevance of mission command on board vessels (Karlstad & Krabberød, 2007). An officer on board the now decommissioned Oslo-class frigates made the following statement:

"On board a vessel, I think that mission command must be used where it is relevant. However, it is unlikely that it will be necessary. If it is necessary, I am wondering what is wrong with that vessel, because it should not be necessary."(Krabberød, 2002, p. 87)

The respondent reasoned that the conditions on board were too small for mission command, and that it was more effective to use a more directive leadership style: "Do that, do it like this, don't do that" (Krabberød, 2002, p. 87). This view is in line with Hughes, who states that an important difference between army and navy units is that a crew is literally in the same boat. Thus, for example, the challenge of maintaining strong unit cohesion in the face of an adversary's attempt to create disorder and thereby demoralize the unit seems to be of less importance. As Hughes (2000) puts it, "at sea the men go where their leaders go" (p. 28).

Another of the officers interviewed in the same study clearly saw the efficiency benefits of direct supervision and standardization of work possesses, but, on the other hand, he said: "If a complex situation occurs, where you need redundancy in the system and where people have different tasks, it might be a bit less effective" (Krabberød, 2002, p. 89). A curiosity in this context is Mintzberg's (1979, p. 183) claim that the most common error in organizational design is to centralize in the face of cognitive limitations.

In Krabberød's (2002, p. 114) study, 22 of 24 officers stated that they had been in unforeseen situations on board, where standing orders or standard operating procedures, or both, were not directly applicable, i.e., there was no rule under which the situation could be subsumed (Eckhoff & Jacobsen, 1960). Some even said that this happened quite often. So what do you do? Do you turn to your superior for instructions, do you act autonomously or do you act on your own initiative, but still in accordance with your superior's intention as described in mission command? One writer on naval leadership claims that the naval history of war and peace is full of situations where orders are not exhaustive or can be totally lacking. These situations

have resulted in everything from paralysis to a full broadside (Thorleifsson, 1986, p. 10).

Leaders are often described as people with a special mandate from an organization, who have a special function when rules and standard operating procedures do not apply (Strand, 2007). However, being a leader does not necessarily give you better cognitive capacities or the information you need. An important, if not the most important, reason to replace a centralized organization with a decentralized one is information overload (Mintzberg, 1979, p. 183).[8] The following quote illustrates the cognitive complexity involved, from the perspective of the officer of the watch in the operations room:

> *"Around me I have sonar operators, electronic warfare operators, an anti-submarine warfare team, anti-surface warfare team, anti-air warfare team, picture compilation team and communication operators. All these crew members have information they give to me. In addition, I have the bridge team that feeds me information, I have a damage control central which feeds me information. I have a bunch of internal actors that tells me things all the time. Then the communication operators feed me written messages that you have to read, and while you are reading, the anti-submarine warfare officers talk to you. With experience and training this is manageable. But then there is traffic on the external communication net you must respond to, and it starts to accumulate. You must say something about a lot of things, you must answer the anti-submarine officer, you must formulate a written answer to an external signal, the officer of the watch on the bridge asks which fjord he should enter and requests further intentions, then the lookout saw something." (Krabberød, 2002, p. 144)*

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[8] As van Creveld (1985) puts it, the best system of command would be to have a genius in charge. But, as he points out, there are some practical challenges associated with this ideal, "the problem consisting precisely of the inability of military (and nonmilitary) institutions to achieve certainty either in producing a steady supply of geniuses or in identifying the decisive points into which, once available, they should be put" (van Creveld, 1985, p. 268).

Another argument for decentralization in time-critical situations is that it saves time. Sending information up and down the hierarchy is time-consuming (Mintzberg, 1979, p. 183). Saving this time is the main rationale for mission command (Shamir, 2011). One of the respondents in Krabberød's (2002, p. 115) study stated that his experience was that, when things reached a certain level of complexity, crew members were often given free reign to do what was needed to take care of the vessel and to use the weaponry most effectively. This observation can be an indication of the inadequacy of having a centralized organization on board. Krabberød (2002, p. 92) interprets this way of decentralizing when facing complex situations as an ad doc response to a situation in which the superiors do not have the capacity to control, rather than a command philosophy.

Another interpretation of this giving of free reign is "command by veto", which, in the words of Admiral Woodward who commanded the British fleet in the Falkland war, means: "Let your trusted men get on with it until they screw up" (Woodward & Robinson, 1992, p. 317). Interestingly, one of the commanding officers interviewed by Krabberød (2002, p. 85) explicitly stated that he led by "command by veto". However, this philosophy may seem a bit accidental, with connotations to laissez-faire leadership, which basically implies that the autonomy of subordinates is obtained by default (Bass, 1998, p. 138). Laissez-faire leadership has been found to cause low productivity, and a lack of innovation and cohesion (Bass, 1998, p. 149), which all are important to an effective military unit (Shamir, 2011). As a commanding officer of a Nansen-class frigate noted in his diary after having been with the British naval test facility Flag Officer Sea Training (FOST), which has a worldwide reputation for excellence and for representing best practice: "You must state your intention. EVERYONE on board must know the command aim. Practice using it…The commanding officer must demand results." (Commanding Officer, 2013). He clearly distanced himself from laissez-faire leadership and "command by veto" as ways of leading a warship.

Even if the crew on board a warship is united by the hull, operating a naval vessel still seems to involve handling both uncertainty and complexity, which requires

a decentralized organization (Krabberød, 2002; Norwegian Naval Academy, 2009; Palmer, 2005). As the above-mentioned commanding officer elaborates in his diary, "much more responsibility and tasks must be decentralized to the operators in order to give the principal warfare officers more cognitive surplus". According to several studies, mission command is the most effective way of organizing a military force to deal with uncertainty (e.g. Boyd, 1987; Nissestad, 2007; Richards, 2004; Shamir, 2011; van Creveld, 1982; Vandergriff, 2002).

In 2005, the frigate HNoMS Trondheim (2005, p. 16) conducted an interesting pilot project in which the crew tried to implement mission command in its damage control team. The report concludes that using mission command in the damage control organization has an enormous potential and is doable; the tempo increased, communication improved, they became better at handling chaos, the organization became much better at functioning when formal leaders were absent, and subordinates rose to the occasion and motivation increased (HNoMS Trondheim, 2005). Six years after the statement "Mission command is hyped!", the commanding officer of a Nansen class vessel, who had just finished FOST and was in preparation for deployment to Operation Ocean Shield, the anti-piracy operation in the Gulf of Aden, was invited to share his ideas on leadership on board. His experience was that "we are completely dependent on mission command" (Kammerhuber, 2013). Thus, even though there is no exact scientific evidence supporting the claim that mission command is effective on board, there seem to be rational reasons in favor of implementing it, beyond it simply being fashionable.

However, a rational argument about the instrumental relevance of a concept is seldom enough to make it a theory that is actually used instead of just being espoused (Argyris, 1990).[9] Krabberød (2002, pp. 89, 90) found that only 13 of 24 officers interviewed had a good grasp of the mission command concept. He concludes that there does not seem to be an implementation strategy for mission command on board.

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[9] An amusing digression in this context is Jacobsen's (2004) labelling of a reorganization process that believes in rational argument as "the captain model" (p. 185).

Krabberød (2002, p. 159) also concludes that the parallels found between how thing are done on board and mission command can most likely be traced back to how the culture has evolved, and not to a conscious implementation of mission command. This view is maintained in Karlstad & Krabberød (2007).

Both after the pilot project on HNoMS Trondheim (2005, p. 17) and in the post-FOST reflection by a commanding officer of a Nansen class vessel, it was emphasized that there are important challenges associated with implementing a decentralized organization with mission command as the leadership philosophy – first and foremost whether superiors will dare to let go of control and subordinate crew members' willingness to take responsibility in uncertain situations (Jansen & Offerdal, 1987). In the next section, the cultural aspect, the norms that regulate behavior in groups, will be discussed.

1.3.2 Mission command – challenging the basic assumptions?

Shamir (2011, p. 199) stresses that mission command is not just a technique for issuing orders; it is inextricably linked to a certain image of soldiers, a certain organizational culture (Shamir, 2011, p. 15). Although the Norwegian Chief of Defense states in the foreword to the 2007 doctrine that its purpose is cultural development (Norwegian Defence Staff, 2007, p. 3), to the author's knowledge, there is no explicit implementation strategy for how to implement the prescribed norms.[10]

Several studies have presented cultural mismatch as the main cause of problems with implementing mission command and making it a theory in use (e.g. Muth, 2011; Nissestad, 2007; Richards, 2004; Shamir, 2011; van Creveld, 1982; Vandergriff, 2002). Borgmann and Aronsen (2005, p. 115) are explicit on this point when they conclude that there is a need for transformation in the Norwegian Navy, not a

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[10] At the time of writing, the author has worked for more than 10 years in the leadership development department at the Norwegian Naval Academy.

transformation of organizational maps and formal procedures, but a transformation that will "shape our minds". In line with Borgmann and Aronsen, Shamir (2011, p. 199) suggests that institutionalizing mission command is likely to imply a transformation of individual and organizational basic assumptions, such as the joy of taking responsibility in uncertain situations. Basic assumptions are the deeper, implicit beliefs people hold, and someone who does not hold them is likely to be viewed as a 'foreigner' or even as a 'crazy' and will automatically be dismissed or sanctioned, or both (Schein, 2004, p. 25).

In his lecture at the Norwegian Naval Academy, the above-mentioned commanding officer raised the question of whether the officers on board are mentally prepared to lead in hardship and uncertainty:

> Some need help to get out of their comfort zone… we must make better use of the middle managers…. We have a long way to go to change the culture at home in the direction of what we have experienced here at FOST. This concerns both how we design exercises, the way we practice and evaluate, and, not least, our professional attitude (Kammerhuber, 2013).

The fact that the culture, at least in the frigate service, is not consistent with what is needed in a mission command culture, may explain the reluctance other experienced Norwegians have expressed about the relevance of using mission command on board and the apparently limited success of implementation (Borgmann & Aronsen 2005; Karlstad & Krabberød, 2007; Krabberød 2002). Thus, even if there are rational reasons for mission command on board being relevant, there are indications that the principles of mission command may be at odds with the organizational culture. And, as Schein (2004) puts it, "The bottom line for leaders is that if they do not become conscious of the cultures in which they are embedded, those cultures will manage them" (p. 23). Thus, from the perspective of implementing mission command, it will be important to

assess the degree of correspondence between the informal and formal norms (Christensen et al., 2007, p. 40). If reforms challenge people's basic assumptions, anxiety is likely to be unleashed and, consequently, resistance to the reform (Schein, 2004, p. 37).

In their recommendations on how reforms in the public sector should be carried out, Christensen et al. (2007) stress that "there is no alternative to making a thorough analysis of the challenges confronting a particular organization and identifying what its main problems are" (p. 181). Christensen et al. (2007, p. 175) further state, that a distinction must be drawn between descriptive and prescriptive organizational models. However, Mintzberg (1983, p. 3) claims that his organization theory should be fruitful with respect to both aspects of organizational reform. In the next section, Mintzberg´s organization theory will be presented as a tool for analyzing both the actual mode of operation and the design of the Nansen-class organization.

1.4 Mintzberg's organization theory

"I believe our greatest mistake in dealing
with organizations – one we have made
throughout this century and continue to make
every day – is in pretending that there is
'one best way' to manage every organization."
(Mintzberg, 1989, p. 3)

Mintzberg's organization theory belongs to a branch of organization theory called configuration theory. In a much cited article, Meyer, Tsui, and Hinings (1993, p.

1175) define organizational configuration as "any multidimensional constellation of conceptually distinct characteristics that commonly occur together". The basic assumption in this kind of theorizing is that you should look for internally consistent sets of organizations rather than looking for relationships that hold across all organizations (Short, Payne, & Ketchen, 2008). It is not each of the organizational variables, for example, age or size, in themselves that are most important. The focus is on identifying how organizations can be grouped together along several variables, e.g., small organizations tend to be young etc. Configuration analysis emphasizes a holistic and synthesizing view of organizations (Meyer et al., 1993, p. 1177). Thus, configuration theory differs from other approaches to organizational analysis by how organizations are described (Short et al., 2008).

Further, in configuration analysis, success or failure is explained by the degree of fit between a given configuration and a context, i.e., one kind of configuration is assumed to be effective in a complex and uncertain environment, while another kind of configuration is assumed to be effective in, e.g., a simple and predictable environment. This leads to the third main difference between configurational approaches and variable-oriented approaches to the study of organizations. Configuration theory will aim to predict which kind of organization will be most effective in a particular situation (Short et al., 2008).

In his recent book *Managing*, Mintzberg (2009) claims that practitioners and researchers generally "have little vocabulary beyond the word *organization*". Mintzberg (1979) presented his configurational vocabulary in *The Structuring of Organizations*. In this book, Mintzberg is concerned with the management of the total organization and aims to synthesize research on organizing into a manageable descriptive theory.

Writing in 1979, Mintzberg claimed that a major flaw in the contemporary literature was addressing how the described structure is related to the functioning of an organization. Through his configuration theory, Mintzberg therefore attempted to present concepts that correct this flaw. In order to understand how an organization

actually functions, one must know its basic structural parts, what functions the different parts perform, and how they interrelate.

The first basic part consists of the *operators* who perform the organization's tasks. As the complexity of the organization increases, more operators are needed to perform the work and the division of labor gets more complicated to coordinate. Thus, a hierarchy of authority (i.e., managers) tends to evolve. Here, Mintzberg (1979, p. 19) distinguishes between the very top of the hierarchy, which he calls the *strategic apex*, and middle managers in the *middle line*. If work gets even more complicated, an administrative division of labor tends to develop between managers who supervise the work and employees who standardize work processes. This category of employees constitutes the fourth basic part, which Mintzberg (1979, p. 19) calls *technostructure*. Finally, he adds a fifth part of the organization, the *support staff*. This category of employees provides indirect support to the organization. Examples are controllers, human resource managers, canteen personnel, etc. At the end of his 1979 book, Mintzberg (1979, p. 480) opens up for the possibility of a sixth basic part, *ideology*, which he implements fully in later works (Mintzberg, 1989). Ideology comprises the traditions and beliefs that are unique to an organization. It is people at the strategic apex, in the middle line, and operators who are most directly connected to the organization's core activity. In a frigate context, the core activities are being able to fight, and to keep the vessel moving and afloat.

To Mintzberg (1979), organizing entails "two fundamental and opposing requirements: the *division of* labor into various tasks to be performed and the *coordination* of these tasks to accomplish the activity" (p. 2). Of these two activities, it is coordination that is likely to be the most challenging, since the division of tasks is as much given by what is to be done and by the available tools. Based on this, he states that:

"The structure of an organization can be defined simply as the sum total of the ways in which it divides its labor into distinct tasks and then achieves coordination among them." (Mintzberg, 1979, p. 2)

In the next section, the coordinating mechanisms that, according to Mintzberg (1979), are "the glue that holds the organization together" (p. 3) will be presented.

1.4.1 The coordinating mechanisms

Mintzberg (1979) claims that five coordinating mechanisms seem to explain the most fundamental ways in which organizations can coordinate their activities. You will find aspects of all five mechanisms in most organizations. However, an organization will tend to favor one of the mechanisms over the others (Mintzberg, 1979, p. 8). Mintzberg (1979, p. 7) further claims that there is a rough order to how organizations tend to rely on one of the five. As the work becomes more complicated, the chosen mechanism seems to shift. In the following, the five mechanisms are presented in ordered sequence, from less to more complicated work.

Mutual adjustment is a coordination category that is based on informal communication. Those who perform the work find a way to coordinate their individual contributions to solve their common task. To Mintzberg, this is the coordination mechanism used in the simplest kind of organizations, where informal communication between workers is all that is required to coordinate their individual efforts. When work becomes a bit more complicated, Mintzberg expects that someone will be required to take on the leadership function and give instructions to the other workers in order to coordinate the individual contributions. He calls this coordinating mechanism *direct supervision.*

Beyond some minimum size – Mintzberg (1979, p. 9) is not explicit on this point – organizations will try to standardize work processes when possible.

Standardization basically implies that the coordination of activities in the organization is designed before the work process starts. For example, a manager, an engineer or an educational institution has decided how work should be performed in order to meet predefined standards. Thus, to exaggerate somewhat, a worker does not need to worry about how to coordinate work with his colleagues. Mintzberg has identified three basic ways of standardizing coordination. The first is *standardization of work processes*. This mechanism is used when work can be broken down into detailed procedures. When the worker comes to work, he finds his position and what he is to do is stated in the procedure. In military organizations, this way of coordinating work is often called using standard operating procedures or drills, and a lot of work on board a Nansen-class frigate is based on drills. For example, there are drills for what you do when the look-out reports "man over board", for how to feed the crew efficiently when the crew is on high degree of readiness, and, as in the Glamorgan example, for how to react when an incoming missile is expected.

If work becomes more complicated, organizations will turn to *standardization of outputs* as the coordinating mechanism, which in essence means that coordination is achieved by specifying the results of different jobs. When the frigate was deployed to the Syria operation, the Norwegian operational headquarters gave the crew a mission, which was to escort a merchant vessel that was to transport chemical warfare agents out of Syria. The output should be that the merchant vessel had a safe voyage. How the crew actually organized its activities on board to solve this mission was largely up to the commanding officer's discretion. On board, you will find the same logic when the commanding officer states his command aims to the crew. For instance, the commanding officer could state that, if the vessel encountered technical problems, the engineers should prioritize maintaining maximum speed.

The third way to standardize if work becomes even more complicated is to *standardize skills*. In these situations, the work processes are too complex to be standardized in an exhaustive way by analysts, as is the case when relying on standardization of work processes. The organization must rely on the knowledge highly skilled professionals have acquired through years at school and on-the-job

training. Coordination is achieved by what the experts have learned to expect from each other. An example of this kind of coordination on board is work in the operations room, where officers in charge of the different warfare areas largely know what to expect from each other when, for instance, the anti-submarine officer reports a possible submarine contact (Mintzberg, 1979, pp. 5-9).

The possibility of a fourth coordinating mechanism, *standardization of norms*, was hinted at in *The Structuring of Organizations,* and it was introduced in later writings, then primarily as an overlay to the other mechanisms (Mintzberg, 1979; Mintzberg, 1989; Mintzberg, 2009). Here, indoctrination has replaced training. The purpose is to reinforce organizational members' identification with an ideology. If workers share a strong ideology, it is assumed that this will have a coordinating function. Finally, Mintzberg (1989) has added *politics* as an overlay to the basic coordinating mechanisms. There will be situations where the absence of coordination is more striking, situations where the organization is primarily affected by power struggles among individuals.

Interestingly, Mintzberg expects that, when faced with the most challenging kind of tasks, i.e., work that is both complex and unpredictable, organizations will revert to the most basic or simple form of coordination, mutual adjustment. Due to the complexities of the task, knowledge of what must be done will develop as the work process unfolds. In such situations, the organization must develop new solutions and cannot rely on standardized programs for coordination. The organization must break away from established patterns (Mintzberg, 1989, p. 102, 199).

Mintzberg (1979, pp. 8-9) claims that most organizations are dependent on informal communication and leadership. The world is too complicated to standardize work processes completely. Thus, rather than treating the informal and formal as dichotomous, they should be seen as interdependent. The formal system tends to shape the informal, while the informal system oils the formal system. Mintzberg (1979, p. 9) further supposes that mutual adjustment and direct supervision are likely to be interchangeable. When mutual adjustment breaks down, the organization will turn to

direct supervision, and when the work gets too complicated to be coordinated by one brain, the organization will turn to mutual adjustment. However, both direct supervision and mutual adjustment can be problematic to rely on in organizations consisting of experts, since they are likely to be perceived as impediments to professional autonomy (Mintzberg, 1989, p. 177).

   Mintzberg (1979) stresses that "authority and communication are not ends in themselves, they are facilitating processes" (p. 58). What they facilitate are the two fundamental processes: decision-making and production. A decision process involves more than just the selection of alternatives. It involves all those actions, conscious or unconscious, taken from a stimulus is identified to commitment to action. Mintzberg indicates seven kinds of activities that lead up to a decision: identification, recognition, diagnosis, search for alternative solutions or the design of new solutions, screening of the solutions, evaluation and choosing, and, finally, authorization of the chosen alternative (Mintzberg, 1979, p. 58).[11]

   A stimulus for a decision may occur anywhere in the organization, on an ad hoc basis, and the result of the decision process will be dependent on the "complex intermingling of the formal and informal flows of authority, communication, and decision processes" (Mintzberg, 1979, p. 63).

1.4.2 Deriving configurations: design parameters, contingency factors, and effectiveness

   After analyzing how research has described the functioning of organizations, Mintzberg turns his attention to effectiveness and organizational design. Effective structuring in Mintzberg's (1979, p. 220) theory is about achieving consistency between design parameters and contingency factors. Mintzberg claims that it is not the use of a single design parameter such as decentralization that is the key to success, but

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[11] More recent research seems to embrace the same main elements (Brun & Kobbeltvedt, 2006, p. 156).

how the organization manages to combine parameters into a working system. As he writes, getting it all together is most important.

Design parameters are the knobs that can be turned to try to influence how work is divided and coordinated and to establish stable patterns of behavior in order to achieve a better fit (Mintzberg, 1979, pp. 65-68). Mintzberg (1979, p. 67) has identified nine design parameters from previous research: job positions, behavior formalization, training and indoctrination, unit grouping, unit size, planning and control systems, liaison devices, and type of decentralization.

Mintzberg (1979, p. 182) claims that decentralization is the most complex of the design parameters to understand and, since the main argument for using mission command in the Norwegian Armed Forces is to decentralize (Norwegian Defence Staff, p. 163), it seems fruitful to elaborate on this variable. Mintzberg (1979, p. 185) claims that centralization and decentralization are best regarded as end-points on a continuum, where the end points are described in the following way:

> "When all the power for decision making rests at a single point in the organization – ultimately in the hands of a single individual – we shall call the structure centralized; to the extent that the power is dispersed among many individuals, we shall call the structure decentralized." (Mintzberg, 1979, p. 181)

At first this may seem fairly simple, but, as one starts to delve into the issue, the complexity of the concept becomes apparent. Mintzberg (1979, p. 184) writes about the black box called decentralization. To get to grips with the concept, Mintzberg divides it analytically into vertical decentralization and horizontal decentralization. The vertical dimension refers to the degree to which formal decision-making power is delegated to lower hierarchical levels. The horizontal dimension describes the extent to which those who work in the technostructure or support staff have influence over the decision-making process. Personnel who create standard operation procedures are an example of how people can gain power over the decision-making process, since the

procedure will normally influence which course of action a worker should take. It is control over actions, not decisions per se, that matters (Mintzberg, 1979, p. 187)

The power of a decision maker is dependent on the degree to which he has control over the different phases of a decision process, from information about the situation, via what should be done to what is actually done. If all phases of the process are controlled by the strategic apex, the organization is centralized. If a decision maker only controls the choice of what is to be done, the system is decentralized. Mission command is a method for deciding the degree of decentralization, where the right level in the Norwegian operational doctrine is expressed as follows: "decentralizing authority as far as possible and sensible…allowing subordinates as far as possible to decide for themselves how best to carry out their tasks." (Norwegian Defence Staff, 2007, p. 163). This can be regarded as a fairly decentralized system, but, as Mintzberg points out, actions must also be coordinated. Thus a central question becomes how do you motivate for individual initiative while at the same time ensuring that actions are supportive of the overall mission? The technique for achieving both purposes in mission command is to give subordinates tasks with an intention, where it is the intention that is meant to function as the coordination mechanism if a subordinate, on his own initiative, decides to do something that differs from the initial task.

Mintzberg argues that it can be challenging to change the design parameters and he stresses the importance of carrying out a thorough analysis of the conditions in the organization in order to find the most rational design. One thing is that it is complicated to comprehend all the variables involved, another important difficulty concerns who has the correct perception of the context on which future actions must be based (Mintzberg, 1979, pp. 224-226). Not to forget that changing the organization structure is likely to influence established habits and power structures (Mintzberg, 1979, p. 67). Thus, using the expression "turning knobs" about organizational design may be a deceptive way of simplifying a complicated undertaking.

Mintzberg (1979) use contingency factors to label the conditions that are presumed to influence how organizations should mix the design parameters to achieve

a fit. They are age and size, the technical system, the environment, and power. The essence of Mintzberg's configuration theory is that organizations must find a way of combining all these attributes, the different parts of the organization, the coordinating mechanisms, design parameters and contextual factors, in order to "get it all together" (p. 93). Following this logic, an organization should put more effort into finding a balance in its own situation than into trying to make the best possible copy of a foreign concept like mission command. The concept, the organizational idea, must be translated to fit the actual context in which it is to be applied (Jacobsen, 2004).

Based on certain combinations of the basic key parts of an organization, the coordinating mechanisms and how an organization is decentralized, Mintzberg (1989) claims that a limited number of configurations can explain much of how the organization functions. The logic is that each of the basic parts of the organizations tries to pull the organization in a certain direction. The strategic apex will try to lead and try to control decision-making in the organization, the technostructure will try to rationalize, that is, to create more efficient standard operating procedures, and thereby decentralize horizontally. The managers in the middle line search for autonomy and thereby, in Mintzberg's words, try to balkanize the structure by attempting to increase the power of their own units by vertical decentralization to themselves. The operators are expected to pull in the direction of professionalization, by ensuring that the operators have power, a kind of decentralization that is both vertical and horizontal. The ambition of people in the support structure, such as research departments, intelligence etc., is thought to be to pull the organization in a collaborative direction by welding staff, line and operating personnel, and decentralizing selectively to the project at hand, where the need for innovation has arisen. Finally, there is ideology, whose main purpose is to pull the organization together, and which implicitly trusts every worker to make decisions and act in the best interests of the ideology. In such organizations, the purest form of decentralization will be observed.

Mintzberg (1989, p. 110) then states that "when conditions favor one of these pulls, the organization is drawn to design itself as a particular configuration". This statement may be illustrative of Chia's critique that Mintzberg treats organizations as

acting entities with "humanized capacities". This critique will be discussed in the third paper in this study. Table 1 shows the ideal typical configurations and their main characteristics (Mintzberg, 1989, p. 110):

Table 1 Mintzberg's configurations

Configuration	Prime Coordinating Mechanism	Key Part of Organization	Type of Decentralization
Entrepreneurial organization	Direct supervision	Strategic apex	Vertical and horizontal centralization
Machine organization	Standardization of work	Technostructure	Limited horizontal decentralization
Diversified organization	Standardization of outputs	Middle line	Limited vertical decentralization
Professional organization	Standardization of skills	Operating core	Horizontal decentralization
Innovative organization	Mutual adjustment	Support staff	Selected decentralization
Missionary organization	Standardization of norms	Ideology	Decentralization
Political organization	None	None	Varies

Mintzberg (1979, p. 477) emphasizes that the configurations should be regarded as ideal typical frames of reference, where the configurations delineate a boundary within

which existing structures can be analyzed. Some organizations will resemble one of the configurations more than others.

Mintzberg (1979) suggests that an alternative to changing the organizational design is to change the context: "organizations – at least the effective ones – appear to change whatever parameters they can – contingency as well as structural – to maintain the coherence of their gestalts" (p. 304). However, military organizations, like most public organizations, do not have the luxury of choosing their tasks, or their environment. As Jørgensen (1990) puts it, public organizations deal with unsolvable problems (Jørgensen, 1990). Adding that military organizations must be prepared to deal with unforeseen tasks, the ability to design and develop organizations is crucial.

1.4.3 Mintzberg and organizational culture

A critique that has been made of Mintzberg's organization theory is that it is "value-free" (Jacobsen, 2004, p. 87), i.e., that it lacks the cultural aspect. Given the influence organizational culture is supposed to have on organizational design in general and on the implementation of mission command (Gordon, 1996; Nissestad, 2007; van Creveld, 1982), this critique is important. Schein (2004) has defined organizational culture as :

> "a pattern of shared basic assumptions that was learned by the group as it solved its problems of external adaption and internal integration, that has worked well enough to be considered valid, and, therefore, to be thought to new members as the correct way to perceive, think and feel". (p.17)

Krabberød (2011) discusses this critique and argues that, although Mintzberg (1979, 1983, 1989) does not use the term organizational culture explicitly in his writings on

organizational structure and design, he has identified the phenomenon.[12] For example, Mintzberg (1979) writes that "the design of every superstructure ends up with a compromise between 'objective' factors of work flow, processes and scale interdependency, and the 'subjective' factors of personality and social need" (p. 124). Mintzberg (1979) also discusses how new members of the organization learn the value system, the norms and "the required behavior patterns" (p. 97) of the organization they are entering. Mintzberg (1989) even states that the "configurations are not just structures, not even just power systems: they are cultures. Being machinelike or innovative is not just a way of organizing; it's a way of life." (p. 263). These are examples of descriptions that seem to cover the essence of organizational culture according to Schein's definition.

From an organizational design perspective, a central question is therefore the degree of correspondence between the informal and formal norms (Christensen et al., 2007, p. 40). In contrast to the critique of Mintzberg for being value-free, Levin, Fossen, and Gjersvik (1994, p. 178) argue that Mintzberg has covered the cultural aspect with the missionary configuration. In the missionary configuration, the coordinating mechanism is ideology, which Mintzberg (1989) himself links to culture: "*ideology* (an alternate term recently has been 'culture')" (p. 98). Mintzberg (1989) describes ideology as "a rich system of values and beliefs about an organization" (p. 224). However, even if Mintzberg's description of ideology seems to have obvious parallels to Schein's definition of organizational culture, Mintzberg appears to use it as the framework from which norms that are accepted as valid in an organization can be developed.

Krabberød (2011) argues that ideology, as Mintzberg uses it, is too similar to the term organizational goal and thus is too limited to cover the behavioral, descriptive aspects of organizational culture, such as acceptance, assertiveness, initiative, etc. And it seems likely that Mintzberg has made this delineation of the missionary

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[12] Dingwall & Strangelmann (2005) have the same comment on the classical Hawthorne studies: "Although the authors do not refer to 'culture' they have clearly identified the phenomenon." (p. 470).

configuration and ideology consciously, since he writes: "Every organization has a culture, which describes its own way of doing things. Our concern here is a very special culture " (Mintzberg, 1989, p. 221). Krabberød's final conclusion is that Mintzberg appears to have identified the influence of organizational culture, but that the theory should be complemented in order to be able to diagnose the behavioral aspect of organizational culture more fully.

1.4.4 Implicit leadership theories – complementing Mintzberg on the cultural dimension

One way to approach the crew members' basic assumptions is through implicit leadership theory (House & Javidan, 2004, p. 16). The basic idea in this theory is that beliefs and attributes of leadership are clustered in memory schemas. A schema holds knowledge of stimulus and attributes and the relationships between the attributes. These schemas are important since they are the assumptions people make about what constitutes effective and acceptable leadership, including who is considered to be a leader and who is not. When a person has been labelled "leader", assumptions about that person's ability to, e.g., motivate and direct others are triggered (Javidan, Dorfman, Howell, & Hanges, 2010, p. 340). Hence, if mission command prescribes a kind of behavior that is at odds with organizational members' basic assumptions about what a leader should do, for instance whether a leader should take control and micromanage or expect subordinates to take the initiative in complex and uncertain situations, then it can be expected that leaders who act according to the mission command norm will be rejected.

These implicit leadership schemas are expected to vary between individuals. However, it is also claimed that they can be shared among people, that they are socially constructed and can thus be extended to the organizational level of analysis (Javidan et al., 2010, p. 343). A study of cadets at the Royal Norwegian Naval Academy, i.e., those who are going to man the navy's ships, including the frigates,

concludes that the culture[13] among the cadets is "rigid and lacks variety" (Nissestad, 2007, p. 284). According to the author, this kind of culture will make acting according to the mission command norm a hard and demanding enterprise.

1.5 Mintzberg and organizing for naval operations

The ultimate challenge for navies will be what it always has been:
to combine reliability with imagination in their people

(Reeve, 2003, p. 37)

Few if any organizations operate in isolation (Christensen et al., 2007). This claim not only directs attention to the fact that organizations engage in diverse interchanges with their environment, but also to the fact that organizations are dependent on their surroundings. For military organizations, this point is literally of vital importance (Boyd, 1987). There are, however, plenty examples in the history of military affairs of organizations that either prepared for the wrong kind of war, for instance reorientation from the state vs state scenario of the Cold War logic to the logic of low intensity conflicts (Murray, 2011) and now, after the events in Ukraine, back to a state vs state scenario, or that were not able to reorient when their opponent did something unexpected (Richards, 2004).

Mintzberg (1979, p. 267) stresses the importance of the environment to which an organization must respond when it designs its structure. The environment is a broad concept, however. Based on Thompson's classical work *Organizations in Action*, Christensen et al. (2007, pp. 31-32) suggest that there are two environmental

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[13] Nissestad use the following definition of culture: "Culture is a set of assumptions and values that are shared by a group of people (e.g., Germans or Toyota) and that guide that group of people's interaction with each other", which is based on Lane, DiStefano and Maznevski (2006) *International management behavior: Text, readings and cases.*

dimensions that are crucial to organizational design: degree of heterogeneity and degree of stability. But Mintzberg (1979, pp. 268-269) argues that two additional dimensions must be taken into consideration when designing an organization: degree of complexity and hostility. According to Mintzberg (1979, p. 287), these four dimensions will have a profound effect on structure and will often override the other three contingency factors he identifies: age, technical system, and size.

The first fundamental dimension of how Mintzberg (1979, p. 268) theorizes about the environment is, like Thompson, degree of stability. The more stable the environment, the more an organization can predict the future and the more it can standardize its activities. The more dynamic the environment, which means that changes occur unexpectedly, Mintzberg (1979, p. 270) claims, the more organic the structure must be. The second fundamental dimension of Mintzberg´s theory is degree of complexity. Mintzberg (1979, p. 274) actually comments that he is somewhat surprised that Thompson did not include this dimension. Complexities introduce problems of comprehensibility and have an impact on the need for decentralization.(Mintzberg, 1979, p. 276). When complexity increases, it is no longer sufficient to have a genius at the top to control and coordinate actions in the organization. He will be overloaded and the organization will need to decentralize. Mintzberg (1979, p. 286) then combines these two dimensions into a matrix showing four ideal typical types of structure that are suitable in four basic types of environment:

Table 2 Organization structure and environment

	Stable Environment	Dynamic Environment
Complex Environment	Decentralized bureaucratic	Decentralized organic
Simple Environment	Centralized bureaucratic	Centralized organic

A much discussed example in the naval domain is how Admiral Sir John Jellicoe, Commander in Chief of the Royal Navy's Grand Fleet in the First World War, organized his fleet for a possible battle with the German High Sea Fleet. On May 31, 1916 the two fleets met in what has been called the Battle of Jutland, in which 25 ships were sunk and 9000 sailors died (Gordon, 1996, p. 1).

Jellicoe's main approach was to make a plan that covered every contingency for how his fleet, consisting of some 150 large warships, should fight the German High Sea Fleet consisting of 93 capital ships (Gordon, 1996; Potter & Nimitz, 1960). Thus, Jellicoe chose a centralized bureaucratic structure for his battle fleet, a structure that, according to Mintzberg, would be effective in a simple and stable environment, i.e., if the task facing Jellicoe's organization had been predictable and comprehensible. A general example of this organizational logic is Taylorism, where the genius at the top can make a plan that explains who shall do what, when and how.

Jellicoe has been described as an "unexcelled administrator" (Potter & Nimitz, 1960, p. 432) and, based on Churchill's statement that Jellicoe was "the only man on either side that could lose the war in an afternoon" (Gordon, 1996, p. 21), it is certainly understandable that he put all his energy and expertise into making the best plan possible. Jellico would have to answer to the British people for how he managed the fleet in this critical situation and, as Mintzberg (1979, pp. 288-290) hypothesizes, external control is likely to lead to centralization and behavior formalization, since actions must be justified in the aftermath of the action. However, as Gordon (1996) points out, there are considerable potential problems in this way of organizing for naval operations.

First, Gordon (1996) claims that Jellicoe's battle orders had "some fanciful resemblance to a tedious naval board game" (p. 565), that Jellicoe seems to have forgotten that his opponent could not be expected to act according to some predefined rules, and that there was no umpire involved. The contingency Jellicoe had not taken into consideration was that war is "infinitely unpredictable" and that an important, if

not the most important, aspect of a naval force's fighting power is its agility, its ability to respond rapidly to unscripted eventualities (Gordon, 1996, p. 565).

An unpredictable, dynamic environment calls for an organic, adaptable structure. This raises the question of how both adaptability and coordination can be maintained. When the confusion of battle hit the British fleet, Jellicoe tried to maintain control by direct supervision of his fleet. A "ceaseless stream of signals" from his flagship to the other ships in the fleet was necessary to coordinate the movement of his ships and try to adapt to unforeseen events – a process that proved to be too elaborate and failed. (Churchill in Gordon, 1996, p. 566)

A dynamic environment does not exclude a centralized structure, however. In the case where the environment is still simple, and given that coordination is more easily achieved by one brain, it will most likely be effective to keep the executive function centralized and thus achieve flexibility through direct supervision by the commanding officer (Mintzberg, 1979, pp. 275, 286). And, as Gordon states, this is precisely the approach taken by Jellicoe, who tried to run the operation "from one central, and indifferently connected brain".

Using Mintzberg's theory, one explanation for Jellicoe's problems is that he underestimated or ignored the impact a complex environment can have on organizational structure. The degree of complexity affects the possibility of comprehending the environment. The greater the complexity, the more challenging it will be for one individual to cope with all the information that must be perceived, understood, and taken into consideration when making predictions about the future and actionable decisions. Overload is a likely problem, and a need for decentralization arises (Mintzberg, 1979, p. 276).

Depending on the degree of stability, there are two basic ways of structuring an organization in a complex environment. In a stabile environment, it is possible to predict what kind of tasks must be solved, and the question of decentralization concerns how tasks should be solved, i.e., expertise is needed. The organization can thus continue to standardize, but it is a decentralized bureaucratic structure.

Coordination is assured by the standardized training of the experts.[14] The sheer number of ships (243) involved in the battle between the British and German fleets highlights the complexity issue. Even if the events in the battle had played out as planned by Jellicoe and even if Jellicoe was an "unexcelled administrator", he burned himself out making strategic and tactical plans for 150 warships and was overloaded (Gordon, 1996, p. 18).

And the unpredictability aspect complicates matters even more. Jellicoe was facing a complex and dynamic environment. In Mintzberg´s theory, this environment calls for a decentralized and organic structure. It is not enough to decentralize responsibility for comprehending tasks to subordinates, they must also be trusted to respond to unpredictable events, and mutual adjustment becomes the coordinating mechanism (Mintzberg, 1979, p. 286). If, however, subordinates are not trusted to make decisions about when and how they shall respond to unforeseen events, they must ask their commander about each case that deviates from the plan, i.e., a centralized organic structure. Gordon (1996, p. 49) is quite explicit that Jellicoe did not trust his subordinates and therefore tried to keep them on a tight leash. Direct supervision of 150 warships when meeting the enemy was not a manageable task, even for a man like Jellicoe. Another important aspect that is illuminated in the discussion of how Jellicoe organized his fleet is that an organization that has been used to operating under a centralized structure will have difficulties changing to a decentralized structure.

If that were not enough, Mintzberg has two additional environmental dimensions, which are presented as two separate conditions that can be superimposed on the two basic dimensions. The first is diversity, i.e., is there a single kind of output the organization is expected to produce or are different outputs expected? Mintzberg hypothesizes that the more diversity, the greater the propensity to divisionalize. The

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[14] According to the German General Blumentritt, who practiced mission command in the Second World War, such a scheme presupposes a common outlook based upon "a body of professional officers who have received exactly the same training during the long years of peace and with the same tactical education, the same way of thinking, identical speech, hence a body of officers to whom all tactical conceptions were fully clear". (in Boyd, 1986/1991, p. 74)

desired effect of divisionalization is to allow subunits to operate in relatively homogenous environments. However, an important impediment to divisionalization is a critical function or capacity that cannot be segmented (Mintzberg, 1979, p. 278).

The challenge of diversity is an important aspect in Gordon's discussion of the Battle of Jutland. How do you organize 150 ships with relatively big differences to fight a force of 93 ships with relatively big differences? One challenge Jellicoe had to take into consideration was that his fleet was geographically spread, primarily due to the need for homeland protection. This hampered cooperation. Secondly, there is also an internal kind of diversity that is relevant to something as complex as a nation's naval fleet, the ships' capacities. The process of designing, building, and making a capital ship operational is complicated and time-consuming. Therefore, the technological possibilities and capability requirements at the time a warship is built may not perfectly fit the needs of a commander in chief when the time comes for the commander to make use of his force. The main challenge for Jellicoe was that he needed to have his force concentrated in order to be able to fight a concentrated German fleet, while, at the same time, he needed to group his ships, which had different maximum speeds and gunnery capacity, into subunits that could operate effectively together and match possible German subunits.

To Mintzberg (1979, p. 287), an effective way of coordinating when facing diversity is to standardize outputs. While the subunits in the British fleet probably agreed that their general goal was to fight the Germans, there was great disagreement as to how this should be done, about the action principles. And when the battle begun, critical subunits in the British fleet failed to concentrate (Gordon, 1996, pp. 81-101).

Hostility is the final dimension of the environment that is supposed to have an effect on how an organization should be structured in order to perform its mission (1979, p. 269). Mintzberg (1979, p. 281) hypothesizes that any organization will centralize its structure temporarily when faced with hostility. He argues that, in terms of effective coordination, direct supervision is the "fastest and tightest means of control" and it is probably also quite human to look for supervision from a leader in

extreme situations (Hannah, Uhl-Bien, Avolio, & Cavarretta, 2009). As discussed above, Jellicoe planned to meet extreme hostility with a centralized structure.

Mintzberg (1979) then raises a question that is perhaps the essential question when organizing for naval operations: what if the situation is complex and hostile, like the Battle of Jutland? Where complexity demands decentralization, "hostility demands the speed and coordination of a centralized response" (Mintzberg, 1979, p. 282). Mintzberg supposes that, if an organization is forced to choose, it will centralize temporarily in order to survive, and thereby disregard the complexity aspect. What, then, if the hostilities persist?

On this question, Mintzberg (1979) seems to be somewhat discouraged. First, though, in a footnote he speculates that, due to the unpredictable element in an extreme hostile environment, it seems reasonable to expect that an organization will be driven to an organic structure. He had found no evidence to back up that assumption, however (Mintzberg, 1979, p. 281). Then, in the main body of the text, he assumes that an organization that operates in a hostile environment over time – war is explicitly mentioned as an example – will expire when the slack resources expire (Mintzberg, 1979, p. 282). What Mintzberg calls "slack resources" are presumably centralized resources like top management's endurance, since the most effective solution for Mintzberg is to centralize, i.e., to let top management decide what to do. However, Mintzberg also adds, this time in brackets, that organizations whose main task is disaster work are expected to standardize and use a bureaucratic structure (Mintzberg, 1979, p. 309).

What Mintzberg actually identifies in his very brief discussion of organizing in a hostile environment is at the heart of military theory. That the fundamental nature of human conflict is in essence unpredictable, complex, diverse, and hostile seems to be uncontroversial. However, when it comes to the best way to organize, especially as regards whether a centralized or a decentralized structure will be most effective, practitioners and theoreticians are divided (Gordon, 1996; Jacobsen, 1996; Palmer,

2005). Mission command is one way to strike a balance between the need for centralized coordination and agility.

In the quote introducing this section, Reeve claims that the ultimate challenge for navies will be to combine reliability with imagination in their people. It is this combination that the German army, the exemplar of a mission command organization, managed to develop. As Solschenizyn (1971/2000) describes it: "an army which combined two incompatibles – the unmurmuring discipline of the Prussian and the initiative of the nimble-minded European" (p. 99).

1.6 Mintzberg and mission command

> *"Isn't it true the more you practice, the better you get?*
> *Yes, but, and this bears repeating,*
> *the intuitive mastery we are striving for*
> *is not brilliant skill at predictable tasks."*
> *(Richards, 2004, p. 112)*

One way to read the story of the Battle of Jutland is that relying on centralization in a complex, though hostile environment was problematic. From an organization theory perspective, it is tempting to imagine how Jellicoe would have responded to Mintzberg´s discussion of the environmental dimensions and how to coordinate. Would Jellicoe have upheld his belief in a centralized structure?

To rephrase Mintzberg (1979, p. 191), a commanding officer of a Nansen-class vessel has the delicate task of controlling that the different subunits act according to the command aim without restricting their autonomy unduly. The actions taken by the weaponry engineers, machinery engineers, anti-submarine warfare team, the navigating team, the damage control teams, etc. must be coordinated. The navigation team should keep the vessel on a course that ensures the best possible sonar conditions

for the anti-submarine crew, and the damage control team must not turn off the electrical circuit that powers the radar the navigating team uses in fog or the sonar used by the anti-submarine crew etc.

Mintzberg (1979, p. 191) suggests that three coordinating mechanisms are most relevant in situations where an organization has to decentralize in the vertical dimension when subunits have to function "quasi-autonomously": direct supervision, and the standardization of skills and outputs. However, there are (of course) flip sides to the use of all three coordinating mechanisms (Mintzberg, 1979, pp. 191-192). According to Shamir (2011, p. 17), mission command primarily relies on the last two mechanisms. However, Shamir does not elaborate on this and, given the challenges involved in using these mechanisms identified by Mintzberg, a discussion of this subject seems to be in place.

The presentation of the environmental dimensions in the previous section was a somewhat ideal, typical depiction, Few organizations operate in an environment that is uniformly characterized by a single dimension (Mintzberg, 1979, p. 283). Thus, organizations are likely to be selective in how they decentralize and will let subgroups design their structure according to their particular sub-environment (Mintzberg, 1979, p. 287). However, as Mintzberg (1979, p. 190) points out, organizations that decentralize selectively in the vertical dimension will have to use mutual adjustment to a large extent in order to coordinate their activities, which can be costly in a time-competitive environment (Mintzberg, 1979, p. 463).

According to Shamir (2011, p. 17), mission command is a mix of two coordinating mechanisms, the standardization of outputs, which, according to Mintzberg (1979), should be effective in a diverse environment, and the standardization of skills, which should be effective in a complex, predictable environment. This combination of coordinating mechanisms may at first seem like a good match. Both are intended to serve the need for decentralization when the task is too complex to be coordinated by one brain. However, Mintzberg claims that coordinating efforts by combining standardization of skills with standardization of

outputs will in itself be problematic, due to the ill-defined problems that primarily call for highly skilled professionals. Imposing standardization of outputs in order to coordinate workers in a what is basically a professional bureaucracy is therefore expected to be ineffective (Mintzberg, 1979, p. 372).

It is a challenge when planning to use standardization of outputs in this context that it often has the effect of imposing quantifiable performance control systems (Mintzberg, 1979, p. 192). If it is to be possible for the strategic apex to monitor whether subunits actually produce the planned output, it is likely that these outputs will become something quantifiable, even if the problem at hand is not easily quantified. Studies of the management by objectives (MBO) management philosophy have shown that implementation had different effects in different cultures, not only national cultures, but also at the organizational level. If an organization had a culture for micromanagement, MBO would likely be an efficient tool for precisely that, micromanagement (Sjøvold, 2006, p. 202). As Mintzberg hypothesizes, external control will result in behavior formalization. That is, standardization is vulnerable to goal displacement. HNoMS Trondheim (2005) speculates in its report on the pilot project that officers' unwillingness to relinquish control is likely to inhibit the implementation of mission command.

Standardization of output presents the organization with (at least) two additional dilemmas. The first is the planning period. Long periods are likely to weaken the psychological contract the subordinate manager has with the strategic apex, while short planning periods combined with quantifiable goals are likely to mean that subordinates have the output measure on their mind instead of relying on what was the main motivation for using this system in the first place, namely to give subordinates freedom of action (Mintzberg, 1979, p.152). Another especially interesting dilemma in relation to mission command is that, if decentralization actually means decentralization, that is, trusting subordinates' own judgment, what if a subordinate chooses to centralize his own department, what then – is that ok? Moltke the elder emphasized that mission command should permeate the whole organization, from the youngest soldier to the oldest general. Is it at all possible to implement a (mission)

command culture in an organization if it is a culture that is only relevant between managers?

On the other hand, Mintzberg (1979, p. 309) does expect that organizations that specialize in disaster work will develop standardized operating procedures. The main reason he gives is that, even if the environment these organizations operate in may seem dynamic, most of the elements are predictable in the sense that they have been seen before. Consequently, procedures are in place for handling these occurrences. This kind of structure is called contingency bureaucracy, a kind of organization that stands ready to respond quickly to contingencies that have been anticipated (Mintzberg, 1979, p. 332). Based on the argument that, even though the technology has changed, the fundamental nature of naval operations has not changed much since the age of sailing (Reeve, 2003), the logic of standardization should be applicable in a naval context. However, Mintzberg deduces contingency bureaucracy as a hybrid of machine bureaucracy, a structure created for simple tasks, although it is also a structure that is suitable for the standardization of outputs.

An anti-air warfare crew on board a warship knows what to do when a contact is identified as, e.g., a hostile aircraft. Very much is then done according to a detailed standard operating procedure. However, the process of detecting an unidentified contact, making sense of what it is and deciding which procedure to execute *if* it actually is a hostile aircraft is a complex affair – not forgetting the critical time constraint (Barnett, 2009). In the much discussed case in which the American warship USS Vincennes shot down an Iranian airliner in the Persian Gulf during the Iran-Iraq war, the crew had 189 seconds from contact was detected until action had to be taken (Klein, 1998). When complexity increases, it becomes problematic, even impossible, to describe every step a crew member must perform in a detailed procedure, and it must be left to the discretion of the skilled professional instead (Mintzberg, 1979, pp. 249-350).

Professionals use procedures that are well-defined but difficult to learn (Mintzberg, 1979, p. 366). Through years of training at schools or special institutions

and on-the-job-training, formalized skills are learned and the profession's norms inculcated (Mintzberg, 1979, p. 350).[15] Through this kind of training, professionals learn how their main role in the organization should be performed. For example, a Norwegian anti-air warfare officer will have completed a minimum of one year at officer candidate school, three years at the naval academy, months on courses specializing in anti-air warfare and several years of on-the-job-training, where the crew's abilities are evaluated on a regular basis. Thus, personnel in a professional bureaucracy are to a large extent expected to be pre-coordinated.

However, there are (of course) challenges associated with relying on skills as the primary coordination mechanism. One of the most severe of these challenges is probably coordination among the professional themselves (Mintzberg, 1979, p. 372). Mintzberg (1979, p. 372) claims that professionals will resist being directly supervised and will even be likely to see attempts at mutual adjustment as infringements of their professional autonomy. Both these aspects are important in mission command (Richards, 2004). Shamir (2011) can be accused of being somewhat naïve when he claims that standardization of skills will ensure that soldiers will work together "toward common goals across the organizational hierarchy" (p. 17).

An essential precondition for mission command to work is that there is mutual trust and cohesion in the organization, among peers and in the hierarchy (Richards, 2004). Thus, a tendency to not be willing to engage in mutual adjustment must be overcome. When a preplanned response does not fit with reality, as in the Battle of Jutland, sub-commanders must adjust their actions in accordance with what is actually taking place on the scene (Gordon, 1996).

Then there is the direct supervision aspect. In his discussion on how to implement mission command, Richards (2004) claims that micromanagement, like direct supervision, will basically kill mutual trust, and consequently the willingness to

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[15] The Norwegian navy has two kinds of training institutions: general education in the naval profession at the Naval Academy and specialized training for special functions and ships at various training facilities.

take the initiative on which mission command relies. Unless there is a sense of mutual trust in the organization, there is no point in decentralizing by assigning missions. On the other hand, direct supervision does represent the hierarchal logic, the "chain of command" (Shamir, 2011, p. 16). An important question in mission command, as in Mintzberg´s organization theory, is therefore how to ensure that professionals work in accordance with the mission they are given *and* in a decentralized way.

This is where the point of assigning missions in mission command becomes central. In the mission command philosophy, the chain of command attempts to impart its presence by assigning missions with an intention (Shattuck, 2000). It is in this context that Shamir draws on standardization of outputs as one of the two most important coordinating mechanisms in the mission command philosophy. The logic in the mission command philosophy is that specifying a desired output, i.e., the mission, will allow and motivate subordinates to use discretion in how they choose to solve their mission (Norwegian Defence Staff, 2007). On this point, Mintzberg (1979, p. 372) at first seems to agree with Shamir, in that he claims that standardization of outputs will leave the process of deciding how the output should be achieved to the workers' discretion (Mintzberg, 1979, p. 8) Later in the same book, however, Mintzberg (1979, p. 372), as pointed out above, argues that the standardization of outputs will be ineffective in a complex environment, since it will be problematic to define the outputs.

Mintzberg does, however, describe two hybrid structures that seem to be a combination of professional bureaucracy, where standardization of skills is the primary coordination mechanism, and a divisionalized structure, where standardization of outputs is the primary coordinating mechanism. The first is what he calls the "dispersed professional bureaucracy". In this structure, the professionals do their work in remote locations, which puts their loyalty to the test (Mintzberg, 1979, p. 369). Mintzberg uses the Canadian Mounted Police as an example. Once they are sent on a mission to patrol an area, they are on their own. An operational pattern that has much in common with a naval force – once it has put to sea, it is very much on its own as well. To make sure that the Mounted Police officers stay attuned to the organizational

goal, they are "frequently brought back to the central headquarters for a fresh dose of indoctrination" (Mintzberg, 1979, p. 369). A notable example of this aspect is how the icon of professional naval officers, Lord Nelson, prepared his subordinates, called "the band of brothers". "His weeks of consultation and contact with his captains led to success once the battle started, when the darkness and smoke precluded centralized discretion and demanded initiative from his captains." (Knight, 2006, p. 295).

The same logic applies in the hybrid structure Mintzberg (1979, p. 399) calls "socialized divisionalized form". In this structure, only personnel who are thoroughly socialized into the organization and have strong loyalty will be appointed managers. The Norwegian Armed Forces have an internal job market, and it is almost impossible to become a commanding officer without having spent several years in the military. A notable example of this aspect was when Lord Nelson was going to man his fleet for the mission that culminated in the Battle of Trafalgar. When Nelson was given the opportunity to pick who he wanted as commanding officers in his fleet, he replied that he would be satisfied with every officer on the list (Gordon, 1996, p. 158).

The challenge, here, is when something unexpected occurs. What then? According to Mintzberg, organizations, even contingency bureaucracies, must revert to a more organic structure. When the environment is both dynamic and complex, Mintzberg claims that a structure that primarily relies on mutual adjustment, an adhocracy, will be most effective. As he puts it, "there is no other way to fight a war in the jungle" (Mintzberg, 1979, p. 449). The potential problem, though, with this kind of organization is that its internal efficiency is low compared to a bureaucracy; the adhocracy is not drilled in doing ordinary things (Mintzberg, 1979, p. 463). Interestingly, Mintzberg does not explain why efficiency is not that important in jungle warfare.

In the book "Command at Sea", Palmer (2005, p. 16) argues that a decentralized organization "as exemplified by Nelson" will be superior to more centralized systems. The British fleet, under the command of Nelson, conducted operations that were dependent on crews that were highly skilled and disciplined (Knight, 2006).

Interestingly, however, it is not primarily Nelson's abilities as a drill instructor that made him a legend of leadership, but his ability to create what Nelson himself coined the "Band of Brothers" (Knight, 2006, p. 285). Nelson was a believer in delegation, and expected subordinates to use their skills creatively to solve their mission in accordance with his intentions, not at his direction. In order to build the mutual trust necessary for him to delegate and for subordinates to be willing to take initiative, he spent a lot of time discussing with his captains how he envisaged forthcoming battles (The British Ministry of Defence, 2004, pp. 105-106):

Nelson developed what one author has called a consensual style of leadership. His control was based on informality, discussion, and frankness. In Nelson's own words, "the best way to control veteran subordinates [i.e., professionals] was not to try" (Knight, 2006, p. 286). But through informal discussions, Nelson succeeded in establishing a common understanding, a common outlook, by making his intention for the mission understood. Nelson thereby imparted his presence and standardized the output expected of his highly skilled professionals, and could consequently trust them to use their initiative when the unexpected occurred. That is, coordination was achieved without control as in direct supervision. It was Nelson's genius that his subordinates felt secure enough in his trust to exploit unpredicted opportunities (Heyward, 2003, p. 106). This aspect is illustrated in the post-engagement comment from Villeneuve, who commanded the defeated French and Spanish fleet at the Battle of Trafalgar: "In the British Fleet off Cadiz, every captain was a Nelson" (Gordon, 1996, p. 183).

Thus, just as Moltke and his followers managed to cultivate the two seemingly incompatible aspects of discipline and initiative to form an extremely effective organization in the army context (Shamir, 2011), so did Nelson in the naval domain. It was this balance Jellicoe did not find, or believe in, in his fleet when preparing to meet the German fleet in the First World War. Several authors claim that Nelson's way of coordinating his fleet contains important lessons for today's navies (Hayward, 2003; Knight, 2006; The British Ministry of Defence, 2004). And Nelson's leadership style

has been used explicitly to exemplify mission command in the naval domain (Heyward, 2003; The British Ministry of Defence, 2004)

In Mintzberg's theory, it is acknowledged that standardization of outputs can be superimposed on other structures, though primarily on a machine bureaucracy, since it is a highly integrated structure and has operational goals. However, Mintzberg argues that if, and it is a big if, subunits can be made to function as an integrated system, the logic of the divisionalized form can be superimposed on one of the other structures (Mintzberg, 1979, p. 385). A crucial point in institutionalizing mission command is to strike the delicate balance between delegating and micromanagement (The British Ministry of Defence, 2004, p. 112).

By demanding that subordinates act in accordance with the commander's intention (i.e., direct supervision) for a mission (i.e., standardization of outputs), coordination is achieved, and by having subordinates who are both skilled (i.e., standardization of skills) and willing to use their initiative, harmonized agility will be achieved (Richards, 2004). However, without positive support for a decentralized organization in the culture, for example, willingness to take responsibility in uncertain situations, there is a risk that harmonized agility will be replaced by harmonized unwieldiness. This is an aspect that certainly points in the direction of the cultural aspect, and researchers have shown that there are differences among cultures when it comes to variables like dependence, openness, and control (House, Hanges, Javidan, Dorfman, & Gupta, 2004; Nissestad, 2007; Sjøvold, 2006) .

Mintzberg (1979, p. 68) claims that organizational development "inevitably means interfering with established patterns of behaviour". However, Christensen et al. (2007, p. 38) point out that diagnosing culture is challenging, and, as argued above, Mintzberg does not seem to have a very nuanced set of variables with which to assess organizational culture at this level. A fruitful way of complementing Mintzberg's organization theory when discussing the implementation of mission command is through the lenses of implicit leadership theory.

2. Methods

2.1 Study samples

2.1.1 Study 1

The papers reviewed in this study were the 218 papers that, according to *ISI Web of Knowledge* (downloaded August 8, 2011), had cited Doty et al. (1993), and 89 papers and 12 books written by Mintzberg after the publication of the test.

2.1.2 Study 2

The questionnaire was administered to the crews of four Nansen-class frigates (N=385). According to the Norwegian Armed Forces' official website, the total number of crew members on board a Nansen-class vessel is 120 + (www.forsvaret.no, downloaded December 5, 2011). [16] From Frigate 1, 73% of the crew members answered the questionnaire (n=87), which is 23% of the participants in the study. From Frigate 2, 77% of the crew answered (n=92), which is 24% of the participants in the study. From Frigate 3, 86% of the crew answered the questionnaire (n=103), which is 27% of the participants in the study. Finally, from Frigate 4, 86% of the crew answered the questionnaire (n=103), which is 27% of the participants in the study.

Data were collected over a time span. Data from Frigate 2 were collected a year after data from Frigate 1 and data from the third and fourth frigates were collected approximately at the same time, three years later. In addition to the longitudinal time span, each crew had an internal time span due to the training cycles in which new crews are formed, trained, and declared operational on a routine basis. In relation to the internal time span, crews one and two are young in the sense that they have recently started their training cycle, while crews three and four are more mature crews.

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[16] The actual number for a given crew is classified information.

A third temporal aspect is the total number of years the Norwegian frigate service has operated the Nansen-class frigates. If the frigates are ranked by years in service, their order will be Frigate 1, 2, 3 and 4. For reasons of anonymity, the exact number for this variable will not be published. The first Nansen-class frigate put to sea in 2004.

2.1.3 Study 3

The participants in this study were the crew members from Frigates 3 and 4 used in Study 2 (n=206). The reason for choosing those two frigates was that they had participated in much more complex and extensive naval exercises than Frigate 1 and Frigate 2, and that their crews were more mature. In addition to the crew members, four Norwegian experts on mission command were asked to rate an ideal profile to be used as a template in order to obtain deviation scores. Three of the four experts had a naval background.

2.2 Procedure

The study was approved by the commanding officer of the Royal Norwegian Frigate Service and the Royal Norwegian Naval Academy. The study was reported to Norwegian Social Science Data Service and ethical aspects were discussed. Collecting data about individual crew members' perceptions of their workplace entails an ethical aspect, most importantly that data can be used against the employees (Cummings & Worley, 2009, p. 62). In order for the respondents to able to give informed consent, several briefings were held about the research project and one of the researchers was on board on several occasions and available for any questions. Finally, each questionnaire started with a text informing the respondents about the project and how the data would be used, and promising anonymity. The questionnaire also included a question requesting the respondent to give explicit written consent to participation, or not. Some crew members responded that they would not participate, which could

indicate that asking for consent had the desired effect. On one occasion, the commanding officer of a vessel decided that no one from his crew should participate in the study, an indication that there was little or no external pressure to participate. The data were converted to SPSS and Microsoft Excel for analysis.

2.3 Materials

This study uses measures of (1) Mintzberg's design and contextual configurations, (2) effectiveness (3) leadership behavior (i.e., mission command), and (4) task uncertainty

2.3.1 Measuring Mintzberg's design and contextual configurations

The questionnaire used in this study to collect data on how the crew members of the frigates perceive the design of the organization and the context they work in is based on the questionnaire used by Doty et al. (1993). However, due to differences in the research design, it was found necessary to make three modifications to the original questionnaire. First, Doty et al. used top managers of the organizations in their sample as informants about their respective organizations' design and context. Due to the individual-level approach in this study, it was decided to reformulate the questions from being general questions about the organization "To what extent is your organization currently characterized by…" to asking the respondents about their respective job situation, for instance, "To what extent must you comply with written rules…"). Second, as emphasized by Cummings and Worley (2009, p. 126), it is important to formulate questions that are adapted to the specific kind of organization in question and the jargon used. For instance, naval vessels are not responsible for hiring their own personnel, and neither do they have customers or clients. Questions were translated into Norwegian by the author and a professor who teaches organizational theory at the Royal Norwegian Naval Academy. A pilot was

administered to four experienced Norwegian navy frigate officers, who were asked to review the questionnaire for unclear formulations and questions that were irrelevant in the frigate context.

2.3.2 Deviation analysis

Both Study 2 and Study 3 rely on assessing the similarity between a complex empirical entity and one or more multivariate ideal types. The method used for measuring the degree of similarity in this study is Doty et al.'s (1993) acclaimed method for calculating the deviation between a multivariate profile of an empirical object and multivariate ideal types (Fiss, 2011). Deviation scores were calculated using the following formula (Doty et al., 1993, p. 1248):

$$\text{Dio} = \sqrt{(X_i - X_0)W(X_i - X_0)^T}$$

where

Dio = the distance between ideal type i and empirical case o,

Xi = a 1 x j vector that represents the value of ideal type i on attribute j,

Xo = a 1 x j vector that represents the value of empirical case o on attribute j

and

W = a j x j diagonal matrix that represents the theoretical importance of attribute j to ideal type i.

Thus, the smaller the value of D_{io}, that is the measured deviation, the more the empirical object resembles the ideal type. Doty et al. (1993, p. 2012) suggest using expert raters to determine the profile of the ideal type. In Study 2, the ideal type

profiles of Mintzberg's configurations developed by Doty et al. (1993, p. 1213) were used. The inter-rater reliability using intra-class correlation (ICC) = .6 to 1.0. For Study 3, a template of mission command was developed based on the ratings from four experts on mission command. The inter-rater reliability using ICC = .96.

In Study 2, it was necessary to use a weighting matrix to correct for the different number of items used to measure two of the variables (Doty et al., 1993, p. 1214). Each of these items was weighted with a factor of .5, so that the variable in total received a factor of 1. It was also necessary to calculate different deviation scores due to the different conceptualizations of fit in Mintzberg's theory, that is, ideal types fit, contingent ideal types fit, and contingent hybrid type fit. The different versions of fit were calculated according to formulas developed by Doty et al. (Doty et al., 1993, pp. 1248-1250).

2.3.3 Leadership behavior

Leadership behavior was measured using the Systematizing the Person-Group Relationship (SPGR) instrument (Sjøvold, 2006, 2013). This instrument has been used for more than 30 years, and it has been used systematically for more than ten years to provide feedback to cadets at the Royal Norwegian Naval Academy on their leadership behavior (Nissestad, 2007; Norwegian Naval Academy, 2009). The SPGR questionnaire consists of 24 items that are rated on a three-point rating scale (rarely, sometimes, often). In SPGR, behavior is described along three basic dimensions labeled: Control – Nurture (C – N), Opposition – Dependence (O-D), and Withdrawal – Synergy (W – S). SPGR offers different behavioral reports. In this study, behavior is analyzed along 12 vectors, two for each of the basic dimensions (i.e., C1, C2, N1, N2, etc.) (Sjøvold, 2006). The minimum value on each of the vectors is zero and the maximum value is nine. Cronbach's alpha for SPGR items in the instrument was between .75 and .88 and the inter-rater reliability is .98 (Sjøvold, 2013).

2.3.4 Task uncertainty

Task uncertainty was measured using nine single items, which the respondents were asked to rate on a 5- point Likert scale. The questions were:

…do you have to take many different factors into consideration?

…do you have to take new factors into consideration?

…do you have to make independent decisions quickly?

…can misjudgements have severe consequences?

…would you characterize your tasks as simple or complex?

…is information lacking when you have to perform your tasks?

…do you lack immediate feedback on the effect of executed tasks?

…is it difficult to predict the effect of executed tasks?

…do you perform tasks according to standard procedures?

3. Results

3.1 Study 1

In this study, published works that cite Doty at al. (1993) and all works by Mintzberg published after Doty et al. were reviewed in order to find discussions of the validity of Mintzberg's configuration theory. Was there consensus on the validity question? Were there any suggestions to modify Mintzberg's theory? Were there any discussions of the methodology Doty et al. used to test the theory?

The 322 items of research that were reviewed in this study revealed no attempts to correct Mintzberg's theory based on the anomalies suggested by Doty et al., nor any discussions of the methodology the test was based on. Mintzberg has not responded to the test in any of his works, which was also confirmed in a personal email. However, Mintzberg has presented a revision of his own theory, although the revised version remains untested.

Given that inter-subjective agreement is the most reliable tool for determining validity in the social sciences, it would be rather difficult to draw a definite conclusion concerning the degree of consensus on the validity of Mintzberg's configuration theory, unless the test were exhaustive and the lack of discussion could be interpreted as agreement with Doty et al.'s claim of invalidity.

The study then discusses how this result should be interpreted. Should the test be regarded as exhaustive? Should silence be interpreted as agreement with Doty et al.? The discussion concludes that the exhaustiveness of the test is *not* beyond reasonable doubt and it is *not* proved beyond reasonable doubt that silence should be interpreted as agreement. The study suggests that the process of establishing a status for the degree of consensus on the validity of Mintzberg's theory should continue.

3.2 Study 2

This study picked up the gauntlet thrown down by Doty et al. (1993) and tested Mintzberg's configuration theory, based on Doty et al.'s method and hypothesis, against new empirical data. Data on organizational design and context were collected from all organizational participants in four identical organizations, the Norwegian Nansen-class frigates (n = 385).

In contrast to Doty et al., who found no support for any of the hypotheses that were tested, in this study five of the seven tests pointed in the direction prescribed in the hypothesis derived from Mintzberg's theory. As expected, there is a positive relationship between how long the Norwegian Navy has operated the Nansen-class frigates and the number of crew members who work in a design configuration that corresponds to the contextual configuration. This can be interpreted as the result of learning. Over time the organization design will align with a design that is appropriate in the given context. And, as expected, a positive correlation was found between the degree of fit between the empirical organization and configuration and effectiveness for all four variations of fit. Most noticeable was the significant result for the job satisfaction aspect of effectiveness.

Seen as a test of Mintzberg's theory, the main conclusion in this study is that it is difficult to discard the results that point in the direction predicted in the hypotheses. Thus, it may be somewhat premature to claim that Mintzberg's typology and theory are invalid as Doty et al. do. Researchers have pointed to the subjective and interpretable space between the empirical world and theoretical statement. In the social world, the question of validity is probably characterized by shades of grey.

Looking beyond the testing of hypotheses part, this study reveals that, by approaching the organization at the individual level, it becomes quite clear that there are different perceptions of the organizational design and context among crew members. Given that an important part of a manager's job is organizational design, the results of this study indicate that a manager should be very attentive to possible differences in perceptions of the actual organizational design.

The study concluded that it would be fruitful to continue exploring organizations at the individual level using Mintzberg's configurations.

3.3 Study 3

The purpose of the third study was to explore whether there might be a possible mismatch between crew members' basic assumptions and the mission command philosophy. The study demonstrated that crew members did not appreciate mission command in situations where it was supposed to be relevant. The study revealed that the items used to measure uncertainty made a significant contribution to predicting the deviation between how the leaders most appreciated by the crew members behaved and mission command behavior. The two items that made the strongest contribution were "lack of information" and "make independent decisions quickly". This is consistent with the main rationale for mission command: the realization that certainty is a product of time and information and that, in a competitive environment, time will be limited; you have to make do with less information in order to save time. However, the directions of the relationships were the opposite of what was expected. The higher the level of perceived task uncertainty, the more crew members' description of best leader deviated from the mission command norm.

The study suggested two possible explanations: 1) mission command is not relevant on board Nansen-class frigates, 2) even if mission command is the official norm for leadership in the Norwegian Armed Forces and perhaps the exemplar of effective military leadership in modern history, it is not given that leaders acting according to the norm will be appreciated. Mission command is most likely something that must be learned in order to be liked.

4. Conclusion

So how do you organize a warship for naval operations? The purpose of this dissertation was to diagnose important aspects of the organizational challenges facing the Norwegian Nansen-class frigates. Crew development, or more general organizational development, can be seen as a process of raising awareness of patterns of interaction, where someone inside or outside the organization must see the potential for further development (Sjøvold, 2006). It must be possible to conduct an organizational diagnosis, that is, to assess the current functioning of the organization, in order to discover areas for future development (Cummings & Worley, 2009, p. 88). After all, a basic premise in an organizational development process is that effective interventions in organizations must be based on valid information that must fairly reflect what organizational members actually perceive (Cummings & Worley, 2009, p. 151).

Mintzberg (1979, p. vi) claims that, in the right hands, a good descriptive theory is a powerful prescriptive tool. The first of the papers in this study concludes that the exhaustiveness of Doty et al.'s claim that Mintzberg's configuration theory is invalid should be questioned, and neither does there seem to be consensus among researchers that Mintzberg's theory is invalid. However, that is not the same, of course, as there being consensus on the validity of the theory. Thus, in the second paper in this study, Mintzberg's theory was retested based on Doty et al.'s method in the context the theory is intended to be used. In five of the seven hypotheses tested in this study, the results are consistent with Mintzberg's theory, which is a second challenge as regards the conclusiveness of Doty et al.'s test. Seen in combination with Krabberød's (2002) conclusion, based on qualitative data, that Mintzberg's configuration theory would be fruitful as a tool for organizational analysis on board the Oslo-class frigates, Doty et al.'s conclusion that Mintzberg's configuration theory is invalid seems to be rather too conclusive. On the contrary, based on the studies presented here and the theoretical discussion in this introductory paper, it would appear to be fruitful to continue to

explore Mintzberg's theory in future analyses of the organization on board the Nansen-class vessels.

For a nation that has participated in naval operations since the Viking age, the Norwegian Navy could perhaps be expected to have learned all there is to learn about organizing warships. As one writer claims, "Key elements of the experience of naval warfare have hardly changed since the days of Nelson, even in the area of missile warfare." (Reeve, 2003, p. 13) But experience can blind and officers have often been accused of having a recurring tendency to prepare for the last war (Murray, 2011). Nor is there any guarantee that an organization that has been effective for a prolonged period of time automatically continues to be effective. Even the Royal Navy showed substantial operational decay after the days of Lord Nelson and until the First World War (Gordon, 1996). Thus, having a quantitative tool for effective organizational diagnosis would be fruitful for the frigate service in its future work on developing effective crews.

The third study in this dissertation indicates that mission command may challenge crew members' implicit leadership theories. Mission command is based on willingness to take responsibility and act in uncertain situations, which may be at odds with people's basic assumptions (Schmittt & Klein, 1996). Mission command also requires loyalty and discipline, concepts that may be at odds with what is currently fashionable (Jacobsen, 2005). Mission command is not a laissez faire leadership philosophy, where people can do what they want. On the contrary, subordinates are expected to use all their knowledge and all their creativity to solve the mission they are given in accordance with their commander's intention (Norwegian Naval Academy, 2009, p. 49). With reference to the popular axiom that "seeing is believing", however, Weick and Sutcliffe (2001) suggest that it would be more correct to say that "believing is seeing. You see what you expect to see. You see what you have labels to see." (p. 46). Ten years as a teacher at the Norwegian Naval Academy have made me realize how complicated the process of understanding, not to mention implementing, mission command is. Mission command probably has to be learned in order to be liked.

The dissertation started with a quote from Sun Tzu, emphasizing the importance of the military. John Boyd, claimed by some to be the greatest military theorist since Sun Tzu (Coram, 2002, p. 445; Osinga, 2007, p. 3), had the following mantra: "People, ideas, and things, in that order!" (Wilcox, 2012, p. 1). His impression was that there was a conspicuous tendency among officers to prioritize the other way around: hardware, ideas, and people (Coram, 2002). The point was that it is "Humans that fight wars. You must get into the minds of humans, That's where the battles are won." (Hammond, 2001, p. 123) Authors seem to agree that Boyd's general claim that people matter most also has relevance to the navy (Barnett, 2009; Espevik, 2011; Spector, 2001). It has been claimed, however, that naval officers are to a great extent technocrats and that the importance of the human factor has been understood in terms of tradition rather than theoretical precepts (Reeve, 2003, p. 5). The lack of discussion of the relevance of mission command in the Norwegian naval doctrine and the lack of an explicit strategy for implementing the concept may be an indication that the statement is also valid in a Norwegian context. This study has shown that there may be a potential to make better use of mission command on board. Thus, the frigate service would probably benefit if the crew members' implicit leadership theories were explicitly challenged as part of crews' operational training. According to van Creveld (1985), the most essential of the measures the Prussians implemented to deal with the confusion of the battlefield "was purely mental, namely a willingness to recognize the problem and a determination to solve it" (p. 144).

In a review paper on the history of organizational development, it is claimed that the field "has been driven by the twin forces of academic rigor and practical relevance" (Burnes & Cooke, 2012, p. 1396). Ideas about organizational change are often abstract and general and must therefore be operationalized and adjusted to fit the specific organizational context (Jacobsen, 2004, p. 152). This study has hopefully presented some academic pointers about the interplay between context, leaders, and followers that can be used in diagnosing the organization on board the Nansen-class frigates. I leave it to that icon of the Norwegian naval profession, Admiral Tordenskiold, to present my final thought on the implementation of mission command on board:

"What the hell are you hesitating for?!"

[Vad fanden nøler I efter?!]

Source of data

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Standing on the Shoulders of Giants? Exploring Consensus on the Validity Status of Mintzberg's Configuration Theory After a Negative Test

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Abstract

This paper explores the degree of consensus on the validity status of Mintzberg's (1979) configuration theory following a test in which the theory was refuted (Doty, Glick and Huber 1993:1241). The 218 articles that have cited the award-winning paper by Doty, Glick and Huber (1993), and 89 papers and 12 books published by Mintzberg after the test, are reviewed. None of the reviewed articles contained any discussion about the implications for Mintzberg's theory. It is then discussed whether the test was exhaustive and whether the lack of debate should be interpreted as tacit agreement with Doty, Glick and Huber (1993). Normative aspects of a silent research community are also discussed. It is argued that it has not been proved beyond reasonable doubt that the test is exhaustive, and that there are sociological explanations for the lack of debate other than "silence implies agreement". Finally, it is argued that it would have been fruitful if the test had stirred debate.

Keywords: Mintzberg, configuration theory, test, validity

'Ours is not a field that systematically builds and acknowledges foundational contributions.
Instead, usually we move on or simply forget and later reinvent'
(Greenwood & Meyer, 2008, p. 258)

This paper explores the degree of consensus on the validity status of Mintzberg's (1979) configuration theory following a test in which the theory was refuted (Doty, Glick & Huber, 1993). The motivation for this was a practical question: how to organize a battleship. Following the statement "nothing is as practical as a good theory" (Lewin, 1945, p.129), the search for a good theory about designing an organization began. Of the countless theories to choose from (Cummings & Worley, 2009), Mintzberg's theory on the structuring of organizations is one of the most acclaimed (e.g. Fiss, 2011; Groth, 2012; Pollitt, 2005). It is described by one author as a "monument" in organizational design research (Nesheim, 2010, p. 66). However, several organizational researchers have referred to the somewhat paradoxical situation that, while Mintzberg's theory enjoys widespread popularity, there are surprisingly few studies in which the theory has been tested as a representation of organizational reality (Donaldson, 1996; Doty et al., 1993; Meyer, Tsui & Hinings, 1993; Miller, 1996; Strand, 2007). Given that testing is an important part of the theory development process (McKinley, 2010), there should be great interest in testing this popular theory. In 1993, Doty et al. (1993) won the *Academy of Management Journal's* article of the year award for the article "Fit, Equifinality, and Organizatinal-Effectiveness - A Test of 2 Configurational Theories". The article was recently described as one of the "most influential and path breacking studies" (Fiss, 2011, p. 402). The configurational theories tested in Doty et al. were Mintzberg's theory and Miles and Snow's theory (1978). While Miles & Snow received support in the test, Mintzberg did not. Doty et al. (1993) rather unexpectedly concluded that "until other researches can provide empirical support for Mintzberg's work, we are unable to conclude that either the typology or the theory is valid" (p. 1243). According to several authors, positivist inspired research is (still) the governing norm in the social sciences and organization theory (e.g. Alexander, 1982; Bailey, 1992; Bort & Kieser, 2011; Flyvbjerg, 2006). Thus, one would expect that a negative test of Mintzberg's theory would stir debate in the research community and, consequently, lead to a consensus on a corrected version or a replacement theory. As Mintzberg (1989) himself puts it, anomalies should be cherished. Strong voices have argued, however, that the research community may not be as organized as the image of researchers as a community of puzzle solvers might indicate.

According to some authors, the community is fragmented (e.g. Scott, 2003), fashion is an important norm (Bort & Kieser, 2011), and the development of new theory has become an end in itself (McKinley, 2010). Schwarz, Clegg, Cummings, Donaldson, & Miner (2007) polemically ask whether researchers "see 'dead' themes and paradigms without realizing that they are moribund ?". A review of the 218 articles that, according to *Thomson Reuters Web of Knowledge (2011),* cite Doty et al. (1993) and of the works published by Mintzberg after the test should provide interesting material for exploring the degree of consensus on the validity status of Mintzberg's theory. Is Mintzberg's theory still considered to be "a good theory"? How has the test been received by the research community during the almost 20 years since its publication? Has the anomaly been cherished?

The basic argument in Mintzberg's organizational configuration theory

According to Doty et al. (1993), Mintzberg's configuration theory consists of two parts. It provides a rich *typology* for describing organizational and contingency factors. The typology consists of five configurations – Mintzberg underscores that the configurations are pure or ideal types labeled Simple, Machine, Professional, Diversified, and Innovative configuration. This limited number of configurations is supposed to be sufficient to classify any organization.[1] These configurations or ideal types form the boundaries of a pentagon within which real structures can be found (Mintzberg, 1979). It is also a *theory* that proposes that organizational effectiveness can be predicted by the degree of similarity between a real organization and one or more of the configurations identified in the typology. In a given context, one of the organizational configurations is predicted to be more effective than the others. For instance, if an organization is to operate effectively in a machine context, it should be designed as a machine structure.

Testing Mintzberg's configuration theory – the Doty et al. study

Doty et al.'s (1993) motivation for testing Mintzberg's configuration theory came from what they saw as a somewhat paradoxical situation: "few theories have received so much attention in management textbooks and organizational science journals with such meager empirical support." (p. 1197). In order to test the theory, Doty et al. (1993) proposed three logical steps for developing testable quantitative models.

First, the organizational configurations identified in the theory must be conceptualized and modeled as ideal types. Being ideal types, it is expected that there will be deviation between a given organization and the configurations. It is therefore necessary to construct a method to measure this deviation. Given the complexity of the configurations, Doty et al. (1993) argue that measuring deviation will require a multivariate profile analysis. They use 15 variables to create a profile of organizational design configurations and six variables to create a profile of the organizational context. A panel of experts on Mintzberg's theory was asked to score each ideal type configuration on the identified variables.

The average result from the experts ratings was used as a template for calculating the deviation between a real organization and the different ideal types, based on the following formula (Doty et al., 1993, p. 1248):

$$D_{io} = \sqrt{(X_i - X_0)W(X_i - X_0)^T}$$

where

D_{io} = the distance between ideal type i and organization o,

X_i = a 1 x j vector that represents the value of ideal type i on attribute j,

X_o = a 1 x j vector that represents the value of organization o on attribute j

and

W = a j x j diagonal matrix that represents the theoretical importance of attribute j to ideal type i.

Secondly, a model of fit must be developed that is consistent with the fit assertions in the theory. The purpose of measuring fit is to be able to test the assumption in configuration theory that, the better the fit among the contextual and structural factors, the more effective the organization is predicted to be. Doty et al. (1993) measure fit as the deviation between the ideal type profile of the different configurations stated in the theory and a given organization. Hence, the smaller the deviation calculated using the above formula between an organization and an ideal type, the better the fit.

The third and final step consists of modeling equifinality. Equifinality means that an organization can reach the same level of effectiveness from different initial conditions and by a

variety of paths (Doty et al., 1993). Since most configurational theories identify multiple effective ideal types of organizations, the assumption of equifinality must be interpreted and integrated with the model of fit (Doty et al., 1993). In Mintzberg's theory, all of the configurations are said to be maximally effective. The degree of effectiveness is dependent on context, however. To Doty et al. (1993, pp. 1202-1205), the question is how to identify constraints on the ideal types that an organization can adapt in order to be effective. They presented four kinds of restrictions or models of fit and equifinality:

Ideal types fit, implying that "an organization will be effective if it closely resembles any one of the ideal types in the theory."

Contingent ideal type fit, implying that "an organization must mimic the one ideal type that is most congruent with the contingencies facing it" to be effective.

Contingent hybrid types fit, implying that there are an infinite number of hybrid contexts paired with an infinite number of hybrid designs, but the one hybrid type that an organization must mimic to remain effective is determined by the unique contingencies that the organization faces.

Hybrid types fit is the least restrictive model and implies that "an organization is free to mimic any hybrid of the initial ideal types and remain effective."

The models as simultaneous processes means that the four above-mentioned models are used in combination.

Based on these models, seven hypotheses were derived to test Mintzberg's topology and theory on data collected from top executives in a sample of 128 organizations from various US industries. In order to control for the possibility that, at any given time, an organization's design will be related to its context at some earlier time, data were collected twice from the same organizations at a one-year interval; 85 organizations responded the second time (Doty et al., 1993).

Hypotheses and results in Doty et al.

Testing Mintzberg's typology

The first hypothesis derived to test Mintzberg's typology proposed that "Each of Mintzberg's five ideal-type configurations will be associated with a unique contextual

configuration." (Doty et al., 1993, p. 1207). The null hypothesis of independence between the organizational designs and contexts was not rejected (Doty et al., 1993, p. 1218). A second hypothesis was tested in order to control for the possibility that there may be a time lag between changes in an organization's context and organizational design: "Each of the five design configurations measured at time 2 will be associated with a unique contextual configuration measured at time 1." (Doty et al., 1993, p. 1208). The null hypothesis of independence was not refuted this time either (Doty et al., 1993, p. 1218).

Testing Mintzberg's theory

Mintzberg's work is not only an attempt to classify organizations. As pointed out by Doty et al. (1993, p. 1207) Mintzberg is concerned with *effective* organizational forms. Thus, Doty et al. (1993) proposed that the reason the relationships expected in the previous hypothesis were not found might be due to ineffectiveness. Doty et al. therefore derived hypotheses to test aspects of Mintzberg's propositions about the relations between organization, context and effectiveness, i.e. Mintzberg's theory.

First, Doty et al. (1993) hypothesize that "An organization with the correct paring between its design and contextual configuration will be more effective than an organization with an incorrect design-context paring." (p. 1207). T-tests were used to explore whether there was a significant difference in effectiveness between the group of organizations that had adopted designs which, according to Doty et al.'s interpretation of Mintzberg's theory, should be appropriate to the context. The t-tests revealed no significant differences between the two groups. Thus the hypothesis was not supported (Doty et al., 1993, p. 1218).

The next step in Doty et al.'s (1993) analysis was to test the assumption in Mintzberg's theory that 'effective structuring requires an internal consistency among the design factors' (p. 1208). The hypothesis was formulated as: "The greater an organization's ideal types fit, the greater the organization's effectiveness." (Doty et al., 1993, p. 1208). None of the ten correlations between the measures of ideal type fit and effectiveness was significant. This hypothesis was thereby not supported. However, as with the test of Mintzberg's typology, there may be a time lag between adopted organizational design and effectiveness. Hence, the measures of ideal type fit at Time 1 were correlated with measures of effectiveness at Time 2. This time, one of ten correlations, the efficiency measure of effectiveness, was significant but

small. Doty et al. (1993, p. 1220) concluded that the longitudinal version of the hypothesis was not supported either.

As pointed out, however, Mintzberg supposes a relation between context, organization and effectiveness. Doty et al. (1993) therefore hypnotized that "The greater an organization's contingent ideal types fit, the greater the organization's effectiveness." (p. 1209). In this test, they found two of ten significant correlations. The direction of both these correlations was the opposite of the predicted direction, however. The longitudinal version of the test revealed no significant correlations. Thus, this hypothesis was not supported (Doty et al., 1993, p. 1220).

Mintzberg theorizes that organizations often function in a world of conflicting contingencies and that, as a result, hybrid types can be expected to be effective. Doty et al. (1993) formulated the following hypothesis to test that assumption: "The greater an organization's contingent hybrid types fit, the greater the organization's effectiveness." (p. 1209). As with the test of the previous hypothesis, this test returned two significant correlations, but, again, in the opposite direction to that predicted. Neither of the correlations in the longitudinal version was significant. Thus, this hypothesis was not supported (Doty et al., 1993, p. 1221).

Finally, Doty et al. (1993) tested the possibility that the different models of fit represent simultaneous processes rather than mutually exclusive ones, and hypothesized that "The greater an organization's ideal types, contingent ideal types and contingent hybrid types fit, the greater the organization's effectiveness." (p. 1209). To test this hypothesis, the canonical correlation between the three measures of fit and the five measures of effectiveness was calculated. None of the cross-sectional or longitudinal correlations was significant. Thus, this hypothesis was not supported (Doty et al., 1993, p. 1222).

Given the popularity and intuitive appeal of Mintzberg's configuration theory, Doty et al. decided to test an alternative configurational theory. The results of the second test provided support for Miles & Snow's (1978) theory. Doty et al. (1993) argue that the support found for the alternative theory using the same methodology, and with the same respondents in the same organizations, is an indication of the validity of their test methodology.

Doty et al. (1993) concluded that "until other researchers can provide empirical support for Mintzberg's work, we are unable to conclude that either the typology or the theory is valid" (p. 1243). At the very least, they hoped that the results they presented would stimulate some

revisions of Mintzberg's theory (Doty et al., 1993). That expectation will be explored in the next section.

Exploring the degree of consensus on the validity status of Mintzberg's configuration theory

In order to explore the degree of consensus on the validity status of Mintzberg's configuration theory, *Thomson Reuters Web of Knowledge* was used to find research referring to Doty et al.'s test. The search turned up 218 references. The 218 articles were then searched for references to Mintzberg's work on configuration theory. That search returned 41 articles that will be studied in this section to see whether and how the result was discussed.

The research community; observing the negative test of Mintzberg

The negative result with regard to Mintzberg's configuration theory was mentioned in five articles (Gresov & Drazin, 1997; Miller, 1996; Pagell & Krause, 2002; Peng Tan, & Tong, 2004; Sinha & Van de Ven, 2005). However, none of the papers included a discussion of the implications for Mintzberg's theory. The first of these papers chronologically was written by one of Mintzberg's former colleagues at McGill university, Danny Miller (1996). After having described Mintzberg's typology as an exemplary one – in contrast to many others that "appear thin and arbitrary", Miller (1996) comments that is "unfortunate that many typologies are never tested empirically, and those that are fail usually to be borne out (Doty et al. 1993)" (p. 506). In a footnote to the quoted statement, Miller explains that this is partly due to great variance in approaches to testing the typologies. Studies use different variables, operationalizations and samples. Moreover, conflicting results are seldom resolved due to the lack of cumulative work. In the next paragraph in the paper, Miller continues to use Mintzberg as an example of "good typologies" without further discussion of Doty et al.

Gresov & Drazin (1997) write that: "The authors [Doty et al.] tested four different fit models, of which two were contingent and two equifinal, using first the typology elaborated by Mintzberg (1979) … none of the fit models was supported for the Mintzberg model." After that, no more space is devoted to the Mintzberg theory. But Gresov & Drazin (1997) do give attention to the results of the Miles & Snow test. In light of Doty et al.'s argumentation that, having found support for Miles & Snow's theory using the same method as in the negative test

of Mintzberg's theory as an indication of validity of their method, it is relevant to mention that, according to Gresov & Drazin (1997) "Researchers can now use this methodology, and creative variations of it, to test fit-performance predictions for theoretically derived theories." (p. 423). There are no explicit references to Mintzberg's theory in this last quote, but, given the general formulation of the statement, it seems reasonable to interpret it as providing support for the methodology Doty et al. used to test Mintzberg's theory as well. Consequently, it can be interpreted as support for Doty et al.'s results (i.e., it is Mintzberg's theory that is invalid, not the methodology used to test the theory). On the other hand, the test also depends on valid operationalization of Mintzberg's theory, which is not discussed.

Pagell & Krause (2002) mention the result in a review of the literature examining external fit and performance. They observe that Doty et al. found that organizations that correspond to one of Miles & Snow's ideal types did have enhanced performance, while Mintzberg's typology did not distinguish between high and low performing organizations. Pagell & Krause (2002) do not elaborate on this issue, however. Peng, Tan & Tong (2004) comment that, since the Mintzberg typology does not hold up as well as the Miles & Snow typology in the test by Doty et al., they decided to build their analysis on Miles & Snow's typology. Finally, Sinha & Van de Ven (2005) also comment that Doty et al. in a "pioneering study […] found no evidence for Mintzberg model" (p. 397). And, like Greshov & Drazin (1997), Sinha & Van de Ven (2005) claim that Doty et al.'s method for modeling ideal types is "useful and appropriate for testing theoretical configurations" (p. 397). Sinha & Van de Ven (2005) do raise a few questions concerning the methodology (e.g., how new configurations can be discovered). These are general questions, however, and not directed explicitly at the test of Mintzberg.

The research community; using Mintzberg's theory analytically and referring to Doty et al. in the same paper without commenting on the test

In four of the 42 papers, the authors have chosen to use Mintzberg's theory as an important analytical tool in their analysis without commenting on the results from Doty et al., even though they use Doty et al. as a reference in the paper. The first of these chronologically is Johnston & Yetton (1996), who identified three fit typologies that could be utilized in their analysis: Burns & Stalker (1961), Miles & Snow (1978), and Mintzberg (1979). They selected

Mintzberg "because it provides a more richly detailed and sophisticated treatment of ideal type organizational forms" (Johnston & Yetton 1996, p. 195). Since Johnston & Yetton (1996) use Doty et al. to document the claim that organizations resembling an ideal type configuration are hypothesized to be more effective, it seems reasonable to expect a comment on Doty et al.'s test of Miles & Snow, and Mintzberg.

However, Doty et al. neither actually test nor discuss the validity of Mintzberg's classification of organizational forms. What they tested and found unsupported was a hypothesis suggesting that each of the ideal typical organizational forms will be associated with a unique contextual configuration (Doty et al., 1993), and the classification of both organizational forms and contexts was based on a template derived by Doty et al, not by Mintzberg. Johnston & Yetton (1996) found that each of the two IT organizations they analyzed turned out to be close to one of the ideal types. One organization resembled the machine and the other the divisionalized configuration. They concluded that their study demonstrated the importance of configurational analysis (Johnston & Yetton, 1996), an analysis that was based on Mintzberg's typology. However, they do not discuss how their result might supplement or compete with Doty et al.'s result.

In a paper on using configurations as a theoretical approach to studying health service organizations, Reeves, Duncan & Ginter (2003) use a reference to Doty et al. in the introduction to their paper to support a claim that, as organizations and environments increase in complexity, it becomes more difficult for the organizations to decide how to achieve fit with the environment. Reeves, Duncan & Ginter (2003) draw upon Mintzberg's configurations in support of their own taxonomy. In the discussion section, they claim that Mintzberg's "theoretical work is supported, but as would be expected, not duplicated in this study of health care organizations." (Reeves, Duncan & Ginter, 2003, p. 40).Why the authors do not use this opportunity to discuss Doty et al.'s unsupportive results remains unanswered.

In order to develop a theoretical model for studying management accounting systems, Gerdin (2005) leans quite extensively on Mintzberg's work, for example to develop an organizational structure variable he calls "The Simple Unit". Mintzberg was also used in support when Gerdin (2005) looked for possible explanations for results that did not conform with prior research on management accounting systems (MAS): "Contrary to expectations, Rudimentary MASs were somewhat overrepresented. However, the concept of equifinality may help to

explain this finding […] Mintzberg (1983, p. 7) argued that" (p. 118). And in the conclusion, Doty et al. are used as an example of researchers who have "explicitly taken up the concept of equifinality in their empirical work." (Gerdin, 2005, p. 120). Gerdin does not comment on Doty et al.'s empirical work on Mintzberg, however.

In a discussion on the implementation of information systems in hospitals, Lapointe & Rivard (2007) present an analytical model covering the individual, group and organizational levels. Lapointe & Rivard (2007) state that predictions based on the template they use at the organization level are not fully developed, but they write, "it is strongly grounded in theory because it is derived from Mintzberg's model of configurations (OC) (1979, 1980), which has been extensively used since its publication (Doty et al. 1993)" (p. 91). Doty et al. (1993, pp. 1196-1197) do write that Mintzberg's theory has been extensively used, but they also emphasize that few theories have received so much attention with such meager empirical support, and that Mintzberg's theory is invalid.

That said, extensive use might perhaps be as good an indication of the usefulness of a theory in the social sciences as a quantitative test. In addition, Doty et al. tested the ability of Mintzberg's theory to classify and predict organizational effectiveness, while what Lapointe & Rivard discuss is implementation. At the end of their discussion, Lapointe & Rivard (2007) state that they are "confident enough in the soundness of their theoretical foundation and the richness of our findings to offer practical design" (p. 105). Mintzberg's theory thus seems to have passed Lapointe & Rivard's test of usability. They do not give any advice, however, on how to interpret that result compared to Doty et al.'s result.

The research community; citing Mintzberg and Doty et al. within the same set of brackets without commenting on the test

Both Mintzberg and Doty et al. were cited in the same reference in five papers (i.e., within the same pair of brackets), but without any advisory comments on how to interpret the results in Doty et al. (Nickerson & Zenger, 1999, 2002; Palthe & Kossek, 2003; Rivkin & Siggelkow, 2003; Zott & Amit, 2008). A quote from the first of these papers chronologically illustrates this: "Attempts to structure organizational forms that deviate from these commonly found clusters are lower performing (Mintzberg, 1979; Doty et al., 1993)" (Nickerson & Zenger, 1999:48). Since Doty et al. claim that Mintzberg's typology cannot be used to separate low

performing from high performing organizations, it is rather difficult to interpret what the intention behind this reference actually is.

However, an example from these papers illustrates that, even though it can seem a bit odd to use Doty et al. and Mintzberg in the same reference, it could be defensible. In this paper, the authors use Mintzberg and Doty et al. as support when describing a concern among contingency theorists: "A prominent concern among contingency theorists has bee (e.g., Doty et al., 1993; Galbraith, 1977; Miles & Snow, 1978; Mintzberg 1979)" (Zott & Amit, 2008:2). Regardless, knowing that Doty et al. claim that Mintzberg's theorizing is invalid, a comment from the authors on Doty et al.'s results would have been enlightening.

The research community; citing Mintzberg and Doty et al. in different places in the text without commenting on the test

The last category of papers found in this review consists of 27 papers (Bezencon & Blili, 2009; Brown & Iverson, 2004; El Sawy et al., 2010; Ferratt et al., 2005; Fiss, 2007, 2011; Gomez-Gras & Verdu-Jover, 2005; Gosain, Lee & Kim, 2005; Greckhamer et al., 2008; Hill & Birkinshaw, 2008; Hult et al., 2006; Jaspers & van den Ende, 2006; Mathiassen & Sorensen, 2008; Lee, Miranda & Kim, 2004; Lejeune & Yakova 2005; Love, Priem & Lumpkin, 2002; Meijaard, Brand & Mosselman, 2005; Naude, Henneberg & Jiang, 2010; Nissen & Burton, 2011; O'Reilly & Finnegan, 2010; Payne, 2006; Raisch & Birkinshaw 2008; Sandelin, 2008; Siggelkow & Rivkin, 2009; Smirnov, Dankiv & Dankiv, 2009; Sun, Hsu & Hwang, 2009; Visscher & Visscher-Voerman, 2010).

In these papers, the authors use Mintzberg in one or more parts of the text in support of their argumentation and, in other parts, use Doty et al. to support their argumentation, without commenting on the negative test. In order to illustrate this category, the first, last and median papers chronologically will be used. In the first of these papers, Mintzberg's configurations are drawn upon in the discussion part, in which Love, Priem & Lumpkin (2002) discuss the relevance of generalizing their results to other kinds of organizations. Doty et al. are used in a discussion of methodological considerations when using a "key respondent survey approach" (Love et al., 2002). Although Mintzberg and Doty et al. are used in different places, it would perhaps have been fruitful to comment on Doty et al.'s results.

In the median paper, Raisch & Birkinshaw (2008) first use Mintzberg together with Miles & Snow (Miles & Snow, 1978) and Meyer, Tsui & Hinings (1993) to document that there is a long tradition of defining effective configurations and trying to distinguish them from less effective ones. In this context, it is worth noting that Meyer, Tsui & Hinings (1993), which was the introduction paper to a special issue on configuration theory in which Doty et al. were published, present the results from Doty et al. Raisch & Birkinshaw (2008) use Doty et al. to document that different authors have argued that mixed strategies and structures lead to lower performance. Thus, it could be reasoned that Raisch & Birkinshaw (2008) use these references independently. On the other hand, Mintzberg and Doty et al. are referred to in the same section of the paper, and they should thus probably be read as part of a related, consistent argument.

Finally, the last paper chronologically in this review is by Nissen & Burton (2011), who, in their introduction, use Mintzberg as one of 13 different references to support the argument that a "a myriad of empirical papers […] have confirmed and reconfirmed that poor organizational fit degrades performance and many diverse organizational structures have been theorized to enhance fit" (p. 418). Interestingly, in a footnote to the quoted statement, the authors note that they recognize differences in meaning between organizational structure, form, configuration, etc., referring among others to Doty et al. However, it is not, at least not explicitly, acknowledged that Doty et al. do not reconfirm the argument about fit and performance in Mintzberg's theory.

The research community; snowballing a phrase found in Miller (1996)

The first article that was discussed in this review contains a reference to a paper with the interesting title "Against Configuration: Miller, Mintzberg and McGillomania" (Miller, 1996). Following this path finally led to Donaldson's (2001) book *The Contingency Theory of Organizations*, in which he claims that Doty et al.'s "findings challenge the whole typology of Mintzberg (1979) and those typologies derived from this typology" (p. 147). While Donaldson does not discuss the test of Mintzberg's theory either, it is relevant to note that, according to Donaldson, there are problems with Doty et al.'s analysis of the Miles & Snow data, which lead Doty et al. to erroneously conclude that there is support for Miles & Snow's theory. This is relevant because an important argument Doty et al. use to justify the validity of their method is

that using the same method on the same sample resulted in support for one theory and not the other.

Somewhat surprisingly, Donaldson does not give any reason why he does not discuss Doty et al.'s analysis of their Mintzberg data. One explanation can be found in the tendency many of us have to seek information that conforms with what we expect to see (March & Heath, 1994). Donaldson (1996, 2001) is generally critical of the configurational approach – Donaldson was the source of the term "McGillomania". Consequently, a negative test that conforms with his *a priori* assumption does not need any further scrutiny. Donaldson does not refer to any other empirical tests of Mintzberg's theory.

Two rather surprising results stand out. Firstly, none of the articles has suggested any revisions of Mintzberg's configuration theory or discussed the methodical approach used by Doty et al. to test Mintzberg's typology and theory. However, one article contained an intriguing reference to Donaldson's discussion of Doty et al., but Donaldson did not discuss the test of Mintzberg's theory either. Secondly, Mintzberg's name did not turn up on the list generated from *Thomson Reuters Web of Knowledge.* Thus, in the next section, research published by Mintzberg after 1993 will be searched for references to Doty et al..

Across the table – Mintzberg's response to the "null result"

In order to cross check whether Mintzberg has responded to the "null result", 74 articles and 12 books listed on Mintzberg's own internet page were searched for references to Doty et al. (Mintzberg, 2011). No references to Doty et al. were found. Since Mintzberg is a very productive researcher, it might be that he had forgotten to put some of his articles on the list. Thus, *Thomson Reuters Web of Knowledge* was searched for articles written by Mintzberg from 1993 onwards. This search returned an additional 15 articles, but no references to Doty et al. were found this time either. Finally, an email was sent to Mintzberg asking whether he had made any comments on Doty et al. Mintzberg confirmed that he had not, explaining that: "They published in 1993 and all my writing on the subject happened before that." (Henry Mintzberg, 2012, personal communication).

Even though Mintzberg has not responded to Doty et al.'s paper, he has commented on anomalies and suggested implications for his theory. Due to the self-reflective nature of this comment, it is presented in some length. Mintzberg (1989) starts with a reference to Darwin's

distinction between two types of researchers: lumpers and splitters. Lumpers are those who categorize, splitters are those who claim the opposite: that nothing can be categorized and that styles vary indefinitely. Based on that distinction, Mintzberg (1989) presents a very interesting self-reflection:

> For several years I worked as a lumper, seeking to identify types of organizations […] I developed various 'configurations' of organizations. My premise was that an effective organization 'got it all together' […] All of the anomalies I had encountered – all those nasty, well functioning organizations that refused to fit into one or another of my neat categories – suddenly became opportunities to think beyond configurations. I could become a splitter too. (pp. 254-255).

Mintzberg elaborates that many organizations seem to fit more or less naturally into one of his categories, but some do not. In order to meet the critique from splitters, Mintzberg (1989) has suggested that the configurations can also be thought of as forces pulling the organization in different directions, i.e., the simple configuration represents a force for direction, the machine configuration a force for efficiency, the professional configuration a force for proficiency, the divisionalized configuration a force for concentration, and the adhocracy configuration a force for learning.[2]

That said, it should be added that the perspective of configurations as forces seems to be quite clear in the original presentation in *The Structuring of Organizations,* in which Mintzberg states "the configurations represent a set of five forces that pull organizations in five different structural directions […] Almost every organization experiences these five pulls; what structure it designs depends in large part on how strong each one is." (Mintzberg, 1979, p. 469-472)

Doty et al. make reference to the publication in which Mintzberg presents this explicit reorientation. The perspective of configurations as forces is not integrated in their test, however. Thus, Doty et al.'s claim of invalidity only appears to be relevant to a lumped version of Mintzberg's theory.

Discussion

One promising result was that, even though Mintzberg has not responded to Doty et al., the review of Mintzberg's work showed that he has acknowledged anomalies and proposed an

additional set of auxiliary hypotheses (i.e., perceiving the configurations as forces). Mintzberg's own revision remains untested, however.

From the perspective of scientific development as an explicit cumulative and dialectic process, the result of this review was rather surprising. The 322 items of research that were reviewed in this study revealed no indications of attempts to correct Mintzberg's theory based on the anomalies suggested by Doty et al. Neither did this review reveal any discussions of the methodology on which Doty et al. based their test of Mintzberg. Considered one by one, the authors of the papers discussed above may have had good reasons for not discussing the implications of the negative test of Mintzberg in more depth. Those reasons were not presented, however.

Consequently, except if the test were exhaustive and the lack of discussion could be interpreted as agreement with Doty et al.'s claim of invalidity, it will be difficult to draw a definite conclusion about the degree of consensus on the validity of Mintzberg's configuration theory. On the other hand, the review identified research in which it was concluded that using Mintzberg's configurational theory had proved fruitful. In addition, in a recent paper, Mintzberg's theory has been presented as a solid framework for analyzing organizations today (Groth, 2011), and it is still in use by Mintzberg (e.g. 2009) himself.

So, what now? Are Doty et al.'s findings just another example of research providing what Bailey (1992) labeled 'so what results' (i.e., research that has produced reliable but insignificant results)? The question will be addressed from three perspectives. First, it will be discussed whether there are methodological reasons for challenging the exhaustiveness of the test. Then, from a sociological perspective, it will be discussed how the lack of debate should be understood. Should it be interpreted as tacit agreement with the claim of invalidity, or are there other reasonable explanations for the silence? Finally, it is one thing to describe where one is heading and try to explain why, but, from a value rational perspective, the most important question is perhaps to ask whether that development is desirable (Flyvbjerg, 2006). Therefore, from a normative perspective, it will be discussed whether the test should have stirred debate.

The exhaustiveness of the test

The most pressing question, at least from an applied perspective, is whether the test was exhaustive, i.e., was this the crucial test that falsified Mintzberg's theory once and for all?

However, due to the subjective, intuitive space between axioms and an empirical test, it has been questioned whether a social theory should be rejected on the basis of an ultimate, crucial experiment (Alexander, 1982; Flyvbjerg, 2006), a challenge Miller (1996) has pointed to as an explicit difficulty when testing configurational theories in general, where the variables, operationalizations and samples used have varied greatly.

That there might be room for interpretation is illustrated by Doty et al.'s (1993) discussion of the limitations of their own study: using perceptual measures from a single informant – the top manager of the organizations in the sample – to describe the structure of an organization, not measuring all components in Mintzberg's theory, and using only two experts to make quantified profiles of the ideal typical configurations. The top manager's perception might not be accurate (Mezias & Starbuck, 2003; Mintzberg, 1979), and including other variables could of course produce other results, and, as explicitly reflected upon by Doty et al. (1993): "Another group of organizational researchers might interpret Mintzberg's typology differently and find different results from the current data." (p. 1224).

Another important aspect that Doty et al. do not discuss as a possible limitation is the dependent variable in the test, organizational effectiveness. As noted by Mintzberg (1989), organizational effectiveness is a complex variable to measure, and different stakeholders are likely to evaluate organizational performance in terms that benefit themselves (Scott, 2003). Having relied on the top managers' perceptions, the question of how other stakeholders might have evaluated organizational performance remains open.

Doty et al. (1993) argue that, by finding support for another configuration theory (i.e., Miles & Snow), using the same methodology and the same informants in the same organizations, enhances the validity of their conclusion. It is difficult to see, however, how making a valid interpretation of one theory (i.e., Miles & Snow) is an argument for making a valid interpretation of another theory (i.e., Mintzberg). In addition, Donaldson (2001) has pointed to problems in Doty et al.'s analysis of the Miles & Snow data.

There is also the question of whether measuring ideal types is consistent with the ideal typical approach (Jacobsen, 1992). Mintzberg (1979) explicitly writes that "Each configuration is a pure type (what Weber called an 'ideal' type)." (p. 304). Weber (1922/1971) was quite explicit that ideal types are not hypotheses; they are not portraits of reality. They should be used to develop unambiguous ways of expression, as a tool for developing hypotheses about reality.

Consequently, it does not make sense to test whether an ideal type is true or false in the empirical world. It is more a case of an ideal type being more or less useful (Jacobsen, 1992).

In this context, it is useful to mention Donaldson's (2001) claim that there seems to be some confusion in configuration theory. According to Donaldson, there is a distinction between treating organizational types as "cognitive configurations" serving as mental models that can be used as a basis for evaluating organizations to guide peoples' orientation etc. and the perspective Donaldson calls "existential configurations", where it is implied that reality is actually composed of a limited number of types.

From a cognitive perspective, configurations will remain abstract; they will never be found as empirical objects. Such use of configurations is valid, Donaldson claims, and it does also seem to be consistent with Weber's description of ideal typical use of concepts and Mintzberg's description of how to use his configurations. On the other hand, Donaldson writes that, "As we have seen, existential configurations fail to explain the organizational world." (Donaldson, 2001, p. 152)

Since Donaldson does not have any references to what or who "we have seen", it is not immediately apparent whether he is referring to Mintzberg's (and Miles & Snow's) theory or to Doty et al.'s test of the theory, or both. However, based on Weber's definition of ideal types, and Mintzberg emphasis that the configurations are ideal types – which Doty et al. do acknowledge – it seems that Doty et al. can be criticized for conflation when they claim that Mintzberg's typology and theory are invalid (i.e., treating Mintzberg's configurations as existential configurations when, according to Mintzberg, they are pure types, or, in Donaldson's terminology, cognitive configurations). An example of this possible conflation is where Doty et al. (1993) write "the degree of deviation between each real organization and the ideal types is measured" (p. 1200). It would probably be more correct to claim that it is Doty et al.'s model that is invalidated. On the other hand, this review identified researchers who found Doty et al.'s method for testing theoretical ideal types appropriate (Gresov & Drazin, 1997; Sinha & Van de Ven, 2005).

In sum, there seems to be enough room for interpretation in relation to these few aspects to question the exhaustiveness of the test. Given the complexity of Mintzberg's configuration theory, the subjective room for interpretation is possibly too large for one critical test to falsify the theory. Then there is the question of whether it is possible to test ideal types. In addition,

Doty et al. have not tested Mintzberg's split version of his theory, in which the configurations are presented as forces pulling on the organization. That is not the same as arguing that the test should be ignored, however.

Rather, as Mintzberg (1989) has claimed, cherishing anomalies is the most important prescription for effective theory development: "Breakthroughs […] come from anomalies that have been identified and held onto" (p. 253). Even though Mintzberg has commented on anomalies in relation to perceiving the configurations as exhaustive categories, after this review, it still seems relevant to ask how long the anomalies proposed by Doty et al. will be held on to.

Does silence imply agreement?

How then, should the lack of debate be interpreted? Does the silence imply agreement or is it more probably an indication of ignorance? In a review of a book Mintzberg co-authored, *Strategy Safari* (Mintzberg, Ahlstrand, & Lampel, 1998), the reviewer claimed that a fault in the book was that configurations may have no practical use, adding, however: "In some businesses having a useless idea may be fatal, but in the management theory market it hardly matters." (Carney, 1998) From this rather uncomforting and defensive perspective, whether or not a test of Mintzberg's theory turned out to be supportive of the theory is actually irrelevant. Thus, in order to gain a better understanding of why the test did not provoke debate, it seems fruitful to examine whether explanations might not be found in the sociology of the research community.

First, Doty et al.'s study is well within the positivist-inspired tradition of organizational research (i.e., collecting quantitative data to test hypotheses about a given theory's predictive potential in relation to an objective reality). Given that emulating positivistic natural science is still the governing norm in organization science (Bort & Kieser, 2011), methodological unorthodoxy does not present itself as a very likely explanation for the lack of interest in discussing the negative result. The positivistic norm may not be the governing one, however.

In a recent study, Bort & Kieser (2011) challenged the view of researchers as being mainly concerned with solving problems identified by their peers in order to contribute to scientific progress. Perhaps not very surprisingly, Bort & Kieser claim that scientists are just like everyone else: their attention is influenced by what is fashionable. One example they give of a subfield of organizational theory that is just not popular anymore is contingency theory, under which the configuration theory is categorized (Jacobsen & Thorsvik, 2002).

Organizational design is another subfield of organization theory that embraces Mintzberg's theory and that is said to be unfashionable (Miller, Greenwood, & Prakash, 2009). Thus, the lack of interest might be explained by the mere fact that it is unfashionable. Consequently, silence in this context means ignorance, not agreement.

One of the hypotheses that was supported in Bort & Kieser's study was that concepts from authors with a high reputation will be referred to more often than concepts from authors with a lesser reputation. Mintzberg's *The Structuring of Organizations* has been described by one author as a monument of classic research on organizational design (Nesheim, 2010). Tom Peters suggests that Mintzberg is "perhaps the world's premier management thinker" (Mintzberg, 2009), and, according to Pollit (2005), Mintzberg has been a particularly influential voice over the past thirty years. Thus, scientists could be expected to be quite eager to start working on an anomaly found in a premier thinker's theory.

A classic explanation of why that expectation was not met and why silence may be an indication of something other than agreement, can be found in Kuhn's (1964) theory of paradigms, in which Kuhn describes how researchers working within an established research program are not willing to accept information that is not consistent with a prevailing theory. The term "McGillomaniacs" or "McGillomania" is probably meant to draw attention to this tendency among Mintzberg and his colleagues, who work at or have worked at McGill University. It hints at their unanimous promotion of the idea that a limited number of configurations will provide a valid representation of organizations (Miller, 1996; Mintzberg, Ahlstrand, & Lampel, 1998/2009). However, with his version of configurations as forces, Mintzberg has displayed a willingness to accept and implement anomalies. It is the larger community that does not seem to be interested. On the other hand, it remains a nagging question whether Mintzberg would have something to lose if he were to cherish the anomaly presented by Doty et al.?

A related explanation might be found in a Foucauldian-inspired power analysis in which attention is turned to knowledge that is subjugated (Bacchi, 2009), i.e., Mintzberg's popularity and influence might be one reason why the need for revision suggested by Doty et al. has not stirred debate in the larger community. Even though Doty et al. were awarded a prize for the article, it is still Mintzberg who is the influential one. Bort & Kieser (2011) further speculate that, due to the pressure to mass produce in order to successfully pursue an academic career, researchers might be more inclined to follow theoretical concepts rather than contribute to

developing new ones (i.e., it is more effective to exploit than to explore). Hence, to an aspiring scientist, it might appear to be 'smarter' to conform and produce work that supports, rather than challenges an influential author's theory. In this context, the task of developing suggestions for revising Mintzberg's typology and theory could be associated with too much uncertainty. As Miller (1996) writes, there are no cookbooks for generating good typologies. Thus, a reasonable explanation for the silence might again be ignorance.

In sharp contrast to the description of the research community as being most interested in exploiting established theories stands McKinley's (2010) observation that the current overriding goal in organization studies is the development of new theories at the expense of trying to establish a consensus on the validity of an existing theory by testing and replication, before a new theory is proposed. If McKinley's observation is correct, this could be one more argument for interpreting the lack of debate as a sign of ignorance rather than agreement.

Even though Bort & Kieser (2011) and McKinley (2010) seem to be in total disagreement as to whether organizational researchers primarily produce new theories or replicate old ones, they seem to agree on the tendency towards self-containedness, i.e., what other researches find or discuss is not automatically interesting. What seems to unite the positions of Bort & Kieser and McKinley is the concern raised by several authors about the lack of interest in engaging in *cumulative* research (e.g. Groth, 2011; Ketchen et al., 1997; McKinley, 2010; Miller, 1996; Miller et al., 2009; Nesheim, 2010; Short, Payne & Ketchen, 2008). The lack indicated in this review is not a lack of an empirical test of (Mintzberg's) theory, which seems to be an aspect of what Bort & Kieser (2011) call exploiting. What is lacking is the next step in the process of evaluating the validity status of the theory, re-achieving a sense of inter-subjective consensus after an identified anomaly, which seems to be an aspect of what Bort & Kieser (2011) call exploring.

An alternative to the positivistic norm of accumulation is that knowledge about organizations does not accumulate (Czarniawska, 2003). That validity is achieved at the expense of the reliability on which the ambition of a stable, testable theoretical framework rests (Bailey, 1992). Perhaps the collective phenomenon labeled organization is simply too varied and complex to be measured (Weick, 1979), and the process of getting an organization into a reliable measurable form involves stripping it of what made it worth counting in the first place, i.e., validity is sacrificed.

Clegg is an interesting example of a researcher who is skeptical about trying to establish a unified understanding of organizations by accumulating quantitative, questionnaire-based data. In a debate article, Clegg suggests that theories generated:

> in terms of a dream of completion, of unitarian understanding [of organizations] produce the nightmares of dead data crowding the page – frozen moments captured in average responses to survey items calibrated as scales, correlated with other dead traces of life lived elsewhere. (Schwarz et al., 2007, p. 304).

From such a position, even if it is probably somewhat overstated, it seems perfectly explainable that Doty et al.'s study did not stir much debate. Who would want to spend time on "dead data"?

However, Clegg does claim that there are no privileged grounds on which a scientist can falsify or confirm certain representations (Schwarz et al., 2007). Consequently, no theory, method or test is in principle exhaustive and, to Clegg, it is important to continuously reflect (i.e., re-examine) on methodological and theoretical assumptions.

In sum, there are quite a few arguments indicating that there may be other reasonable explanations for the lack of debate than interpreting the silence as consensus among the research community on the invalidity of Mintzberg's theory as a result of the negative test. In the next section, we will turn to the normative question of whether the publication of a negative test of Mintzberg's theory should have stirred debate.

Should the claim of invalidity have stirred debate?

Since information is said to be found in differences, the point of departure for this section will be the epistemological position represented by Clegg, who in principle appears to be skeptical of the methodological approach used by Doty et al.. In cooperation with Hardy, Clegg suggests that it is from active theoretical debate that we learn and not "through the recitation of a presumed uniformity, consensus, and unity" (Clegg & Hardy 2006, p. 438).

To categorize Doty et al.'s study as research that recites a presumed uniformity and has thereby produced dead data would appear to be an injustice. Rather, it seems fair to claim that they approached the organizational phenomenon with an explicit *a priori* theoretical expectation, namely to see whether the symbolic system synthesized by Mintzberg enabled them to map back to the empirical world. That attempt at mapping back identified possible tensions in

Mintzberg's theory. Thus, being explicit about theories, methods and prior assumptions should provide a fruitful point of departure for discussion. To ignore the test seems to be a violation of the norm of reflection, regardless of the method used (Clegg & Hardy, 2006). On the other hand, what Doty et al. do not discuss is whether they managed to connect the experiences of those in the actual organizations with the concepts they operationalized; did they have a realistic content? From a reflective position, that question deserves debate, not ignorance (Schwarz et al., 2007).

Clegg & Hardy (2006) regard pluralism as an important aspect of theoretical development, but, as noted by McKinley, theoretical pluralism as a goal could have drawbacks. In an interesting discussion of pluralism and scientific progress, Knudsen (2003) warns against what he calls the fragmentation trap. A troubling thing about this trap is that it is a self-reinforcing situation in which new theories are proposed at a pace that puts severe limitations on the time the larger theoretical community needs to give each contribution the attention it deserves and in order to contribute thorough reflection (Knudsen, 2003). Thus, too much diversity seems to undermine one of Clegg & Hardy's (2006) criteria for judging theoretical positions: thorough reflection and active debate. So, in arguing against unification, Clegg & Hardy seem to be very close to falling into the fragmentation trap. Knudsen (2003) further questions the argument that, the more pluralistic a theoretical community is, the more competition and the better possibilities for a scientific "breakthrough", claiming that the validity of the argument has never been established.

On the other hand, there is a ditch to fall into on the other side of the road as well: what Knudsen (2003) calls the specialization trap. This trap is also presented as a self-reinforcing process, where the focus is turned inwards to exploit and fine tune existing research programs. And since exploitation is more efficient (i.e., yields faster and safer returns on known problems), it is less likely that scientists will take the chance of experimenting with new approaches. In Clegg & Hardy's (2006) terminology, this would mean that researchers who have fallen into the specialization trap will be less interested in reflecting on the foundations of their research, which is consistent with Bort & Kieser's (2011) observation about the tendency among researchers to exploit rather than explore.

The overarching dilemma when it comes to studying organizations is nicely put by Clegg:

> Although we have no problem with recognizing the objectivity of organizations as a phenomenon that exists independently of those more or less theorized representations that we have of them, simultaneously, we know of them only through such representation. (Schwarz et al., 2007, p. 304).

To Clegg, this dilemma implies that knowledge must be applied in a practical and context-dependent way, premised on Aristotelian virtue phronesis (Schwarz et al., 2007). The scientist cannot rely on pre-described, generalized theories and methods, but must rely on his wisdom or practical rationality in an "inherently unlawlike way" when engaging with the organization in question. From this perspective, the real test of a theory should be in the situated, practical encounter with the individuals working in the organization or organizations in question. However, as discussed above, if "unlawlike" is interpreted as laissez faire research, it could potentially end in the fragmentation trap.

Knudsen (2003) also seems to have found an Aristotelian-inspired solution to the challenge of theorizing about organizations. Knudsen has emphasized that the art of representing the representation of organizations lies in striking a balance between too much fragmentation and too much specialization. In contrast to Clegg, however, Knudsen (2003) explicitly claims that scientific progress is made when a new theory relieves the tension by clarifying the domain of application and proposing a new explanation or explanations. So, when Doty et al. present anomalies, this should have stirred debate in order to clarify the alleged tensions. On the other hand, it could be that it is those who produce research inspired by Mintzberg's configurations – like Doty et al. – who are operating on a self-contained theoretical island.

In sum, even though they claim to adhere to different positions in the philosophy of science, Clegg & Hardy (2006) (anti-Popperian) and Knudsen (2003) (pro-Popperian) seem to agree that theoretical debates are a necessary ingredient in arriving at a valid representation of the organization phenomenon. One of the fundamental insights in organization theory is that people have bounded rationality (Simon, 1997). One possible approach to remedying this "boundedness" is to try to stand on each others' shoulders by trying to find possible relationships between new and old theories. Thus, based on this triangulation, it seems reasonable to claim that the study presented by Doty et al. should have stirred debate.

Conclusion

Based on this discussion, it seems reasonable to doubt the exhaustiveness of Doty et al.'s claim that Mintzberg's typology and theory are invalid. It also appears reasonable to doubt that the lack of debate should be interpreted as general agreement with Doty et al.'s claim. It is difficult, however, to make claims about the consensus on the validity of Mintzberg's theory, since no debate has been found that could form the basis for reaching a kind of inter-subjective agreement.

Given the vast number of available theories and perspectives that can be used to analyze how organizations function (Cummings & Worley, 2009), it does not initially seem to be critical if *one* test of *one* of these theories questions the validity of that theory. To practicing managers, it could be as important to follow the norms of their institutional environment as to try to find theories that are valid according to organizational theorists. However, it is hard to escape the feeling that it would have been comforting to know that the theory you choose to use when entering the practical field had been scrutinized by other researchers, and that you were actually standing on the shoulders of giants. As Stablein (2006) remarks, the "we" is important in organizational research; social science is a social practice. If the ambition is to be an applied science, the tendency towards laissez-faire, or, to put it in more positive terms, to "let a thousand flowers bloom", does not seem very productive if you prefer to use a "good theory", i.e., a theory where there is a consensus on its validity status (McKinley, 2010).

Thus, seen from an applied perspective today, it would have been fruitful if the study by Doty et al. published almost 20 years ago had inspired a cumulative engagement in arriving at a consensus on the validity of Mintzberg's typology and theory. However, an important disclaimer is that Doty et al. may have stimulated research that was not discovered in the 322 pieces of research explored in this paper. Donaldson (2001) is an example who could indicate that Doty et al. may have found resonance in research that was not found on *Thomson Reuters Web of Knowledge*. On the other hand, and following Popperian logic of falsification (Gilje & Grimen, 1993), the papers found using *Thomson Reuters Web of Knowledge* have been checked out. A possible next step in a cumulative process of establishing the status of the degree of consensus on the validity status of Mintzberg's configuration theory would be to extend the search.

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Footnotes

[1] The number of configurations was later expanded to include the Missionary and the Political configurations (Mintzberg,1989). However, Doty et al. do not include the Missionary and Political configurations in their analysis, and they are therefore excluded in this study as well.

[2] The two configurations Doty et al. have left out of their discussion represent the following forces: the missionary configuration, a force for cooperation, and the political configuration, a force for competition (Mintzberg, 1989).

II

Testing Mintzberg's Configuration Theory

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Abstract

In 1993, Doty, Glick and Huber tested Mintzberg's acknowledged configuration theory. Unexpectedly, they concluded that the theory is invalid. However, no follow-up studies have been carried out. The present study presents new data and tests Mintzberg's theory using the same method as Doty et al. While Doty et al.'s study is based on how managers of a diverse set of organizations perceived their organization, the data used in the present study was collected from all organizational participants in four structurally identical organizations (N=385). Support for Mintzberg's theory was found in five of the seven hypotheses tested. The main conclusion in this study is that Mintzberg's theory is partially supported.

Keywords: organizational design, management, configuration theory

The purpose of this study is to provide new data and test Mintzberg's (1979) organization theory using a method developed by Doty, Glick, and Huber (1993), a method that has been described as path-breaking and highly influential (Fiss, 2011, p. 393). When faced with the question of how to organize the Norwegian Nansen-class frigates effectively, it seemed reasonable to turn to the literature of organizational design. Among the vast number of potential diagnostic models to choose from (Cummings & Worley, 2009, p. 89), Mintzberg's configuration theory is much acclaimed (Fiss, 2011, p. 393; Groth, 2012, p. 9; Nesheim, 2010, p. 66). In essence, Mintzberg (1979) claims that how organizations are designed can be characterized by a limited number of clusters, which he calls configurations, and the same applies to organizations' context. Mintzberg (1979, p. 219) hypothesizes that, in order to be effective, an organization should have a close fit between the organization's design configuration and contextual configuration. That is, in a given context, one of the organizational design configurations is hypothesized to be more effective than the other configurations.

However, several researchers have pointed to the somewhat paradoxical situation that, while Mintzberg's theory enjoys widespread popularity, there have been surprisingly few studies where the theory has been operationalized and explored as a quantitative analytical tool (Donaldson, 1996; Doty, Glick, & Huber, 1993; Meyer, Tsui, & Hinings, 1993; Miller, 1996; Strand, 2007). An exception to this is the study by Doty et al. (1993), who tested Mintzberg's configuration theory on a sample of 128 U.S. organizations. To their surprise, they found no support for any of their hypotheses and concluded that "until other researchers can provide empirical support for Mintzberg's work, we are unable to conclude that either the typology or the theory is valid." (p. 1243). However, a recent literature review revealed that the results have given rise to little or no debate in the academic community during the more than twenty years since it was published in the highly recognized *Academy of Management Journal* (Krabberød, 2014). Nor did the reviewer find any studies that had taken up the challenge of providing new empirical data.

A possible limitation in Doty et al. (1993, p. 1223) is that they used perceptual measures from a single informant, the top manager, to obtain data about the structure and context of the organizations in their sample. In *The structuring of Organizations*, in which Mintzberg (1979) presents his organization theory, he explicitly warns against relying on the top manager's perception to obtain a valid description of a given organizational structure and

context. This claim is supported by research that has shown that top managers' perceptions are not accurate (Mezias & Starbuck, 2003). There thus seem to be valid reasons to question Doty et al.'s choice of sample.

In 1938, Barnard claimed that "the social scientists – from whatever side they approached – just reached the edge of organization and retreated. Rarely did they seem to me to sense the processes of coordination and decision that underlie a large part at least of the phenomena they described." (p. xxix) Writing some 40 years later, Mintzberg (1979, p. 12) criticizes most contemporary organizational research for not being able to relate the description of structure to the actual functioning of the organization. And another 40 years later, Bechky (2011) claimed that organizational theory is still flawed by an image of organizations that is too abstract and does not reflect people's experiences. The question, then, is who has the correct description of the organizational structure. Schein (2004, p. 265), for instance, suggests that different organizational members may perceive an organizational structure differently.

Most organizational researchers would probably agree that, without individual participants, there is no such thing as structure, no organization. An important challenge in organizational analysis is thus to describe the interplay between "organizations consisting of people" and "people in an organizational context" (Christensen, Lægreid, Roness, & Røvik, 2007, p. 2). However, even if Mintzberg (1979, 1983, 1989) is concerned about a theory's ability to describe the actual functioning of organizations, and he explicitly raises the question of how to read the collective mind (Mintzberg, 1989, p. 29), he does not give any explicit advice on how to deal with the individual level in organizational configuration analysis. Interestingly, his theory has been placed in the category of theories that treat organizations as acting entities with "humanized capacities" (Chia, 2003, p. 119).

In Mintzberg's (1979, p. 68) theory, organizational structure covers the formal and semiformal means organizations use to establish stable patterns of behaviour, and he claims that the configurations hold the key to understanding the structure of organizations (Mintzberg, 1979, p. 213). Given that organizations consist of individuals enacting their environment (Weick, 1979), it should be fruitful to explore how each of the organizational participants perceives the organization and the context they work in. Since, according to Mintzberg, the configurations hold the key to understanding how organizations function, it should be relevant use them to analyze how action and interaction are perceived by each of the organizational members and not just by the top manager.

Mintzberg (1979) claims that environmental variables seem to be most important at the top of an organization, but he adds that, under certain conditions, the environmental variables can have pronounced effects on the other parts of the organization as well: "it is not the environment per se that counts but the organization's ability to cope with it – to predict it, comprehend it, deal with its diversity and respond quickly to it" (p. 269). In an often cited text, Duncan (1972) proposes that it might be fruitful to also include the internal environment in organizational analysis, defining the environment as: "the totality of physical and social factors that are taken directly into consideration in the decision-making behaviour of individuals in the organization" (p. 314). Mintzberg (1979, pp. 296-297) proposes that the different contingency factors are likely to have different effects at different levels in the organization, but concludes that we have more to learn from treating the factors as parts of a holistic pattern, that is, as contextual configurations.

Even though Mintzberg has not given advice about how to deal with the individual level in organizational analysis, other researchers have suggested developing the configurational approach at the individual level (Donaldson, 2001; Meyer et al., 1993). After all, a basic premise in an organizational development process, which was the motivation that triggered this study, is that effective interventions in organizations must be based on valid information that fairly reflects what organizational members actually perceive (Cummings & Worley, 2009, p. 151). By using Doty et al.'s (1993) method to test Mintzberg's theory at the individual level, the ambition is to try to see people working in an organizational context and thereby to try to narrow the distance between the observer and the observed. In this study, perceptual data on organizational structure and context are collected from all organizational participants in four identical organizations, four crews from the Norwegian Nansen-class frigates (N=385).

Mintzberg's Configuration Typology and Theory

Mintzberg's theory is part of an approach to studying organizations called configurational theories (Doty et al., 1993). The basic premise in this line of theorizing is that organizations that resemble the ideal types defined in the theory will be more effective. Mintzberg (1979) provides a framework for studying organizational structuring based on a synthesis of previous research. Mintzberg (1979, p. 303) proposes five configurations as a fundamental way of categorizing organizations: the Simple, Machine, Professional, Diversified, and Adhocracy configurations. The possibility of two additional configurations was hinted at in *The Structuring of Organizations,* and, in later writings, the two configurations the Missionary and

Political configurations were implemented (Mintzberg, 1989). According to Mintzberg, the new configurations can be found as pure configurations, but are more likely to infuse the other five configurations with ideology and/or politics, respectively (Mintzberg, 1989; Mintzberg, 2009). However, since Doty et al. do not include the Missionary and Political configurations in their analysis, they are also excluded in this study. Mintzberg (1979, p. 304) elaborates that the configurations bound a pentagon within which real structures can be found. Thus, hybrids of the configurations are expected and allowed in the topology.

Organizations do not function in isolation, however, and the configurations are related to a certain context. The contextual factors are the organization's age and size, its technical system, the environment, and its power relations. As regards organization structure, there are logical configurations of contextual factors (Mintzberg, 1979, p. 303) that correspond to the structural configurations. According to Doty et al. (1993, p. 1205), Mintzberg's configurations can be used as a rich descriptive tool to identify potentially effective configurations of design and contextual factors. This is the essence of Mintzberg's *typology*.

The basic logic in Mintzberg's configurational *theory* is interpreted by Doty et al. (1993, p. 1205) as being the arguments Mintzberg presents about organizational effectiveness as a result of the degree of similarity between a given organization and the configurations. To be effective in a given context, a given organization should design its structure as the structural configuration that matches the contingency configuration (i.e., an organization that is operating in a context classified as a machine context should try to adopt a machine structural configuration). This is what Mintzberg (1979, p. 220) calls the extended configuration hypothesis.

Testing Mintzberg's Configuration Typology

The first step in Doty et al.'s (1993) analysis was to test the internal logic of Mintzberg's typology, the claim that each design configuration corresponds to a unique contextual configuration. That is, in contexts classified as a Simple configuration, organizations should have Simple design configuration, while, in contexts classified as a Machine configuration, organizations should have Machine design configurations, etc. To test this assumption, Doty et al. (1993, p. 1207) derived the following hypothesis that will be explored here using new data:

Hypothesis 1a: "Each of Mintzberg's five ideal-type configurations will be associated with a unique contextual configuration."

To take into account Mintzberg's claim that organizational design changes may follow changes in organizational context, Doty et al. (1993) derived a longitudinal hypothesis: "Each of the five design configurations measured at time 2 will be associated with a unique contextual configuration measured at time 1." (p. 1207). The design of this study is cross-sectional. However, there is a time lag between data collection from the different frigates. From a rational perspective (Scott, 2003), it seems reasonable to expect that the longer an organization has operated in a given context, the more the structure will align with the correct structure in that kind of environment. Thus, Doty et al.'s longitudinal hypothesis is modified to:

> Hypothesis 1b: The longer the Norwegian Navy has operated frigates, the larger the part of the crew that will perceive a design configuration that corresponds to their perception of the contextual configuration.

Testing Mintzberg's Theory

As pointed out by Doty et al. (1993, p. 1207), Mintzberg is concerned with *effective* organizational forms; effective organizations have a close fit between contingency factors and design. Consequently, the relationships expected in the previous hypotheses might not be found due to ineffectiveness.

In a discussion of different ways of measuring organizational performance, Brewer (Brewer, 2006, p. 36) argues that organizational performance is a socially constructed concept – just as organizational reality is socially constructed (Stablein, 2006) – and notes that "one might argue that employees know their organization better than anyone else" (Brewer, 2006, p. 37). Hence, it should be fruitful to explore Mintzberg's assumptions about effectiveness at the individual level.

First, Doty et al. (1993) derived the following hypothesis: "An organization with the correct paring between its design and contextual configuration will be more effective than an organization with an incorrect design-context paring." (p. 1207). That is, an organization that operates in a machine context is expected to be more effective if it has a machine bureaucracy design than if it has any other of the ideal typical designs. The question here will be whether this proposition holds at the individual level. Will organizational participants who work in a situation where there is a match between the design of the job position and its context

perceive the organization as being more effective than those who work in a situation where there is a mismatch?

> Hypothesis 2: Organizational participants who perceive a match between the design and contextual configuration will perceive the organization as more effective than those who do not.

Doty et al. (1993, p. 1202) present four alternative interpretations of equifinality that are relevant to testing Mintzberg's theory. Equifinality basically means that there are several possible ways of reaching the same level of organizational effectiveness. The first, "ideal types fit", implies that "an organization will be effective if it closely resembles any one of the ideal types in the theory" (Doty et al., 1993, p. 1203). The second is "contingent ideal type fit", which implies that "an organization must mimic the one ideal type that is most congruent with the contingencies facing it" to be effective (Doty et al., 1993, p.1203). The third kind of fit is "contingent hybrid types fit", implying that "there are an infinite number of hybrid contexts paired with an infinite number of hybrid designs, but the one hybrid type that an organization must mimic to remain effective is determined by the unique contingencies that the organization faces" (Doty et al., 1993, p. 1203). The fourth and last interpretation of fit is seeing the three above-mentioned models in combination, as "simultaneous processes" (Doty et al., 1993, p. 1204).

To test the ideal type fit assumption in Mintzberg's (1979) theory that "effective structuring requires an internal consistency among the design factors" (p. 219), Doty et al. (1993) formulated the following hypothesis : "The greater an organization's ideal types fit, the greater the organization's effectiveness."(Doty et al., 1993, p. 1208). In order to examine whether this proposition holds at the individual level, the following hypothesis will be explored:

> Hypothesis 3: There will be a positive relationship between degree of ideal types fit and effectiveness.

To test the contingent ideal assumption, in which a relationship between context, organization and effectiveness is assumed, Doty et al. (1993) hypnotize that "The greater an organization's contingent ideal types fit, the greater the organization's effectiveness" (p. 1209). Here, the following hypothesis will be explored:

Hypothesis 4: There will be a positive relationship between degree of contingent ideal types fit and effectiveness

Mintzberg (1979, pp. 474-477) theorizes that organizations often function in a world of conflicting contingencies. Thus, hybrid types can be expected to be effective. This is what Doty et al. (1993, p. 1209) call the contingent hybrid types assumption. They formulate the following hypothesis to test the assumption: "The greater an organization's contingent hybrid types fit, the greater the organization's effectiveness." (Doty et al., 1993, p. 1209). Here, the following hypothesis will be explored:

Hypothesis 5: There will be a positive relationship between degree of hybrid types fit and effectiveness.

Finally, Doty et al. (1993) test the possibility that the different models of fit represent simultaneous processes rather than mutually exclusive ones: "The greater an organization's ideal types, contingent ideal types and contingent hybrid types fit, the greater the organization's effectiveness." (p. 1209). Here the following hypothesis will be explored:

Hypothesis 6: There will be a positive relationship between degree of ideal types fit, contingent ideal types fit, hybrid types fit and effectiveness.

Method

The Sample

The questionnaire was administered to the crews of four Nansen-class frigates (N=385). According to the Norwegian Armed Forces' official website, the total number of crew members on board a Nansen-class frigate is 120 + (www.forsvaret.no, downloaded December 5, 2011).[1] From Frigate 1, 73% of the crew members answered the questionnaire (n=87), 23% of the participants in this study. From Frigate 2, 77% of the crew answered (n=92), 24% of the participants in the study. From Frigate 3, 86 % of the crew answered the questionnaire (n=103), 27 % of the participants in the study. Finally, from Frigate 4, 86% of the crew answered the questionnaire (n=103), 27 % of the participants in the study.

Data were collected over a time span. Data from Frigate 2 were collected a year after data from Frigate 1, and data from the third and fourth frigates were collected approximately

at the same time, three years later. In addition to the longitudinal time span, each crew has an internal time span due to the training cycles, where new crews are formed, trained, and declared operational on a routine basis. In relation to the internal time span, crews one and two are young in the sense that they have recently started their training cycle, while crews three and four are more mature crews. A third temporal aspect is the total number of years the Norwegian frigate service has operated the Nansen-class frigates. If the frigates are ranked by years in service, the order will be Frigate 1, 2, 3 and 4. Due to anonymity concerns, the exact number for this variable will not be published. The first Nansen-class frigate put to sea in 2004.

Material

To measure organizational design and context, 14 of the 17 variables identified by Doty et al. (1993) are used. The last three were omitted due to assumed difficulties in relation to unambiguous interpretation at the individual level. Due to the individualistic approach, it was found necessary to reformulate the items used, and it was also necessary to reformulate some questions to adapt them to the specific kind of organization in question and the jargon used (e.g., a navy vessel is not responsible for hiring its own personnel) (Cummings & Worley, 2009, p. 126). Doty et al.'s questions were translated into Norwegian by the author and a professor who teaches organizational theory at the Royal Norwegian Naval Academy.

Due to the enormous workload of crew members on a warship, economization was an important aspect when drafting the questionnaire. Having found acceptable levels of reliability for individual level data, Wanous and Hudy (2001) argue that it is justifiable to use single items for individual data in a practical setting. Single items were used to measure the 14 variables, except in two cases where it was decided to use two items. However, using single items increases the importance of using constructs that are clear to the respondents (Wanous & Hudy, 2001, p. 368). Four experienced Norwegian navy frigate officers were therefore asked to review the questionnaire for unclear formulations and questions that were irrelevant in the frigate context.

The first of the variables used to measure the organizational context was environmental complexity. To measure environmental turbulence, Doty et al. (1993) asked their respondents to rate the following questions on a Likert scale: "Over the past year, how many important changes have occurred in the behavior of key 1) suppliers, 2) competitors and 3) customers/clients?" and "To what extent is your organization affected by changes in the behavior of key 1) suppliers, 2) competitors and 3) customers/clients?" It was decided to

measure this variable by a single item that was reformulated as: "To what degree do you have to take new factors into consideration when performing your tasks?" This reformulation should be consistent with Mintzberg's (1979) claim that the essence of the turbulence variable is to measure "changes that occur unexpectedly" (p. 268).

Doty et al. (1993) argue that as "regulation increases, the frequency of exceptions decreases. As the sophistication of a system increases, the analyzability decreases." (p. 1211). Hence, analyzability and the number of exceptions can be used as proxies for regulation and sophistication, respectively, which are the variables Mintzberg (1979, pp. 249-251) uses. To measure analyzability, Doty et al. used the questions "Is there a clearly known way?" and "Is there an understandable sequence of steps that can be followed". Based on Mintzberg's (1979, p. 250) comment that, with little regulation, a worker determines his own procedures and, with extreme regulation, the operator has no discretion in his work, these two questions were merged into one. Respondents were asked to what degree they carried out their work according to (fixed) procedures.

Doty et al. (1993) measured the number of exceptions by asking top managers about the work performed by work groups in the organization. The first question was to what extent "is the work in these groups the same from day to day" and the second "Do these groups perform the same tasks in the same way most of the time?" It was decided to merge these two questions and ask "To what extent is your work the same from day to day?" Due to the objective nature of the variables age and organizational size, it was not found relevant to collect data about the individual respondents' perception of these variables. The number of employees used in the analysis is 120. Age was measured as the number of years the frigates had been in service.

As regards the first two variables that are intended to measure the design configurations, vertical and selective decentralization, it was decided to formulate a new set of questions because of the individual design. Mintzberg (1979, p. 181) defines a centralized organization as one where all decision-making power rests at a single point in the organization, and, when such power is dispersed among the individuals in the organization, the structure is called decentralized. To measure the degree of vertical decentralization, the two questions asked were, "To what extent do you decide your own work?" and "To what extent do you decide how to do your work?" (Cronbach's $\alpha \geq .747$)

Mintzberg (1979, p. 187) also describes a kind of decentralization where power over different decisions rests in different places in the organization. This is called selective decentralization. Doty et al. used the inter-item variance on the vertical decentralization

questions to measure selective decentralization. Since it may be difficult for individuals in an organization to know the extent to which power to make different kinds of decisions rests with different places in the organization, this variable was not included in the analysis.

The questions used by Doty et al. (1993) to measure the coordination mechanisms – direct supervision, standardization of work, and standardization of skills – were reformulated from "To what extent does your organization …" to "To what extent do you …". To measure the extent to which the organization used standardization of output, Doty et al. asked questions about acceptable level of quantity and acceptable level of quality. These questions were merged to "To what extent is the result you are to accomplish decided in advance?" The use of mutual adjustment was measured by Doty et al. as "To what extent does your […] through informal communication process among individuals?" and "To what extent is your organization currently characterized by informal communication practices?" In this study, the term "informal communication" was not used due to possible problems interpreting what it means. Following Mintzberg's (1979, p. 463) claim that "people talk a lot in these structures" (p. 463), questions concerning mutual adjustment were merged into one: "To what extent do you discuss how to solve your tasks with others involved?"

As regards measuring the degree of formalization, Doty et al.'s (1993) questions about "…strict enforcement of written rules", "…the existence of written rules" and "To what extent is your organization currently characterized by the development of formal procedures and/or policies?" were merged into "To what extent do you have to comply with written rules when you perform your tasks". As Mintzberg (1979, p. 82) writes about formalization, "No matter what the means of formalization […] the effect on the worker is the same: his behaviour is regulated." (p. 82).

Doty et al. (1993) measured the variable "hierarchy of authority" by asking the respondents about organizational levels, which were converted into Likert scale values. In this study, it was assumed that it would be difficult to interpret the meaning of a Likert rating of levels of hierarchy. The variable was therefore left out.

Doty et al. (1993) measured the degree of specialization by asking their respondents how strongly they agreed or disagreed with the following statements: "Most people have positions that require a different set of skills than those required by other positions", "Most people have job titles that apply to few other people", and "Most employees do similar types of work". Due to the possible difficulty an individual might experience in deciding the extent his work differs from other positions, it was decided to use two items to measure this variable, and the first and third ones were assumed to be the most relevant (Cronbach's $\alpha \geq .434$).

To identify the key part of the organization, Doty et al. (1993) used the number of employees to decide which part of the organization was dominant. Doty et al. commented that Mintzberg is most concerned with influence, but they argue that the number of employees will tend to be highest in the most dominant part of the organization. This argument should mean that workers will be the dominating coalition in organizations where the number of workers is greater than the number of managers, or analysts, which seems rather peculiar. According to Mintzberg (1979, pp. 301-303), the operators are only one of five internal forces that influence the structuring of organizations, and which of the internal coalitions or forces that has most influence on the organizational structure is contingent on the "condition" of the organization. In this study, the variable was therefore omitted.

Measuring organizational effectiveness is a complex task and there is no agreement on items (Christensen et al., 2007). Mintzberg (1979, 1983, 1989) does not give any explicit advice about which items to use. The task is no easier when delimited to measuring the effectiveness of military organizations (Murray & Millett, 2010). Wall et al. (2004) found that subjective and objective measures of organizational effectiveness were positively correlated and argued that, due to equivalence between the findings for the two kinds of measures, the use of subjective measures of performance is supported in cases where objective measures are not feasible. Further, researchers on public organizations have argued that using individual employees' perceptions of organizational performance is acceptable (Kim, 2005, p. 250). It was therefore decided to collect data about the crew members' perceptions of organizational effectiveness.

An important question is whether it is at all relevant to measure the effectiveness of a warship in peacetime. Spector (2001) comments that, in contrast to veterans from land warfare, who often claim that the experience of combat was unlike anything they had experienced, "sailors often say that they found themselves doing virtually the same job in combat as in peacetime drills" (p. 396). Working on a vessel at sea also means that the crew must be able at all times to survive the forces of nature and internal threats such as fires, whether involved in warfare or not (Barnett, 2009). That is, it is a continuous task (Murray, 2011, p. 8). Thus, even if there is no enemy present in the traditional sense, one can expect that it will be relevant to ask about effectiveness.

The two questions that were asked to measure effectiveness were based on the traditional military mantra, "solve your mission and take care of your men" (Norwegian Armed Forces, 2012, p. 3), which is consistent with the classic twin factors of leadership theory: "task orientation" and "relationship-orientation" (Hogan, 2005, p. 128) and Schein's

(2004) description of a subjective version of success, that is, "the sense that the group accomplishes its tasks and the members feel good about their relationship to each other" (p. 16). The importance of fulfilling the mission is rather obvious. The question used to measure this aspect was: "To what extent do you think that the vessel solves its tasks effectively?" The other part of the mantra addresses the importance of unit morale. A sense of belonging and unit cohesion are critical aspects of a navy crew's ability to function under wartime conditions (Wombacher & Felfe, 2012). The question asked in this study was: "To what extent are you satisfied with working on board?"

Test Model

The quantitative model Doty et al. (1993) derived to test Mintzberg's typology and theory has three logical steps. First, the theoretical configurations must be conceptualized and modelled as ideal types. Then, the degree of fit between ideal type and the real organization must be measured in order to classify an organization as one of the ideal types. Finally, the equifinality assumption in the theory must be given an explicit interpretation. That is, each of the ideal types identified in Mintzberg's theory is claimed to maximize effectiveness (Doty et al., 1993, pp. 1201-1202). For instance, a high degree of fit with a machine bureaucracy will, in the right context, theoretically reach the same level of effectiveness as an adhocracy in the right context.

Given the complexity of the configurations, Doty et al. (1993) argue that a profile analysis is required. Based on the variables mentioned above, a panel of experts on Mintzberg's theory was asked to score each ideal typical design and context configuration in order to construct a template for measuring deviation between an empirical organization and the theoretical configurations. The inter-rater reliabilities for the variables in the template are .6 to 1.0 (intra-class correlation, ICC) (Doty et al., 1993, p. 1213).

A real organization's deviation from the five ideal typical designs and contextual configurations, respectively, can then be measured using the formula (Doty et al., 1993, p. 1248):

$$\text{Dio} = \sqrt{(X_i - X_0)W(X_i - X_0)^T}$$

where

Dio = the distance between ideal type i and empirical case o,

Xi = a 1 x j vector that represents the value of ideal type i on attribute j,

Xo = a 1 x j vector that represents the value of empirical case o on attribute j

and

W = a j x j diagonal matrix that represents the theoretical importance of attribute j to ideal type i.

According to this methodology, a real organization's design and context are classified as the design and contextual configuration with the smallest measured deviation. Thus, an organization may for example be classified as a Machine design configuration operating in an Adhocracy context. The deviation score is used to measure degree of fit between ideal type and empirical organization. That is, the less deviation, the better the fit between an organization and the ideal type.

The method used here is the same as used by Doty et al. (1993). The different versions of fit were calculated according to formulas developed by Doty et al. (1993, pp. 1248-1250). A weighting matrix was used to correct for the different number of items used to measure two of the variables (Doty et al., 1993, p. 1214). Each of these items was weighted with a factor of .5, so that the variable in total received a factor of 1.

One question when using deviation analysis to classify empirical objects as different ideal types, for example whether an organization should be classified as a machine bureaucracy or a professional bureaucracy, is whether you should have a cut-off point (Verburg, Den Hartog, & Koopman, 2007, p. 197). That is, whether the discrepancy is small enough to be called a fit or if fit should be regarded as the configuration with the smallest deviation. Doty et al. chose the latter alternative, which will also be used in this study. Thus, a respondent's perception of organizational design and context is classified as the design and contextual configuration with the smallest measured deviation from how the design and contextual configurations are operationalized in the template.

Procedure

The study was approved by the commanding officer of the Royal Norwegian Frigate Service and the Royal Norwegian Naval Academy. The study was reported to Norwegian Social Science Data Service and ethical aspects were discussed. Collecting data about individual crew members' perceptions of their workplace entails an ethical aspect, most importantly that data can be used against the employees (Cummings & Worley, 2009). In order for the respondents to able to give informed consent, several briefings were held about the research project, and one of the researchers was on board on several occasions and available for any

questions. Finally, each questionnaire started with a text informing the respondents about the project and how the data would be used, and promising anonymity. The questionnaire also included a question in which the respondent was asked to give explicit consent to participation. Some crew members indicated on the questionnaire that they did not wish to participate, which could indicate that asking for consent had the desired effect. On one occasion, the commanding officer of a vessel decided that no one from his crew should participate in the study, an indication that there was little or no external pressure to participate. The data were converted to SPSS 18 and Microsoft Excel for analysis.

Results

Table 1 presents the means, standard deviations and Pearson correlations for the items used in the study.

Insert Table 1

Table 2 shows the cross-classification of the crew members based on how they described the organizational design and context. To illustrate, five crew members are classified as working in a simple structure design configuration and a simple structure context configuration on Frigate 1, while eight of the crew members on Frigate 2 are classified in the same category. The table shows that a majority of the respondents (64.4%, n =385) perceive the structure as a professional bureaucracy. A visual control of Table 2 shows that this pattern is consistent on all four frigates. Thus, if Doty et al. (1993) are correct in their assertion that the number of employees in a given part of the organization is an indication of degree of influence, all four frigates tend to pull in the direction of a professional bureaucracy configuration. This would be consistent with the description of naval officers as "technocrats with their professional standing resting upon arcane and often secret knowledge" (Reeve, 2003, p. 9), since the professional bureaucracy configuration mainly consists of duly trained and indoctrinated specialists or professionals Mintzberg (1979, p. 349). Table 2 also shows that there are different perceptions of the organizational design and context among the crew members.

Insert Table 2

Testing Hypotheses Derived from Mintzberg's Typology

Hypothesis 1a predicts that respondents should fall on the diagonal of the contingency table, and 114 of 385 (29.6%) respondents are classified as expected in the hypothesis. Doty et al. (1993, p. 1218) found that 25.8% (n=128) of their sample fell on the diagonal, They concluded that their data did not even approximate the pattern expected in H1a and concluded that H1a is not supported. Following Doty et al.'s norm, H1a is not supported in this study.

Hypothesis 1b assumes that, the longer an organization has operated in a given context, the more the design will align with the prescribed structure in that kind of environment. That is, if an organization operates in a context classified as a machine bureaucracy, it is to be expected that the organization's design over time will become more like the machine bureaucracy ideal type. On Frigate 1, 18.4% (n=87) of the crew members worked in a corresponding design and context configuration. On Frigate 2, the percentage was 26.1% (n=92), on Frigate 3 it was 35.0% (n=103), while on Frigate 4, 36.9 % (n=103) worked in a corresponding design and context configuration. The relationship between degree of alignment between context and design and the age of the organization was investigated using Spearman's rho. There was a positive, but small correlation (r_s =.16, n=385, p<.01), indicating that there is a tendency that, the longer the frigates have been operating, the higher the number of personnel who perceive a combination of design and contextual configurations expected in Mintzberg's (1979) theory. Most noticeable is the doubling in the proportion of crew members from Frigate 1 to Frigate 4. Thus, there seems to be moderate support for hypothesis 1b.

Testing Hypotheses Derived from Mintzberg's Theory

In this section, Mintzberg's (1979) theory about the relationship between organizational design and effectiveness will be explored. The basic idea that will be tested is that the less deviation, that is, the better the fit between a crew member's actual work situation and the ideal type, the more effective the organization will be.

Hypothesis 2 predicts that crew members who work in a position where the design and contextual ideal types match will perceive the organization as more effective than those who do not. An independent-sample t-test was conducted to compare the two groups. There was no significant difference between the two groups, neither as regards task effectiveness (t (369) = .292, p = .386, one tailed) nor job satisfaction (t (383) = .287, p = .388, one tailed). These results do not support H2.

Effectiveness of Alternate Models of Fit

H3 states that there is a positive relationship between the ideal type fit and effectiveness. There was a positive and significant correlation between degree of ideal type fit and the job satisfaction dimension of effectiveness ($r = .12$, $p<.05$), and a positive, but non-significant, correlation between degree of ideal type fit and task solving ($r = .03$). Both correlations are in the predicted direction. However, the small overlap between the two variables indicates that it is problematic to give unequivocal support to H3. On the other hand, it does seem equally problematic to reject the hypothesis.

H4 posits a positive relationship between the contingent ideal types fit and effectiveness. As in the case of H3, there was a positive and significant correlation between degree of ideal type fit and the job satisfaction dimension of effectiveness ($r = .10$ $p<.05$), and a positive, but non-significant, correlation between degree of ideal type fit and task solving ($r = .04$). Both correlations are in the predicted direction. However, the small overlap between the two variables indicates that it problematic to give unequivocal support to H4. On the other hand, it does seem equally problematic to reject the hypothesis.

H5 posits a positive relationship between the contingent hybrid types fit and effectiveness. As in the case of H3 and H4, there was a positive and significant correlation between degree of ideal type fit and the job satisfaction dimension of effectiveness ($r = .12$, $p<.05$), and a positive, but non-significant, correlation between degree of ideal type fit and task solving ($r = .06$). Both correlations are in the predicted direction. However, the small overlap between the two variables indicates that it problematic to give unequivocal support to H5. On the other hand, it does seem equally problematic to reject the hypothesis.

In the seventh and final hypothesis (H6), it is presumed that effectiveness may be the result of a combination of the three models of fit. A canonical correlation analysis of the relationship between the three sets of fit measures and the two effectiveness measures revealed that there is a positive significant relationship ($r_c = .26$, $p< .001$), which supports the seventh and final hypothesis.

Discussion

This study has provided new data for testing Mintzberg's (1979) configuration theory and typology based on Doty et al.'s (1993) method. Doty et al. found no support for Mintzberg's work in any of the hypotheses tested and claimed that Mintzberg's configuration theory is invalid. In five of seven hypotheses tested in this study, the result was in the direction predicted. The effect was small, however. Researchers have argued that one should be restrictive in falsifying a social theory based on a test, due to the intuitive and subjective space

between theoretical statements and empirical tests and because the derived hypothesis represents the tester's perception of the theory more than the actual theory (Alexander, 1982; Flyvbjerg, 2006; Mizruchi & Fein, 1999). Based on this study, it may be rather hasty to claim that Mintzberg's typology and theory are invalid, as Doty et al. do.

Most notable is the consistent positive and significant relationship between degree of fit and job satisfaction in each of the alternate models of fit. Psychologists have argued that most people will try to avoid cognitive dissonance (Schein, 2004, p. 320) and, at an organizational level, Mintzberg (1979) claims that an organization is "driven toward one of the configurations in search for harmony in its structure." (p. 473). Thus, this result could be an indication that Mintzberg's harmony hypothesis also finds support at the individual level. An interesting aspect of this result in a military context is that belonging or cohesion is found to be an important element of "fighting power", that is, the sum of mental qualities that makes a unit fight (van Creveld, 1982, p. 3). However the literature on military cohesion is mainly based on studies of land warfare, and there is a general lack of research on this aspect in a sea warfare context (Wombacher & Felfe, 2012). These findings should therefore inspire more research on the social aspects of the organizational design of warships.

A concern about the design of this study is the part of the test that takes the classification of respondents into nominal categories as its point of departure, that is, the tests of Hypotheses 1a, 1b and 2 (see also Doty et al., 1993, p. 1200). Mintzberg (1979, pp. 302, 304, 468-479) explicitly states that the configurations should not be treated as mutually exclusive, but as bounding a pentagon within which real structures may be found, and he claims that a real organization would not be expected to fit neatly into an exhaustive category (Mintzberg, 1979, p. 304). Thus, to find support for one (H1b) of the three hypotheses is notable. Operating the Nansen-class frigates is a new experience for the Norwegian navy. From an organizational development perspective, you would therefore expect an organization to need time to adjust its design structure in accordance with the contextual structure. And in this case, the process of alignment is in the direction prescribed by Mintzberg's (1979) extended configuration hypothesis: "effective structuring requires a consistency among the design parameters and contingency factors" (p. 220).

One possible limitation of this study is the effectiveness measures. As noted above, effectiveness is a notoriously difficult variable to measure (Christensen et al., 2007). Another limitation is that, according to Mintzberg, Doty et al.'s (1993) test was "very convoluted" (personal communication, August 7, 2012). Organizations are a highly complex social phenomena (Scherer, 2003, p. 311) and Mintzberg's thoughts on the structuring of

organizations are – however plainly presented – correspondingly comprehensive and complex. Thus, by stripping Mintzberg's theory down to five profiles based on a few variables may be to simplify too much. Consequently, it could be that the result is more a reflection of the multivariate technique used than of an understanding of the phenomenon in question (Mintzberg, 1979, p. 226). As Leach warned, "to get the organization into countable, measurable form, is to strip it of what made it worth counting in the first place" (in Weick, 1979, p. 29).

 An interesting finding in this study was that 64.4% (n=385) of the crew members were classified as working in the same kind of organization structure, a professional bureaucracy. What, then, about the rest of the crew? In this regard, Mintzberg (1979) has noted a possible pathology: how managers design structures to fit their misperception of the organization's context. Schein (2004) claims that the most important thing for a leader is to surmount the organization's culture. Could it be that, for a manager, it is just as important to surmount the organization's design and context? In an organizational development process, it is important that the personnel affected identify with the organizational diagnosis (Cummings & Worley, 2009). What if the organizational members do not think that the top manager describes the same organization as they do? What kind of organization does the commanding officer of each of the four frigates think it is? Was he one of the 64.4% who thought that the frigate organization was a professional bureaucracy? Given that an important part of a manager's job is organizational design, the results of this study indicate that a manager should be very attentive to possible differences in perception of the actual organizational design. A question worth looking into in future research would be to explore whether managers and participants actually find the configurations to be fruitful diagnostic tools for organizational development. As Jacobsen (1992) emphasizes, a central question as regards the use of ideal types is not whether the ideal types are true or false, but whether they are useful or not.

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Footnotes

[1] The actual number for a given crew is classified information.

Table 1
Mean Scores, Standard Deviations, and Correlation Coefficients between Design, Context and Effectiveness Items

Variables	M	SD	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
1. Vertical decentralization (item 1)[a]	3.05	1.07	--														
2. Vertical decentralization (item 2)	3.70	1.00	.60**	--													
3. Direct supervision	3.31	.98	-.40**	-.25**	--												
4. Standardization of work	2.77	.97	.02	-.04	.07	--											
5. Standardization of skills	3.79	1.22	.32**	.26**	-.17**	-.01	--										
6. Standardization of outputs	3.64	.86	-.10	-.08	.08	.03	-.11*	--									
7. Mutual adjustment	3.80	.86	.15**	.13*	.04	.12*	.25**	-.08	--								
8. Formalization	3.53	1.05	.01	-.08	.14**	.00	.21**	.10	-.06	--							
9. Specialization (item 1)[b]	3.61	1.16	.22**	.18**	-.10	-.01	.43**	-.10	.09	.13**	--						
10. Specialization (item 2)	4.00	.96	.17**	.15**	-.09	-.16**	.16**	.02	.03	-.04	.28**	--					
11. Number of expectations	3.52	.98	-.28**	-.24**	.09	.02	-.29**	.19**	-.20**	.01	-.16**	-.18**	--				
12. Environmental turbulence	3.20	.91	.24**	.27**	-.09	.02	.36**	-.18**	.30**	-.02	.26**	.04	-.37**	--			
13. Environmental complexity	3.15	.96	.36**	.31**	-.14**	-.09	.54**	-.12*	.26**	.10	.38**	.22**	-.43**	.46**	--		
14. Analyzability	3.81	.84	-.15**	-.21**	.22**	.23**	-.08	.16**	-.10	.27**	-.06	-.14**	.29**	-.19**	-.19**	--	
15. Task solving	3.68	.80	.10	.08	.05	.08	.05	-.03	.09	-.01	.04	-.01	-.04	.07	.07	.09	--
16. Job satisfaction	3.94	.94	.21**	.18**	.05	.06	.22**	-.12*	.18**	.14**	.14**	.03	-.17**	.13*	.24**	-.01	.36**

Note. *p<.05. **p<.01, (2-tailed). [a] α=.75, [b] α=.47

Table 2

Crew members' perception of organizational design and context

Design configuration	Context Configuration					
	Simple structure	Machine bureaucracy	Divisionalized form	Professional bureaucracy	Adhoc -racy	Totals
Frigate 1						
Simple structure	6	0	0	0	0	6
Machine bureaucracy	7	0	0	0	0	7
Professional bureaucracy	45	0	0	11	15	71
Divisionalized form	13	0	0	0	1	14
Adhocracy	1	0	0	0	1	2
Totals (N=87)	71	0	0	11	17	100
Frigate 2						
Simple structure	9	1	0	1	0	11
Machine bureaucracy	5	0	0	2	0	8
Professional bureaucracy	35	0	0	17	15	67
Divisionalized form	8	0	0	3	1	12
Adhocracy	1	0	0	1	0	2
Totals (N=92)	58	1	0	25	16	100

Table 2 Continued

Design	Context Configuration					
configuration	Simple structure	Machine bureaucracy	Divisionalized form	Professional bureaucracy	Adhoc -racy	Totals
Frigate 3						
Simple structure	6	4	0	2	0	12
Machine bureaucracy	6	1	0	5	0	12
Professional bureaucracy	19	0	0	25	12	56
Divisionalized form	5	4	0	4	1	14
Adhocracy	2	0	0	2	3	7
Totals (N=103)	38	9	0	38	16	100
Frigate 4						
Simple structure	8	3	0	3	0	14
Machine bureaucracy	3	2	0	0	1	6
Professional bureaucracy	27	0	0	27	10	64
Divisionalized form	9	3	0	3	1	16
Adhocracy	0	0	0	1	0	1
Totals (N=103)	47	8	0	34	12	100

III

Task Uncertainty and Mission Command in a Naval Context

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Abstract

Mission command is a leadership philosophy that was designed to ensure that military organizations could operate effectively in uncertain situations. It has become the exemplar of military leadership (Shamir, 2011). This study explores whether an increase in task uncertainty is positively related to appreciation of mission command by crew members of Norwegian state-of-the-art, Nansen-class frigates ($N = 174$). The result of a simultaneous multiple regression indicate that there is a relationship, but in the opposite direction of what was hypothesized. The greater the task uncertainty, the more the behavior of the preferred leader deviated from mission command. The most important predictor was perceived lack of information, and the more the respondents felt that they lacked information when carrying out their tasks, the more their description of preferred leader behavior deviated from mission command.

Keywords: uncertainty, leadership, mission command, navy

Task Uncertainty and Mission Command in a Naval Context

This paper presents data on the relationship between followers and leaders in the context of Norwegian warships, the Nansen class frigates. Practicing the military profession is characterized by teamwork (Espevik, 2011; Jacobsen & Krabberød, 2012; Norwegian Defence Staff, 2007}. Researchers have found that the presence of others, like teammates, will affect a person's task performance (Passer & Smith, 2007) and it is argued that that people involved in teamwork are more vulnerable to the effect of others' decisions and actions (Edmundson, 2012). For one, in teams on different levels of maturity there will be different expectations to the leadership function (i.e. to which degree the formal leader should take care of the team's needs like nurture, commitment, productivity and innovative thinking, not to mention who are expected and allowed to act as a leader, Sjøvold, 2007). For example, will team members appreciate a leader who expects team members to take responsibility in new and uncertain situations instead of enforcing structure? Conversely, will the group accept that an ordinary team member takes initiative and present an alternative and new solution?

Researches have emphasized that it is important that the team leader sets the standards and ensures good and functional climate in the team (Edmundson, 2012; Salas, Sims, & Burke, 2005). Interestingly, Avolio (2007) claims that the followers (i.e. the team members) have been neglected in research on leadership. Avolio (2007) further claims, "leadership development theory and research has focused on changing the leader, with much less attention given to the interaction of leaders, followers and context." (p. 30).

Mission command is a leadership philosophy that enjoys near "mythical canonization" when it comes to coordinating individual efforts into teamwork in the military domain, and is formally implemented by many modern military organizations (Shamir, 2011, p. 5), including the Norwegian armed forces (Norwegian Armed Forces, 2012; Norwegian Defense Staff, 2007). It is claimed to be the historically most effective way of organizing military (land) forces to deal with their defining problem (i.e. uncertainty, van Creveld, 1985). In addition to being characterized as uncertain, today's

military operations are increasingly complex. An increase in the degree of complexity and uncertainty in the environment will put demands on how a team must function in order to be effective demands that are different from teams operating in a predictable environment (Edmundson, 2012).

The U.S. Chairman of the Joint Chiefs of Staff (U.S. Joint Chiefs of Staff, 2012) states that "training for mission command is about building teams" (p. 7). This view is shared by the Norwegian Chief of Defence, who states that the philosophy necessitates that leadership becomes a collective process (Norwegian Armed Forces, 2012). Keeping an eye on the external world, monitoring processess, and acting to excerting corrective meassures if necessary is not solely the formal leader's job. This responsibility lies on every team member (Royal Norwegian Naval Academy, 2009).

In immature teams, team members tend to stick to what they are good at and fulfill functions within their comfort zone, and it is the leader who is expected to decide whether a team needs to reorient and to initiate corrections, if the leader decides to do so. Sjøvold (2007, p. 625) describes this as "one-person-one-functional-role" groups, which can be effective when performing simple and predictable tasks. However, the rigidity of one-function restricts flexibility and due to this Sjøvold (2007) reasons that in unpredictable and complex environments, problems are best solved by mature groups. In mature teams all members, not just the formal leader, will "hunt for new ideas, critizise the 'the way things are done,' and keep an eye on external forces" (Sjøvold, 2007, p. 626). All members of mature teams are capable, and just as importantly, have the opportunity to contribute without being restricted by role expectations (Sjøvold, 2007).

In a treatise on military organization at sea, uncertainty is defined as "imperfect correspondence between information and environment" (Palmer, 2005, p. 319). For example: Where is the enemy? What will the consequences of our actions be? How much time do we have to make a decision? To van Creveld (1985), an authority on the history of military organization, certainty is the product of two factors, "the amount of information available for decision making and the nature of the task to be performed" (p. ??). Thus, when confronted with a task that involves uncertainty, a team has two basic options: It can increase its

information-processing capacity or it can design its modus operandi to enable it to operate on

the basis of less information (i.e., a higher level of uncertainty, van Creveld, 1985). The

problem with the first approach is that time is a limited and critical factor in military

operations (Boyd, 1987), and endeavoring to achieve a higher degree of certainty by

collecting more information or by sending requests for clarification up the chain of command

will be time-consuming. Mission command is a philosophy that is based on the second

approach, a willingness to accept greater uncertainty in order to save time (van Creveld,

1985). Decentralization is seen as the most effective means of ensuring continuous adaptation

to unfolding events in a time-competitive environment. The most important objective of

mission command is to reduce the need for communication in the organizational hierarchy

(i.e. teams and team members must be able to act autonomously but still coordinated; Boyd,

1987; Shamir, 2011; van Creveld, 1985).

However, uncertainty implies things beyond our control, which normally generates

anxiety (Schmitt & Klein, 1996). It is thus somewhat paradoxical that mission command,

which is claimed to be the historically most effective means of organizing for uncertainty, is

based on something people are generally expected not to like, operating with greater

uncertainty. Several studies have also highlighted difficulties when it comes to implementing

mission command in military organizations (e.g., Borgmann & Aronsen, 2005; Muth, 2011;

Shamir, 2011;).

Moreover, there is a lack of research on the implementation and use of mission

command in the naval context. Mission command is prescribed as the common leadership

philosophy for all services in the Norwegian armed forces (Norwegian Defence Staff, 2007).

From a contingency perspective, this makes one question whether the challenges are basically

the same for an army team operating in Afghanistan and a damage control team on board a

naval vessel. Researchers have claimed that if the context is changed, leadership will change

(e.g., Hannah, Uhl-Bien, Avolio, & Cavarretta, 2009; Mintzberg, 2009; Nissestad, 2007). An interesting exception is a survey (Borgmann & Aronsen,2005) that found that only 23.2% of officers from operational units in the Royal Norwegian Navy adhered to the mission command philosophy principles, instead of a more directive, micro-managing leadership style. Borgmann and Aronsen's (2005) conclusion was that a transformation is needed, not of organizational maps and formal procedures, but a transformation to "shape our minds" (p. 115).

According to Shamir (2011), institutionalizing mission command may entail a transformation of individual and organizational basic assumptions. Basic assumptions are the deeper, implicit beliefs people hold. As Schein (2004) puts it, "someone who does not hold them is viewed as a 'foreigner' or as a 'crazy' and is automatically dismissed" (p. 25). The importance of this aspect is explicitly underscored in implicit leadership theory, in which it is claimed that individuals have implicit beliefs that distinguish leaders from followers, and effective leaders from ineffective leaders (House & Ravidan, 2004). Thus, if mission command is consistent with implicitly held effective leadership theories, leaders would be expected to act in accordance with the formal mission command philosophy to be regarded as effective and appreciated in uncertain situations, in which mission command historically has proven to be the most effective leadership norm.

This study explores whether an increase in task uncertainty is positively related to increased appreciation of mission command by crew members of Norwegian state-of-the-art, Nansen-class frigates.

Mission Command

Prussia's defeat by Napoleon in the battle of Jena-Auerstedt in 1806 is said to have been the starting point for a groundbreaking reorganization of how the Prussian army fought, which led to the establishment of the mission command philosophy (Shamir, 2011). The

army went from being trained to act like a gigantic machine in which each soldier and officer played his part in the preplanned, standardized drill controlled from above, and it was recognized that the organization of military units in war was too complex to be directed by one man at the top. There were too many exceptions, too many unpredictable situations. A higher degree of agility was required than was achievable when the whole organization was micro-managed (Shamir, 2011).

A gap was to be expected between what was planned and actual events. The responsibility for filling or utilizing this gap (i.e., to judge the situation and take the initiative) according to the commanders' intention – was decentralized first to division commanders and finally became the responsibility of every soldier from the highest general to the lowliest private (Shamir, 2011). This reform led to the formation of an army, the German army, which in the Second World War had "developed fighting power to an almost awesome degree" (van Creveld, 1982, p. 4), and it is claimed that this is the only historically proven method of subordinates being given freedom to act on their own (Silva, 1989).

However, as several authors have pointed out, there are challenges in trying to copy or simply translate a foreign, historical concept (e.g., Hughes, 1986; Shamir, 2011; van Creveld, 1982). The lengthy description of the essential norm of mission command in the Norwegian Armed Forces Joint Operational Doctrine thus seems justified:

> The fundamental command philosophy of the Armed Forces is mission command. This means that commanders at different levels give direction by stating what is to be achieved and why it is to be achieved. Within this framework, subordinates are basically then given the freedom to fulfill the task as they think best. This philosophy is chosen for the reason that it allows room for *initiative* to be exercised at all levels. Because its effect is inclusive and stimulates participation at all levels in the organization, it also provides the greatest *robustness* against the frictions of combat.

Mission command is a philosophy which goes beyond the assignment of tasks and the allocation of resources. The philosophy is about having a culture of professionalism and mutual trust. (Norwegian Defence Staff, 2007, p. 163)

Mission command was formally adopted as the leadership philosophy for the Norwegian Armed Forces in 1995. As in Prussia, mission command was implemented into Norwegian doctrine in order to improve performance as a response to after action learning. In Norway's case, it was the lessons learned after a tragic accident in 1986 in which 16 soldiers died that initiated the process of implementing mission command as the official leadership doctrine (Offerdal & Jacobsen, 1993).

The Naval Context

In a classic study comparing German and U.S. army performance during the Second World War, van Creveld (1982) highlights the importance of what he calls the intrinsic qualities of a military units: those somewhat intangible qualities such as initiative, trust, cohesion and courage. These qualities are the organizational foundations, what makes a military unit fight. Van Creveld (1982) labels these intrinsic qualities as "fighting power": "Though good equipment can, up to a point, make up for deficient fighting power (the reverse is also true) an army lacking the latter is, at best, a brittle instrument" (p. 3).

When introducing the anatomy of naval battle, Reeve (2003) makes the same argument as van Creveld (i.e., that "people have always mattered most in the outcome of naval warfare," p. 4). However, while there is an abundance of research discussing fighting power in relation to armies, far less research seems to have been conducted on Fighting Power in the naval domain (Spector, 2001,; Wombacher & Felfe, 2012,).

A great disadvantage for military organizations is that they only periodically have an opportunity to practice their profession: "This is less true for navies than armies, because the former must always contend with the sea" (Murray, 2011, p. 8).[1] A vessel at sea is perhaps

the closest one can get to a delimited and what Anand and Daft (2007) call a self-contained organization, where input arrives at the gangway and, when the vessel has left the quay, almost everything needed to produce its product – fighting power – is supplied internally, thus a navy vessel must be self-reliant (Barnett, 2009). Work on a vessel at sea is a continuous task. The crew must be able at all times to survive the forces of nature and internal threats such as fire and flooding, regardless of whether the vessel is involved in warfare or not. According to Barnett (2009) "The environment is inherently hostile; teamwork is required merely to survive" (p. 13). In contrast to veterans of land warfare, who often claim that the experience of combat was unlike anything they had experienced, "sailors often say that they found themselves doing virtually the same job in combat as in peacetime drills" (Spector, 2001, p. 396). As one sailor put it in an interview after the Falklands War: "It was just like Portsmouth," which is a Royal Navy training facility (Wastell, 2003, p. 304). Consequently, it seems reasonable to expect that how a ship's organization functions in peacetime should predict how the ship will function in war.

However, prescribing mission command as the leadership doctrine for all military units (i.e., leadership is exercised in the same way on board a large navy vessel as on board a small submarine or by a coastal ranger squad in Afghanistan) would appear to be in contrast to the perspective in which leadership is context-dependent (Hannah et al., 2009). Since mission command was developed for the Prussian army more than 200 years ago, it should be fruitful to explore the relationship between task uncertainty and appreciation of mission command in the context of a state-of-the-art naval warship. Are there similarities that outweigh the differences when it comes to exercising leadership on board a large navy vessel and, for example, an army unit in Afghanistan?

One important difference that is claimed to exist between army units and naval vessels is that "in ships at sea, the men go where the leaders go" (Hughes, 2000, p. 28). There

is nowhere to run. While Hughes is most concerned with unit morale, another important aspect of that observation is that it should reduce the need for internal communication. However, on the other hand, Palmer (2005) argues that, even though there are important contextual differences between naval and land operations, uncertainty is "just as prevalent afloat as van Creveld found it to be in his study of generalship ashore" (p. 16). As a result, Palmer (2005) claims that "decentralized approaches as exemplified by Nelson are on the whole superior" (p. 16). Palmer does not explicitly refer to mission command, but it is claimed that Nelson is one of history's greatest proponents of mission command (Heyward, 2003). Thus, it would seem reasonable to expect mission command to be relevant in a naval context as well.

Uncertainty and Leadership

According to the Norwegian Joint Operational Doctrine, armed conflict is characterized by *friction*, which refers to things that happen that separate a plan on paper from its actual execution; *uncertainty and chaos,* which describe a situation in which information is lacking, incomplete or contradictory; and, finally, *danger and stress* as a result of, for example, direct threats, the dangers of the cruel sea and loneliness (Norwegian Defence Staff, 2007).

In a discussion of leadership under extreme conditions, Hannah et al. (2009) point to conflicting findings in the literature on what is perceived as effective leadership. There is research claiming that subordinates facing a threat will look to leaders who initiate structure and take decisive, authoritative action. However, Hannah et al. (2009) suggest that the focus on the team leader's task competence in critical situations may indicate that a culture for a participative leadership style has not been established prior to the critical situation. Thus, there may be a group culture that is characterized by what Sjøvold (2007) calls dependence.

In such a culture the appropriate thing to do is be passive and to await the instructions from a strong leader, like soldiers in a trench waiting for orders (Sjøvold, 2007).

On the other hand, there is research showing that leaders who displayed greater receptivity to input from followers and integrated the efforts of team members were found to be effective (Hannah et al. 2009), which could be an indication of a more mature group culture (i.e. a team where all the members are proactive and will try to influence what is happening; Sjøvold, 2007). The contrast to a team with soldiers in a trench waiting for their orders is aptly illustrated by Lupfer (1981) who describes how the German army during the First World War enhanced the effectiveness of their defense in depth. Since timing was critical the decision to start the counterattack was not centralized to the headquarters, but to the smallest units. The German doctrine actually "forbade wasting time by waiting for permission from higher headquarters" (Lupfer, 1981, p.20). The Germans fostered a culture characterized by initiative, not reactivity. Soldiers were not expected to wait passively for orders in the trenches, but to be actively looking for the right time to start the counterattack. Hannah et al. (2009) argue that it is important to explore the question of "whether followers and groups have different models or implicit theories of optimum leader prototypes for differing dimensions of extreme contexts" (p. 908)

Since mission command is the leadership philosophy that has proven historically to be the most effective means of organizing for situations characterized by uncertainty (Shamir, 2011; van Creveld, 1985), it seems reasonable to expect that the more crew members perceive their tasks as being characterized by uncertainty, the more they will appreciate mission command. On the other hand, as pointed out above, uncertainty will generally generate anxiety and instead of trying to operate with less information, as mission command describes, it is claimed that military organizations have endeavored to increase their information processing capacity (McMaster, 2011).

In a study of uncertainty in military operations, Schmitt and Klein (1993) found that many of the information requirements that were sent up the chain of command were initiated "to relieve anxiety rather than out of any actual operational need" (p. 63). One of the assumed key reasons why organizations have not succeeded in implementing mission command, is that the willingness to take responsibility by being proactive and filling gaps in situations where there is no preplanned response, may be counterintuitive and not consistent with people's implicit leadership theories (Shamir, 2011). As Schmitt and Klein (1993) underscore, "the ultimate requirement is to be able to operate effectively in spite of uncertainty" (p. 66). Thus, it would be fruitful to explore the relationship between the implicit theory of leadership (appreciation of mission command) and the degree of task uncertainty.

Hypothesis: An increase in task uncertainty will be positively related to appreciation of mission command.

Method

The participants in this study were 174 crew members from two Norwegian Nansen-class frigates and four Norwegian experts on mission command.

Measures

Leadership behavior was measured using the Systematizing the Person-Group Relationship (SPGR) instrument (Sjøvold, 2006). The SPGR questionnaire consists of 24 items that are rated on a three-point scale (*rarely*, *sometimes*, *often*). In SPGR, behavior is described along three basic dimensions labeled: Control-Nurture (C-N), Opposition – Dependence (O-D), and Withdrawal -Synergy (W-S). In this study, behavior is analyzed along 12 vectors, two for each of the basic dimensions (Sjøvold, 2006). The minimum value for each of the vectors is zero and the maximum value is nine.

Each of the crew members was asked to rate the behavior of the leader they preferred during a specified complex naval exercise. Using the same instrument, four expert raters,

who were highly familiar with both the SPGR instrument and mission command, were asked

to describe how participants cooperate in an organization that operates on the basis of the

mission command norm. Three of the four expert raters had a naval background. See Table 1

for descriptive statistics.

Appreciation of mission command was measured as the deviation between a

respondent's description of the preferred leader and the average of the expert ratings of

mission command behavior. That is, the smaller the deviation, the more the respondents

appreciated a leader who behaved in accordance with the mission command norm.

Shamir (2011) remarks that mission command that it is a "complex, elusive and

multifaceted concept" (p. 202), which makes it difficult to quantify. To arrive at a measure of

the degree of deviation between an empirical entity and a multivariate ideal type, the

following formula proposed by Doty, Glick and Huber (1993) was used:

$$D_{io} = \sqrt{(X_i - X_0)W(X_i - X_0)^T}$$

where

D_{io} = the distance between ideal type i and empirical case o,

X_i = a 1 x j vector that represents the value of ideal type i for attribute j,

X_o = a 1 x j vector that represents the value of empirical case o for attribute j

and

W = a j x j diagonal matrix that represents the theoretical importance of attribute j to

ideal type i.

Thus, the smaller the value of D_{io} (i.e., the deviation), the more the best leader description resembles mission command. Doty et al. (1993) suggest using expert raters to determine the level of each construct that best represents the ideal type.

   Task uncertainty. As pointed out by Schmitt and Klein (1993), uncertainty "engulfs every facet of military action" (p. 63). It covers many more aspects than gaps in information, e.g., risks, future states, complexity, time pressure and consequences. They also note that what is perceived as an uncertain situation is subjective; people have different perceptions of what is considered uncertain (Schmitt & Klein, 1993). In this study, uncertainty was subjectively measured using nine single items that were intended to cover the most intuitive and central aspects.[2] The respondents were asked to rate each of the items on a 5-point Likert scale (*strongly disagree, undecided, disagree, agree, strongly agree*). The items were: "Do you have to take many different factors into consideration?", "Do you have to take new factors into consideration?", "Do you have to make independent decisions quickly?", "Can misjudgments have severe consequences?", "Would you characterize your tasks as simple or complex?", "Is information lacking when you have to perform your tasks?", "Do you lack immediate feedback on the effect of executed tasks?", "Is it difficult to predict the effect of executed tasks?", and "Do you perform tasks according to standard procedures?".

Procedure

   The study was approved by the commanding officer of the Royal Norwegian Frigate Service and the Royal Norwegian Naval Academy. Collecting data about individual crew members' perception of their workplace involves an ethical aspect, most importantly that the data can be used against the employees (Cummings & Worley, 2009). The study design was provided to the Norwegian Social Science Data Service, and ethical aspects were discussed. In order to enable the respondents to give informed consent, several briefings were held about the research project, and the researcher was on board the frigates on several occasions and

available to answer any questions. Finally, each questionnaire started with a text informing

the respondents about the project, how the data would be used, and promising anonymity.

The questionnaire also included a question requesting respondents to give or withhold

explicit consent to participate. Some crew members responded that they would not

participate, which could indicate that asking for consent had the desired effect. On one

occasion, the commanding officer of a vessel decided that no one from his crew should

participate in the study. The data were converted to SPSS and Microsoft Excel for analysis.

Results

Of the 154 participants in the study,40% of the crew members are officers, 37% are

enlisted, and 23% are conscripts (20 did not report). The crew members are divided into four

functional specializations; 34% represent the operation branch, 20% logistics, 22 % machine

engineers, and 24% weapon engineers (2 did not report). Table 1 presents the means and

standard deviations for crew ratings of best leader behavior and the expert ratings of how

crew members would cooperate according to a mission command norm along the 12 SPGR

behavior vectors, as well as the deviation between best leader behavior and mission

command. Table 2 presents the means, standard deviations, and Pearson correlations for the

independent variables (task uncertainty) and the dependent variable (deviation from mission

command). Table 3e presents the Pearson correlation for uncertainty items and the 12 SPGR

vectors. An independent samples *t*-test was conducted to compare the degree of appreciation

between the two crews. There was no significant difference between the two crews, *t* (172)

=.29, *p* = . 78, two- tailed.

In order to test the hypothesis, deviation from mission command was regressed on the

nine uncertainty items. Table 4 presents the results of a simultaneous regression.

The overall model was statistically significant, $R^2 = .12$, $F[9,164] = 2.545$, $p < .01$. Item three (lack information when performing your tasks) was the strongest contributor to the prediction of the dependent variable ($\beta = .29$, $p < 01$). Item six (have to make independent decisions quickly) was the second strongest contribution, but just exceeded the .05 significance level ($\beta = .18$, $p = .051$). However, the direction of the relationship was the opposite of what was hypothesized: The greater the task uncertainty, the more the description of the best leader deviated from mission command. Thus the hypothesis was not supported.

Discussion

This study provides new data on the appreciation of mission command in a naval context. That the two items that made the strongest contribution to predicting the deviation between description of best leader behavior and mission command behavior were "lack of information" and "make independent decisions fast" is consistent with the main rationale for mission command. That is, since certainty is a product of time and information, and time will be limited in a competitive environment, crew members have to make do with less information in order to save time (van Creveld, 1985).[3] The most notable result in this study is that the more crew members' description of their task fit a situation in which mission command should be relevant, at least according to the mission command theory, the more crew members' description of their preferred leader's behavior deviated from the mission command norm.

If context is an important predictor of what leaders do and should do, the most immediate explanation seems to be that the naval context differs from the land context, where mission command originated and consequently, mission command may not be relevant. On the other hand, it is claimed that uncertainty is as prevalent at sea as on land (Palmer, 2005). Another explanation is the finding reported by Hannah et al. (2009) that in uncertain situations many employees appreciate an authoritative and instructive style of leadership.[4]

Mission command is a leadership philosophy with the premise that employees thrive on uncertainty. But uncertainty implies a need to relate to something new, which can temporarily destabilize our cognitive and interpersonal world and which most of us do not like (Schein, 2004). An authoritative leader can function as an anxiety reducer in such situations. Consequently, if team members are not explicitly trained in mission command, a formal leader or another team member who has acted in accordance with the mission command norm might not be appreciated. Being an appreciated leader is not necessarily the same as being an effective leader, however. Becoming a mature team often implies that team members are willing and able to push their boundaries of individual comfort (Sjøvold, 2007,).

Edmundson (2012) claims that to excel in in uncertain and complex environments one needs teams that embrace uncertainty. Several authors have shown that implementing mission command is a challenging enterprise (e.g., Nissestad, 2007; Shamir, 2011; van Creveld, 1982). It is claimed that mission command is a demanding leadership philosophy which requires explicit training (van Creveld, 1985, p. 271) and is "fundamentally a learned behavior" (U.S. Chiefs of Staff, 2012, p. 6). This study has identified two aspects of uncertainty that seems to warrant attention in future team development. A notable conclusion in Shamir's (2011) study of attempts to implement mission command is that, even if a military unit has successfully implemented mission command at one time, there is no guarantee that the same unit will automatically have the same cooperative climate over a period of years. Thus, operating according to the mission command norm seems to require continuous attention.

One important limitation should be noted. It is challenging to quantify a complex social phenomenon like mission command, which has both a historical interpretation and a modern description. A list of cultural descriptions of a mission command culture will contain many characteristics that complement and even contradict each other (Shamir, 2011). Perhaps

a quantified instrument is not compatible with measuring something as complex as mission command culture Given the time-constrained training and preparation phase before a naval unit is declared operational, the enormous amounts spent on the military, and the widespread use of mission command, more attention should be devoted to establishing an instrument that can be used as a template for measuring mission command. The template used in this study is one approach.

It is worth mentioning the lack of statistical relationship between deviation from mission command and the other uncertainty items. But, as Keegan (1988) has claimed, if there is one thing the long history of war (on land) has demonstrated, it is that the moments when the "flow of information upwards and orders downwards will most nearly match the pace of events – are very, very few" (p. 327). During the most recent significant conventional naval war, the Falklands War, the commander of the British task force stated with a sigh that "the battle for information is never-ending" (Woodward & Robinson, 1992, p. 198). The fact that a perceived lack of information is the most important predictor in this study is consistent with both Keegan's lesson and Woodward's reflection. This study has indicated that lack of information is still an important factor to consider, also in the naval context. Further research may wish to devote more attention to which aspects of lacking information are most important in relation to mission command: the internal aspects (e.g., I do not know what my superiors' intentions are) or external aspects (e.g., I do not understand what the enemy is doing).

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Footnotes

[1] "Naval warfare is marked by the essentially singular interaction of professional military personnel with the 'cruel sea' . . . the sea is more powerful than war" (Reeve, 2003, p. 30).

[2] The questions are taken from a larger survey investigating the organizational context of naval leadership.

[3] The Prussian-German slogan was: "better a bad decision in time than a perfect decision taken too late" (Murray, 2011, p. 8).

[4] In the questionnaire used in this study, the respondents were asked two questions about micromanagement. They both correlated positively with the degree of deviation from mission command: the extent to which respondents appreciated being given detailed orders, $r(172) = .22$, $p < .01$); the extent to which they appreciated giving detailed orders, $r(172) = .17$, $p < .05$). According to Richards (2004), micromanagement is a sure way of undermining a mission command philosophy.

Table 1

SPGR Mean Scores (M), Standard Deviation (SD) for Crew Ratings of Best Leader and

Expert Ratings of Mission Command

		Crew		Expert raters[a]	
Variables	Typical Behavior	*M*	*SD*	*M*	*SD*
Control (C1)	Controlling, autocratic, attentive to rules and Procedures	4.74	2.38	5.06	1.13
Task-orientation (C2)	Analytical, task-oriented, conforming	6.98	2.14	9.00	0.00
Relations (N1)	Taking care of others, attentive to relations	6.34	2.25	5.06	1.13
Creativity (N2)	Creative, spontaneous	1.32	1.92	0.56	1.13
Loyalty (D1)	Obedient, conforming	6.50	2.03	4.50	1.84
Acceptance (D2)	Passive, accepting	6.72	2.24	6.19	1.13
Criticism (O1)	Critical, opposing	2.26	2.05	2.25	1.84
Assertiveness (O2)	Assertive, self-sufficient	3.34	2.38	2.81	2.15
Resignation (W1)	Sad appearance, showing lack of self-confidence	1.01	1.83	0.00	0.00
Self-sacrifice (W2)	Passive, reluctant to contribute	0.86	1.65	0.00	0.00

| Engagement (S1) | Engaged, inviting others to contribute | 7.38 | 1.83 | 8.44 | 1.13 |
| Empathy (S2) | Showing empathy and interest in others | 6.64 | 2.17 | 8.44 | 1.13 |

Note. [a] Average measures ICC =.96. ICC was calculated as two way mixed model with absolute agreement. Inter-rater correlation [.81 to .95]

Table 2

Mean Scores, Standard Deviations and Correlation Coefficients between Task Uncertainty Items and Deviation from Mission

Command

Variables	M	SD	1	2	3	4	5	6	7	8	9	10
1. Take many different factors into consideration	2.32	1.01	--									
2. Take new factors into consideration	2.13	.90	.70**	--								
3. Lack information when you have to perform your tasks	1.39	.79	-.06	-.09	--							
4. Difficult to predict the effect of executed tasks	1.12	.81	.04	.07	.18*	--						
5. Lack immediate feedback on the effect of executed tasks	1.47	1.05	-.11	-.13	.34**	-.13	--					
6. Have to make independent decisions quickly	2.15	1.06	.51**	.50**	-.07	.06	-.15*	--				
7. Misjudgments can have severe consequences	2.28	1.19	.53**	.46**	.02	.05	-.04	.51**	--			
8. Characterize your tasks as simple or complex	2.12	.96	.56**	.44**	-.10	.06	-.07	.46**	.51**	--		
9. Perform tasks according to standard procedures	1.16	.85	.16*	.16*	.06	.03	.12	.17*	.05	.12	--	
10. Deviation from mission command	7.90	2.55	-.13	.00	.35**	-.04	.20**	.01	.05	-.10	-.01	--

Note. *p* < .05. **p* < .01 (2-tailed)

Table 3

Correlation Coefficients between Task Uncertainty Items and SPGR Vectors

Variables	*Take many different factors into consideration*	*Take new factors into consideration*	*Lack information when you have to perform your tasks*	*Difficult to predict the effect of executed tasks*	*Lack immediate feedback on the effect of executed tasks*	*Have to make independent decisions quickly*	*Misjudgments can have severe consequences*	*Characterize your tasks as simple or complex*	*Perform tasks according to standard procedures*
Control	-.09	-.16*	-.09	-.05	-.02	-.14	-.08	-.14*	-.21**
Task-orientation	.17*	.07	-.43**	-.11	-.24**	-.02	.07	.15*	-.01
Relations	.07	.06	-.27**	.02	-.29**	-.04	-.05	.08	-.10
Creativity	-.20**	-.05	.24**	-.05	.15*	.05	.06	-.24**	.06
Loyalty	.06	.07	-.28**	.03	-.17*	-.04	-.02	.06	-.04

Acceptance	.04	.07	-.22**	-.01	-.15*	-.08	-.15*	.01	-.07
Criticism	.00	.02	.07	.01	.03	.02	.12	-.10	-.03
Assertiveness	-.21**	-.10	.04	-.07	.06	-.03	.01	-.06	.02
Resignation	-.03	.07	.23**	-.16*	.15*	.05	.08	-.11	-.05
Self-sacrifice	.02	.12	.26**	-.15*	.19**	.14*	.12	-.16*	.06
Engagement	.09	.05	-.29**	.05	-.24**	.00	-.06	.05	.04
Empathy	.07	.05	-.30**	.01	-.26**	.05	-.03	.00	.09

Note. *$p < .05$. **$p < .01$ (2-tailed)

TABLE 4

Summary of Simultaneous Regression Analysis for Variables Predicting Deviation From Mission Command

Variables	Model 1		
	B	*SE*	β
1. Take many different factors into consideration	-.45	.27	-.19
2. Take new factors into consideration	.19	.29	.07
3. Lack information when you have to perform your tasks	.89	.25	.29**
4. Difficult to predict the effect of executed tasks	-.21	.24	-.07
5. Lack immediate feedback on the effect of executed tasks	.06	.19	.03
6. Have to make independent decisions quickly	.43	.22	.18
7. Misjudgments can have severe consequences	.07	.21	.03
8. Characterize your tasks as simple or complex	-.23	.25	-.09
9. Performs tasks according to standard procedures	.01	.23	.00
Constant	6.78		
R^2	.12**		

Note. $*p < .05$,. $**p < .01$; missing data were removed listwise

Bio

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