

Leadership development:

An empirical study of effectiveness of the leadership development program at The Royal Norwegian Naval Academy and its impact on preparing officers to execute leadership in today's conflicts and the conflicts in the years ahead.

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Part I

Introduction

This part of the dissertation consists of the introductory chapter, which presents the background and the general research question addressed by the empirical study.

1. Introduction

1.1 The Objective and Theme of the Dissertation

The objective of this dissertation is to examine leadership and the effectiveness of leadership development. Many organizations view leadership as a source of competitive advantage and are investing in its development accordingly (McCall, 1998; Vierce & Fulmer, 1998). This has turned leadership into the most extensively studied topic in the social, behavioral, and management sciences. Although leadership and leadership development have grown into a multibillion dollar industry (Yukl, 2006, p. 386), many of the reported insights are trivial and consist largely of a collection of decontextualized facts. One reason for this might be that there is little agreement across empirical studies regarding the defining characteristics of leadership (Hogan, 2006) and no consensus concerning the essential features of effective leadership and leadership development (Day, 2001; Hogan, 2004; Barker, 1997). Relatively little is known about what is actually developed (Day & Halpin, 2004). Within the field of leadership development, most of the focus has been on the various methods used to develop leaders (e.g. Conger & Benjamin, 1999; McCauley, Moxley, & Van Velsor, 1998; Vierce & Fulmer, 1998) rather than about what will be developed.

Nevertheless, it is obvious that leadership matters because it concerns building and maintaining effective teams, persuading people to give up, for a while, their selfish interests in order to pursue common goals that are important for the responsibilities and welfare of their groups (Hogan & Kaiser, 1994). It is important to distinguish between a person's short-term and long-term interest: Actions that promote the group also serve an individual's long term welfare. History mournfully suggests, however, that without an external threat to their group, people largely pursue their short-term interests.

Leadership only occurs when others willingly adopt, for a period of time, the goals of a group as their own. Leadership is persuasion, not domination, and persons who can require others do their bidding because of their powers are not leaders. Dixon (1993) states that leadership development involves building the capacity for groups of people to learn their way out of problems that could not have been predicted, or that arise from the disintegration

of traditional organizational structures and the associated loss of sense-making (Weick, 1993). Thus, leadership concerns building cohesive and goal-oriented teams, and there is a causal and definitional link between leadership and team performance (Hogan, Curphy, Hogan, 1994).

Various writers have convincingly argued that our evolutionary history makes us selfish (Dawkins, 1976) and yet able to identify the welfare of our social unit—perhaps because individual survival sometimes depends on group survival (Eibl-Eibesfeld, 1989, J. Hogan, 1978). When leadership is conceptualized in the context of human origins, it is consequential for the success of organizations and the well-being of their members and their countries' citizens and represents a powerful adaptive tool for individual and group survival (Hogan, 2006; Hogan, Curphy, Hogan, 1994). This evolutionary perspective is also consistent with the definition of leadership development proposed by McCauley et al. (1998) as expanding the collective capacity of organizational members to engage effectively in leadership roles and processes.

This requires that both leadership and leadership development must attend to the social and interpersonal nature of their phenomenon. It requires a social context, and therefore can not be directly developed unless groups of people are brought together. This is because leadership development depends on fostering social relations among individuals in a group, team, or organization (Day, 2000); people are nested in teams, and teams are nested in organizations. Leadership development is about developing the abilities of group members to continually reinvent themselves, which is an effort that requires that these processes be linked and connected to a broader organizational strategy (Hall & Seibert, 1992; Latham & Seijts, 1998).

Furthermore, Day (2000) argued that there is a fundamental difference and distinction between *leader development* and *leadership development*. The emphasis within *leader development* typically is on individual-based knowledge, skills, and abilities associated with formal leadership roles. Leader development is a result of purposeful investment in human capital. The purposes of *leadership development* are to build the intrapersonal competence needed to form an accurate model of oneself (Gardner, 1993, p. 9), to engage in healthy attitude and identity development (Hall & Seibert, 1992), and to use that self-model to perform effectively in any number of organizational roles. These capabilities contribute to

enhanced individual knowledge, trustworthiness, and personal power, which have been proposed as the fundamental leadership imperatives (Zand, 1997), at least from a traditional, individualistic leadership perspective. What most organizations describe as their leadership development effort should more accurately be labeled as leader development. The reason is that most development approaches focus exclusively on the individual and ignore the social context. The underlying assumption is that developing individual leaders will result in better leadership, which is at best a tenuous assumption. Within leadership development, the emphasis is on the social nature of this competence and on the idea that effective development best occurs in an interpersonal (i.e. social) context. This makes leadership development a more complex endeavor than one concerned solely with individual leader development.

In his latest book, *Personality and the Fate of Organizations*, Professor Hogan claims that “nowhere in our educational system is there any systematic training for leadership. Competent leadership training does not occur in business schools, and it does not occur in the military academies” (2006, p. 108-109). His statement represents a challenge, especially for the military academies, because their purpose is to educate and develop young men and women so that they are able to build and maintain effective teams to pursue a common goal that is important for society in general. Leadership and leadership development is their primary focus and *raison d’être*. Their focus is to train and develop officers to cope with today’s conflicts and the conflicts in the years ahead. Norway has three military academies whose aim is to fulfill this important purpose through their leadership development programs.

This dissertation will investigate the effectiveness of the leadership development program at the Royal Norwegian Naval Academy (RNoNA) located in Bergen, which I will do by asking the following overall and general research question:

Is the leadership development program at the Royal Norwegian Academy effective in preparing officers to execute leadership in today’s conflicts and the conflicts in the years ahead?

Because of the small body of research addressing leadership development, this study is exploratory in its orientation and aims at theory generation and development of propositions

for leadership development in general, although this study is conducted within the military realm.

1.2 The Context of the Dissertation

Since the RNoNA was established in 1817, the main purpose has been, and still is, to educate and train officers to lead others into combat on behalf of the nation. This demanding challenge seems to have grown even larger because the Norwegian Armed Forces and other western militaries have—because the end of the Cold War—experienced an accelerating revolutionary change driven both by rapid technological innovation and by an extraordinary globalization of military affairs. Since the fall of the USSR and the rise of groups like al Qaida, officers are now realizing that many of their long-established leadership and warfighting models are inadequate to help them understand or deal with today's military conflicts. Where military leaders once operated with a machine model of their world, which was predicated on concepts developed during the Industrial Revolution, such as linear thinking, control, and predictability, they now find themselves struggling with something more organic and non-linear, where limited control and a restricted ability to predict are the norm. The major reason for this is that the primary cause of conflict in the 21st century has evolved to become a condition—*disconnectedness*—and not a religion (Islam), nor any particular place, nor even the style of conflict known as “terrorism” (Barnett, 2004, 2005).

These developments within the military realm and the new military landscape after the Cold War, and especially after the 9/11 attacks define a world that is nonlinear, organic, and characterized by uncertainty and unpredictability. We are experiencing the disintegration of traditional organizational structures and the associated loss of sense-making (Weick, 1993). In today's fast-changing environment, the ones who will win are the ones who are able constantly to adapt and evolve because we are now facing an enemy that does not have a formal army. Each engagement is particular unto itself and in its unique setting. We are facing an adversary that is connected through a “nervous system,” an overarching political idea that not only binds them together, it also coalesces a social energy which promotes disconnectedness from the wider world. Our adversaries are different from our military, whose nervous system is hierarchical and relatively static. Our adversaries' nervous systems

are complex adaptive systems, “rhizomatic¹” Smith (2005) or starfish-like (Brafman & Beckstrom, 2006). Such a command system operates with an apparently hierarchical structure above ground, visible in the operational and political arenas, and with another system, the real control system, centered in the roots out of sight. It is a horizontal and decentralized system with many discrete groups. It develops to suit its surroundings and purposes in a process of natural selection, with no predetermined operational structure. Its foundation is that of the social structure of its locale.

The rhizomatic command system is difficult to attack, just as rhizomatic weeds are difficult to eradicate. In agronomy, rhizomes are eradicated by one of three methods: digging them up, removing the nutrients from the soil, or penetrating the roots with a systemic poison. Analog methods must be used to deal with organizations that have adopted rhizomatic command-and-control systems. Cutting off their visible heads by, for example, killing their “known leaders” may at best cause them to lie dormant for a season, during which they operate with catalysts—spiritual and cultural leaders. Attacking their visible command structures, therefore, could be considered as attempting to solve the problem “within the context of war,” on the physical level. As seen today in both Afghanistan and Iraq, such actions are often a spur to action other directions. We have to realize that no act of force will ever be decisive because the true enemy is a social and economic condition, disconnectedness itself, which requires an understanding of war in the context of such widely diverse fields as politics, economics, and sociology—in other words, “war in context of everything else” (Barnett, 2004). This requires that all leadership development efforts be linked into this context, making organizational reinvention and sense-making possible.

At the same time it is important to keep in mind that neither human nor organizational life merely resembles natural ecosystems; rather, they all share fundamental properties, specifically nonlinear processes, because they are complex adaptive systems and thus follow the same deep laws. These laws, however, will not play out in exactly the same way in military affairs as they do in biology because in military affairs, people make conscious decisions, whereas in biology there is no such conscious intent.

¹ This is a botanical analogy that is consistent with complex adaptive system theory. Rhizomatic plants can propagate either by spreading fertilized seed, or vegetatively through their root systems, even when the root is severed from the parent body. This allows the plant to survive a poor growing seasons or disturbance to the soil.

1.3 An Holistic Approach to Leadership Development

Unfortunately, leadership research has been based primarily on minitheories of personality rather than on more comprehensive models of team and organizational behavior (Kaiser & Hogan, 2006). This forced me to look elsewhere for a theoretical foundation to answer my research question, and the search led me to the ideas and work of U.S. Air Force Colonel John Boyd (1927-1997). He was a receptive and original thinker who synthesized ideas from across disciplines to formulate his own philosophy about warfare, competition, decision making, and the nature of leadership. Although his work was conducted within the military realm, during the last five years, six books have been published on his life and work, and both foreign policy analysts (Barnett, 2005) and business strategists (Richards, 2004) are beginning to recognize Boyd's influence. In his latest book, for example, best selling business guru Tom Peters called Boyd a "revolutionary military strategist" (2003, p. 19), and he also described Boyd's observe-orient-decide-act (OODA) loops in business (p. 219).

There are several reasons why Boyd's work provides a useful foundation for research in leadership development. Boyd was the first in the modern era, to propose a comprehensive theory of strategy that is independent of size or technology and to identify an organizational climate for achieving it. In contrast to one of the most famous military thinkers in history, Carl von Clausewitz (1984), whose theory held that numbers dominate, unless other factors somehow override, numbers were essentially irrelevant to Boyd. Recent research has confirmed the accuracy of Boyd's observation (Biddle, 2004; Rotte & Schmidt, 2002). They found that factors like numerical superiority convey at most a weak advantage, and technological superiority none at all. It is cohesion and morale, not numbers and technology, that instill courage and confidence in ordinary soldiers to perform extraordinary deeds under seemingly hopeless circumstances, and that requires leadership.

Second, he was also the first to propose that the two most successful forms of modern armed conflict—maneuver (blitzkrieg) warfare and guerrilla warfare—are based on the same underlying principles. They both stress measures including preparation of the opponent, deception, and clouded signatures as the basis for penetrating the opponent and forcing surrender or collapse without the need for major battles.

Third, Boyd also was the first to observe that the common underlying mechanism involved tactics that distort the enemy's perception of *time*. He identified a general category of

activities to achieve this distortion, the ability to change the situation faster than the opponent could comprehend, which he called “operating inside the Observation–Orientation–Decision–Action (OODA) loop.” Building on a tradition in strategy going back to Sun Tzu, Boyd noted that operating in such a fashion generated not only mental effects, such as confusion, but moral ones, and that enemies confronted by these tactics often simply gave up and fled the battlefield. This basic strategy is now widely accepted by agile military forces such as the U.S. Navy Sea-Air-Land Team (SEALs), the most elite of American military units: “Military analysts say we [U.S. Navy SEALs] are becoming skilled disciples of John Boyd. That is, we execute the Boyd Loop—observation, orientation, decision, action (OODA)—far better and quicker than our enemies” (Couch, 2004, p. 258). Boyd’s theories stand in stark comparison to the fire-power based attrition doctrines that were followed, and to a large extent still are, by the major Western military forces (Vandergriff, 2006).

Finally, Boyd was one of the first major strategists to base his organizational concepts for accomplishing these effects on what complexity theory now calls “self-organization,” which at the time he proposed it was a clear break from the top-down “command and control” mentality that all U.S. military services and other Western militaries employed. Boyd’s alternative was to generate and focus creativity and initiative throughout the ranks, and he proposed a specific organizational climate to accomplish it. Again, Boyd was not the first to appreciate initiative, even by privates and sailors, but he was the first to tie a specific climate based on initiative to the ability of teams to generate rapid changes, which he called “transients,” in combat and other conflicts. Until Boyd, military forces stressed tighter control, “knowing where everybody is on the battlefield,” to enable commanders to move units around as if they were chess pieces. This, unfortunately still is the idea behind the ongoing technology-driven development of “network-centric” warfare within NATO, which stands in opposition to Boyd.

Because leadership concerns the building of cohesive and goal-oriented teams, leadership development is an effort within a social context to increase the abilities of leaders and members to build such teams. An important ingredient in creating effective teams in a modern conflict or business setting is expanding the abilities of all members to take on different roles as the team develops and confronts unexpected challenges. A leadership development program, therefore, requires tools for measuring the competency for workable relations in organizational contexts. SPGR (Sjøvold, 1995, 2002, 2005, 2006, 2007) which is

an acronym for “Strengthening the Person-Group Relation,” represents such a tool set. It consists of tools created over the last 20 years to measure the competence of individuals, groups, and organizations for developing and maintaining functional relations. The theoretical foundation of the SPGR model combines Bion’s model for Group Emotionality (Bion, 1987), Parsons’ suggestions of pattern variables (Parsons & Shils, 1953; 1951), Mills (1984) work on group development, and Bales Theory of Social Interaction Systems (Bales, 1999). The structure of the methodology is a further development of the structure found in Bales SYstematic Multiple Level Observation of Groups (SYMLOG) method (Bales and Cohen, 1979). As such it contains insights from both Moreno’s (1953) sociometry and Lewin’s (1952) field theory. Besides integrating different theoretical perspectives, the SPGR system is a model and a procedure for visualizing how organizations, teams, and individual team members can contribute to the development of organizations, teams, and team members. It provides a helpful tool for improving the development of leaders and leadership.

Boyd’s syntheses, especially his notions of time distortion and competitive team behavior in situations characterized by complexity and stress, together with SPGR’s theory, methods, and psychometrics, provide the necessary foundation for investigating the effectiveness of leadership and leadership development within an understanding of leadership as an adaptive tool for both individual and group survival. By applying this fundament, this empirical study seeks to avoid insignificant insights and decontextualized facts concerning leadership and leadership development.

1.4 Organization of the Dissertation

This dissertation is organized into eight main parts (Part I to VIII). Part I consists of this introductory chapter. Part II is devoted to the context and the theoretical foundation of this dissertation and consists of three chapters. Chapter 2 provides a description of the context within which most military officers will perform leadership. It describes the world of the 21st century and the challenges for today’s military and for an effective leadership development program to deal with these challenges. This chapter also answers two central questions: (1) Training to do what? (2) Against whom? It also provides the underlying insights needed to understand war “in the context of everything else,” that is, as relevant to the political environment of the 21st century. Chapter 3 provides a foundation for military leadership in

21st century conflict by covering the essentials of Boyd's theory needed to answer this dissertation's research question.. Chapter 4 presents both a theory and method for implementing Boyd's theory of competition and conflict. Part III of this dissertation consists of chapter 5, where the general conceptual framework underlying my empirical model will be discussed, and the relationships to be studied in the empirical study will be outlined as a result of Part II. Part IV consists of two chapters that are the direct result of the conceptual model needed to outline the research questions presented in part VI. Chapter 6 covers personality while chapter 7 covers culture. Part V consists of one chapter that describes the Royal Norwegian Naval Academy and its approach to leadership development. Part VI covers research and methodology and consists of two chapters. Chapter 9 outlines seven additional questions that supplement and help to answer the main research question, while chapter 10 is a discussion of the methodology applied in this dissertation. Part VII, results and analysis, consists of three chapters where the research questions outlined in chapter 9 are presented, analyzed and discussed. The final part, part VIII, includes the last chapter, which is devoted to an overall discussion of the results found in Part VII and their implications for our ability to resolve today's conflicts and those in the future. It also suggests implications for the theory and practice of leadership development. This part includes a discussion of the limitations of this study, suggestions for further research, and ideas for improving leadership development at the RNoNA and in the Norwegian armed forces.

Part II

The Context and Theoretical Foundation

This part consists of three chapters that put this dissertation into context. Chapter 2 describes the nature of war and conflict in the 21st century, answering three central questions: 1) training to do what? 2) Where? and 3) Against what types of organizations? Chapter 3 outlines Boyd's theory of competition and conflict, while chapter 4 is a follow up on chapter 3 presenting a theory and method that connect the theories presented in chapter 3.

2. War and Conflict in the 21st Century

2.1 Introduction

The world has changed. During my short time in the Norwegian armed forces, beginning in June 1981, the world has gone through significant changes. In 1981 I was part of an institution that was created in the aftermath of World War II (WWII). The standard assumption in the 1980s was that the Western world had about 8-9 minutes to respond to a Soviet launch of nuclear Armageddon, where Norway would form a flank. Specifically, we prepared to defend the northern flank from a Soviet invasion. Since then we have seen a dramatic downshifting in the nature of war. Within a few years the standard will be that Western military forces must be able to operate an unmanned aerial vehicle on the far side of the earth to identify, recognize, target, and if necessary employ a small missile to kill an individual, all within 8-9 minutes (Barnett, 2004, C-Span). Warfare has changed from taking on a massive nuclear war to taking down a terrorist halfway around the world.

A closer look at the latest wars and conflicts in the 1990s reveals an interesting pattern. In Somalia, war was waged to eliminate the warlord Mohammad Farah Aideed and his clan. In the former Yugoslavia it was Milosevic and his lieutenants. In Afghanistan it was al Qaida and Osama bin Laden, and finally in Iraq it was a deck of cards (Barnett, 2004). What we have witnessed in the aftermath of the Cold War is a completely new military demand pattern. We are now facing an enemy like al Qaida, an enemy who does not use conventional military force. So what will our adversaries do? The answer is that they will wage *fourth generation warfare* (4th GW). Fourth generation warfare provides us with a challenge because it is still developing. Unfortunately this challenge has not yet been fully realized by the military and the political establishment. If it had, we would not have bought a “high tech” military, and ended up fighting “low tech” wars. The wars in Iraq and Afghanistan have clearly demonstrated the limits of modern technology: It can defeat virtually any conventional military force, but it provides no special advantages in prolonged insurgency. Joint Direct Attack Munitions and television-guided antitank missiles can not distinguish between insurgents and noncombatants or help soldiers to speak Arabic.

This development seems to be very hard to grasp, but its essentials must be understood if leadership development is to be linked to a context and broader organizational strategy that is relevant to 21st century warfare. In this chapter I will provide the essentials of this development by presenting in section 2.2 the “generations of war” concept, while section 2.3 describes the environment that we will most likely face in today’s and tomorrow’s conflicts. Finally, section 2.4 summarizes this chapter by focusing on the new expanded and altered military role and its leadership requirements.

2.2 The “Generations of War” Concept

In this section I present a summary of the development of warfare using the *generations of war* concept. This concept is the most widely used scheme to break the history of modern warfare into overlapping evolutionary *generations* (Hammes, 2004; Lind, Nightengale, Schmitt, Sutton, & Wilson, 1989; Vandergriff, 2002) that define major changes in warfighting and leadership styles. The concept of “generations²” was first proposed in a 1989 paper published in the *Marine Corps Gazette*. The authors (Lind, et al., 1989) began their numbering system with the Peace of Westphalia in 1648, which established the modern state system in Europe, and the count of generations now stands at four. Each generation is not confined to a specific historic period, however, but can be seen somewhere in the world today, as shown in Figure 2.1.

First generation warfare (1st GW) was close-quarters, linear fighting tracing its roots back to the Greeks and Romans through the Middle Ages and into the age of Napoleon. The tactics of this generation consisted of the column and line—regularity driven primarily by the need to mass firepower from short range smoothbore muskets. The first generation of war, however, reflected not just the limits of technology but also the political, economic and social structures that Europe developed as it transitioned from a feudal system to a system of nation-states ruled by monarchs (Hammes, 2004).

² Lind et al. (1989) uses the term “generation” as a shorthand for a dialectically qualitative shift within modern war. As Lind states: “For you Hegelians out there, “generations” is short hand for dialectically qualitative shifts, and working with the U.S. Marines, to use the phrase ‘dialectically qualitative shift’ guarantees that the entire audience at that is reading the label on their beer bottles. So we have tried to simplify the terminology” (2001, p. 19-20).

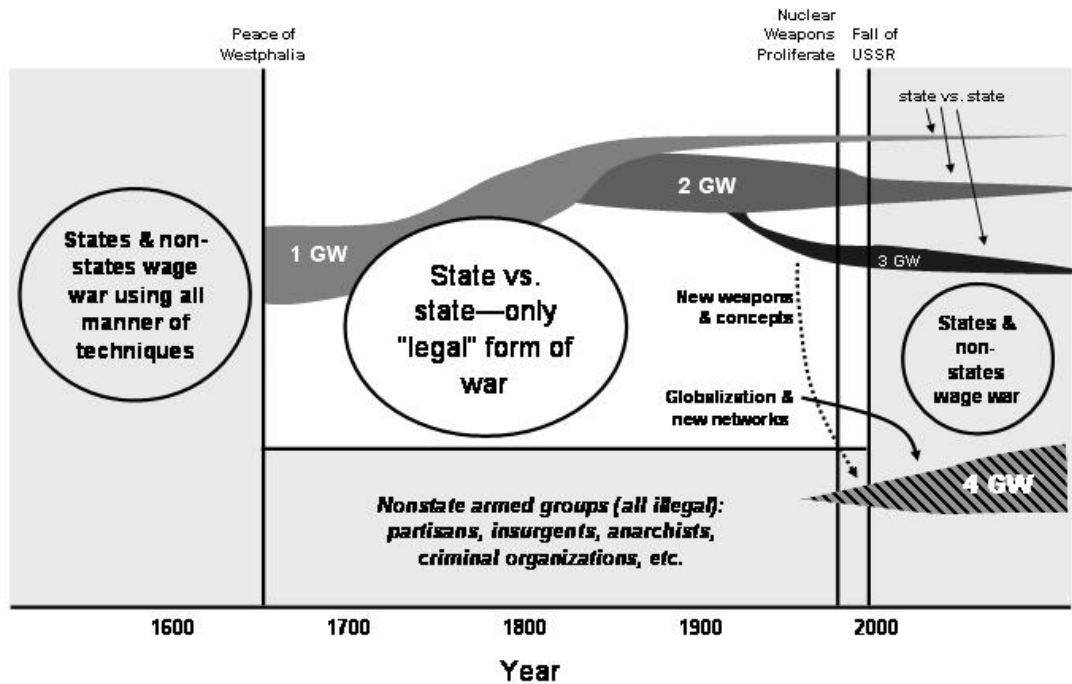


Figure 2.1 The "Generations of War" Scheme (Richards, 2005, p. 21)

The first generation of modern war evolved slowly in consonance with the societies of Western Europe until it peaked with the enormous armies of the *levee en masse* and the Napoleonic Wars of the early 19th century.

Politically, warfare of Napoleonic size and complexity required the emergence of the nation-state. Only the resources of a nation-state could raise, train, equip and sustain the massive armies required by the French Revolution and then by Napoleon. The nation's transition from the private domain of a monarch allowed for mobilization of its entire wealth, ingenuity and manpower in support for war. Economically, major advances in agriculture and transportation were essential to generating the wealth and resources required to field and sustain large armies. Socially, the development of a genuine feeling of patriotism in the mass of men making up the armed forces was essential to enabling such warfare. By the end of the Napoleonic period, warfare did not involve just royalty, a small professional army, and the treasure of a country; it consumed the entire population.

The military culture that evolved during the first generation was a culture of order, embodied in ranks, saluting, uniforms, drill, etc., in accordance with a typical bureaucracy. The philosophy of first generation warfare is that army that is the best at doing these things will

win. Hence, first generation warfare was (and to some extent is) characterized by rule-based practices, including specification of authority and the limits of that authority, specification of hierarchy of authority, supervision of the exercise of the authority, the continuous and ongoing nature of the exercise of authority, the continuing and ongoing nature of administrative activities, differentiation of person from office, and specialization of work activities based on expertise and documents as the bases for official business (Weber, 1947)³.

At the time that it evolved, it was consistent with the battlefield, which was dominated by order. The ideal army was a perfectly oiled machine and that was what the military culture of order sought to produce. Initiative by the ranks was not valued nor largely even tolerated. Officers of this period were from the aristocratic class, possessed little or no professional training, and operated under one commander who made most if not all tactical and strategic decisions. Because the issue was decided at the line of the battle, there really was no operational level in 1st GW. Although a few commanders, such as Gustavus II Adolphus, Frederick the Great, and the young Napoleon employed some of the practices of maneuver warfare, 1st GW is mostly focused on attrition warfare, where the aim is to compel the enemy to surrender by exploiting destructive force. The Napoleonic wars are considered the epitome of 1st GW, and their magnitude, combined with new and more lethal technologies, spurred the transformation from first to second generation warfare (Lind et al. 1989).

Second generation warfare (2nd GW) was characterized by *Materialschlacht* or an industrial war of attrition. The period dominated by 2nd GW spans most of the post-Napoleonic era through World War II and the Vietnam War. From 1800 to 1915, the West witnessed a combination of increased gross domestic product (GDP) per person, major population increases, and significantly better government control. These factors, along with the rapid industrialization of Western Europe and North America, massively increased the wealth available to the national governments of Europe. This was important in the evolution of war because 2nd GW required both the wealth generated by an industrial society and the sheer volume of output that only such a society can produce.

³ Weber used the Prussian Army as a model when he described the bureaucratic organization.

Although technology developed rapidly, the military culture still remained a culture of order, and so 2nd GW is often represented by the French methodical battle. This entailed a step-by-step approach to the battle, an emphasis on firepower, a belief that the defense was stronger than the offense, and strict obedience to orders from the top down. Under this concept, the locus of decision making had to remain at the highest levels, because a higher commander had to have greater control in order to coordinate the actions of numerous subordinate units. The entire system was designed to be propelled forward by pressure from above, rather than being pulled from below. When combined with the increase in lethality provided by industrial age weaponry, such rigid command structures produced the enormous increase in attrition that we associate with 2nd GW.

Third generation warfare (3rd GW) evolved during World War I as a German bottom-up, idea-based, and technologically supported reaction to the Allies' material superiority, and it restored maneuver to the battlefield. Rather than methodical battle, the Germans emphasized continuous operations—3rd GW is in some sense the triumph of “operational art,” which describes maneuvering between or even in place of battles. They stressed the importance of *penetration*, and if a breakthrough were made, the attacking troops would push as far as possible. The Germans emphasized mobility: The objective of the leading elements was not destruction of enemy soldiers. Rather, it was to seek penetration by attacking the weak spots of the enemy's resistance, which they located and even created through tactics that exploited *decentralization* and *initiative*. The Germans also emphasized pulling from below. They recognized that while strategic or operational-level concepts had to be formulated by higher-level commanders, the success of those concepts depended upon lower-level commanders having the flexibility and freedom to capitalize upon any momentary advantage that they might gain. To make the most of these tactical innovations, the Germans also evolved a leadership philosophy, often called the *blitzkrieg philosophy* (although the Germans did not use that name), under which a commander could act according to the circumstances of the moment and even sometimes ignore a directive or a control measure such as a boundary, if his actions contributed to the accomplishment of the unit's mission.

Such an approach relies on highly trained units led by well educated and experienced leaders trusted to make on-the-spot decisions to bypass enemy strengths and penetrate to attack vulnerable areas such as headquarters, supply depots, and artillery units. At the tactical level, it involves *nonlinear* tactics focused on making penetrations and is based on ideas such as

*surface and gaps, reconnaissance pull, multiple thrusts*⁴, and decentralized *Auftragstaktik*, all harmonized by the ideas of commander's *intent* and *Schwerpunkt* (focus of effort). The key to its success was that the Germans already possessed a culture that emphasized decentralization and rapid decision-making by its officers and NCOs.

Biddle (2004) has empirically shown that *the modern system*, which is 3rd GW, is the key to success in state-on-state warfare. At the same time he warns that:

Modern-system offensive tactics are extremely complex, and demand high levels of training and skill to be implemented properly... While effective if implemented properly, they demand high level of skill both from troops and leaders... Such operations put a premium on judgment, mental agility, and individual initiative at all level of commands... (2004, p. 38 -44)

The conclusion is straightforward: you win only by becoming better at 3rd GW than your opponent, rather than by achieving a material or even technological superiority over him. However, as noted, it seems that the age where advanced states settle life-or-death issues through conventional combat is over, and state-versus-state warfare in cases where one or both parties possess nuclear weapons will more resemble military theater than real war. This suggests that most warfare in the future must be something other than 1st, 2nd, or 3rd generation war.

To describe *fourth generation warfare* (4th GW) is a difficult task because it is still evolving. What we know is that the end of the Cold War and the proliferation of nuclear weapons, have moved warfare away from contests between state armies and down to the individual level, which corresponds to the “first image” in a system proposed by Waltz⁵ (1959). This kind of warfare has been given many labels: Lind et al. (1989) labeled it *4th generation warfare* and saw it as an extension of 1st, 2nd, and 3rd generation warfare. Van Creveld (1991) labeled it “nontrinitarian warfare⁶,” Smith labeled it “war amongst the people”

⁴ *Multiple thrusts* in business are sometimes called “exploratory marketing” (Hamal and Prahalad, 1994). The basic idea is to start a number of things and reinforce the ones that succeed.

⁵ Waltz's other two images are the individual and the international system. Within the individual image, wars start because there are evil people in the world, while within his third image, wars start because there is no Hobbesian leviathan to prevent them.

⁶ Nontrinitarian warfare: The Clausewitzian Universe rests on the assumption that war is conducted predominately by states and governments. Until the Peace of Westphalia (1648), however, war was waged by many different kinds of social

(2005), while two Chinese colonels, Liang and Xiangsui (2002), labeled it “unrestricted warfare,” which includes; Trade War, Financial War, New Terror War (in contrast to Traditional Terror War⁷), Ecological War, Psychological Warfare, Smuggling Warfare, Media Warfare, Drug Warfare, Network Warfare, Technological Warfare, Fabrication Warfare, Resource Warfare, Cultural Warfare and International Warfare (pp. 36-46). They claim that any of these methods of operation can be combined resulting in a completely new method of operation. It appears that we are approaching Sun Tzu’s “total war”.

Sun Tzu insisted that all warfare be as irregular (“formless”) as possible, which indicates that he made no fundamental distinction between different kinds of warfare. Whatever we label this kind of warfare, it contradicts the Clausewitzian Universe, which rests on the assumption that war arises as the logical result of policy decision made by states and governments. What we have witnessed since the end of the Cold War and what some strategists call “Globalization III”⁸ is that war now is waged by different kinds of social entities, and they wage war for a nearly endless variety of reasons.

Van Creveld (2004), summarized modern warfare as:

entities, such as barbarian tribes, the Church, feudal barons of every rank, free cities, and even private individuals. His threefold division into government, army, and people does not exist in the same form when conducted by these other entities. Present-day armed violence often does not fit the Trinitarian pattern because it does not distinguish between governments, armies, and people (see especially van Creveld, 1991, p. 49-62).

⁷ *New Terror War* describes terrorists who use the latest technology, and set themselves against humanity as whole.

⁸ Globalization I, from 1870 through 1914, was largely based on the uncompetitive movement of raw materials from the colonies to Europe. When that system of global economy self-destructed in two great world wars, Western Europe along with Japan and Australia was connected to America’s new version of globalization, Globalization II, from 1945-1980. It was based on free markets, free trade, transparency, democracy, and collective security. The Western-defined globalization process renewed its march eastward with the collapse of the Communist bloc in 1989, with China predating that conversion by several years as a result of Deng Xiaoping’s “four modernizations” push in the early 1980s, which marked the beginning of Globalization III, 1980-2001. Globalization IV was entered as a result of 9/11 (Barnett, 2005, p.273-274).

A form of war in which the entire system of regular force, their maneuvers, and their operations collapses. In which the opponents are no longer uniformed forces, like yourself, fighting overtly in one way or another; advancing, retreating, maneuvering, firing, and so on and on, but, where you get a completely different kind of opponent who no longer wears a uniform, who no longer fights overtly, who may often no longer be a part of a regular chain of command. You are a part of a regular chain of command, you are being commanded from the top down. That is not true in 4th generation warfare, where to give Iraq as an example, there may be a dozen different groups all commanded—to the extent that they are commanded—by different people and different money. So, 4th generation warfare is a completely different kettle of fish. It is different, above all, not only in the tactics, but in the identity of the forces that fight it.

We have seen front lines disappear and the distinction between friend, foe, and noncombatant become vague to nonexistent⁹. A decade before 9/11, van Creveld (1991) claimed that: "...the Clausewitz Universe is rapidly becoming out of date and can no longer provide us with a proper framework for understanding war" (p. 58), and the same would be true for Waltz's "second image," the nation state. This fact seems to be difficult for both politicians and the military establishment in the Western world to understand as long as they are locked into a 2nd generation warfare orientation resting on an orderly culture. Van Creveld goes as far as claiming that:

Many, particularly in Western-Europe, seem to be putting their heads in the sand, pretending non-trinitarian war does not exist or does not concern them and trying to preserve their structure even as the economic resources at their disposal as well as their order of battle continue to shrink. Others simply pray that it will go away so they can have a sigh of relief and return to 'real soldiering' (2003, p. 8)

On the organizational level, the Norwegian and other Western militaries are facing an adversary that is a flat, organic, relatively leaderless, non-hierarchical network, rhizomatic, or starfish-like¹⁰. On the social level this network is bound together with personal ties that assure loyalty, trust, and cooperation. For this reason, fourth generation warfare has also been described as "netwar" (Hammes, 2004). Members of the network also share the same

⁹ Mary Kaldor (1999) gives a good description of this kind of warfare in her book, *New & Old Wars: Organized violence in a global area*.

¹⁰ See section 2.5 for a more in-depth description of the starfish organization.

ideals, enabling them to create a social order¹¹. As a result, there seem to be two doctrinal practices that especially suit netwar actors. First, they organize and present the network in way that is as “leaderless” as possible by having no single leader who stands out or by appearing to have multiple leaders, like the First Intifada that started on December 8, 1987. Here the Palestinians “created a web-like organization, a network that was not subject to decapitation, as a hierarchical organization would be. The networked nature of the leadership made it virtually impossible to destroy. This is a definitive characteristic of a 4th GW organization” (Hammes, 2004, p. 101). The other common doctrinal practice used by netwar participants is swarming tactics. As Robb (2004) describes it, rather than massing large, visible units on a battlefield, netwar leaders employ a myriad of small units that are normally kept dispersed. At a specified time or upon a signal, these dispersed units converge on a target from multiple directions, conduct an attack, and then disperse to prepare for the next operation.

Hammes also suggests that as the leadership of successful 4th GW groups has shifted the focus away from near-term tactical effectiveness—or from even winning battles—to continually improving the organization’s political viability, they have moved warfare into the context of everything else, besides merely war. In particular, they see themselves as webs of individuals unified by ideas and commonly-held stories and narratives but not as military organizations in the usual sense. Such stories seem to be important because they express a sense of identity and belonging—of who “we” are, why we have come together, and what makes us different from “them.” They also communicate a sense of cause, purpose, and mission. They express aims and methods as well as what “we” believe in, what we mean to do, and how.

I will now examine in more detail developments in the international environment since the end of the Cold War that define the type of leadership development program that will be required.

¹¹ This effect will be further addressed in section 3.6. in the discussion of *Einheit*, which is a German word that has the connotation of “unity” or “mutual trust.” It implies a common outlook towards military or business problems built through common experience. The purpose of *Einheit* is to align individual orientations, although not rigidly, see Figure 3.1.

2.3 What Will We Actually be Facing?

This is a difficult question to answer, but the metaphors of the *starfish* and the *spider* provide insight, see Brafman and Beckstrom (2006). The spider is a creature with eight legs coming out of a centralized body. If you chop off the spiders head, it dies. A starfish at first glance is similar to a spider in appearance. Like the spider, the starfish appears to have a bunch of legs coming out of central body, but that is where the similarities end. With a spider, what you see is what you get: The head does what heads usually do, the body houses the central organs, and so on. But starfish are very different. The starfish is decentralized and doesn't even have a head. The major organs are replicated throughout each and every arm so that if you cut a starfish in half, it will not die, and pretty soon you will have two starfishes to deal with. The starfish can achieve this magical regeneration because it is a *neural network*—instead of having a head with a distinct brain, like a spider, the starfish functions like a decentralized network, and there is no central command. In the military world the starfish would be al Qaida¹², while the spider would appropriately represent the Western military.

As we saw with the attack on Afghanistan, it is easy to mistake military starfish, like al Qaida, for spiders, because we are looking for organizations that have structures, rules, hierarchies, and of course leaders. We are used to seeing the world through a centralized lens, and so decentralized organizations don't make much sense. To make matters worse, when attacked, such a decentralized organization tends to become even more open and decentralized. Because there is no central intelligence and control, it can function as a open system, and the intelligence is distributed throughout the organization. A starfish-like organization is often able to respond more quickly than a spider because each member has access to knowledge and intelligence and also has the ability to make immediate use of them. This spells trouble for a spider organization because its members' orientations make it difficult for them to recognize, when a decentralized organization is about to become a threat, even if they recognize it at all.

This is a development that has been fueled by the Internet, making the mutation of a decentralized organization easy, and the result can be incredibly quick growth. This points to

¹² Other organizations that functions like a starfish are Alcoholics Anonymous, Wikipedia, Skype, and Apache

the fact that when industries become decentralized, e.g. like the music record industry, overall profit decreases. So within business, when a starfish enters the equation there will be no more high profits.

Even a starfish-like organization, however, requires some measure of cohesion; otherwise it would dissolve into a cloud of floating cells. The glue that holds decentralized organizations like al Qaida and the Taliban together is their ideologies (Brafman & Beckstrom, 2006; Roy 2004). Like the Apaches that fought the Spanish for more than two hundred years, both al Qaida and the Taliban hold their ideology so strongly that they are willing to fight and sacrifice themselves for their cause (Brafman & Beckstrom, 2006). The Internet has allowed people who share this ideology to become virtual members, and they can in a sense join al Qaida without leaving home (Roy, 2004). As these organizations become more virtual, they also become more amorphous and more difficult to identify. This process creates circles of members that are independent and autonomous, yet glued together by ideology. They do not have hierarchy and structure, but they are not lawless. Instead of long lists of written rules, they largely depend on norms implied by their ideology. There is also another pattern to such decentralized organizations that may seem mysterious to modern structured militaries, and that is the presence of a catalyst—a spiritual and cultural leader who cedes daily operational control to other members. The catalyst’s leadership role is to enable the organization thrive on its own by transferring ownership and responsibility to the circle. A catalyst, like Osama bin Laden or the Apaches’ Nant’ans, is an inspirational figure who spurs others into to action by developing ideas, sharing them with converts, and leading by example. When organized into circles and cells united by a powerful ideology, starfish organizations can be extremely effective in 4th GW.

By contrast, the typical military more fits the definition of a spider organization, which, when attacked, tends to become even more centralized, and unproductive activities (entropy) start building up inside it. Such organizations, like spiders or other “higher” organisms, employ a centralized command-and-control philosophy where the aim is to enforce order by issuing commands from the top and monitoring their execution at the bottom. Such an organization must closely track the activities of its members (to ensure that orders are being followed), making it unlikely that low ranking members will take risks and innovate. It is natural that spider-like military organizations will assume that all other armed forces are also spiders and will try to attack what seems to be their organizational structure and eliminate

their leaders. However, a starfish organization is not like the Sopranos: If the catalyst is identified and destroyed, another may rise to its place and the organization may continue to function, as the Israelis experienced during Intifada I and the United States has confronted in its struggle with insurgents in Iraq, see Hammes (2004, p . 179).

So what do we do then? To take out a starfish there are two effective alternatives. The first involves polluting or raising the temperature of its water (Brafman & Beckstrom, 2006). For a decentralized organization, like al Qaida, its “water” is the appeal of its ideology. We know that slums have been hopeless places where terrorists have easily recruited members, so when life is hopeless they might just as well join terrorist cells. The other proven strategy is to induce the starfish to start behaving more like a spider—to encourage or force it to adopt a more centralized structure, for example, which can then be dealt with through conventional police and military means. The Israelis successfully used this strategy against the first Intifada by reintroducing the (centralized) PLO into the occupied territories (Hammes, 2004). Both strategies require an understanding of war in the context of “everything else” and not solely within the context of war. I will develop this theme further in the next section.

Operating against starfish-like organizations requires an expansion of the traditional military role. This is not, however, a new requirement. In 1997, The Center for Strategic & International Studies in their panel report *Professional Military Education: An Asset for Peace and Progress* stated that:

Today, a young Army captain standing at a road juncture between formerly warring parties in Bosnia is equal parts soldier, diplomat, negotiator, provider of humanitarian relief, and law enforcer. In the future, he will have to deal with such things as information warfare and cyber crime (Cheney, p. 18).

It is clear that this expansion of the military role also requires an expansion of leadership development in order to provide the military teams capable of operating effectively in this new, complex, and amorphous environment.

2.4 Summary

Leadership and leadership development must echo the future of warfare as represented by warfare in the context of everything else, which means 4th GW—“asymmetric” conflict pushed to its limits by starfishlike organizations. Our development efforts must enable officers to lead in conflicts in increasingly urban environments because the spread of urbanization will influence how armed forces conduct their future missions. Cities, once separated by maneuverable terrain, are increasingly connected with concrete. Whereas in earlier wars, most cities could be bypassed and isolated, this will not be the case as the 21st century progresses, as we can see from the streets of Baghdad and Beirut. Large cities now dominate the landscape in what Barnett calls the “Gap.” Third World countries that have not integrated their economies into the developed “Core,” (Barnett, 2004) and potential enemies are likely to capitalize on this by forcing commanders to enter them¹³. If attacking forces enter cities behind a wall of massive firepower, as we have seen partly done in Iraq, civilian deaths will occur, something that undermines our struggle on the moral level. Future opponents representing or under the influence of superempowered individuals like bin Laden will use buildings as havens and fortresses, egging Western forces on to use firepower to protect soldiers’ lives, resulting in an attrition approach to conflict—war only within the context of war.

Leadership development must also move away from exclusively inculcating military tactics. In today’s conflicts where the objectives are moral, we must ask ourselves why should our opponents, with an infinitely diverse array of options to choose from, want to enmesh themselves in a web of their own making and use means of warfare that are limited to the realm of the force of arms? Our future opponents, most of whom will be lacking the latest technological wonders, will employ moral and psychological tools enhanced by extensive study, along with off-the-shelf commercial technology, to counter and exploit the Western way of war. They can not succeed by use of overwhelming military power, nor even by the presence of casualties and bloodshed, but by continuing to evolve the concept of 4th

¹³ Sun Tzu’s approach to conflict has been used by guerrilla commanders, particularly by Mao Zedong. This is not surprising, given Sun Tzu’s emphasis on deception and formlessness, because guerrillas that become predictable are quickly eliminated. See Boyd, 1986, p. 90-91, for the essence behind guerrilla campaigns and p. 107-108, for counter-guerrilla campaigns.

generation warfare. This represents our ultimate leadership and leadership development challenge.

Few officers and soldiers in Norway and the other Western militaries possess sufficient mental preparation for this type of conflict, which goes beyond the traditional military doctrine and training. However, this is a reality that all officers must face, because the goal behind this kind of warfare will encompass more than merely “using all means that involve the force of arms to force the enemy to accept one’s own will.” Rather the goal might be “to use all means whatsoever—means that involve the force of arms and means that do not involve the force of arms, means that involve military power and means that do not involve military power, means that entail casualties and means that do not entail casualties—to force the enemy to serve one’s own interests” (Liang & Xiangsui, 2002, p. 43).

Military leadership development programs in the future must produce officers capable of operating in this new environment, of being better 4th GW warriors than their “terrorist” opponents who are organized into starfish-like organizations. These new officers will serve in organizations that are hybrids, retaining some elements of centralized control—commanding officers, for example, who are subject to their countries’ political leaderships—but also embodying some degree of starfish characteristics. When confronting a decentralized, ideological, networked enemy in the Gap, these organizations and their new officers must be able to adapt on the spot and act appropriately, which will often not involve the use of overwhelming military force.

The most significant strategist of the post-World War II era to examine this problem and propose comprehensive solutions was John R. Boyd, and the next chapter will examine the essential elements of his approach.

3. John Boyd's Philosophy of Conflict

3.1 Introduction

Fourth generation warfare differs from the more “normal” forms of war in such fundamental ways that an entirely new philosophy of conflict is needed to describe not only the conflict itself but the demands it will place upon leadership development. The strategic theories of the late John R. Boyd provide the most comprehensive description of the changes in conflict and, as noted in previous sections, form the basis for the doctrines of the elite units of the American military. The purpose of this chapter is to examine the essential elements of Boyd's work in order to describe how military units in the future can absorb enough “starfish DNA” to successfully prosecute 4th GW.

His work can be considered an updating and an affirmation of Sun Tzu, to which Boyd added insights from complexity theory, quantum mechanics, foundations of mathematics, evolutionary biology, neurophysiology and thermodynamics. It is especially important to note that his strategic concepts are independent of size or technological sophistication. Thus, using the concepts identified by Boyd, smaller but more cohesive and agile organizations can often defeat larger, more technologically sophisticated opponents, as we are seeing in Iraq, Afghanistan, and Lebanon today. Because his strategy is based around the moral and mental dislocations brought upon by rapid change, as contrasted to attrition from massed firepower, his work is particularly relevant in today's conflict scenarios—4th GW and warfare within the context of everything else.

Boyd focused on using a time advantage to reduce the enemy's will to resist (moral effects) and by creating and exploiting weaknesses before the opponent could comprehend—make sense of—the situation, to cause confusion so that any resistance would not be effective. He identified an organizational climate that enables organizations to accomplish these effects.¹⁴

¹⁴ This climate is consistent with Barney (1986) and Pfeffer (1995) who state that for an internal characteristic to provide a sustained competitive advantage it must be valuable, rare and imperfectly imitable (Barney, 1986; Barney & Hansen, 1994; Hitt, Ireland & Hoskisson, 1995).

To create his organizational climate, Boyd relied on what now is called “self-organization,” a concept within complexity theory. This was a clear break from the top-down “command and control” or leadership mentality that all U.S. services employed. His alternative was to create and focus initiative and creativity throughout the organization, and thereby build the capacity for groups of people to learn their way out problems that could not have been predicted. Boyd was actually the first to tie a specific climate based on initiative to the ability to generate fast transients, defines as abrupt changes in the environment, in combat and conflict situations.

Section 3.2 gives a rationale for why applying the theories of John Boyd by discussing the criticism raised against his work. Section 3.3 outlines Boyd’s operational climate or culture which takes us into his world of leadership and the leadership philosophy that corresponds to his climate—*Auftragstaktik*. Section 3.4 covers the OODA loop, its speed, its central dialog, and its connection to command and control. Section 3.5 is a summary which also covers the fundamental differences between war and business.

3.2 The Arguments Against the Work of John Boyd

3.2.1 Introduction

Boyd developed his ideas on conflict and military strategy during a time of significant scientific turbulence—the three decades of 1960-90—and the scientific debates and insights gained during this period strongly influenced his thinking. As science progressed and created a new language to address and explain the dynamics of living systems, Boyd evolved his mental concepts accordingly, see Osinga 2005 for detailed discussion of this topic. This reliance on new science, however, has also made him vulnerable to criticism. The majority of the criticisms against Boyd stem from two sources, one raised from an academic perspective and another from the military community. These need to be addressed and I will start with the latter.

3.2.2 Criticism from the Military Community

The objections raised by some in the military community reveal an overly simplified concept of the OODA loop that implies an exclusive focus on speed of decision making, while obscuring other themes, theories and arguments that lie behind and should be incorporated in it. Based on this conception the following arguments are raised:

1. The OODA loop can be negated by going slow, that is, by not immediately acting or reacting to the opponent's moves.
2. A competitive advantage may be gained by taking the time to make more accurate observations and better decisions rather than by going through the loop more quickly.

Both of these arguments are based on the conception of the OODA loop as a simple O to O to D to A cycle, and if that were the case they would have some validity. However, if the concept Boyd actually drew (see section 3.4) is adopted, these no longer apply. According to Boyd, (1987a, 1987b) the important elements in applying the OODA loop to a conflict situation are:

1. Keeping orientation as accurate as possible at all times - removing fixations that cause orientation to "stick" or lock, and
2. Having an inventory of potentially effective actions that flow smoothly and intuitively from orientation.

Under this concept, the "speed" element of the loop virtually disappears, and both of the objections become irrelevant. Orientation will initiate actions when it is time to do so, not just when the loop happens to cycle back around to it.

A more complete understanding of Boyd's theory, which will be given in this dissertation, reveals a contest between orientations, that is, between opposing efforts to comprehend a rapidly changing and often poorly observed universe. When orientation becomes relatively inaccurate, that is, when one side's mental model of the universe no longer matches as well to reality as the other's, then some of the less accurate side's actions will be ineffective because the situation will have changed. To put this another way, the competitor who does a better job of keeping an accurate orientation will have opportunities to exploit inaccuracies

in his opponent's orientation - to "operate inside his OODA loop¹⁵." This "real" concept of the OODA loop also easily explains the primary physical manifestation of operating inside an opponent's OODA loops, "fast transients," because orientation can simply trigger different actions in rapid sequence, which will appear as transients to outside observers. In other words, it can set up the *cheng*, and then when it senses that the time is right, it can launch the *ch'i* -- the effect on the opponent will be a fast transient, see section 3.4.1.

Another important contribution, and perhaps one of his most important and one that is rarely mentioned by those who criticize Boyd by only focusing on the incomplete version of the loop, concerns the non-physical effects on the opponent with the less accurate orientation. These fall into two categories:

- 1 Mental, for individuals and groups. It includes surprise, ambiguity, confusion, shock, etc.
- 2 Moral, for groups. The most important moral effect is probably the emergence of many non-cooperative centers of gravity, which magnifies friction

I will now turn my attention to the most important criticism as seen from an academic perspective, that raised by the Swedish engineer Niklas Zetterling (2004).

3.2.3 Criticism from an Academic and Scientific Perspective

Zetterling's criticism concerns Boyd's use of Gödel's Incompleteness Theorem, Heisenberg's Uncertainty Principle, and the Second Law of Thermodynamics in his essay *Destruction and Creation* (1976). Any valid criticism of this essay would undercut much of Boyd's theory because *Destruction and Creation* forms the basis of Boyd's work and his way of thinking.

Zetterling's argument, which embodies the fundamental premise of all positivistic criticism, is that constructs and theories from the natural sciences cannot be applied to the study of human nature. While this argument is, in general, valid, it is important to examine how Boyd

¹⁵ In an award- winning essay Jim Snorr (2001), a British officer, even denied anything like an OODA loop exists: "There is no OODA loop. The idea of getting inside the enemy decision cycle is deeply flawed" (p. 39).

actually used the three principles as part of his argument. The fundamental question is whether metaphors, inspirations, and ideas from the natural sciences may be used to generate new understanding and knowledge within the social sciences. The obvious answer to this is yes, and even Zetterling finds such an approach valid: “With such a methodology, these sciences could be applied in generating ideas or as metaphors” (2004, p. 309, my translation). A deeper and more thorough reading of Boyd would have revealed that this is indeed his approach. Boyd never claimed that Heisenberg, for example, applied directly to the problems of human competition, but he used changing metaphors, thought association, and somewhat forced analogies to explore for insights and the relations between them.

It is, in fact, generally recognized that there is great merit in developing and using metaphors to improve understanding of complex and perhaps yet unknown phenomena. As Robert Shaw noted, “you don’t see something until you have the right metaphor to let you perceive it” (Gleick, 1987, p. 262). Thus, the nuances, analogies, and metaphors uncovered through analyses produce new concepts. “They’re there,” says Boyd, “it’s just that they are prisoners of other concepts, and you need to liberate them. It’s a sort of guerrilla warfare of the mind” (Hammond, 2001, p. 184-185).

Boyd never used the natural sciences as scientific evidence for the social sciences—as axioms which represented a stable center for further work—but as a starting point for understanding human behavior. This was Boyd’s way of thinking, his method which is described in *Destruction and Creation*, and the methods are neither true nor false, but either useful or not useful. Both Kuhn (1970) and Schumpeter (1994), for example, recognized the destructive side of creativity. But Boyd was unique in his explanation of how this process is grounded in fundamentals, such as those discovered by Gödel, by Heisenberg and by entropy, and he provided a compelling explanation for the destructive side of creativity. His method of argument was that these destructive principles are found in every system that has been scientifically examined, and there is no reason to believe that they are not also present in social systems. He then proceeds to give copious examples from the practice of armed conflict (Boyd, 1986, pp. 9-125). However, Boyd does not describe how nature behaves, but focuses on war and conflict within a *mind-time-space*, a framework for analyses and synthesis that incorporates all three aspects.

3.2.4 The Importance and Relevance of Boyd's work

It is fair to say that Boyd's complete work represents an attack on American and Western doctrine and training, which apply formulaic answers, checklists, and school solutions and which shun openness, nonlinearity, and *Auftragstaktik* in favor of technology, attrition, and mass. Neither did his theories offer specific guidelines for designing military campaigns, like the more recent air power theorist John Warden (1995). Boyd's ultimate aim was not to convince people about the validity of this or that doctrine, but instead to create a way of thinking, a thought process that revolves around the theme of adaptability (Hammond, 2001). To reach this aim Boyd took on a very orderly culture which disliked the political aspects of war and preferred merely to apply military force to the targets selected. Strategy then equals targeting. The number and nature of targets destroyed represents the best measure of success. When the enemy can no longer endure the pain of this destruction, the war is over. We are still encountering this mentality in Iraq and Afghanistan, with their daily counts of insurgents killed.

This is an attrition approach to war that ignores the reality that is an intelligent, adaptable, and determined adversary who determines whether he will surrender, when, on what terms. Despite using terminology stressing strategic effort (e.g., "effects based operations"), the western military establishment still tends to focus on inputs, e.g. keeping score of targets, instead of on outcomes—the effects they seek to achieve. Boyd's approach, which stressed mental agility, is an attack on an anti-intellectual orderly culture, see Vandergriff (2002) for a discussion of this topic.

The distinguished English strategist Colin S. Gray (1996) characterized modern American / Western military culture by eight central attributes: 1) An indifference to history, 2) The engineering style and technical fix, 3) Impatience, 4) Blindness to cultural differences, 5) Continental *weltanschauung*, maritime situation—war is incorrectly equated with "war in Europe," 6) Indifference to strategy, 7) The resort to force, belated but massive, and 8) The evasion of politics. These attributes unfortunately led many modern military leaders to dismiss Boyd's ideas as antiquated and too theoretical, ignoring the fact that his work represents an updated general theory of competition—independent of the technology employed—that dates back at least 2500 years, and to which I will now turn my attention.

3.3 Boyd's Organizational Climate for Operational Success and its Leadership Consequenses

3.3.1 Introduction

Boyd worked his way back through history and found that many of the elements that characterized German military tactics and strategy of World War II also could be found throughout history, although the Germans were the first to codify them in their present form and to give them the distinctive terminology that we still use today. The German approach represents the starting point for his development of an organizational climate created in initiative and creativity throughout the military organization. His organizational climate represented a clear break from the traditional military approach to *command and control*¹⁶ which was, and still is, the dominant approach within most military organizations today, especially those in Western Europe. This climate is a product of 1st and 2nd generation warfare and the culture of order which was further fueled by the “scientific management” approach.

The aristocratic tradition, the top-down command and control system, the slavish addiction to the “Principle of Concentration”, and the drill regulation mind-set, all taken together, reveal an “obsession for control” by high-level superiors over low-level subordinates that restrict any imagination, initiative, and adaptability needed by a system to evolve the indistinct-irregular-mobile tactics that could counter the increase in weapons lethality (Boyd, 1986, p. 62).

According to Boyd, this represented “a top-down mentality applied in a rigid or mechanical (or electrical) way that ignores as well as stifles the implicit nature of human beings to deal with uncertainty, change, and stress” (Boyd, 1987a, p. 35).

To fully grasp how different his proposed organizational climate is, I will first look at leadership from a traditional military perspective, which interprets it as a command and

¹⁶ The traditional military approach to command refers to the ability to direct, order, compel with or without authority or power. While control means to have the power or authority to regulate, restrain, verify, (usually against some standard) direct or command. Comes from Medieval Latin *contrarotulus*, a “counter roll” or checklist (*contra*, against plus *rotulus*, list) (Boyd, 1987a, p. 37).

control question. This will be done in the first part of this section while the second part focuses on his organizational climate and its consequences for leadership.

3.3.2 The Different Approaches; a Historical Perspective

In any school of leadership, the function of command can be carried out by three different methods: by direction, by plan, or by influence. Each of these three methods responds to the commander's underlying and pervasive quandary, uncertainty,¹⁷ and each of these methods of command grapples with uncertainty in its own way. Generally, the directing commander attempts to *prioritize* uncertainty, the command-by-plan commander seeks to *centralize* uncertainty, and the influencing commander prefer to *distribute* uncertainty (which was the idea behind the German approach). Viewed from a historical perspective these three methods can be grouped into two exclusive doctrinal architectures and approaches to command and control that have evolved for fighting wars. The first is *direct*, containing the command-by-direction and command-by-plan methods, while the second is the *indirect*, command-by-influence.

The *direct approach* is based on the idea that one must exert close control over organizational energy, and it is seen within armed forces that rely on mass mobilization and a force of amateurs to fight their wars, e.g., like the Norwegian conscript model. Done correctly, this results in top-down flow or enforced integration via an imposed structure and is most suited for attrition warfare. Because of this, some commentators also label this kind of warfare “synchronization warfare” (Vandergriff, 2002). The function of command in this approach has been carried out in two ways, *by direction* or *by plan* (van Creveld, 1985).

Command-by-direction is the oldest of methods—virtually the sole method until the middle of the 18th century, and largely in disfavor since (van Creveld, 1985). As armies grew larger, commanders realized that even if they could find a vantage point from where they could see the entire battle, distances prevented them from playing any role other than observer. This circumstance forced commanders to adopt one of two compromise approaches to command. In the first approach they could either attach themselves to one element of the force, judging

¹⁷ According to van Creveld (1985) insufficient information concerns not the quantity of information, but getting the necessary quality of information in the right form, at the right place, and at the right time.

it to be the decisive one, and thereby direct some of the forces all the time, while depending on communication, if any, with the other units. The second variant involved the commander moving from unit to unit as the situation seemed to warrant, thereby directing some or all of the forces some of the time. Both variants of command-by-direction fell short of the commander's dream to direct dynamically all of the forces all of the time and instead forced him to attempt to prioritize uncertainty (Czerwinski, 1998).

In recognition of the difficulties with command-by-direction, Fredrick the Great tried to break out of the limitation imposed in commanding-by-direction. He resorted to *command-by-plan*, thereby opting for comprehensiveness over dynamism. The effort consisted of trying to plan every move in advance, relying on highly trained troops and strict discipline to carry out the scheme as ordered (van Creveld, 1985). This approach, the highly centralized command-by-plan formula, evolved into the norm for command of modern military forces. However, as with all plan regimes, increased complexity has more than kept pace with heightened competency. The reason is that command-by-plan inherently fights the disorderly nature of war as much as it does the adversary. It is a futile quest to will order upon chaos. This method is illustrated with the French approach towards the German attack in 1940 and the NATO air campaign methods used during the Gulf and Kosovo campaigns. This method is characterized by trading flexibility for focus, propelled forward by pressure from above, in order to concentrate on identifying and neutralizing centers of gravity or targets sets in a campaign. It operates exclusively at the strategic and operational levels of war. It reduces information requirements by focusing on perceived centers of gravity and honing associated targets list into prioritized and increasingly synchronized and simultaneous operations. Command-by-plan is a drastic simplification of the organization to enable it to operate with less information by preplanning the majority of its responses.

Both command-by-direction and command-by-plan are supported by the capabilities of modern information technologies and especially the ongoing development of *network centric warfare*, which represents an evolution toward the concept of command-by-plan. The digitized battlefield is intended to equip commanders with dynamic, near real-time capabilities to enable them to synchronize their efforts according to the plan.

Van Creveld (1985) insists that command-by-direction is an inadequate approach, regardless of the technology employed, and stands in the danger of becoming self-defeating because it

will lead to an extreme inward focus and thus result in increased entropy. The second approach, command-by-plan, which attempts to increase the performance of command through “drastic simplification of the organization so as to enable it to operate with less information” is like the first approach, also inadequate and likewise stands in danger of being self-defeating because such organizations do not interact with the unfolding and unanticipated events in their environment. A good example of this can be witnessed in the recent (July-August 2006) war between the Israeli Defense Force (IDF) and Hezbollah. The IDF with its American-style hi-tech “precision weaponry,” killed ten times as many civilians as enemies, while Hezbollah with their rockets which are anything but precise killed more soldiers than civilians¹⁸. Israel can hit anything it can target, but against a Fourth Generation enemy, it can target little. This also raises the question of who is the real “terrorist.” Terror bombing by aircraft is still terror, so Hezbollah may not only be winning at the moral and mental levels and at the strategic and operational levels, but at the physical and tactical levels as well (Lind, 2006).

When an organization is confronted with insufficient information to carry out a task in an unpredictable environment, which is the case both with command-by-direction and command-by-plan, the second doctrinal architecture, the indirect, can offer a solution. Van Creveld described the essence of indirect architectures, which include maneuver warfare, by observing that in unpredictable and confused circumstances, a military organization must:

... react by designing the organization, or indeed the task itself, to operate on the basis of less information, relying on the division of the task into various parts and to the establishment of forces capable of dealing with each of the parts separately on a semi-independent basis. It is a central theme... through every change... (and) technological development that the third one will remain superior... in virtually every case (1985, p. 269)

This method takes disorder in stride as inevitable and even, in so far as it affected the enemy, as desirable. The aim here is to unleash power in a focused way. Done correctly, the result is a bottom-up flow or natural harmony via an evolved structure. The function of command in this approach is *command-by-influence* (van Creveld, 1985). Command-by-influence was

¹⁸ According to Lind (2006) who quotes the Associated Press, as of the 10th of August, Lebanese dead total at least 642, of whom 558 are civilians, and only 55 Hezbollah fighters. In contrast, of 97 Israeli dead, 61 are soldiers and only 36 civilians.

developed by the Germans in the latter stages of World War I and refined in World War II. The modern German approach to warfighting started as a reaction to the Prussian defeat by Napoleon in 1807, it was conceptually complete by 1918, and it was successfully applied in 1939-40 (Jacobsen, 1996), indicating a focus on adaptation and evolution. Van Creveld (1982) compared command-by-plan, the American way, and command by influence, the German way, and found that the Germans, using the second approach, far exceeded Americans (who largely embodied command-by-plan) in *fighting power*.¹⁹

The Wehrmacht was able to deploy such powerful forces because they had evolved a superior system for dealing with people. They built their army around the needs, social and psychological, of the individual fighting man. They believed in mutual trust, a willingness to assume responsibility, and that it was the right and duty of subordinate commanders at all levels to make independent decisions and carry them out. To generate independence, freedom had to be granted. To train men towards responsibility, authority had to be delegated. To create trust, they had to assure reliability and long standing relationships. They looked for character and the capacity for independent action, while careerism was frowned upon. The ability to generate and maintain trust was counted as the single most important virtue. This led them to focus on personality, character, professional competence, and achievements. By “character” they meant: *honesty, selflessness, readiness to commit oneself*, and a *sense of responsibility* (van Creveld, 1982).

Though American officers were also to lead men in combat, this was regarded essentially as a “human engineering” problem. The senior leadership of the U.S. Army did not pay strong attention to the needs of the soldier, but relied on the new theories of “scientific management” and on techniques to ensure the optimum distribution and deployment of resources. To become a qualified “personnel technician,” an officer had only to acquire the tricks of the trade. The differences between these two approaches are reflected by their thought-processes and even by their language. A German officer confronted by some task would ask: *worauf komme es eigentlich an?* While the American officer trained in the “engineering approach” to war, would inquire: *what are the problem’s component parts?*

¹⁹ The term *fighting power* is the mixture, in one combination or another, of discipline and cohesion, morale and initiative, courage and toughness, the willingness to fight and the readiness, if necessary to die. Fighting power, is defined as the sum of the total mental qualities that make armies fight (van Creveld, 1982, p. 3)

(van Creveld, 1982). Interestingly this indicates that Western modern militaries, for the most part, find themselves in a tradition extending from Hegel through Marx and Durkheim to modern-day sociologists and social psychologists, who believe that when a person is placed in a leadership role, e.g. as a commander of a submarine, that person is, by definition, a leader, and that most people are fungible—it does not particularly matter who is in the role because individual differences in the talent for leadership are irrelevant. They expect that subordinates will respect the role and abide the role player. On the other hand the German approach aligned with Sigmund Freud, Thomas Carlyle, and Max Weber, evolutionary theory, and Sun Tzu, a tradition that argues that leadership is a function of the characteristics of individuals. This means that some people have more talent for leadership than others, and that who we are is how we lead (Hogan, 2006).

According to Boyd (1986, 1987a) the German codification rested on the following cultural attributes; *Einheit*, *Fingerspitzengefühl*, *Auftragstaktik*, and *Schwerpunkt*²⁰. It was this codification that Boyd further developed and polished to the “Principles of the Blitzkrieg” (see Boyd, 1986). He derived these partly from established German doctrine and partly from his interviews with senior Wehrmacht commanders (see Richards, 2004, p. 134). Boyd, however, did not like the term “Principles of Blitzkrieg” because of its connotations. He preferred to call these four, “An Organizational Climate for Operational Success,” thereby tying it to any type of organization, not just military units (Richards, 2004). According to this scheme, any culture or leadership climate will work if it advances these four attributes. So what did the Germans do?

The German success in 1940 ultimately rested on a cultural foundation that stressed character and the capacity for independent action. They emphasized continuous operations and stressed the importance of penetration, and if a breakthrough were made, the attacking troops would push as far as possible. The objective of the leading elements was not destruction of enemy soldiers. Rather, it was to seek penetration by attacking the weak spots

²⁰ *Fingerspitzengefühl* is a Zen-like quality of intuitive understanding, an ability to sense when the time is ripe for action that is built through years of progressively more challenging experience. *Einheit* - has the connotation of "mutual trust" and implies a common outlook towards organizational problems. This is built through common experience and represents *Fingerspitzengefühl* at the organizational level. *Schwerpunkt*—which is any concept that gives focus and direction to our efforts. In ambiguous situations, it answers the question, "What do I do next?" This requires leadership. *Auftragstaktik*—convey to team members what needs to be accomplished, get their agreement to accomplish it, then it hold them strictly accountable for doing it—but it doesn't prescribe how. It requires high levels of mutual trust.

of the enemy's resistance through exploitation of the principles of decentralization and initiative. They emphasized pulling from below while at the same time they recognized that strategic or operational-level concepts had to be formulated by higher-level commanders. As Richards (2004) points out, successful military organizations are not participatory democracies. There is a commander whose intent is paramount and whose lawful orders must be obeyed. Highly effective military organizations have found ways to harmonize this commander's intent with the initiatives of all other members of the organization, which is the ultimate force multiplier. The success of those methods depends upon lower-level commanders having the flexibility and freedom to capitalize upon any momentary opportunities they might gain. Under the German leadership philosophy, a subordinate commander could act according to the circumstances of the moment and even sometimes ignore a directive or a control measure such as a boundary if his actions contributed to the accomplishment of the unit's mission.

They also considered leadership as an art, which the introduction of their *Truppenführung* of 1936 reveal: "War is an art, a free creative activity resting on scientific foundations. It makes the highest demands on a man's entire personality" (van Creveld, 1982, p. 28-30).

German commanders were able to obtain a high operational tempo and rapidly exploit opportunities because of their approach to leadership. A German commander made sure that his subordinates knew his intent, his *Schwerpunkt* (the main focus of effort). Through use of this scheme, subordinates were not micromanaged; they were instead given *Auftrag* ("mission orders"). They understood their commander's overall intent and they knew that their job was to do whatever necessary to fulfill that intent. The essence here was the interplay between *Absicht*, *Auftrag*, and *Entschluss*. The Germans' *Absicht* is translated as the intent. The commander then assigned *Aufträge* (tasks) to subordinate units to carry out his *Absicht*. The subordinate commander then decided upon a specific course of action, the *Entschluss*, which became his resolution or decision (Hughes, 1986). According to the German *Truppenführung* a subordinate commander could change or abandon his task within the framework of the higher commander's overall *Absicht*. Exactly this ability to separate *Absicht* (intent) at higher level from *Aufträge* (tasks) and *Entschluss* (resolution/decision) was critical both to their legendary battlefield flexibility and to the initiative of its commanders at all levels. As a result of this concept, both subordinate and commander shared a common outlook. They trusted each other, and this trust was the glue that held this

apparently formless effort together and permitted implicit rather than explicit communication. Trust was simply the unifying concept.

3.3.3 Boyd's Climate

Boyd developed the approach described in the previous section into an “Organizational Climate for Operational Success.” One way to visualize Boyd’s climate is to start with the individual and work upwards (Richards, 2004), which also underlines that we as human beings are nested in teams, and teams are nested in organization. It is not teams that behave, it is people, and in so doing, they create team-level and organizational phenomena. Individuals cultivate and polish their *Fingerspitzengefühl*, intuitive competence, for the jobs they hold. This comes through years of experience and self-discipline. It provides its owner an uncanny insight into confusing and chaotic situations often described as the “ability to feel the battle”²¹. *Einheit* or “unity” or “mutual trust” can be thought of as a *super-Fingerspitzengefühl*—and it suggests the competence of the group, working together to accomplish some purpose. As such, the *Einheit* aligns the individuals, although not rigidly. The *Schwerpunkt* provides focus and direction to aim the entire organization towards that goal or purpose. “Focus and direction” is how Boyd usually translated *Schwerpunkt* which:

... represents a unifying concept that provides a way to rapidly shape focus and direction of effort as well as harmonize support activities with combat operations, thereby permit a true decentralization of tactical command within centralized strategic guidance—without losing cohesion of overall effort.

or put another way

Schwerpunkt represents a unifying medium that provides a directed way to tie initiative of many subordinate actions with superior intent as a basis to diminish friction and compress time in order to generate a favorable mismatch in time/ability to shape and adapt to unfolding circumstances (Boyd, 1986, p.78).

As mentioned, the *Schwerpunkt* is also the *ch'i* (see Boyd, 1986, p. 147, 151, 153, and 157), and so it requires that all other organizational activities support it. To do so, it has to provide

²¹ See especially Klein (1998) to get an impression of the importance of this ability)

real and actionable guidance in those situations, such as an abrupt change in battlefield or market conditions, where there has not been time to issue new formal directions. People who find themselves in such circumstances must understand what the main effort is and how they can support it. Then they can use their initiatives to accomplish the organization's mission until they receive further orders. People don't wait around for the commander to make a "decision" before taking action. They show initiative, and they gain the confidence to do so through experience and trust—*Einheit*—among people throughout the organizations. The effect of many people within a unit taking the initiative (harmonized by the commander's intent) is that the unit can rapidly change direction. This rapidity or quickness is critical, because a gap in the enemy's position—or in a competitor's product line—will only be an opportunity for a brief period, until the adversaries or competitors reorient.

The concept of *Schwerpunkt*, focus-and-direction, satisfies a necessary condition for the successful employment of mission orders, or *Auftrag*. According to Boyd²², the *Auftrag* or mission can be thought of as a virtual contract between superior and subordinate. The subordinate agrees to undertake actions that will serve the superior's intent in terms of *what* is to be accomplished, while the superior agrees to give the subordinate wide freedom to exercise imagination and initiative in terms of *how* intent is to be realized. As part of this concept, the subordinate is given the right to challenge or question the feasibility of the mission if the subordinate feels the superior's ideas on what can be achieved are not in accordance with the existing situation or if the superior has not provided adequate resources to carry it out. Likewise, the superior has every right to expect the subordinate to fulfill the mission contract when agreement is reached on what can be achieved consistent with the existing situation and resources provided (Boyd, 1986, p. 76).

One way to understand the *Auftrag* is to apply Weick's (1983) streamlined, but different version of it, here known as the *commander's intent statement*. Weick's version contains five facets:

1. Here's what I think we face.
2. Here's what I think we should do.

²² Boyd never uses the word *Auftragstaktik* in his presentations but used "mission" instead.

-
3. Here's why.
 4. Here's what we should keep our eye on.
 5. Now, talk to me.

However, there are limitations with the mission concept that need to be dealt with because: "...it does not suggest ways to coordinate or harmonize activities among many superiors and subordinates as a collective group" (Boyd, 1986, p. 76). This was solved by joining the *Auftrag* to the *Schwerpunkt*. The *Auftrag*, which is personal, between a superior and a subordinate, is designed to allow maximum room for individual initiative, while still accomplishing the unit's mission (either directly assigned or inferred from the *Schwerpunkt*) during the chaos and complexity of conflict and war. It can be thought of as "fine-tuning" the orientations of individuals. It is the *Schwerpunkt*, on the other hand, that provides harmony for the entire group, providing guidance for the infinity of circumstances that neither can be enumerated nor foretold. Without both *Schwerpunkt* and *Auftrag* (mission) there can be no orientation to deal with both present and future because the *Schwerpunkt* is the harmonizing agent, a medium to realize superior's intent without impeding initiative in order to produce vigorous effort in the organization and is thus a key element in harmonizing the orientations of all members of the group.

Because the future is the future—uncertain, ambiguous, and at least partially under the control of others who do not wish us well—we will from time to time have to shift our focus. There cannot be a formula for this process, although in general, the *Schwerpunkt* aims the organization while the *Auftrag* (mission), provides the energy, the motive force to encourage the members of the group toward accomplishment of the common goal.

The German approach produced organizations with leaders who were able to build stable relationships with individual members, which is largely a function of their integrity and social skill. Leaders with social skill and integrity are able to recruit individuals, in a psychological sense, to group participation. Those who lack social skills or integrity can only form a group by demanding the obedience of their staff, and such groups generally do not hold together well under pressure. Conversely, it tended to eliminate poor officers, who often lacked social skills or integrity, were unable to build relationships, and were therefore unable to build and maintain effective fighting units. Another important way the Germans

were able to bind people to a team was by providing participants with a credible rationale for their membership (van Creveld, 1981).

They were able to project a vision that the individuals found attractive²³, a vision consistent with their own identities and that gave meaning and purpose to their participation in the team task, which is what results from applying *Auftragstaktik* and employing the *Schwerpunkt*, see Figure 3.1.

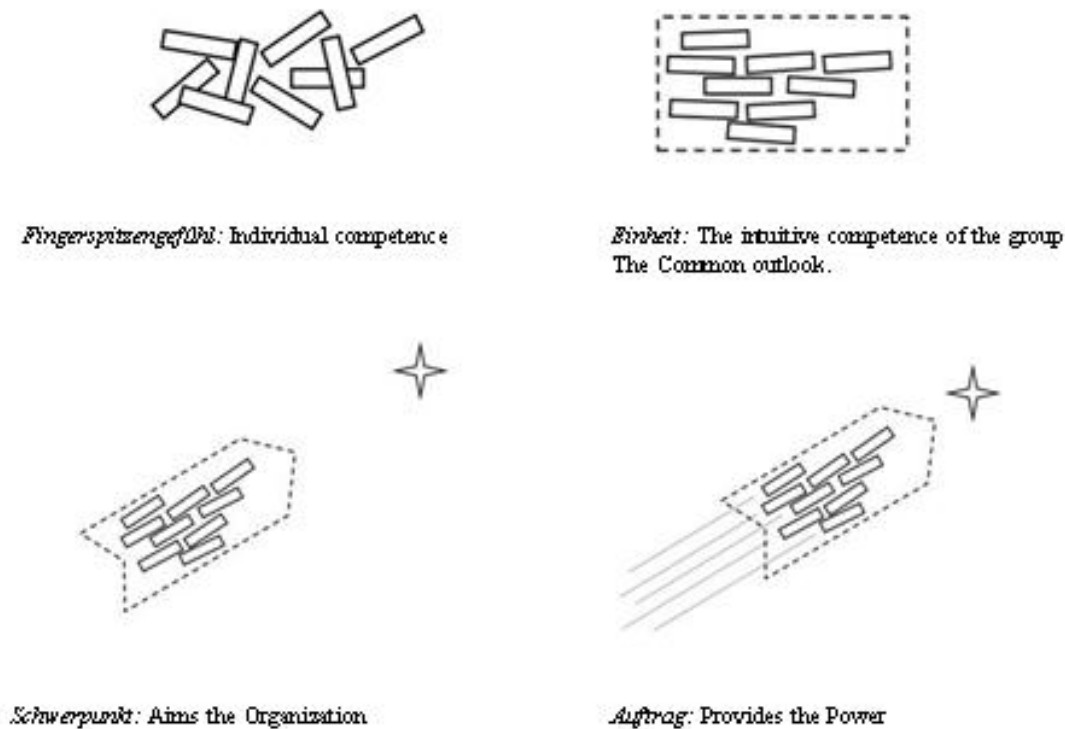


Figure 3.1 A Graphical Representation of Boyd's Organizational Climate for Operational Success (Richards, 2004, p. 129-130)

Leaders with imagination can project a vision (which requires the ability to synthesize) and a *Schwerpunkt* that participants find attractive, morally compelling, and worthy of allegiance,

²³ According to van Creveld "the average German soldier in World War II was not psychotically inclined. He did not fight to gain social prestige, at any rate after the winter of 1941. He did not as rule fight out of a belief in Nazi ideology – indeed; the opposite may have been nearer the truth in many cases. Instead he fought for the reasons that men have always fought: because he felt himself a member of a well-integrated, well-led team whose structure, administration, and functioning were perceived to be, on the whole and spite of the inevitable existence of *Drückengerger* (shriekers) and "Golden Pheasants" (party hacks in gorgeous uniforms), equitable and just" (1982, p. 163-154).

whereas incompetent leaders unwittingly project visions that are distasteful, incongruent with identity of status motivations) to people.

In summary, people were linked to groups by virtue of the personality of the officer. It is this “climate” that offsets the tendency of a team or an organization to lose effectiveness as a result of the transfer of entropy across organizational boundaries, resulting in increased entropy—manifest as disorganization and wasted energy—within the group itself.

3.4 The OODA Loop

Boyd’s approach to strategy—the mental tapestry which suggests that individuals’ efforts and actions must converge to an emerging pattern in order to accomplish a higher purpose (1987b, p. 58)—rests on his conclusion that the pattern of winning and losing comprises four key qualities: insight, initiative, adaptability, and harmony²⁴ (Boyd, 1986, p. 185) and their interaction played out on the physical, mental, and moral level. These are the key features that permit teams and other organizations to shape and adapt to an ever-changing environment (Boyd, 1986). To do so, they must be able to pull the adversary apart by restricting the flow of energy into its system, which increases its entropy, produces paralysis, and collapses any remaining will to resist. In 4th GW terms, these features enable units to “poison the water” of their starfish-like adversaries.

Boyd created a most effective technique for accomplishing this at the tactical level where leadership is put into action to:

Operate inside adversary’s observation-orientation-decision-action loops to enmesh adversary in a world of uncertainty, doubt, mistrust, confusion, disorder, fear, panic, chaos,... and/or fold adversary back inside himself so that he can not cope with events/efforts as they unfold (1986, p. 177)

The focus is on disrupting the adversary’s perception, initiative, and trust, or what Boyd called the *mind-time-space dimension* of an adversary, rather than on achieving a

²⁴ Boyd used two variants of the set of these four elements, this is the second one, while the first one was *variety/rapidity/harmony/initiative*, see Boyd, 1986, p. 12.

quantitative advantage in firepower. Obviously this turns the OODA loop into a central part of Boyd's approach as well as any leader's, manager's, or commander's activity because it controls the range of available of available actions.

Even though it is called a "loop," it is not, and Boyd put the word inside quotes in his last briefing (1995). Unfortunately, most of the time it is presented as a loop, e.g., see the NJDD, 2000, Part A, p. 64. However, as Figure 3.2 illustrates this is not the case. The OODA loop is not a sequential cycle of observe, then orient, then decide, then act, then back to observe. If this were correct, then the OODA loop would be nothing more than an ordinary "stage model." In any competitive situation, however, we can never afford to quit observing while we try to orient or make decisions. All the elements of the OODA loop must operate simultaneously. Action must flow smoothly, in an organic way, from orientation, usually without an intervening and often delaying decision step. This important point is illustrated with the red *implicit guidance & control* arrows from orientation to action in Figure 3.2.

The OODA loop represents an approach to organizational behavior which focuses on ways to improve organizational compositeness, where the essential purpose of the OODA loop is to help people understand how to change their environments before their opponents can comprehend, that is, by operating inside their opponents' loops.

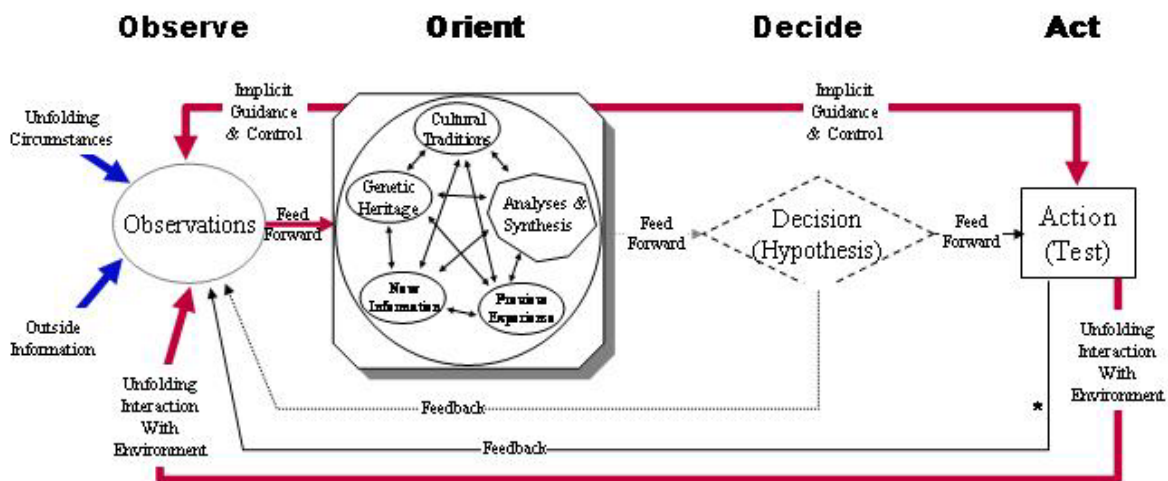


Figure 3.2 The OODA Loop (Boyd, 1995)

This is done through interaction. Interaction, in its various forms, is the glue that binds any social system together by balancing stability with entropy. By juxtaposing the positive and negative features of various activities and linkages, Boyd derives the concept that interaction represents “a many-sided implicit cross-referencing process of projection, empathy, correlation, and rejection” (1987a, p. 10-11). *Projection* represents a collision of ideas and hypothesis, which is the Popperian process of conjecture and refutation. Next Boyd observes that orientation seen as a result (i.e., not as a process) represents “images, views, or impressions of the world shaped by genetic heritage, cultural tradition, previous experiences, and unfolding circumstances” (1987a, p. 13). Now he has brought together different synonyms for mental models—schemata, memes, and tacit knowledge—in a dynamic relation with the environment. He has also incorporated Polanyi’s vision of knowing, while the relationship with the environment clearly points toward complexity theory as previously discussed. By bringing together the conceptual lenses for observation, which is the source of images, views, or impression, with interaction he gives a description of the “end state” of orientation, that is, as a process:

Orientation is an interactive process of many-sided implicit cross-referencing projections, empathies, correlations, and rejections that is shaped by and shapes the interplay of genetic heritage, cultural tradition, previous experiences, unfolding circumstances, and analyses and synthesis (1987a, p. 15)

This is a heavily synthesized description that indicates that orientation is a dynamic process which results in views, images and impressions. According to Boyd, effective orientation—the many-sided, implicit cross-referencing process—requires the ability to deconstruct any problem in a number of ways, draw ideas from across a range of disciplines, and discern common patterns (Richards, 2004). Orientation, then, is best considered as a continuous, on-going, far-from-equilibrium process that is partly constituted by our interactions with a confusing and rapidly changing environment. But at the same time it also suggests that our interactions are subject to modification, which is also true of our views, images, and impression. Therefore:

Orientation is the Schwerpunkt. It shapes the way we interact with the environment—hence orientation shapes the way we **observe**, the way we **decide**, the way we **act**. In this sense orientation shapes the character of present observation-orientation-decision-action loops—while these **present** loops shape the character of **future** orientation (Boyd, 1987a, p. 16).

Orientation is a damping mechanism because it controls not only what action we are going to take but the whole range of actions available to us (Beckerman, 1999). Orientation limits how many states are available, otherwise we would produce an infinity of states, which would simply be chaos or stochastic equilibrium, where any one of them is as likely as any other. Because action is flowing out of orientation, until our orientation changes our range of available actions can not change. Orientation is the dissipative structure making adaptation to novelty possible. The loop, like the whirlpool, only exists when it is moving, hence when it is dissipating entropy out of the system so it can continue to self-organize and continue to process energy through it.

3.4.1 OODA Loop Speed

The concept of OODA loop speed, which most militaries wrongly considers equivalent to decision making speed, involves the entire loop, all 33 or so arrows. OODA loop speed is fundamental to an understanding of how OODA loops produce decisive effects in war and other conflicts. This most definitely does *not* mean that just executing OODA loop cycle more rapidly than one's opponent is the key to victory.

When action is flowing smoothly and nearly instantaneously from orientation, as it should the vast majority of the time, then the speed that counts reflects the time to reorient in response to changing external and internal conditions. With a more rapid reorientation, or equivalently, with an orientation that is at any point in time better matched to the environment than the opponent's, opportunities will arise to set up and exploit deception and surprise—"play the *cheng/ch'i* game," as described by Sun Tzu (from *cheng*, meaning orthodox or expected and *ch'i* meaning shocking or unexpected. When this is successful, the slower side, that is, the victim of the deception, will have to spend time to recover from the deceptive act. This will allow the quicker side to continue changing the situation. Fourth generation combatants in Iraq and Afghanistan are playing this game quite effectively by combining attacks with improvised explosive devices with attempts to ambush the survivors and rescuers.

However, it can not be emphasized too strongly that the key to playing the *cheng/ch'i* game is accurate orientation. In Boyd's concept, a competitive unit will quickly understand the situation, recognize the possibilities for *cheng/ch'i* at all levels, and through its implicit

guidance and control, will be able to set up and exploit effective surprise and deception operations. At the same time, it will learn from the experience (decision/hypothesis), which might result in reorientation and perhaps also in a wider repertoire of future actions.

The “quickness” of OODA loops is manifested in the ability to make rapid switches between *cheng and ch’i* to produce the jerky, abrupt *asymmetric fast transits* that causes adversaries to hesitate and their abilities to function break down. Quickness, or agility, in this sense of asymmetric fast transients, is partly dependent upon an organization’s ability to expand the envelope of its intuitive capabilities, its *Fingerspitzengefühl*, so most of the time it can exploit lower level initiative, while at the same time realize higher-level intent, thereby diminishing entropy and compressing time through what is unstated or not communicated to one another in an explicit sense. Mental agility with an attached time vector to the main purpose is the key to remaining adaptive and unpredictable.

It is therefore important that we, or any organization, suppress the tendency to build up explicit internal arrangements—a complex organization, for example, or a culture of bureaucracy, or a high degree of dependence on technology—that hinder interaction with the external world. Boyd found that smaller or less technologically advanced forces often won (see Boyd, 1986, p. 89, Richards, 2004, p. 39-40), largely because of their ability to rapidly shift the focus of their main efforts and thereby excel in the *cheng/ch’i* game. This enabled smaller forces to “operate inside their opponents’ OODA loops,” which Boyd defined as the ability to create and exploit opportunities before the larger forces could comprehend and then reinforce or take other effective action. As a result, Boyd insisted throughout his life on “people, ideas, and hardware” in that order, because there are few instances where technology or size alone was able to change the situation quickly enough to overcome deficiencies in people or ideas (Biddle, 2004; Coram, 2002; Hammond, 2001; van Creveld, 1989).

This is of utmost importance since commanders must simultaneously observe any mismatches between their conceptions of ongoing events and the way they really are. Serious mismatches should cause them to reorient to new confusing and threatening situations, and force them to generate new ideas to deal with them (Richards, 2004, p. 65). In those situations, the quickness of the whole loop will be determined by the time it takes to *reorient* in response to what is happening in the environment. Reorientation then is done

through *explicit* decision, that is, through an ongoing process of hypothesis and test, Boyd's alternate labels for decision and action. Explicit decisions are also made when implicit decisions are not sufficient. In such a situation, it is necessary to explicitly reharmonize the action of groups of people, i.e., to reorient them to a new goal or purpose. This is illustrated with blue colors in Figure 3.3. Because explicit decision making, action, observation, and reorientation always take time, there is an interval during which an organization will remain locked into its existing orientation by its implicit guidance and control link. This existing orientation will influence the ongoing actions until we are reoriented and have changed the range of available actions.

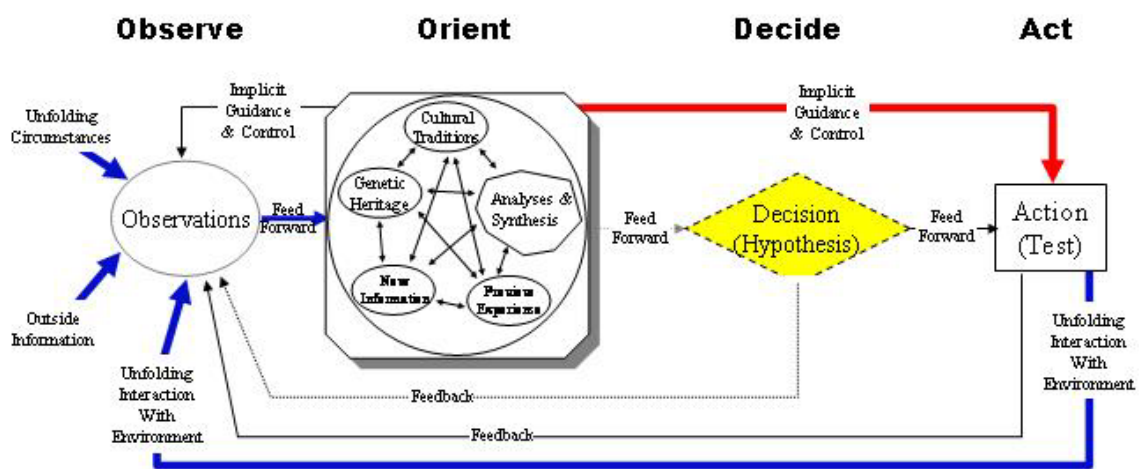


Figure 3.3 The OODA Loop and Explicit Decisions

3.4.2 The OODA loop in play: The central dialectic

The OODA loop puts us into a central dialectic—a struggle involving our orientations, adversaries' orientations, and an unfolding of events or patterns in the environment—that underlies our conscious reality. The danger is that we might become alienated, which in conflict and war is more than merely a psychological sense of unhappiness with the world as it is. *Alienation* means the ironic relationship of being controlled by the product of one's own orientation, which is illustrated in the OODA loop figure with an asterisk besides the feedback arrow that goes from action to orientation in Figure 3.2. To avoid alienation we must be able to create mental images—dynamic patterns—that match the dynamic, ongoing activity in the world and thereby reduce our own entropy.

Commanders therefore, must always look for mismatches and live by the general rule that bad news is the only thing that will do them any good. To thrive, we must be able to find data that do not fit with our current orientation and we must do this while there still is time. This requires interactions, emphasizing again the process nature of orientation: If we do not interact continuously with as wide a variety of sources as possible, our brains can not cope with the new developments that come from the environment, and we will not be able to reorient. We will not have an adequate variety of responses, resulting in an overload of stress. While we are doing this, we must also deny our adversary the possibility of uncovering or discerning those patterns that match our activity or other aspects of reality in the world. If we are successful, this will increase our adversary's entropy. If we are not successful, there is the possibility that the adversary will change the world before we can comprehend what has changed, and we will become disoriented and find ourselves in the position of playing catch-up. As a result we will most certainly lose the initiative.

The red arrows in the OODA loop (Figure 3.2) reflect Boyd's conclusion that most decision making can and should be implicit, and that quite often, orientation controls actions implicitly without the need for explicit decisions at all (Richards, 2004, p. 64). The ability to dispense with explicit decisions and rely instead on implicit guidance and control requires harmony in form of cohesion, mutual trust, and common orientation/outlook²⁵. This can only be gained by exposing commanders with different skills and abilities, hence with a high degree of diversity, through training, against a variety of situations as close to a conflict environment as possible, whereby each commander can observe and orient simultaneously to the others and to the variety of changing situations (Boyd, 1987a, p. 18). The common outlook or *Einheit*²⁶ is "created" when commanders make their *Schwerpunkt* or intent known to their own subordinates. Once this is achieved, subordinates do not need to be micromanaged; instead they can be led, using *Auftrag*.

The result of this process is that subordinates and their commander begin to develop and share a common outlook. This means that they understand and know their commander's

²⁵ Boyd's use of "common outlook" is similar to the concept of shared mental models that allows team members to generate common predictions about the task and team demands in absence of communication among team members (see Salas & Cannon-Bowers, 1997; Tannenbaum, Salas, & Cannon-Bowers, 1996).

²⁶ Boyd also used the German word *Einheit* to describe Common outlook.

overall intent and they know their job is to do whatever necessary to fulfill that intent. Only in such an environment of harmony, trust, and focus that commanders can successfully employ implicit communication. At the same time, trust will evolve as a consequence of the similar mental images or impressions that the commander and each member of the unit create and commit to memory by repeatedly sharing the same variety of experience in the same way (Boyd, 1987a, p. 18). As the doctrine of the one U.S. service that has adopted maneuver warfare summarizes it:

...it is not more command and control that we are after. Instead we seek to decrease the amount of command and control we need. We do this by replacing coercive command and control methods with spontaneous, self-disciplined cooperation, based on low-level initiative, a commonly understood commander's intent, mutual trust, and implicit understanding and communication (MCDP 6, 1996, p. 110).

This might seem close to groupthink. Groupthink, however, arises when an organization starts writing down doctrine and dogmas, checklists, list of procedures and principles, etc., and starts punishing people if they do not follow the procedures. There is enough natural variation built into almost any group of human beings, and if we manage to stay implicit, we will avoid groupthink. However, this requires an organization built on mutual trust and common experiences, which makes it possible to have quite a wide diversity within the common outlook: They all align, but no two of them are exactly alike, as illustrated in Figure 3.1.

3.4.3 The OODA Loop: the Essence of any Command and Control System

Boyd concluded that the OODA loop represents the essence of any command and control system because “the nature of any command and control system must permit one to direct and shape what is to be done as well as permit one to modify that direction and shaping by assessing what is being done.” (Boyd, 1987a, p. 31). Command must give direction in terms of what is to be done in a clear unambiguous way. In this sense, command must interact with system to shape the character or nature of that system in order to realize what is to be done; whereas control must provide an assessment of what is being done, also in a clear unambiguous way. In this sense, control must not interact nor interfere with the system but must determine (not shape) the character or nature of what is being done (1987a, p. 31).

The OODA loop provides an alternative to the traditional military approach to command and control, an approach that greatly disturbed Boyd (Boyd, 1987a). *Command* by definition means to direct, order, or compel while *control* means to regulate, restrain, or to hold a certain standard as well as to direct or command. His approach to command seemed more closely aligned to leadership and appreciation, instead of command and control because appreciation includes the recognition of worth or value and the idea of perception. He also found it difficult to believe that leadership even could exist without appreciation. This led him to:

Appreciation, as part of leadership, must provide assessment of what is being done in a clear unambiguous way. In this sense, appreciation must not interact nor interfere with system but must discern (not shape) the character/nature of what is being done or about to be done, whereas leadership must give direction in terms of what is to be done also in a clear unambiguous way. In this sense, leadership must interact with system to shape the character or nature of that system in order to realize what is to be done (1987a, p. 34).

The implication of this is that assessment and discernment should be invisible and should not interfere with operations while direction and shaping should be evident to the organization, unit, and or team. Otherwise appreciation and leadership would interfere with each other and not provide an effective means to improve our fitness to shape and cope with unfolding circumstances. Simply put, we would be changing the situation as we were trying to observe and understand it (1987a, p. 24). This illustrates how Boyd built his approach to leadership, which he defined as “the art of inspiring people to enthusiastically take action toward the achievement of uncommon goals” (1987a, p. 37).

3.4.4 OODA Loop Summary

The essentials of the OODA loop, as presented above, suggest that future officers must be trained and developed in a way that enables them to create a climate which fosters the four key qualities of variety, rapidity, harmony, and initiative, which would permit them to shape and adapt to a rapidly and unpredictable changing environment. Then they will be able to turn adversaries into *relatively closed* systems. If we can operate inside their OODA loops, then we can make them appear to be closed with respect to us. This notion of relative closeness takes us out of the world of physics and into the world of strategy. If we can do that—operate at higher OODA loop speeds than our adversaries—they will start to appear

closed with respect to us, and as a result start to generate entropy within their teams. The entropy inside their systems acts as Clausewitz's friction and generates chaos (1984), confusion, and makes it hard or even impossible for them to adapt to the rest of the world. In a combat situation, the build-up of entropy will cause them to hesitate, bicker among themselves, or even fracture into separate and largely non-cooperative sub-teams. Leaders operating in the Gap against a 4th GW "starfish" must stay alert for this and understand its causes—disorientation and entropy made worse by an internal focus.

From a leadership development perspective it is important to keep in mind that orientation is the central variable, which comprises several variables that either enable or hinder us in generating the necessary harmony and initiative. Orientation, therefore, is the key factor that indicates whether we are able to improve our ability to shape and adapt to unfolding circumstances. Improving orientation processes and our ability to harmonize them within an organization are critical components in military leadership and in leadership development programs for 21st century operations.

OODA loop speed as defined above would then be an indication of the effectiveness of the ongoing leadership development. If we are successful in our development and training approaches our OODA loop speed will be relatively quicker than our adversary's—which is what "fast OODA loop" really means.

When commanders or any decision makers fully understand the OODA loop, they are able to compress time—that is, the time between when the situation changes and when action is taken. When the commander has developed a *Fingerspitzengefühl* for changing situations, tempo picks up and actions will seem to flow instantaneously from orientation. Such a commander can sense and exploit fleeting opportunities before the slower side understands what is happening. This mismatch denies the adversary the opportunity to cope with the ongoing events or efforts as they unfold, which can be important in a 4th GW environment, with many units operating widely dispersed from other units. As long as we continue to be the quicker side (in the sense of quicker OODA loops), we can continue to increase ambiguity, confusion, panic and chaos on the adversary's side.

3.5 Summary and Some Words of Caution

I have outlined the essence of Boyd's theory of competition and conflict. I believe it is fair to say that Boyd's theory provides unique insights while at the same time pointing towards the need for human organizations to exhibit the same innovation and creativity at the top as biological organic organizations. Such organizations are complex adaptive systems, and the name of the game, according to complexity theory transformed to organizational life, is to constantly adapt and evolve through operating optimally as a complex adaptive system, or to return to Boyd's words "it is a strategic game of interaction and isolation" (Boyd, 1987b, p. 33).

In the types of conflicts that Norwegian military units will likely conduct, this means interacting within our own units and the local population and isolating the "terrorists" from popular support. At the most basic level, the combination of variety, rapidity, harmony, and initiative—particularly their interaction—seems to be the key that will permit commanders in the field, particularly in the Gap, to shape and adapt to ever-changing environments and fulfill our strategic aim.

3.5.1 War versus Business: the Fundamental Difference

Although Boyd's ideas have spread into the world of business, there is still a need to distinguish between warfare and business. This is also an important distinction when it comes to educating and developing officers. While we speak about business as a form of warfare—and there are some parallels in the dynamics—certain fundamental differences segregate the military sphere from the civil and all the aspects encompassed by the latter, including business, the stock market, personal relations, romance and sports. Boyd's organizational climate and the use of time as the basis for shaping competition could generally be used in business. But this path alone will not lead to success in business because of fundamental differences between business and war. War is at heart a two-sided conflict, where the goal is to compel an opponent to do something they would rather not do. The ultimate purpose of war is to brutalize, conquer, slay, and exterminate. Direct action to achieve these purposes is not only permissible, but also required. As a result, the specific strategies and tactics of war are coercive and destructive in nature. Although business executives may speak about "eliminating their competitors," and that in business, as in war,

one should “avoid strengths and attack weaknesses,” these are merely metaphors subject to individual interpretation. In a business setting, an organization should find or create areas where competitors are vulnerable, that is, develop products and services that customers will buy instead of its competitors’. Another major complication for business involves the need to control cost and boost profitability, which are not themes in Boyd’s approach to warfare.

The underlying weakness in the “business is war” approach is that business, in contrast to war, is, or at least it is supposed to be, attractive and constructive. Topologically, commerce is a many-sided conflict (the firm, customers, and competitors) where the battle remains solely for costumers’ minds, attracting them to give money to us instead of to our competitors. This is a “battle” that is waged by creating and manipulating perceptions rather than direct attacks. It could be said that 4th GW—because of its emphasis on attracting populations and isolating terrorists—shares more characteristics with business than does 1st, 2nd, or 3rd generation warfare.

4. The Systematizing Person-Group Relation

4.1 Introduction

In this chapter I will present both a theory and method that makes it possible to understand and investigate the social interaction of teams and organizations. The aim is to connect this theory and method with Boyd's work on the nature of 21st century conflict that was outlined in the previous chapter. This is important since we know that human nature is inherently social, social interaction is a crucial human preoccupation, and role-taking ability is the "g" factor in social interaction²⁷ (Hogan & Roberts, 2004). All social interactions have three essential components:

1. Agenda, the reason for interaction;
2. Roles to play, because we only interact with others in the context of roles, which provide the needed structure and predictability. There are important differences in peoples' abilities to define and play roles, and skillful players generally do better in the game of life.
3. The rules of the game, ritual, or ceremony in which a person is involved (Hogan, 2006).

We also know that attention and status are the result of social interaction. When we gain status, it is natural for others to begin to resent us even as they congratulate us. Conversely, acceptance is gained by conforming to the expectations of others, which makes achievement difficult. As such, there is an inherent tension beneath the surface of social life as people try to advance themselves without alienating others. An ability to deal with this tension is one of the things that make leadership an art since it involves persuading people to give up their selfish interests and pursue a common goal. Because leadership concerns the building of cohesive and goal-oriented teams, leadership development involves efforts within a social context to expand the participants' role-taking abilities. According to Collins (1997), it is

²⁷ Here Hogan and Roberts (2004) are heavily influenced by Mead's (1934) work.

necessary to have a large role set in a complex modern society, where “role set” refers to the combination of the different roles that any particular individual plays.

“Systematizing Person-Group Relations” (SPGR) represents both a theory and a method for research and human-relations consulting in organizational settings, it is a field-theory of social interaction. The SPGR was chosen since it represents an analytical tool that provides means of bringing an organization into its full-fledged or proactive stage. The most significant characteristic of a group at this level of maturity or of a proactive organization is its orientation towards options in its external environment and its ability to take advantage of these options, hence play the interaction and isolation game and being able to dissipate entropy. The major premise in such a group or organization is that all members adjust their objectives and goals to improve the organization and increase organizational learning. In other words all organizational members display behavior that is usually defined by executive behavior. This is in accordance with the essence of *Auftragstaktik* while it contradicts the model of leader-employee relationships found in classical management theory and in 2nd GW.

In this chapter, I will outline the fundamentals of the SPGR model including: (1) a short background and presentation to the SPGR; (2) the basic group functions; (3) the principle of balance and maturity; (4) group and leadership development including the dynamics of the SPGR; and (5) the relevance and importance of SPGR for implementing Boyd’s theory of competition and conflict. SPGR also includes a measurement part that will be covered in section 10.3.1 where I describe the data collection instruments used in this dissertation.

4.2 SPGR Background

The SPGR (Sjøvold, 1995, 2002, 2005, 2006, 2007) is an integrated set of special, tailored tools created over the last 20 years to measure the competence of individuals, groups, and organizations to develop and maintain functional relations, and it provides a useful instrument for focusing on those interaction variables that permit vitality and growth. The theoretical foundation of the SPGR model combines Bion’s model for Group Emotionality (Bion, 1987), Parsons’ suggestions of pattern variables (Parsons & Shils, 1953; 1951), Mills (1984) work on group development, and Bales Theory of Social Interaction Systems (Bales, 1999). The structure of the methodology is a further development of the structure found in

Bales SYstematic Multiple Level Observation of Groups (SYMLOG) method (Bales and Cohen, 1979). As such it contains the insights from both Moreno's (1953) sociometry and Lewin's (1952) field theory. It is worth mentioning that today's SPGR model bears little resemblance to its SYMLOG origins (Sjøvold, 2007).

The SPGR system, besides integrating different theoretical perspectives, is a model and a procedure for visualizing how organizations, teams, and individual team members can contribute to the development of their organizations, teams, and themselves. It represents a helpful tool to improve leadership in organizations, groups, and individuals, which makes it suitable for the development of leaders and leadership.

4.3 The Basic Group Functions

The concept of 'group functions' was first introduced by Parsons (1951; 1953), and the concept is central to the further discussion. The idea that the predominant behavior of a group varies during the course of its existence is well-established. It also appears that most models agree on the behavior that relates to the type of problem facing the group. While Parsons (1953) suggests four basic functions of groups, Tuckman and Jensen (1977) describe four phases of group development and McGrath (1991) four modes in which groups may perform. It is fairly easy to see how the four functions, phases or modes are assumed to meet similar challenges. Even the more psychoanalytical models, like Bion's (1961) model of group emotionality reflect similar patterns. The SPGR model for group and team development builds on Parsonian thinking.

The theoretical core of the SPGR consists of four basic *functions*: *Control* (C), *Nurture* (N), *Opposition* (O), and *Dependence* (D). The basic idea is that at any given time, a team activates the function best suited to meet the specific problem they face. If the problem at hand is instrumental, then the Control function is activated; if the problem is relational, the Nurture function is activated and so on. When one of the functions is activated, the predominate behavior of the group members reflects that active function. When the Control function is active, for example, analytical, task-oriented or even autocratic behavior dominates; when the Nurture function is active, caring, empathic or even spontaneous behavior dominates; if the Opposition function is active, critical, assertive or even self-sufficient behavior dominates; and when Dependence is active, conforming, passive, and

obedient behavior dominates. Since an active group function is always reflected in group behavior, see Table 4.1 for an overview, systematic observation of behavior is an efficient tool to investigate these phenomena. This is the approach used to study the groups referred to in this dissertation.

Further paring of the four functions yields two of the four SPGR *dimensions*: (1) *Control versus Nurture*²⁸ (C-N) and (2) *Opposition versus Dependence* (O-D). The effect of any behavior associated with a basic function varies depending on the intensity with which it is manifested. This is especially true in conflicts, where emotional power tends to oscillate between poles in a battle to gain influence. In SPGR this important aspect of group relations is caught by its third dimension: (3) *Influence versus Passivity* (I-P). The Influence-versus-Passivity dimension is an embedded dimension that appears as an aspect of each of the other dimensions and so is not shown in Table 4.1. The W-S dimension will be covered in section 4.4

Table 4.1

Elements of Group Constitutions

Dimension	Group function	Short description
C-N	Control	Structure, logic, authority
	Nurture	Caring, social orientation, openness
O-D	Dependence	Loyalty, conformance, submission
	Opposition	Criticism, rebellion
W-S	Withdrawal	Passive resistance
	Synergy	Engagement, constructive goal-oriented teamwork

Within each group, the basic group functions are supported by a distinct set of behaviors. Groups differ in the predominant behavior they display, and one may interpret these differences as a measure of the cultural characteristics of groups. The results of these dimensions are presented in more detail along twelve *vectors* in the SPGR factor analytical

²⁸ Within the leadership literature this has been discussed as autocratic versus participative, initiating structure versus consideration, self-assertive versus empowering, task-oriented versus people oriented, forceful versus enabling, and Theory X versus Theory Y (Kaplan, 1996; Kaplan & Kaiser, 2003a; Kaplan & Kaiser, 2003b), or the leadership dilemma (Stogdill, 1974).

space. The vectors are shown in Figure 4.1 and described in Table 4.2. The vector code indicates which dimension it belongs to; Control vectors are labeled C1 and C2 and so forth.

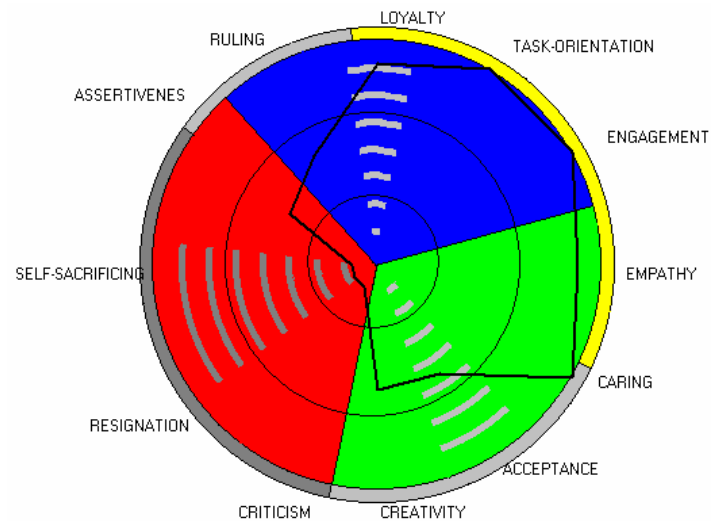


Figure 4.1 The SPGR 12 vector

Table 4.2

The SPGR Behaviors Vectors

SPGR Vector	Codification	Typical behavior
Engagement	S1	Engaged, inviting others to contribute
Caring	N1	Taking care of others, attentive to relations
Acceptance	D2	Passive, accepting
Creativity	N2	Creative, spontaneous
Criticism	O1	Critical, opposing
Resignation	W1	Sad appearance, showing lack of self-confidence
Self-sacrifice	W2	Passive, reluctant to contribute
Assertiveness	O2	Assertive, self-sufficient
Ruling	C2	Controlling, autocratic, attentive to rules and procedures
Loyalty	D1	Obedient, conforming
Task-orientation	C1	Analytical, task-oriented, conforming
Empathy	S2	Showing empathy and interest in others

4.4 The Principle of Balance and Maturity

The construct of ‘group constitution’ is defined as the *balance* of the basic group functions. A team may activate one function to solve a specific problem and activate another to solve another problem. On the other hand, a group may be stuck in one function even though that function is not adequate to meet the challenge the group actually faces. This makes the concept of balance between the basic functions within the group dynamic central to understanding SPGR. These four basic functions—control, nurture, opposition and dependence—are necessary for a group’s functioning, and they will influence the group or the organization with different strengths throughout their existence. To be a well-functioning group the members have to agree on how to cooperate and on the sanctions (Control) that will follow when the working rules are broken. At the same time, individuals must be taken care of and the relationships between them must be maintained (Nurture). Typically, a good leader will evaluate what behavior or action is most appropriate, both in a given situation and over the long term, and then make a choice. In a mature group, this will work according to Boyd’s OODA loop, and most of the time, these choices will flow implicitly from a shared group orientation, without explicit decisions. To cope successfully with changing contexts, new tasks, or internal issues, group members need to be able to shift from behaviors reinforcing efficient production (Control functions) to Nurture functions and vice versa. This is social action as *role taking*. In other words, a group needs to balance the Control and Nurture functions over time (Bales 1953). Just as the Control-versus-Nurture dimension must be balanced, so must the Opposition-versus-Dependence dimension. In the longer time span, we need to have a correcting attitude, hence Opposition, to how we do things today and what we can improve, enabling us to grow and survive in the long run. It is also necessary that we be willing to do what needs to be done, hence Dependence, without excessive discussion. Figure 4.2 illustrates this balance. Balance is an important concept of the SPGR model. ‘Balance’ is, however, not equivalent to the concept of equilibrium like Bales (1953, 1955), who described it as a homeostatic controlled status quo. Balance is a constant shift and polarization between active group functions. Consequently members of a team free themselves from fixed roles, and they become capable of performing behaviors that support all functions.

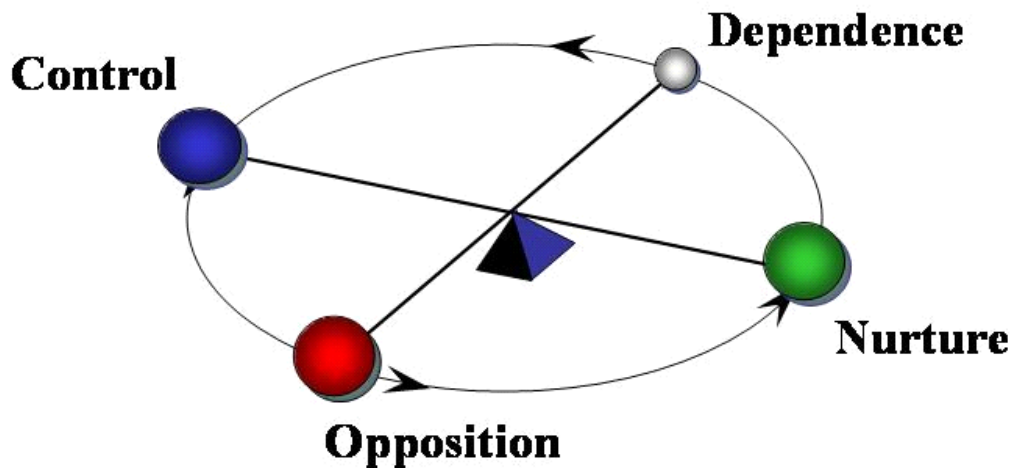


Figure 4.2 The Balance of the Basic Group Functions in the SPGR Model (the arrow-and-circle in this figure illustrates the important difference between the dynamic balance and static equilibrium)

This is a state of free flow that is characteristic for highly creative teams (Csikszentmihalyi and Csikszentmihalyi, 1988). A well-functioning or well-balanced group can be compared to a gyroscope. It is the speed of rotation that makes it stable and robust. The ‘one person—one role’ group may balance the group function by having an equal number of supporting roles, but such a group will respond very slowly and be vulnerable to environmental change, particularly those caused by enemies, customers, and competitors. So when one of the basic functions is predominant, this will, over time, most likely hamper learning and development and the group’s ability to explore the environment for new ideas that might be valuable to it (Sjøvold, 1995, 2002, 2005, 2006, 2007).

Domination by one of the functions may last for just a few seconds, for several months or even for years. When a group is dominated by one of the functions, the activities of the group become predictable because the focus is on preserving the status quo, leading to a lack of initiative, adaptability and harmony, and as such the group and its members are not able to interact effectively with their environment. In competition and conflict any lack of initiative and adaptability—slower OODA loops, in Boyd’s terminology—makes it easier for an adversary to predict and then exploit group actions. These basic functions will have a strong impact because they also represent a group’s affective (under) structure or culture (Bion, 1987). They will govern the way group members think, feel about, and perceive events

within and outside the group and thus influence the members' views of reality. Simply put, they have a strong impact on the group members' orientations.

SPGR uses the term *maturity* to describe the development of groups. The key to the development of groups and leadership lies in the balance of these four functions, because the transition to a higher degree of maturity and development depends on how well the group manages to balance these functions and which they choose to operate within. A group at the highest level of maturity is characterized by its ability to balance the basic functions over time in such a way that all the members can perform all the different roles in smooth interchange (Sjøvold, 2006, 2007). Then we have the first of two more aspects of group constitutions, namely *Synergy*. Synergy appears in groups where the basic group functions are well-balanced and characterized by engagement and constructive goal-oriented teamwork. The second additional aspect of group constitution is *Withdrawal*, which is found in less mature teams. Here, members tend to take on roles according to their zone of comfort, and limit their behavior to support one basic function; they tend to restrict themselves from contributing to the common group work, which in turn results in passive behavior and resistance, i.e. Withdrawal. In such groups, one member may be the caring person (Nurture), another person the achiever (Control) and so on.

However, balance is not just a matter of like-size subgroups of members adhering to opposing functions, or dimensional poles. Balance can be skewed towards one of the functions with fewer members (one might in some cases be enough) if these members exert considerable influence on the group. There might be situations where such a preponderance of influence may be a good solution for a group, but over time the *influence-versus-passive* dimension must also be balanced. Extremely dominant individuals in a group tend to freeze the group in a fixed pattern of roles, which in the end makes the group predictable, giving an adversary the opportunity to operate inside the group's OODA loops.

Research has shown that that a single person's traits and behavior can change the situation (Barry & Stewart, 1997; Stewart & Barrick, 2004; Williams & Sternberg, 1988). Williams & Sternberg found that even one overly zealous or domineering member in a group significantly inhibited the quality of that group's performance. They also found that some groups performed better than others because the characteristics of these groups created a state of internal harmony, *Einheit* in Boyd's climate, indicating a higher level of maturity in

SPGR terms, which resulted in the maximization of productivity. Groups marked by internal harmony are free to utilize the full talent of their members in terms of both cognitive and social-cognitive abilities. Kaplan and Kaiser (2003a) labeled a similar concept of balance, *versatility*, defined as capability on both sides of the duality as well as the ability to judge which approach is most appropriate for the situation²⁹. The opposite of versatile would be “lopsided,” either doing too much or too little (Kaplan, 1996, Kaplan & Kaiser, 2003a, Kaplan & Kaiser 2003b). They found, in particular, that versatile executives received higher ratings of effectiveness than lopsided executives (Kaplan & Kaiser, 2003a), a finding which was consistent with the findings of Bachman (1988).

Bales (1999) defined *group dynamics* as the perpetual shift between polarization and unification in a group. In the SPGR model such polarization occurs when members take stands associated with functions representing the poles in the basic dimensions (Sjøvold, 2007). For example, a dispute might ensue between (a) a commander who is not on the spot but claims to know the “correct solution” and who demands prompt execution (Control function) of orders and (b) members of the unit who call for continued discussions to ensure that all the members’ voices have been heard so that his intention can either be corrected or correctly understood (Nurture function)³⁰. This kind of polarization may be brief (seconds) or become a permanent conflict that might have disastrous results for those involved. The brief polarization is characteristic of optimal group dynamics; the latter is dysfunctional.

The salience of different basic functions changes over time, a point that is illustrated by a rotating movement between the functions in Figure 4.2. Groups of different maturity move between functions with different velocities. High speed and the ability to dissipate entropy are typical for groups of high maturity, where members have developed competency in all functional roles and can smoothly shift among these when needed. Low speed is typical for less mature groups, where functional roles are tightly bound to individuals. In such “one-person-one-functional-role” groups, the rigidity of the person-role connection restricts

²⁹ Kaplan and Kaiser are mostly concerned with the forceful-versus-enabling balance, and as such their perspective is at a lower level of complexity than the SPGR.

³⁰ This does not imply that legal orders should not be followed, but it is about creating a command climate that contributes to *Auftragstaktik*.

flexibility and adaptability. Negotiations among members about who should be allowed “on stage” cause significant loss of energy and time, and the result is an increase in entropy.

Team maturity, as defined here, is closely related to role structure. The more specific the roles that team members assume, the less flexible and responsive the team will be. The interdependence of individual and team development is also obvious. As members expand their behavioral repertoire and skills, the team also becomes a better arena for learning. The individual needs the team to develop, and the team will only develop through its members (Mills 1984). Innovative teams have a high capacity to learn and are, in our terminology, mature. However, all teams do not need to be innovative or mature to be effective. Team effectiveness is a highly flexible concept (McGrath 1991, Gersick 1988, Hackman 1983, 1992, 2002). Effectiveness is always related to team task and context. The more complex tasks are, and the more unpredictable the context is, the more mature the team needs to be for success. The analysis of operational requirements presented in chapter 2 shows that a high maturity level is required to perform effectively in a 4th GW environment.

The SPGR model suggests four levels of maturity where, at each level, group members achieve new shared capabilities. The detailed descriptions of these levels will be outlined in the next section.

4.5 Team and Leadership Development

*Team development*³¹ constitutes the fourth dimension of the SPGR model: *Withdrawal* versus *Synergy*. This is illustrated with Figure 4.3. In a new or otherwise immature group, members tend to stick to what they are good at, which means taking roles that fulfill functions within their comfort zones. A person who is of a nurturing nature will typically fill a nurturing role. A structured and analytical person will easily fill a Control-function role, and so on. Figure 4.4 illustrates the different roles within the SPGR space³².

³¹ For an overview of models for group development, see Chidambaram and Bostrom (1996), Jern and Hempel (1999), Poole and Hollingshead (2004) or Sjøvold (2006).

³² The SPGR space and its Field diagram are outlined in section 10.3.2 and Figure 10.2 illustrates this space; see also appendix A.

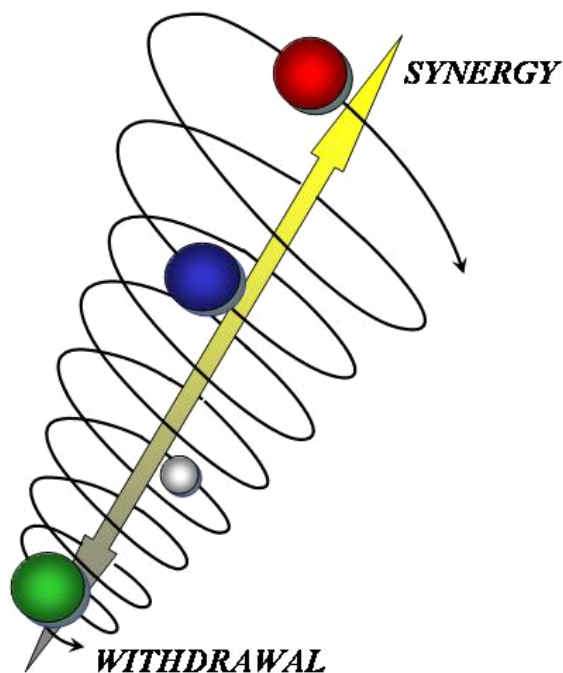


Figure 4.3 Withdrawal versus Synergy

At an immature stage in group development, no learning is required. Members slip into the most convenient roles and stay in them. Members of a new group or new members in a group spend most of their energy probing for an answer to the question, “What is in this relation for me?” As a consequence they withhold their resources and contributions. The group as a whole is close to the Withdrawal pole of the fourth SPGR dimension. The ability to perform other group functions implies learning, pushing, and expanding the boundaries of individual comfort through a process such as leadership development. The group and each individual member of the group will, throughout their development, if successful, add new role systems to the old one, but the old ones are not discarded (Mills, 1984).

Role taking is a general, all-purpose device by which individuals construct new social actions and replace old ones (Collins, 1997). If group development doesn’t succeed, the members are blocked out from new roles, and the members’ energies and mental capacities do not become available to the group. This might always be a possibility because growth is not automatic but occurs through the vision and effort of the group members. An important aspect, according to Mills (1984, p. 132), which is fully integrated in the SPGR system, is

that the potentials for individual and group growth are maximized under the same set of conditions because “the opportunities for the development of the individual member as a person, and group development, are of course interrelated”.

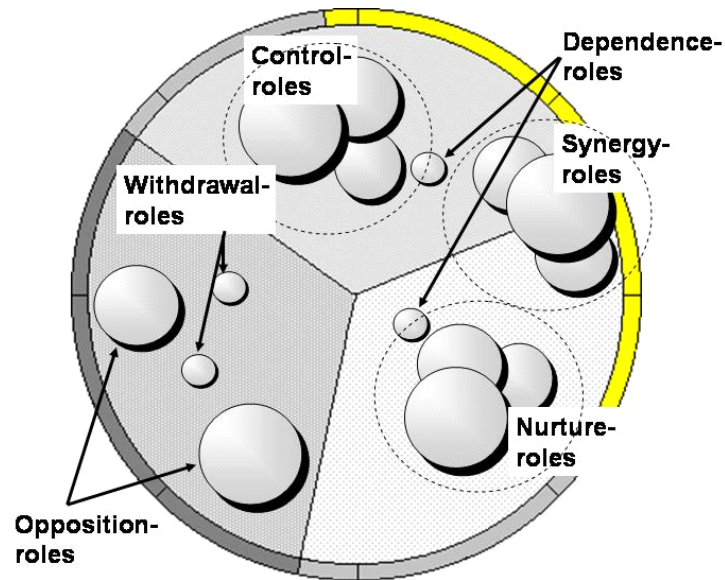


Figure 4.4 The SPGR Space and the Different Roles

A prerequisite for such learning is a shared commitment to the group and its members, intent, and mission by giving up, for a while, their selfish interests. Such commitment benefits the group as a whole as well as the individual members because they are willing to give each other unconditional help to succeed, which is what leadership is all about. This also indicates that competency in multiple functional roles increases as a group approaches the Synergy pole.

In the next section, I will elaborate on the dynamics that make this role-taking possible.

4.5.1 The SPGR Dynamics

I will now look further into the dynamics suggested by the SPGR model and connect it to the essence of Boyd’s theory of competition and conflict. The SPGR model assumes that dimensional balance is obtained through a circular movement among the four functions (Control, Nurture, Opposition, and Dependence) and that growth is achieved in a spiraling

movement from the Withdrawal to the Synergy pole. Sjøvold (2006, 2007) uses the spinning top as an explanatory metaphor. Growth in SPGR is a result of a free flow between the different basic functions, which captures the essence of Boyd's agility concept, which is sometimes also illustrated by a spinning metaphor, often a whirlpool or tornado. It is the degree of agility that makes possible rapid and smooth shifts among the basic functions so that that each member's innovation and creativity can be used to reach the *Schwerpunkt*.

Low agility implies a low maturity and a lack of ability to dissipate entropy because there is no internal harmony. In a group with a low maturity, entropy will build up inside the group and 'kill' it with equilibrium, in particular, a static one-person-one-role situation. Both the SPGR balance, see section 4.4, and Boyd's agility display a paradoxical dynamic that is both stable and unstable. However, it seems to be difficult to hold the paradox of both balance and imbalance simultaneously in order to make sense of it in the context of leadership and team development. Agility in a mature group is obtained because all members are capable of performing roles and exerting behavior outside their previous normal comfort zones. All members have the opportunity to contribute to the group's work without being inhibited by one another or by fixing role obligations. Such dynamic role-taking behavior defines the group's internal harmony, in Boyd's language, or maturity within the SPGR concept, that allows it to dissipate rather than build up entropy.

From the perspective of developing both leadership and leaders, the SPGR functions may be treated as emotional states, or types of culture (Sjøvold, 1995). Emotional strength can result either from a majority of the members sharing the same belief or from a minority exerting such high influence that they assume the role of "religious" leaders. The strength of emotionality, therefore, is important in assessing the potential for development. Similarly, groups with strong cultures are less likely to change than groups with weak cultures, so commanders must understand a group's culture in order to intervene successfully to improve its performance. Seen from the perspective of this dissertation, the major task of an intervention during a leadership development program is to propel a group towards the Synergy pole, because this pole provides experience in all functions to all members. To generate such important and necessary opportunities, fixed role structures must be broken; fluctuations induced; influence more evenly distributed, avoiding "bad apples" and overly domineering members; and the group forced to leave its predominant function.

Before development can occur, an intervention must identify through assessment the primary functional mode in which the group is currently operating and address associated concerns. The primary concern of a Nurture group is commitment; a Dependence group, authority; a Control group, work; and an Opposition group, identity. The nature of an intervention will vary according to the distribution of influence in the group and which primary function the group is about to enter because some functions are more permeable and open to development interventions than others. According to Sjøvold (1995, 2006, 2007) the most likely sequence of accessibility is: Nurture -> Dependence -> Control -> Opposition, which is illustrated in Figure 4.5.

Complex problems in changing, unpredictable environments are best solved by mature groups, which is the case for today's conflict scenarios (see chapter two) and therefore for any military leadership development program. This also explains why some groups may jump to one of the basic functions and stay there without having to pass through phases of development in a fixed sequence. For example, if we have a military group operating in Dependence, where reactivity and passivity predominate, it may be effective in a stable and structured context if all members fulfill their prescribed subtasks in a coordinated manner under a strong leader. Even this kind of group, consisting of a strong leader with committed followers, probably went through a period focusing on *Nurture* functions before starting work. However, even if it is likely for new groups to pass through *Nurture* and *Control* functions as phases in their development, this is not a necessity in the SPGR model.

Sjøvold (2005, 2002, and 1995) found that there is a connection between the group's level on the nurture-dependence-control-opposition spectrum and the particular function that is distinctive in the group. By observing the group's most distinctive interaction behavior, it is possible to identify the group's culture. Bion (1987) claimed that the culture represented focal points that a subgroup may form in the continuous process of polarizations and unification. If a group is inhibited by the presence of one of the functions or cultures, the group might not have the ability (or will) to act rationally to overcome the emotional inhibition the actual function represents. Nonproductive norms caused by the one of the functions can be highly dysfunctional. To be able to operate according to *Auftragstaktik*, the group's maturity must be increased, which means that the basic functions must be challenged, and the group and its members must expand their roles to increase the group's

capacity to enact the basic leadership tasks needed for collective work. This requires the ability to rapidly shift among the functions.

In order to describe how this shifting process occurs within the process of group development, I will need to define the functions in greater detail:

1. The *Dependence function* is the individual's receptivity to a wider range of information about oneself, others, own groups, own and other societies, and the physical environment. It is each individual's receptivity that leads to an increase in openness at the group or team level, hence an increase in the range, diversity, and effectiveness of the channels of intake of information from the outside world (Deutsch, 1963, p. 140). This requires openness to new freedoms, responsibilities, roles that leads to an increased capacity to extend the scope of the group's contacts and obligations beyond its current boundaries. To do so, individuals must have the necessary flexibility to modify their own ideas, beliefs, personal norms, and emotional attachments without the loss of intellectual or moral integrity. This will help to build the capacity of a group or team to alter its customs, rules, and techniques to accommodate new information and new contacts, thereby increasing its adaptability.
2. The *Control function* concerns the individual's capacity to postpone immediate gratification and to evaluate an increasing number of avenues for gratification. At the group or team level this indicates a capacity to hold goal-seeking efforts in abeyance while alternative goals are considered. This requires the capacity to de-commit oneself from one goal, to recommit to new and additional goals, and to learn how to attain them, which gives the group capacity to shift to, or add, new goals.
3. The *Nurture function*, integration, concerns the capacity to perform an expanded repertoire of roles and variety of social relations without suffering diffusion of personal identity. The individual's integration will give the group or team the capacity to differentiate into subparts while maintaining collective unity, to retain the capacity to export resources without becoming impoverished, and to send emissaries without losing their loyalty.
4. The *Opposition function* is each individual member's capacity for deeper emotional involvement with others without surrendering oneself, thereby extending the group's

capacity to receive new members and to transmit to them its culture and capabilities. Increasing an individual's ability to convey personal experience, learning, and capability to others will result in the group's capacity to capture, in permanent form, the group's experience and learning and to convey them to other groups and to posterity.

The different maturity levels with the predominant functions of each are presented in Figure 4.5 (Sjøvold, 2006, 2007).

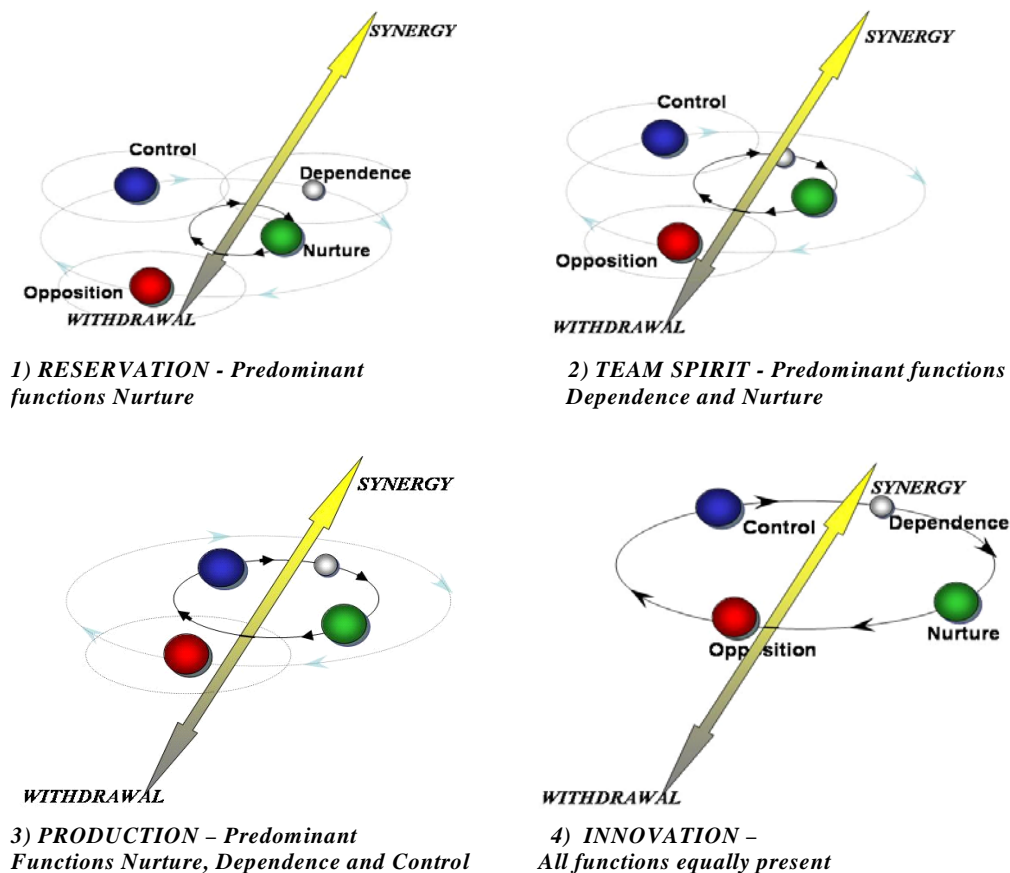


Figure 4.5 SPGR Maturity Levels and Group Development with Dominant Functions Illustrated³³

³³ This is symbolized by having the dominant functions orbiting closer to the Withdrawal – Synergy stem.

Movement from one maturity level to the next depends upon two conditions: (a) success in accomplishing the lower maturity level and (b) conceiving, conveying, and inducing members to accept the more advanced notion of their purpose. The critical steps in the entire progression are reconstitution of the group through adding new role systems and reorienting the group through the induction of a more advanced purpose. In many ways, this might resemble Boyd's approach to progress, which he considered to be confusion at a higher level. The essence is that leadership and team development requires commitment, deliberate, and very hard work. In the next section I will show how SPGR and the theories of Boyd work together and that the SPGR captures the essence behind Boyd's strategic game of interaction and isolation.

4.6 The SPGR System and Boyd's Theories - an Integrative View

This aim of this section is to show that there is an underlying theme that makes it possible to integrate the theories of John Boyd and the SPGR. I argue that the SPGR and its approach to team and leadership development represents a field theory of social interaction that captures the essence of Boyd's theories and especially the fundamental concepts within the OODA loop applied to all organizational levels. In his essay, *Destruction and Creation*, Boyd (1976) provided the philosophical foundation for his theories. He integrated Gödel's Incompleteness Theorem, Heisenberg's Uncertainty Principle, and the Second Law of Thermodynamics. From this he concluded that to maintain an accurate or effective grasp of reality one must undergo a continuous cycle of interaction with the environment—the OODA loop—to assess how it constantly changes. By expanding Darwin's Theory of Evolution, he suggested that natural selection applies not only in biological but also in social contexts such as the survival of nations during war or business in free market competition. By integrating these two concepts, he stated that the OODA loop (covered in section 3.3), and especially orientation because it is the *Schwerpunkt*, was the central mechanism of adaptation in a social context, and that increasing one's own rate and accuracy of assessment vis-à-vis one's counterpart's rate and accuracy of assessment provides a substantial advantage in war and in all other forms of competition. He further added, as previously discussed, that the most effective organizations have a highly decentralized chain of command that utilizes *Auftragstaktik* in order to harness the mental capacity and creative

abilities of individuals and commanders at each level. This would create a flexible organization, or what could be considered an open system—as compared to a hierarchical one—that would be quicker to adapt to rapidly changing situations. Such an organization would require an organizational climate as discussed in section 3.3 and illustrated with Figure 3.1, because any highly decentralized organization relies upon a high degree of mutual trust and a common outlook arising from prior shared experiences.

Conversely, the ability to synthesize alternatives and to adapt quickly to unpredictable events helps individuals, organizations or nations survive. Furthermore, those who have the better understanding of the directions and shape of change than others may well be able to exploit this and survive on their own terms. Boyd, following in the tradition of Sun Tzu insisted that success rests on the cultivation of internal organizational harmony, which is an effort to keep the entropy³⁴ produced within the system as low as possible:

High entropy implies low potential for doing work, a low capacity for taking action or a high degree of confusion and disorder. Low entropy implies just the opposite. [...] From this law it follows that entropy must increase in any closed system, or for that matter, in any system that can not communicate in an ordered fashion with other system or environments external to itself (1976, pp. 5-6).

The essential point is that a relatively closed social entity tends to forget its original purpose and naturally, as time passes, becomes increasingly dysfunctional. It will spend more time and effort examining itself by focusing on internal processes and procedures and when confronted with a challenge from the external world, the inevitable result will be increasing

³⁴ Entropy is an essential part of thermodynamics, the science that deals specifically with irreversible, time-oriented processes. The distinction between reversible and irreversible processes was introduced in the mid-19th century through the concept of entropy associated with the second law of thermodynamics. In Greek, entropy simply means “evolution”, and according to this law, irreversible processes produce entropy, hence evolution, while reversible processes leave the entropy constant. An implication is that there is an arrow of time in which the only direction is forward into the future (Prigogine, 2003, 1997).

The second law of thermodynamics is an inequality: The entropy, S , of an isolated system increases monotonically until it reaches its maximum value at thermodynamic equilibrium. We therefore have $dS \geq 0$ for the change of entropy over the course of time. If we then extend this statement to systems that are not isolated we must distinguish among two terms of entropy change, dS . The first, $d_e S$, is the transfer of entropy across the boundaries of the system. The second, $d_i S$, is the entropy produced within the system. We then have: $dS = d_e S + d_i S$. The second law can now be expressed by stating that whatever the boundary conditions, entropy production $d_i S$ is positive, that is, $d_i S > 0$ and as such *irreversible processes are always creating entropy* (Prigogine, 1997; Nicolis & Prigogine, 1977, 1989).

confusion and disorder. Eventually, such an organization will fragment into many “non-cooperative centers of gravity,” or power centers, which further leads to disillusion with the original goals and loss of faith in their possible attainment. This will cause organizational members to seek other alliances, or just become demoralized and stop doing anything productive. Unless an organization is able to obtain and use input from the outside, that is, to reestablish the flow of negative entropy, it will gradually slide into this ‘entropic’ state, and “die”. In other words, continuing to focus internally in an attempt to solve organizational problems will not improve matters but will only make them worse.

The Belgian scientist Ilya Prigogine, who pioneered research in this field and won the Nobel Chemistry Prize in 1977, argues that at the most fundamental level of matter, it is the individual variability of entities and the interactions between them that lead to change in populations of ensembles. This is a process he argues is extending to every level, including that of human action (1997, 2003; Prigogine & Stengers, 1988). It was these phenomena Bales observed within the groups he studied in the 1950’s. In his last book he discusses the flavor of social interaction in real time and here he makes an interesting statement:

...the complex nature of interdependence among persons and the sense of dynamic process were so disorderly. In particular, the categories failed to explain why the process was so disorderly. If I had known today, I might have recognized that these small groups were “complex self-organizing systems” operating “on the edge of chaos”... (1999, p. 160).

Unfortunately Bales didn’t think that such a perspective would have helped him. Instead he focused on equilibrium and chose to label it as a: “social-interaction-system” in an effort to capture the idea of an “energy system” (Bales, 1999, p. 160). Since all life and development feed on a “negative entropy flow” (Prigogine, 1997), it is obvious and natural that Bales would observe groups as “energy systems” on “the edge of chaos.” The essence here is that the fluctuations present in groups reflect the variety of individuals and their individual orientations. If they are too similar to each other there will be little variation, and the result will be little or no fluctuation and little or no adaptability. But if the members of the group preserve their different orientations and different behaviors, the group will have more

fluctuations and therefore greater variety³⁵. This is very well demonstrated with the SPGR and is a critical element of Boyd's theory as well.

A group with little fluctuation will, according to SPGR theory, most likely be dominated by one of the SPGR functions, and such a group will be close to equilibrium. This might be the case when a few members dominate, influence the group strongly, and dampen out the fluctuations. There is no organic whole but a collection of individuals somewhat synchronized by domination. For all practical purposes this tells us that we have only one OODA loop running, that of the dominant individual.

In complex situations, like warfighting, agility is essential because it enables groups to continue the whirl of reorientation, mismatches, analyses, and synthesis as they shift roles between active group functions over and over, *ad infinitum*. Agility provides a basis to comprehend, shape, and adapt to an unfolding and evolving reality that remains uncertain, ever-changing, and unpredictable. Agile individuals and groups can play the interaction (with one's allies) and isolation (of one's enemies) game and can survive on their own terms or improve their capacity for independent action. On the other hand, a team, or a commander, who takes a long time to shift between the basic functions, would in SPGR terms, be characterized as *immature*. This team will use considerable energy dealing with each function, and because they have a low ability to change between them, they will have poor agility and a slow OODA loop. The team is in a steady state, and the entropy remains constant over time. When the situation changes, they will not be able to comprehend and cope with the novelty that arises out of their environment. As such they will be vulnerable to pressure from the environment because their lack of agility will make them predictable. In a complex situation, where such a team or an organization will be facing a creative adversary, in 4th GW, for example, they might easily be overwhelmed because they lack the ability to adapt and influence the situation. This will contribute to an increased level of entropy, S . Hence we have an external perturbation—the adversary actions—representing transfer of entropy, $d_e S$, across the boundaries of the team, and this most likely will lead to disintegration and defeat. The solution to this is to create an organizational climate which would make *Auftragstaktik* possible in way that would dissipate the entropy transferred

³⁵ In SPGR analysis, groups like this become distinct when one looks at a group field diagram and the scatter diagrams that show the behavioral variety among the members. See appendix A for an example.

across the boundaries by being relatively more open than our adversary resulting in a low level of internal entropy, d_iS , or in SPGR terms be able to operate at a higher maturity level than our opponent.

Another danger of immature groups is that their members tend to take on and perform only roles that they are comfortable with. There is a danger that personal comfort might lead to a permanent role structure. In a group with such an evolved, permanent role structure, the inward focus will lead to increased entropy, which will manifest to the external world as slow and predictable OODA loops. The group will be influenced by strict order and discipline and members will use most of their energy to adapt to role expectations and to conform to existing norms, while they exert control to ensure that all members fulfill their roles in the structure. A group like this can easily develop a culture with an “us” against “them” attitude, and because predictability is secured by being careful and nice with each other, they will lack the mutual trust necessary to develop the common outlook needed to gain adaptability and initiative in an unpredictable world.

A *mature* group, on the other hand, is an organic group able to shift rapidly between the basic functions. It would be a highly agile organization. A mature group will have been exposed to increasingly complex situations, and as a result, it will have developed more advanced role systems as dynamic relations between purpose, requirements, and capabilities. A mature group, through interactions and shared experiences, will have developed adaptability, initiative, and mutual trust. Long periods of interaction and shared experiences also ensure that a mature group will possess a common outlook—a *Schwerpunkt*. Finally, a mature group will have an outward focus that will help keep its members’ orientations matched to the real world. When we put these aspects together as Boyd (1995) did, we see that “the OODA loop represents an evolving, open-ended, far-from-equilibrium process of self-organization, emergence, and natural selection” (p. 5) and so mature groups will naturally function with quick OODA loops.

The maturity development from Withdrawal towards Synergy also corresponds well with Sun Tzu’s notion of “formlessness”: “Thus the army does not maintain any constant strategic configuration of power, water has no constant shape. One who is able to change and transform in accord with the enemy and wrest victory is termed spiritual” (Sun Tzu, 1984, p. 71). This emphasizes the importance of remaining adaptable and flexible, of varying

behavior not only to suit individual circumstances but also to avoid becoming predictable. While “never change a winning strategy” is considered a cardinal rule of sports competition, thought should also be given to Sun Tzu’s dictum not to repeat a winning strategy (1984, p. 71). Otherwise, the adversary will eventually discern the patterns of control and the methods of conquest and conceive tactics to thwart them by exploiting any inherent weakness.

Low maturity in a group, unit, or staff consists of more “form” with discernable patterns, e.g. like a permanent role structure, while at the highest maturity level, *Innovation*, the group demonstrates adaptability, variety and agility, which produce “formlessness” in the mind of the opponent. The ability to reduce perceived form by functioning at a high level of maturity will be extremely important in 4th GW, where Norwegian and other western forces will likely stand out physically from the local population. In *Patterns of Conflict* we can clearly see that Boyd had a love-hate relationship with systems, that is, with form. He wanted the minimum of system on his side, because it always tended to focus a force inward, resulting in an increased level of entropy. Many of Boyd’s strategic ideas were designed to create and then exploit the pathologies of systems—feedback loops, interface problems, complexity, etc.—which in the confusion and stress of conflict would act to destroy the moral bonds that permit an organic whole to exist (1986, p. 122). In this sense, the more system there is, the more “form” there will be and the less maturity, therefore the easier it will be to attack. This is illustrated and summarized in Figure 4.6. Given the choice, Boyd would have maximized the use of advanced systems—by his opponents.

On the other hand, some organization, hence form, is always necessary, and by applying the SPGR it seems possible to achieve Boyd’s organizational climate for success through leadership development. So by pumping up our adversary’s entropy (through variety and rapidity), while reducing our own (through harmony and initiative), we can keep our entropy lower than the adversary’s at all times.

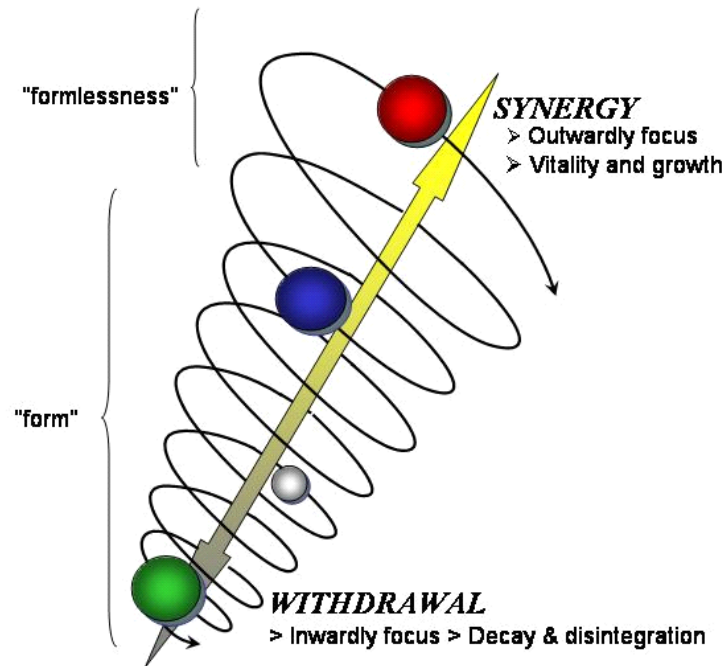


Figure 4.6 SPGR Synergy versus Withdrawal and the Ideas of Boyd and Sun Tzu

This will allow us to compress our own time and so retain the opportunity to exploit variety and rapidity in a directed way, or as Boyd expressed it:

Altogether Variety/Rapidity/Harmony/Initiative enables one to: Operate inside adversary's observation-orientation-decision-action loops to enmesh adversary in a world of uncertainty, doubt, mistrust, confusion, disorder, fear, panic, chaos, ...and/or fold adversary back inside himself so that he can not cope with events/efforts as they unfold (1986, p. 177)

This chapter has showed that the SPGR system and its theoretical foundation align with Boyd's theoretical perspectives which make it especially suitable for approaching his theories and leadership development.

Part III

The Conceptual Framework

This part consists of chapter 5. It builds on Part II and constitutes the overall conceptual model for this dissertation, the orientation part of the OODA loop

5. The Conceptual Model Outlined

5.1 Introduction

The purpose of this chapter is to present my conceptual framework, which is the foundation for my empirical investigation, and is based on the OODA loop, as described in section II. We are facing adversaries that thrive in a dynamic, novel, and unstable world by operating as systems that are more open than we are. They can, for example, blend into their own populations, while learning about our societies by studying and living in our countries and by using the Internet from anywhere. So far we, the Western militaries, have experienced considerable difficulty adapting to this reality, which, as Afghanistan and Iraq demonstrate, has resulted in our inability to shape it for our own ends. We have tried to solve our problems within in the context of war alone and primarily on the physical level, although partly on the mental level, but paying little attention to the moral level, which is the essence of 4th Generation Warfare. It is the moral level which fuels and gives our adversaries their social energy to continue their fight. This indicates a lack of reorientation on the part of virtually all modern military forces and reinforces the previously stated conclusion that the ability to reorient under conditions of stress and uncertainty is the key to success in 21st century warfare. For this reason, a deep understanding of the OODA loop and developing an ability to reorient and act under stress must form the basis of any leadership development program.

5.2 Leadership Development; The OODA loop and Orientation

The main task and *raison d'être* for the RNoNA is to prepare future officers to function effectively during conflicts in the years ahead, where the abilities to function as open systems and to operate inside an opponent's OODA loop will be the central mechanisms enabling officers to gain a competitive advantage. The ability to generate trust—mutual trust or *Einheit*—and a common outlook are the most important virtues that will make this possible. They create the organizational climate that speeds execution of OODA loops,

permit implicit communication, and together, they provide the harmonizing agent that encourages individual initiative via *Auftrag*. People are much more likely to seek initiative in a climate of trust than in a climate of fear (Richards, 2004). Mutual trust is created from mutual experience, by working hard together, and it is a powerful social force. An effective leadership development program must thus help each cadet enhance a unique self understanding, and at the same time, the program must function as an integration strategy by helping cadets to understand how to relate to others. An effective program will enact leadership by applying self-understanding to social and organizational imperatives (Hogan, 2006; Mead, 1934; Parsons, 1953), which is the essence of orientation in the OODA loop.

This requires a military leadership development program that exposes cadets who have different skills and abilities against a variety of developmental experiences, founded in an understanding of future conflicts and the necessary leadership qualities that challenge each of them. During the course of the program, each individual can, through assessment and support, observe and orient himself simultaneously to the others—including those whom the cadet leads—and to a variety of changing situations. By forcing cadets to deal together with such chaotic environments, to repeatedly share the same variety of experiences in the same way, the development process creates a common harmony, focus and direction, among the cadets that they will take forward into their professional lives.

A program which is not able to establish implicit connections or bonds via similar mental images or impressions, as the basis to cope with a many-sided uncertain and changing external environment such as war or conflict, will result in no leadership development and in the end will instead produce leaders who can not cope with the highly chaotic and uncertain nature of 4th Generation Warfare. Put another way, a military leadership development program that does not provide realistic and tough training will kill the troops it was supposed to protect (Toner, 1995). This might also explain why the traditional lecture-based, classroom training found in most formal leadership programs is at best only marginally effective at preparing leaders for 21st century conflict, as I will show in chapters 11 and 13. Unfortunately, the benefits of traditional classroom programs do not last much beyond the end of the program (Dotlich & Noel, 1998, Dixon, 1999). Therefore, an effective leadership development program should arrange settings and circumstances so that cadets, whether acting as leaders or subordinates, are given the opportunity to continuously interact with the external world, and with each other, because leadership development means helping them to

more quickly make many-sided implicit cross-referencing projections, empathies, correlations, and rejections as well as create similar images or impressions, hence the similar implicit orientations, that they will need to be effective in 4th Generation Warfare. The SPGR can measure and document this process and provide guidance to both faculty and students.

5.3 The Conceptual Model for Leadership Development; Orientation

The discussion so far reveals that the variables that constitute orientation are important since they control how well we are able to dissipate entropy and as such it also has a large influence on each individual's role-taking ability which is a necessity for team and leadership development. According to Boyd orientation involves our genetic heritage, our social environment (culture), previous experiences, unfolding circumstances, and the results of analyses we conduct and the synthesis that we form (Boyd, 1995). This gives us the following suggestion for a variable list:

- 1 Genetic heritage
- 2 Cultural tradition
- 3 Previous experiences
- 4 Unfolding circumstances
- 5 Analyses and synthesis

Genetic heritage and cultural tradition could be approached by measurement, previous experience, analyses, and synthesis, although they contribute to shaping our orientation, are not directly measurable. They will influence, however, the ways we interact socially and can be covered implicitly by the SPGR. Unfolding circumstances are not a variable that could be measured as such. However, the different exercises and events in a leadership development are the unfolding circumstances created to see how the cadets perform interaction and isolation. I will now return to the problem of measuring genetic heritage and cultural tradition.

To measure genetic heritage directly through analysis of DNA would be far beyond the scope of this dissertation. I have chosen instead to approach this aspect from a personality view instead of genetics. Although there some disagreement remains among contemporary personality theorists about the meaning of personality (see Saucier and Goldberg (2003) for a detailed discussion of the many definitions of personality), there is agreement that what people do is influenced by stable characteristics, that is, by their *personality*. McCrae and Costa (1989) define personality as enduring emotional, interpersonal, experimental, attitudinal, and motivational styles that explain behavior in different situations. Funder (2001) defines personality as “an individual’s characteristic pattern of thought, emotion, and behavior, together with the psychological mechanisms—hidden or not—behind those patterns”, while Hogan (1991) argues that personality has two different meanings and that failure to separate them leads to confusion. *Personality traits* refer to the characteristics that are stable over time, provide the reasons for the person’s behavior, and are psychological in nature. They reflect who we are and, in the aggregate, determine our affective, behavioral, and cognitive styles. This can be done by the Five Factor Model (FFM), also labeled “The Big Five.” The FFM argues that individual differences in social behavior, and the structure of personality measurement data, can be adequately described in terms of five broad dimensions. These dimensions are (a) *extraversion* (sociable, active, energetic), (b) *agreeableness* (cooperative, considerate, trusting), (c) *conscientiousness* (dependable, organized, persistent), (d) *emotional stability/neuroticism* (calm, secure, unemotional), and (e) *openness to experience* (imaginative, intellectual, artistically sensitive). Furthermore, research has shown that the origins of personality traits, as measured by the Five Factor Model like the Revised NEO Personality Inventory (NEO PI-R) are strongly influenced by genes, see Pervin (2002), Pervin and John (2001) p. 314-329, and Rowe (1997) for a discussion of the genetic influence on personality, utility, and possibilities.

All five factors are heritable; in fact, some estimates find the strongest evidence of heritability for Openness to Experience (McCrae et al., 2000). Riemann, Angeleitner, and Strelau (1997) demonstrated that broad personality traits are strongly measured by genetic influences and that their heritability estimates for the five factors, range from .66 to .79, which are higher than the .50 usually cited. The remaining 21% to 34% of the variance might include unshared influence from the psychological environment, such as peer groups, but it might also reflect wholly biological sources, such as prenatal hormonal environment, minor brain damage or infection, or simply the imperfect operation of genetic mechanisms

(McCrae et al., 2000). The prevailing assumption is that personality traits are the result of the action and interactions of many genes (Matthews, Deary, & Whiteman, 2003). McGue, Bacon, and Lykken (1993) found that stability of personality was associated with genetic effects and changes with environmental factors. According to Pervin and John (2001) the behavioral genetic data indicate that roughly 40-50% of the variance for single personality characteristics and personality overall are determined by genetic factors. The rest of the population variance consists of some combination of environmental effects and measurement error.

The effect of environment is through the *nonshared environment*, the set of experiences unique to different children in the same family, because environmental influences shared by children in the same family have little or no effect on adult personality (Plomin & Daniels, 1987). They suggest that in addition to the 40% or so of personality that stems from genetic factors, approximately 35% is caused by the effects of unshared environments, and 5% because of shared environments, the rest being from measurement error (Dunn & Plomin, 1990).

Another important argument which justifies the focus on personality is the emphasis Sun Tzu had on the characteristics for any general, see especially the chapter entitled “Initial Estimations.” *The Art of War* actually yields a comprehensive portrait of an ideal commander. It naturally follows that the absence of desirable qualities or the presence of their opposites constitute serious flaws that an adversary will deliberately seek out and exploit. Thus both research and military experience justify using personality in the OODA loop as a surrogate for genetic heritage. This gives the following revised OODA loop (note the balloon labeled “personality”).

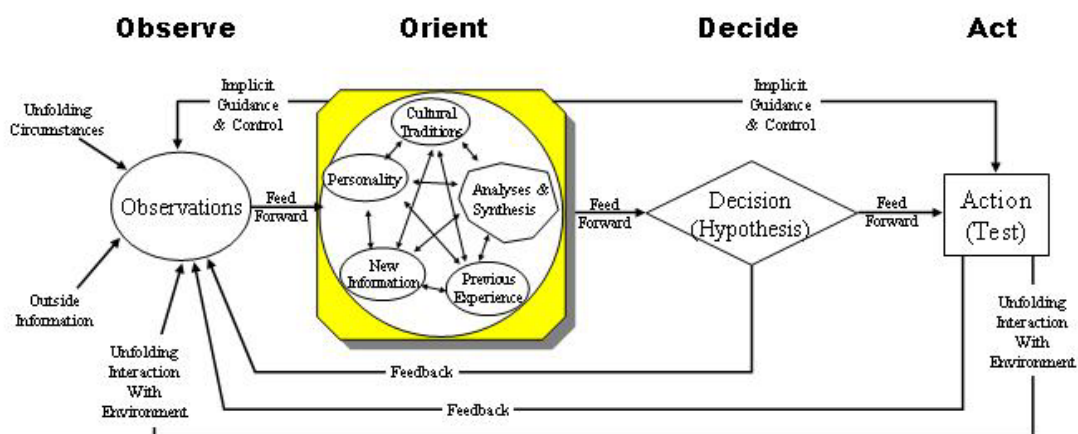


Figure 5.1 A Revised OODA Loop

The previous sections established that an effective leadership development program requires activities that expose cadets—whether acting as leaders or as subordinates—to a variety of situations, increasingly more complex and chaotic, while fostering social interaction and teaching the cadets to maintain a focus on the external environment. The design of the program, therefore, must provide activities that permit vitality and growth while avoiding any tendency towards isolation that could lead the cadets to develop an internal focus.

The SPGR, which is a field-theory of social interaction introduced in chapter 4, enables the measurement of the social interaction within a leadership development program. In addition culture and personality must be measured to explore how these variables play together, and the next part of the dissertation will focus on these two important issues.

Part IV

Theoretical Aspects

This part consists of two chapters that are the direct result of part III and the conceptual model. Chapter 6 examines personality and how it is related to work, teams, and especially leadership. Chapter 7 covers culture and how it is related to leadership, leadership development, and *Auftragstaktik*.

6. Personality

6.1 Introduction

Although strategists from Sun Tzu (1984) to van Creveld (1982) have documented the impact of personality on military leadership, there has been a huge controversy within the academic community concerning research on the topic. Since the early 1990s, however, personality psychology has experienced a dramatic comeback. The rebirth was largely stimulated by demands from the business community, although academic research, particularly Bowers, played a part in the beginning. The development of the Five Factor provides an agreed-on-taxonomy of the major dimensions of personality and their content, although see Block (1995) for a contrarian view. Unfortunately, according to Kaiser and Hogan (2006), leadership research has been primarily based on minitheories of personality rather than on more comprehensive models of team and organizational behavior. One major reason for this is, according to Hogan, that personality has two different meanings, as described in Chapter V, and the failure to separate those leads to confusion. Hogan's perspective, which also applies the FFM, is known as *Socioanalytic* theory and it represents a perspective which is important when it comes to leadership and leadership development.

The purpose of this chapter is to examine the importance of personality. Section 6.2 will summarize what we know about personality in general, section 6.3 discusses personality and leadership, personality and teams is discussed in section 6.4, and the dark side of personality that can lead to failure is covered in section 6.6. Hogan's Socioanalytic theory will be discussed in section 6.7 with a focus on leadership and leadership development. This chapter is summarized in section 6.8.

6.2 Personality in General

Barrick and Mount (2005) insist that personality matters because it predicts and explains behavior at work. One major reason for this is the recent advancement in understanding the structure of personality and improved ways of assessing personality constructs as discussed.

Here, a number of meta-analyses (Table 6.1) have helped because they have made it possible to extract fairly clear answers to the validity of the Big Five traits.

Table 6.1

Summary of Meta-Analytic Findings of the Relationship Between Personality and Job Performance

<i>Study</i>	N	E	O	A	C
Barrick & Mount 1991	.07	.10	-.03	.06	.23
Tett, Jackson, & Rothstein (1991)	.22	.16	.27	.33	.18
Salgado (1997)	.18	.14	.02	.02	.26
Hurtz & Donovan (2000)	.14	.09	.05	.10	.22
Barrick, Mount, & Judge (2001)	.13	.15	.07	.11	.27
Hogan & Holland (2001)	.37	.30	.31	.28	.31

Note: N= Neuroticism, E= Extraversion, O= Openness to Experience, A= Agreeableness, C= Conscientiousness. Coefficients are corrected for predictor and criterion unreliability.

These meta-analyses have shown that the validities of Conscientiousness and Neuroticism generalize in the prediction of overall performance. The *Conscientiousness* trait refers to the willingness to follow rules and exert effort, and the *Neuroticism* trait to the capacity to allocate resources to accomplish tasks. Conscientiousness and Neuroticism can be viewed as measures of trait-oriented work motivation, and it appears that they affect performance in all jobs through “will do” motivational components. General mental health ability affects performance in all jobs primarily through “can do” capacities (Schmidt & Hunter, 1998). This research also revealed that the three other personality traits, Extraversion, Agreeableness, and Openness to Experience, are important in specific niches (Barrick et al., 2001). *Extraversion* has been found to be related to job performance in occupations where a significant portion of the job involves interacting with others, particularly when that interaction is focused on influencing others, as in leadership behavior (Barrick, Mount, & Judge, 2001). Being sociable, gregarious, assertive, and energetic is likely to contribute to success. *Agreeableness* also has been found to be an important predictor in jobs that involve significant interpersonal interaction. However, it matters only when interacting involves helping, cooperating, and nurturing others. Thus, if working in a team forms an important component of the work, Agreeableness may, according to Mount, Barrick, and Stewart (1998), be the single best personality predictor. Employees who are low on this trait will be

argumentative, inflexible uncooperative, uncaring, intolerant, and disagreeable, are likely to be less effective at teamwork, and engage in more contra-productive behavior. This suggests that Agreeableness is an important trait when it comes to leadership development.

Openness to Experience has been found to be related to creativity, divergent thinking abilities, being able to “think outside the box,” and to influence the ability to adapt to change (George & Zhou, 2001; LePine, Colquitt, & Erez, 2000; McCrae, 1987). Openness and flexibility, in turn, are related to having the imagination to think of how things could be, not just how they are. By being receptive to different ideas, people, and situations, open people are able to have at their disposal a wide range of thoughts, feelings, and problem-solving strategies, the combination of which may lead to novel and useful solutions or ideas (McCrae, 1987).

Although Conscientiousness is consistently beneficial in work settings, the findings of George & Zhou (2001) and LePine et al. (2000) indicate that high Conscientiousness may serve to inhibit creative behavior and sound decision making when the situation encourages the conformist and controlled tendencies of employees who are high on conscientiousness. Conscientiousness, per se, does not appear to be detrimental. Rather, it is the combination of high Conscientiousness and a situation and a culture that simultaneously encourage conformity, being self-controlled, meeting predetermined expectations, and that lacks support for creative behavior. However, Feist (1998) found that creative people are more autonomous, introverted, and open to new experiences, norm-doubting, self-confident, self-accepting, driven, ambitious, dominant, hostile, and impulsive, which might not be desirable traits for a leader. Creative people have a tendency to question social norms and to be relatively independent of group influence and social dispositions. To be creative, one must be able to spend time alone and away from people. This clearly indicates that personality traits matter at work, and what are especially important are the specific personality traits that are relevant to leadership.

6.3 Personality and Leadership

The result of the personality debates of the 1960s, 70s, and 80s was that personality had at best a checkered reputation as predictor of work outcomes (see Guion and Gottier, 1965; Michel 1968; Davis-Blake and Pfeffer, 1989). The early trait studies generally were of two

forms: (a) attempts to identify the traits that differentiated leaders from their followers (the great man theory of leadership), or (b) attempts to identify the traits that characterized successful as opposed to unsuccessful leaders. Neither of these approaches yielded consistent findings, and early and often-cited reviews of the leadership trait literature by Mann (1959) and Stogdill (1948) concluded that personality traits, by themselves, explained little about leadership. One possible explanation of this is that some of the indicators of the abandonment of the trait approach could be found in the wide variability of the trait terms used in the studies that formed the subject of Mann's (1959) and Stogdill's (1948) reviews. Because various labels were ascribed to the same or similar traits, these early reviewers concluded that no trait had been consistently associated with leadership effectiveness, and they understandably offered an explanation of this finding in the form of situational variables.

However, several theorists (e.g. Hogan, Curphy, & Hogan, 1994; Lillibridge & Williams, 1992; Vickers, 1995) have challenged this view. They have proposed that the utility of the trait approach in understanding leadership has been erroneously undervalued. Judge, Bono, Ilies, and Gerhardt (2002) conducted a meta-analytic study of the links between personality, defined in the terms of the FFM, and leadership, in terms of emergence and effectiveness. They reported the following estimated corrected correlations: (a) Neuroticism, $-.24^{36}$; (b) Extraversion, $.31$; (c) Openness, $.24$; (d) Agreeableness, $.08$; and (e) Conscientiousness, $.28$; with a multiple R , using the five dimensions overall of $.48^{37}$. For leadership effectiveness, the correlations were; (a) Neuroticism, $-.22$; (b) Extraversion, $.24$; (c) Openness, $.24$; (d) Agreeableness, $.21$; and (e) Conscientiousness, $.16$. More recently, Hogan and Holland (2003) confined their investigation and reported the following estimated true validities: (a) Emotional Stability (Neuroticism), $.43$, (b) Extraversion and Ambition, $.34$; (c) Agreeableness, $.36$; (d) Conscientiousness, $.36$; and (e) Intellect and Openness, $.34$. What is important with the Hogan and Holland study is that they confined their investigation to one inventory, the Hogan Personnel Inventory (Hogan & Hogan, 1995), rather than trying to

³⁶ Low Neuroticism indicates high Emotional Stability. A negative correlation indicates that a lower level of Neuroticism is positively related to leadership.

³⁷ Leadership effectiveness refers to a leader's ability to influence subordinates, while leadership emergence is a within-group phenomenon. The multiple R for emergence was $.53$ and for effectiveness it was $.39$ (Judge et al., 2002).

combine scales across inventories, and they carefully aligned predictors with relevant criteria.

The study performed by Judge et al. (2002) also reported the relationship between the FFM and Leadership by study setting, see Table 6.2.

Table 6.2

Summary of Meta-Analytic Findings of the Relation Between Personality and Leadership by Study Setting

DOMAIN	Business	Government/Military	Students
Neuroticism	-.15	-.23	-.27
Extraversion	.25	.16	.40
Openness	.23	.06	.28
Agreeableness	-.04	-.04	.18
Conscientiousness	.05	.17	.36

Especially worth noting is the low correlation between leadership and Openness in a government or military setting. According to Judge et al. (2002), the student setting is seen as more unstructured, with few rules or formally defined roles; government organizations tend to be relatively bureaucratic; and military organizations, besides being bureaucratic, are also rule oriented. The business setting falls somewhere in between. Research by LePine, Colquitt, & Erez (2000) indicates that that adaptability seems to be a function of Conscientiousness and Openness in situations characterized by sudden changes, novelty, and ambiguity. Those with high Openness made better decisions, and, unexpectedly, those with low Conscientiousness also made better decisions. This revealing effect for Conscientiousness was the trait's reflecting dependability (i.e., order, dutifulness, and deliberation), rather than volition (i.e., competence, achievement striving, self-discipline). This strongly indicates the importance of Openness for dealing with conflicts in the 21st century, but it also provides an argument for a balance between these two important traits. Openness has been found to be related to creativity and to influence the ability to adapt to change, while Conscientiousness predicts both job and leadership performance. Agreeableness was found the least relevant of the FFM in the study of Judge et al. (2002), The Hogan and Holland (2003) study and the findings of Mount et al. (1998), however,

underline the importance of Agreeableness. Silverthorne (2001) found in a study comparing leaders from the U.S., the Republic of China (Taiwan), and Thailand that effective managers differ from less effective ones in describing themselves as more extraverted, more agreeable, more conscientious, and less neurotic in all three cultures, and that U.S. managers also described themselves as more open to experience.

There is empirical evidence to demonstrate that situational strength moderates the personality-behavior relation (Barrick & Mount, 1993; Beaty, Cleveland, & Murphy, 2001; Gellatly & Irving, 2001; Hochwarter, Witt, & Kacmar, 2000). This underscores the fact that we must broadly account for the situational effects to determine whether personality is relevant to behavior and whether those effects extend beyond the requirements of the job. Studies have also demonstrated the effect of situational strength, rather than personality, by showing that situation can control how an individual behaves. When situations are exceptionally strong (e.g. like Goffman's classical description of behavior in the elevator (1963, p. 137-139), or attending a funeral), all individuals tend to behave in the same way regardless of their personality traits. As a natural result, strong situations have been shown to decrease the observed relation between personality and behavior. In contrast, weak situations are characterized by few expectations and many ambiguous demands, and consequently individuals have considerable discretion in how to behave. This is descriptive of the highly political nature of 4th GW. As a result, the validity of personality traits in predicting performance has been found to be larger than when the situation is characterized as "weak" rather than "strong." The important factor to consider here is *discretion* (Kaiser and Hogan, 2006), which will be discussed in section 6.8.

6.4 Personality and Teams

Because the RNoNA conducts leadership development through the use of teams, research on team composition and the role of personality is important (Barrick, Stewart, Neubert, & Mount, 1998; Kozlowski & Bell, 2003; Neuman, Wagner, & Christiansen, 1999). Although most of this research has targeted the main effects in team effectiveness (Barrick et al., 1998), results show that the traits of the team's members influence the group processes (Neuman et al. 1999) and that these influences vary based on the contextual demands inherent in the group and the amount of team interdependence (Kozlowski & Bell, 2003).

This requires that the situation be broadly defined because situational strength, along with group and organizational context, influence personality. Another complicating factor is that a person's traits can also change the situation (Stewart & Barrick, 2004). "One bad apple" in a team can adversely affect the work environment. Just one person who is disagreeable or neurotic (low on Agreeableness and or high on Neuroticism) has been shown to lead to less communication, lower interdependence, less work load sharing, and more conflict (Barrick et al., 1998). Barry and Stewart (1997) found that teams were unable to function effectively if they had too many or too few extraverts in a team setting. Chidester, Helmreich, Gregorich, & Geis (1991) showed that flight crew performance was significantly correlated with the personality of the captain. Crews with captains who were warm, friendly, self-confident, and able to stand up to pressure (i.e., high Agreeableness and emotional stability) made fewest errors. Conversely, crew with captains who were arrogant, hostile, boastful, egotistical, passive aggressive or dictatorial made the most errors (c.f. Chidester et al., 1991; Foushee & Helmreich, 1988). These findings agree with the previously mentioned study by Williams and Sternberg (1988), who found that even one overly zealous or domineering member in a group significantly inhibited the quality of that group's performance.

6.5 Personality and Failure: The Dark Side of Leadership

It is also worth mentioning that research on derailment (Lombardo, Ruderman, & McCauley, 1988; McCall & Lombardo, 1983; Hellervik, Hazucha, & Schneider, 1992; Peterson, 1993; and Peterson & Hicks, 1993) has revealed that managerial incompetence is associated with untrustworthiness, overcontrol, exploitation, micromanagement, irritability, unwillingness to use discipline, and an inability to make good staffing or business decisions (or both). Leaders often fail because they no longer can rely solely on their own skills and efforts. That is, they have been promoted into positions that require them to work through others to be successful. Witt, Burke, Barrick, and Mount (2002) showed that highly conscientious workers who lack interpersonal sensitivity (i.e., low on Agreeableness) are less effective, particularly in jobs requiring extensive cooperation or interaction with others, which is a crucial part of leadership. This indicates a shift from "getting ahead" towards "getting along", where the main difference seems to be Agreeableness.

The dark side of personality refers to the impressions we make when we let down our guard when we are stressed, tired, or do not care how we are perceived (Hogan & Hogan 2001)—when we are “backstage” (Goffman, 1959). Dark side tendencies originate in efforts to get along and get ahead and they are agenda-driven (Hogan & Hogan, 2001). They rest on flawed assumptions, and they yield short-term benefits at the expense of long-term losses. The dark side is the key to understanding leadership failure because they are the flawed interpersonal strategies that prevent leaders from building a team, forming alliances, and gaining support for their vision and plans. The dark side resembles the three self-defeating styles that Horney (1950) identified for managing anxiety in relationships (Hogan & Hogan, 1997). These dysfunctional coping strategies are motivated by excessive concerns for *security*, *recognition*, and *approval*. Each of them rests on a particular interpersonal strategy: gaining security by intimidating others; winning recognition through flirtation and seduction; and obtaining approval by becoming indispensable. We know that it is difficult to predict behavior in a specific episode, but stable individual differences emerge from cumulative performance and aggregate trends in behavior (Epstein, 1979). Especially important in this is the level of discretion because dark side tendencies will be most apparent in “weak situations,” implying senior positions where there are fewer constraints. However, because these are flawed interpersonal strategies, they will come into play in a leadership development program, especially if discretion is high.

On the basis of these reviews, it appears that who we are is how we lead. In the next section I will explore a more comprehensive theory developed by Hogan and his colleagues.

6.6 Socioanalytic Theory

The purpose of this section is to provide a more fundamental theory of personality. I will present in this section a personality theory developed by Hogan and his colleagues. This perspective is known as *Socioanalytic theory* (Hogan, 1983, 1991, 1996; Hogan & Roberts, 2004; Hogan & Smither, 2001) also applies the FFM but it is rooted in interpersonal psychology (Carson, 1969; Leary, 1957; Sullivan, 1953; Wiggins, 1979) and describes a model of human nature that synthesizes thinking about human evolution, which is essential for understanding leadership and leadership development.

This section will cover this theory, its motivational forces, its approach to maturity and development, and its links to leadership development.

6.6.1 Personality: Identity and Reputation

Socioanalytic theory suggest that the inner core of personality—our motivation—is composed of needs that primarily concern the desire to be liked and accepted, to have status, power, or control over others, and to make sense out of the world. The surface of our personality, which is our conscious and unconscious intentions, consists of strategies we have developed to gain acceptance, to gain power, and to make the world predictable, all in the context of modern life. Our need for acceptance and social contact leads to behaviors intended to get along. Our need for status results in behaviors designed to get ahead. And our need for predictability and order leads to behaviors designed to make meaning. These needs are met during social interaction, and the most important differences among people concern how well we get along with others, how much status we have, and how we make sense out of our lives. Some people are more successful than others in attaining these goals, and it is these individual differences that socioanalytic theory tries to explain and that are important when it comes to understanding leadership development.

Our personality consists of two components: identity and reputation. There is the actor's view of personality, personality from the inside, *the inner perspective*. It concerns the “you” that you know—your *identity*, which also includes your values and is ultimately the same as the *self*. Mead (1934) describes our identity as a result of other people teaching us who we are, but at the same time we also choose identity from a “menu” that is available in our culture. Hogan claims, like Mead, that the self is the core of personality and that it is created during social interaction based on feedback from others. When the self is formed, it guides our actions vis-à-vis others, and feedback from others then further shapes the self.

The observer's view of personality is personality from the outside, *the outer perspective*, and it concerns the “you” that the rest of us know, the person others think you are, based on your overt behavior—your *reputation*³⁸. Identity is the stories we tell ourselves and others about

³⁸ Hogan, in contrast to Allport (1961), claims that our reputations are an important part of personality, because: (a) Reputations develop quickly and are stable over time. (b) Most people spend a great deal of time and energy trying to establish and maintain their reputations. (c) Since the best predictor of future behavior is past behavior, and because

ourselves; it is the generic part we play during social interaction. Reputation, on the other hand, is the summary evaluation of our past performances during interactions as shared by the members of our team or organization. These two concepts further serve two different functions for us. We use reputation to describe our past performances and predict future performance. Hence reputations are used to describe or predict behavior. Identity is used to explain behavior. Reputations concern what we do, and identity concerns why we do it.

Social interaction requires an identity because it is our identity that controls the roles we are willing to adopt and how we play them. Our performance and experience in these roles shape both our identities and reputations. For example, all cadets at the RNoNA are supposed to participate in the leadership role, but how they do so varies widely, depending on their identities. At the same time, these identities vary enormously, which explains differences between people.

There are two sets of reasons that account for these individual differences. The first set is biological, while the second set concerns how we analyze the world because what we do depends on what is in our minds, and some people are more insightful than others about how to conduct themselves. The mental models that account for individual differences are (a) our identities and (b) the interpersonal behaviors we have developed to express and defend our identities—which are known as self-presentational behaviors. Successful people know how to manage their reputations and they manage them one interaction at a time. This is self-knowledge from the actor’s perspective, which involves becoming aware of our identities and the self-presentational strategy that we use to support them—being mindful of what we are doing when we interact with others, a perspective which resembles Goffman’s (1959) “frontstage and backstage.” While self-knowledge, from the observer’s perspective, involves becoming aware of how others perceive and describe us.

Figure 6.1 represents core elements of a science of personality as described by Hogan and Roberts (2004). This model evaluates (a) how we see ourselves—our identity; (b) how others see us—our reputation; (c) the manner in which we interact with others in social

reputations reflect a person’s past behavior, reputations are quite useful for predicting many, if not most, aspects of social performance. (d) There is a well-developed taxonomy of reputations, namely the Five Factor Model. (e) Our reputations reflect the amount of social acceptance and status we have within our community (Hogan, 1996)

roles; and (d) how our identity, reputation, and interaction strategies influence our ability to get along with other people and achieve our goals.

During every interaction, we run a major risk of minor embarrassment and a slight risk of utter humiliation because our reputations are evaluated after each interaction. Furthermore, most people can describe their identities, which is the person we know, but few can accurately describe their reputations, even though they usually care deeply about them. This is the person that others know.

At the same time it is important to realize that there are three sets of unconscious causes that underlie our social behavior. The *first* set of unconscious causes is biological in nature. We as people are born predisposed toward certain characteristic moods and emotions. Because we live inside our own mood states, they color our perception like tinted glasses, and we tend to think they are universal, that others see the world as we do. They focus our orientations in ways that are simultaneously profound, idiosyncratic, and unconscious, and it has been shown that becoming aware of our characteristic moods can cause problems (Hogan & Smither, 2001). The *second* set is a function of our natural ego-centrism that we tend to be unaware of, or even ignore: what others expect or believe during interactions.

Hogan and Smither (2001) argue, referring to Eibl-Eisenfeldt (1989), that the rules that govern our interactions are “prewired” in our nervous systems, so that our responses to others do not depend on understanding others or knowing what they expect. Much of our behavior during social interaction occurs automatically and is therefore unconscious. Politicians, actors, and other entertainers understand this and often undergo elaborate coaching in order to master and control these subtle and otherwise unconscious interpersonal behaviors. Such training should be a major component of any good leadership development program. The *third* set of unconscious causes comprises the values, attitudes, and norms of our culture that we assume are true and therefore do not question or evaluate. These include, among others, the concept of *maturity*, which determines how we should treat people above or below us on the corporate ladder.

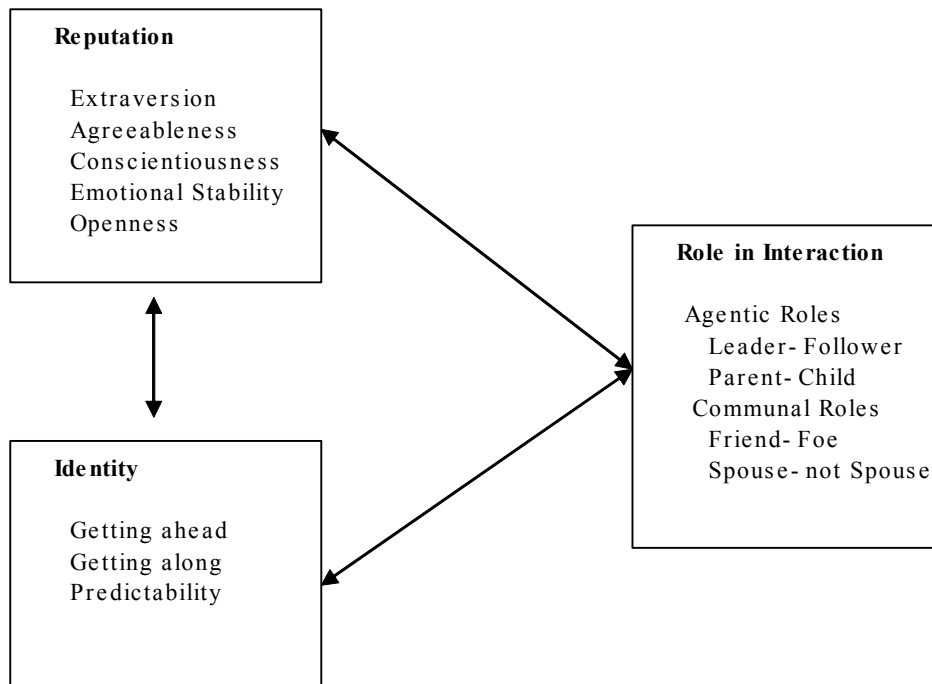


Figure 6.1 Core Elements of a Science of Personality (Hogan & Roberts, 2004)

6.6.2 Maturity

The socioanalytic model of maturity defines maturity in two ways. One is from the *observer's perspective*, where maturity concerns the degree to which a person is liked, admired and respected in his or her community. Well-liked and admired people share three broad but indispensable characteristics: *First*, they are rewarding to deal with because they praise, support, and encourage others and they maintain a positive mood. Unrewarding people criticize, abuse, and demean others, whom they also subject to displays of negative emotions such as anger and cynicism. *Second*, well-liked people are consistent, which means that we know what to expect when we deal with them. They maintain a steady mind, honor their commitments, respect confidences, and play by the rules. *Third*, well-liked people contribute to their groups. When these qualities are translated into the Five Factor Model of personality, a mature person from the observer's viewpoint would be agreeable (supportive and warm), emotionally stable (consistent and stable), and conscientious (honoring commitments and plays by the rules).

The other socioanalytic definition of maturity is from the *actor's perspective*, which concerns the characteristics inside people that explain why they are liked, admired, and respected. The first internal aspect of maturity concerns low neuroticism and is related to success in love and work. At the same time there are many people who seem selfish, self-absorbed, insensitive, rude, and unable to learn from experience. These tendencies reflect poor *role-taking ability*. Role taking ability has two components (Mead, 1934). *First*, it involves thinking about oneself from the perspective of others. *Second*, it involves regulating one's behavior based on what one thinks others expect. When role-taking ability is translated into the lexicon of the FFM, it seems to be a combination of agreeableness, conscientiousness, and openness. This is consistent with Alport's (1961) view, who noted that maturity involves tolerance, a capacity to develop and maintain close relationships, and self-insight. A mature person is resilient, unselfish, and able to laugh at him or herself.

As in the SPGR framework, maturity from the inside is reflected in greater adjustment and role-taking ability, which in the FFM translates into higher agreeableness, conscientiousness, openness, and emotional stability. Maturity from the outside is reflected in a reputation for being agreeable, conscientious, and emotionally stable. Fulfillment of the master motives of getting along, getting ahead, and achieving predictability are positively associated with maturity. Success in certain roles like occupational performance and leadership seems to depend on greater maturity (Judge, et al., 2002; Judge & Bono, 1999; Judge, Erez, & Bono, 1998). Figure 6.2 illustrates Hogan & Roberts (2004) understanding of maturity.

Maturity depends on balancing one's egoistic and altruistic impulses as well as one's self-critical and self-accepting tendencies. Mature people are both comfortable with themselves and open to critical feedback. They are both actively engaged in helping others and reasonable about advancing their own self-interest. A sign of maturity, therefore, is the degree to which individuals are integrated into their society without losing a sense of who they are vis-à-vis others. A commitment to social causes and to the welfare of others is necessary to overcome egocentrism, and a critical distance from those causes is necessary in order to avoid becoming a true believer. Similarly, a measure of maturity is the degree to which one is self-accepting, while at the same time realizing that one is not perfect. Within the context of self-approval, mature people listen carefully to negative feedback from others, especially others with lower status than themselves. The concept of maturity takes into account the relationship between the individual and society.

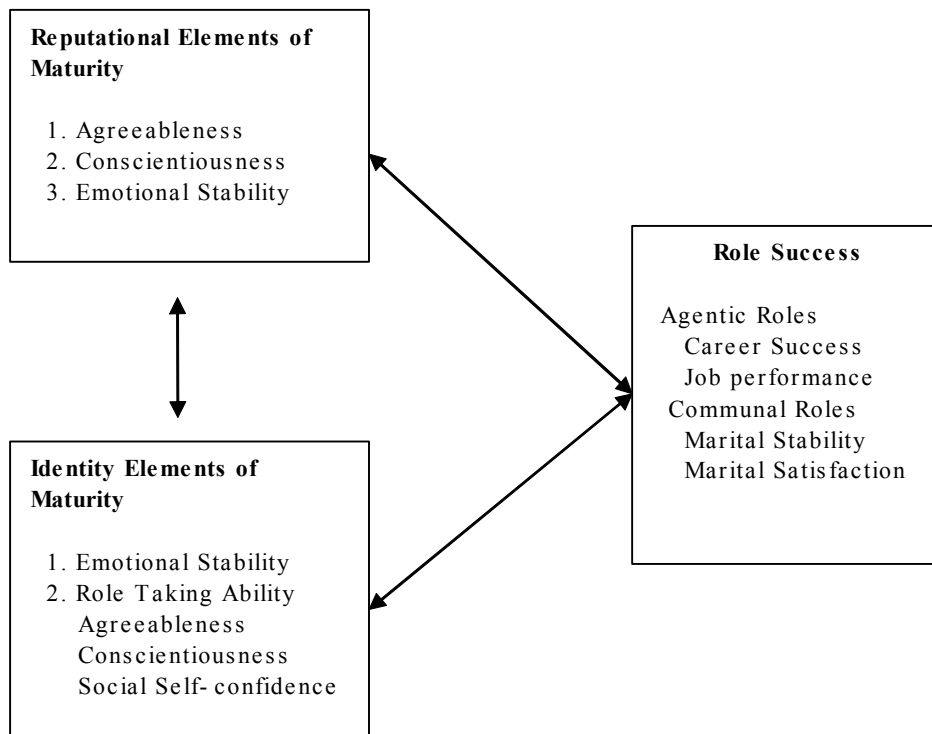


Figure 6.2 Socioanalytic Theory and Maturity

People who develop maturity at a younger age will have smoother transitions into the world of work, have fewer problems with supervisors and coworkers, and be more successful in terms of their occupational status and earnings (Judge, Higgins, Thoreson, & Barrick, 1999). Those who lack one or more of the characteristics that define maturity may confront many problems in their careers, both in the initial transitions and in the establishment of an occupational record.

6.6.3 Socioanalytic Theory and Leadership Development

People's identities drive their reputations. Most of us are preoccupied with our identity, our own self-evaluations. It is, however, others' evaluations of our performance that are substantially more consequential in terms of real world payoff. We know that self-ratings of leadership performance are poorly correlated with actual leadership performance (Hogan, et al., 1994), although some are better at making these self-appraisals accurately than others. What I say about myself is largely my theory about my own performance. According to

Hogan (2006) that theory is rarely tested or evaluated, and in some cases it is shockingly out of touch with reality. In short, self-evaluations of performance capabilities and successes are not reliable data sources, while other people's evaluations are important sources of information. These evaluations are reliable in the sense that if properly collected, they will converge. They are occupational performance because social behavior is in large part guided by forces or processes outside our awareness, or what Boyd labeled our orientation.

Many of these unconscious determinants can be made conscious through social feedback, education, and self-relation. The distinction between self-knowledge and other knowledge is a key consideration for leadership development. It is a matter of importance to know how the team evaluates its members' intrapersonal skills and interpersonal skills in the sense that people can be made aware of the fact that others perceive them as impulsive, insubordinate, bad tempered, not being approachable, responsive, or attentive. Then they can construct strategies for dealing with the negative consequences of poor intrapersonal and interpersonal skills. That we change our identities based on feedback regarding our reputations shows that social interaction is the vehicle for leadership development. To the degree that these unconscious determinants and feedback regarding our reputations remain unconscious, we are liable to act in ways that are foolish, self-defeating, or even immoral.

6.7 An Integrative View and Summary

The findings presented above show quite clearly that personality and leadership are closely connected—and in many ways they confirm that who you are determines how you lead. For the purpose of leadership development, however, it is necessary to have a deeper and more thorough understanding of personality. The key factor is maturity because improving leadership development and leadership performance depends on improving maturity. Furthermore, the fulfillment of the master motives of getting along, getting ahead, and achieving predictability are positively associated with maturity.

The research findings suggest that higher levels of Conscientiousness, Agreeableness, and Emotional Stability will enhance team performance. Although Agreeableness and Emotional Stability do not predict individual job performance as well as cognitive ability and conscientiousness, when aggregated, they are important predictors of team performance and team development. Openness to Experience is also important because it is related to

creativity, divergent thinking abilities, and to the ability to adapt to change. It is a key element in the ability to make timely decisions within a climate of uncertainty and ambiguity, while it is also an important influence on the willingness to learn. This emphasizes the importance of personality. Hogan and Kaiser (2005, 2006) have developed the model presented in Figure 6.4, which suggests that personality predicts leadership style, leadership style impacts employee attitudes and team functions, and these relationships, taken together, predict organizational effectiveness.

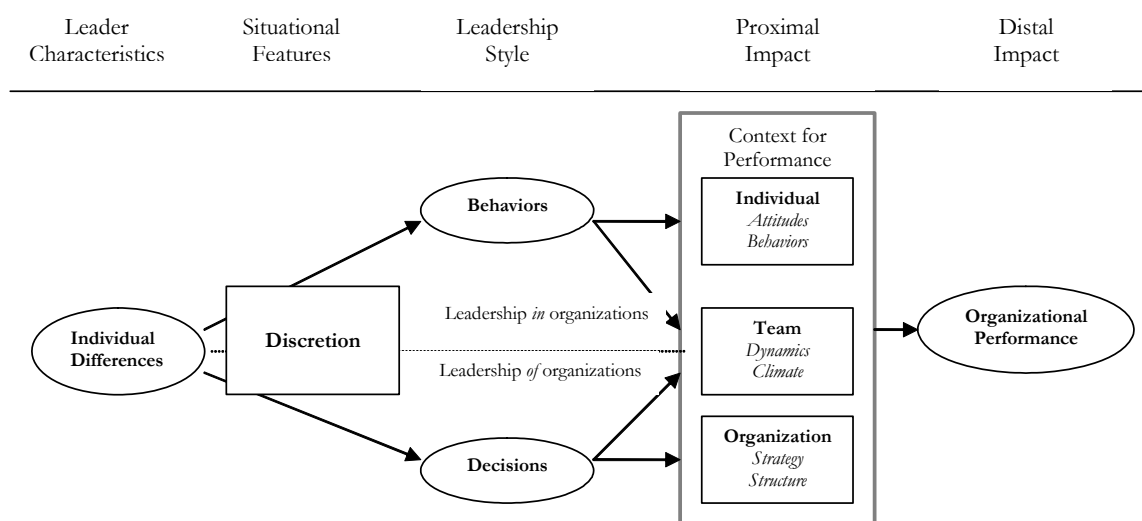


Figure 6.3 Leaders' Impact on Organizational Effectiveness (Hogan & Kaiser, 2005, Kaiser & Hogan, 2006)

Within an organizational context, it is important to distinguish between two types of influences. The first is the influence leaders exert *in* social interaction, which is the main focus of this dissertation. It is leadership as a face-to-face social influence, which describes leadership in an organization. The second is the indirect influence that leaders exert through their decisions about direction, organizational structure, and objectives. This is leadership *of* an organization, guiding collective action impersonally by setting goals, defining roles and staffing positions, allocating resources, and establishing policies. Direct influence is an essential activity for all leaders in an organization; indirect influence is a key activity for strategic senior leadership (Hogan and Kaiser, 2006).

Leadership *in* organizations concerns the behaviors that directly motivate employees and galvanize teams, as opposed to the behaviors that demoralize employees and weaken teams. Leadership *of* organizations involves making decisions about strategy, structure, staffing, and policy that indirectly influences employees by creating a “strong situation” in their work environment.

Because the leader’s role is to facilitate team performance, a leader’s impact across three levels of organizational analyses—the individual, the team, and the organization—creates the context for performance. Because contexts are conducive to performance, these actions affect a team’s performance in competition with rivals and translate directly into organizational effectiveness, which is the ultimate measure of leader effectiveness (Hogan & Kaiser, 2005). It must be acknowledged that a leader’s activities in conducting organizational analyses do tend to focus attention inward, which can increase entropy. However, if as a result, maturity is improved and the ultimate focus is kept external, any increase in entropy will be temporary and more than offset by the resulting increase in organizational effectiveness.

Figure 6.4 shows that there are several moderators of a leader’s personality that have an influence on organizational effectiveness. Most important is the moderating effect of *discretion* which constrains a leader’s range of actions. When leaders have little discretion; their range of action is constrained. When they have an abundance of discretion, they do as they wish. The implication is that when discretion is low, there is little relationship between leader personality and organizational effectiveness. Discretion often increases with hierarchical level, and when discretion is high, leader personality predicts organizational performance. The Germans understood this and, because their system was based on *Auftragstaktik*, focused accordingly on personality and character-building in their officer training (van Creveld, 1982). Simply put, all other efforts taken to command and control, including command-by-direction and command-by-plan, have not taken this issue seriously. They have followed the dominant logic of “once you have stripes on your sleeves you are a leader.”

The organization and development of forces and resources within most militaries, like the Norwegian, and which has preoccupied them for the last 15 to 20 years, has generally been

settled within the old paradigm³⁹. We have turned inward, yielding wholeheartedly to our culture's obsession with mechanical and administrative wizardry. All this can be seen in documents concerning *Network Centric Warfare*, *Network Enabling Capabilities* and *NATO Network Enabling* where thousands of words are deployed in order to communicate a need for updated hardware and administration. This overwhelming rhetoric is meant to suggest purposeful audacity. It is not difficult, however, to detect a remarkable passivity, a latter day expression of the Maginot Line mentality. It could be argued that we are on the brink of failing—our people, structures and process have become appropriate for only one particular segment, “interstate industrial war” or 2nd Generation Warfare. When the environment changes as it has by evolving into 4th Generation Warfare, the kind of people, process, and structures developed for earlier forms of warfare are no longer viable. The results that we now are producing in Afghanistan and Iraq indicate a lack of success in our approach.

³⁹ In 1990-91 NATO had 392 destroyers' frigates and 51 battle and cruisers. Still Norway decided to buy five brand new frigates replacing the old ones by 2010, clearly indicating decision making within the old paradigm (Smith, 2005). The crucial point is that those who took these decisions were a result of the ASA because structure and processes are outcomes of the behavior of kinds of people in the organization rather than the determinants of their behavior (Schneider, 1987).

7. Culture

7.1 Introduction

This chapter will first discuss the function of culture, one of the five components of orientation in the OODA loop. As discussed in section 3.3.3, Boyd concluded that a small set of principles formed the foundation for the German victory and that they were primarily cultural. The Germans had no advantage in numbers and lagged in technology, yet they won and “their strategy was so powerful that in one two-week period, it set aside 300 years of military history” (Richards, 2004, p. 19). Boyd took these underlying principles and codified them, as discussed in section 3.3 and illustrated in Figure 3.1. It was this culture that gave the Germans their competitive advantage, which also is true of Toyota’s Production System (Richards, 2004). This perhaps nonintuitive observation led Boyd to conclude that the Toyota Production System (Ohno, 1988), the model for “lean production,” was another implementation of this culture, (Richards, 2004). It is important, therefore, to understand the effect a culture might have on leadership and leadership development. I will also introduce an approach to culture—The Cultural Orientation Framework—and outline its organizational impact. Finally, I will describe how this framework corresponds to Boyd’s organizational climate and particularly how it affects the use of *Auftragstaktik*.

7.2 The Function of Culture

Culture is a set of assumptions and values that are shared by a group of people (e.g. the Germans or Toyota) and that guide that group of people’s interaction with each other (Lane, DiStefano, & Maznevski, 2006). Although it is a group-level phenomenon, it influences individuals’ perceptions, values, and behaviors, especially with respect to social interaction. It consists of a shared, commonly held body of general beliefs and values that defines the “shoulds” and “oughts” of life. The beliefs and values are taught to people so early and so unobtrusively that they are usually unaware of their influence (Kluckhohn & Strodtbeck, 1961). Culture serves two important functions for groups that affect leadership (Maznevski, DiStefano, Gomez, Noorderhaven, & Wu, 2002; Lane, DiStefano, & Maznevski, 2006).

First, it makes action simpler and more efficient. It provides “software” for the group’s interactions, or what might be thought of as a sort of oil that greases the machine of the society. The shared cultural system allows members to interact with each other efficiently without questioning every motive or action, and with relatively smooth flow of activity. It also provides guidance for decision making so that basic criteria need not be discussed at length. These basic cultural criteria—behavioral scripts, expectancy, and conflict resolution—are captured by the implicit guidance and control arrow from orientation to action in the OODA loop in Figure 3.2. Behavioral scripts help people know what to expect of each other and how to reciprocate appropriately to express conflict and resolve it. Culture also provides an important source of social identity for its members.

Culture and individuals interact in many ways. Culture is a characteristic of groups and is defined in terms of what group members share. However, individuals within a given culture are all different and subscribe to the culture’s assumption and values to a greater or lesser degree (Lane, et al., 2006). To understand this influence, there is a need to understand the basic role of assumptions, or orientations, and perceptions and how they influence our thoughts and actions. An *assumption* is an unquestioned, taken-for-granted belief about the world and how it works. Assumptions, like orientations, create our worldview, or the cognitive environment in which we operate. They come in many different varieties and some of them are so deeply ingrained and unquestioned that it is difficult even to surface them, and even then they are not testable.

The concept of culture incorporates many of these deep assumptions, while others are learned, and, once learned they are taken for granted without further questioning. They also influence the process of perception, or what we notice and how we interpret events and behavior. As such they are absolutely necessary. If we did not make these innumerable assumptions about the world, we would be paralyzed by the need to inquire about the meaning of events and the motives of others. This requires that our assumptions be well matched with the real world. Lane et al. (2006) claim that there are two ways to regain constancy when our assumptions do not fit the ongoing activity in our environment. First, we could change our perceptions of the evidence to match the assumptions, questioning the other, or second, change our assumptions to match the evidence, question ourselves. However, we are more inclined to invoke the first method than the second because it requires a great deal less energy, and it is often reinforced by others who hold the same

assumptions, a real danger in organizations lacking variety. Instead of solving this issue by distorting perception there is another option: altering one's own assumptions or aligning one's own orientation with the ongoing activity. The second option, changing our orientation to match reality, emphasizes the importance of identifying and understanding assumptions in order to get a better match between our orientation and the ongoing events in the external world. This can be achieved through leadership development.

7.3 The Cultural Orientation Framework

Several researchers (e.g., Adler, 1997; Kirkman & Shapiro, 1997) have recommended Kluckhohn and Strodtbeck's (1961) "cultural orientation" framework to investigate the impact of national culture on managerial issues. This framework provides a taxonomy of cultural orientations, founded both on empirical and experimental support, that can be conceptualized and measured at the individual as well as group level of analysis. Before examining this framework, it is useful to note that there also exist other culture maps, see Hall (1960), Hofstede (1980), Bond & Hofstede, (1989), Hampden-Turner & Trompenaars, (1993), and Trompenaars & Hampden-Turner (1998).

The Cultural Orientation Framework (COF) was initially presented by anthropologists Kluckhohn and Strodtbeck in 1961. The basic premise underlying COF is that there are common themes in the problems that different societies have faced throughout time and that these universal issues provide a way of viewing culture more objectively. Kluckhohn and Strodtbeck and their colleagues analyzed hundreds of ethnographic studies and they proposed that there is a limited set of questions—called "cultural orientations"—and a limited set of possible answers for each question—called "variations"—which each society must answer in order to operate in an effective and cooperative way. They identified and validated six orientations in a study of members of five cultures found in the Southwestern United States. These cultural orientations are: (a) relationship to the environment, (b) relationship among people, (c) mode of activity, (d) human nature, (e) time and (f) space. These six orientations are problems or issues that all societies throughout recorded history faced, but different societies have developed different ways of coping with these orientation.

Kluckhohn and Strodtbeck (1961) also articulated three important assumptions concerning these cultural elements that make this framework well-suited for research connected to leadership development.

1. They stated that individuals hold preferences for variations, and the cultural pattern is defined by the aggregation of individuals' preferences. Therefore, we can conceptualize and measure these dimensions at the individual level of analysis, aggregate measures to develop descriptions of cultures, and examine variance both within and between cultures.
2. All dimensions are presumed to be found in all societies, but each society is likely to exhibit, at the aggregate level, a defining rank order of elements within each orientation. This assumption allows us to analyze the dynamics within cultures, as well as identify major aggregate trends. Kluckhohn and Strodtbeck (1961) assert that these variations in patterns are inevitable and even necessary for societies to function effectively as a whole and to change over time.
3. The dimensions are proposed to be conceptually independent, even within orientations. For example, *Relationships-individual* is independent from *Activity-being*, but also *Relationships-individual* from *collective*, and *Activity-doing* from *being*. Researchers can therefore examine the effects of culture more extensively than we can with a less complex, bipolar framework.

The COF focus on how individuals believe the world should work and on their assumptions about how the world does work. These assumptions are naturally a reflection of the culture to which that individual belongs, so individuals are reporting on their own cultures. These assumptions are typically not questioned, nor are they even normally discussed.

Cultural orientations compromise the individual's assumptions about social organizations and elements outside the individual. As with Boyd's conception, the orientations serve as perceptual filters that screen information and potential choices about behavior (Erez and Earley, 1993), and provide scripts for social interactions (Maznevski and Peterson, 1997). Values generally focus on the value-holder. Values are motivators of individual behavior. The COF through an understanding of values will help us understand individual motivations and will illuminate many elements of individual behavior alone and in social settings, within

and across cultures (Schwartz, 1992, 1994; Schwartz and Bilsky, 1990; Schwartz and Sagiv, 1995). In addition, the COF provides an understanding of social behavior patterns, organized systems and decision-making and it represents an important tool for understanding and comparing cultures. The next section will focus on the COF in relation to its organizational impact concerning leadership, teams, and organizational structures to mention some of the most important ones.

7.4 The Cultural Orientation Framework's Organizational Impact

This section will discuss how the different orientations and variations of the COF influence organizations and as such have bearing for the performed leadership and organizational structures. This will illustrate the importance of culture and show that some of the variations of the COF will have both an enabling and constraining effect on the leadership development program at the RNoNA depending on how dominant they are. A culture's orientation to *Relationships among people* is associated both with leadership and with how well and effectively teams function. Organizational structures, communication and influence patterns, reward systems, teamwork, and managerial processes are all influenced by the relationship orientation (Lane et al, 2000, 2006). This orientation would have a pervasive influence on leadership practice and policy. In cultures where *individualistic values* are dominant, individuals are given considerable attention in the organizational culture.

Although organizational structures show power relationships, people in individualistic cultures see the lines in organizational chart as guidelines for decision-making authority and communication, not as strict power relationships. Relationships are treated informally, behavior within the structures is flexible, and such a culture would maintain multiple, open arrangements to be used on an as-needed basis. In a *group-dominated culture*, more attention is given to horizontal differentiation, and this culture would stress within-group patterns. In *hierarchical cultures*, relationships of power and responsibility are arranged such that those lower in the hierarchy are obligated to submit to the will of those higher in the hierarchy, an approach that is close to command-by-direction and attrition warfare. In return, they have the right to expect that those higher in the hierarchy will look after, protect, and provide for

them. A hierarchical culture emphasizes vertical differentiation and uses authority-based communication.

Teamwork is strongly affected by a culture's orientation to relationships among people. All cultures work in teams, but they do so in different ways, and it is a common misconception that collective cultures engage more in teamwork than individualistic cultures do. Within individualistic cultures, team members have specific roles and responsibility, and the team can identify each person's contribution. The leadership role may also change depending on which part of the task needs to be emphasized. In collective cultures, roles are much more fluid, and commitment is to the team itself. Each person is also responsible for helping the group as a whole to function well. In hierarchical cultures, team members have specific levels and roles in the hierarchy, and the team is directed clearly by the leader. People contribute to meetings and discussion in accordance with their place in the hierarchy (Lane, et al., 2000, 2006).

Hierarchies tend to be stable over time and develop the most rigidly obeyed structures. Research has consistently shown that the more hierarchical an organization, the more difficulty it has adapting to change (Lane et al., 2000, 2006; Burns and Stalker, 1961). Many hierarchical societies also develop a strong collective orientation within hierarchical levels. This is characteristic of aristocratic societies and those with a caste system. All data collected on industrialized cultures have revealed that these cultures have preferred either individualism or collectivism first and hierarchy has always been preferred last. Anglo cultures tend to prefer individualism the most, followed closely by collectivism. Lane, et al (2000, 2006) claims that in today's dynamic environment, it would almost be impossible to have an organization with a dominant preference for hierarchy over the long term. This is also in accordance with the development I have described for the military realm. The strategic game of interaction and isolation in today's moral conflicts requires an enabling culture of empowerment, a combination of Collectivism and Individualism, and not the constraining culture represented with hierarchy.

Beliefs about basic *human nature* orientations do not reflect how one thinks about individuals but rather one's belief about the inherent character of the human species. This orientation asks two basic questions. First, are humans primarily *evil*, *good*, *neutral* (neither good nor evil), or *mixed* (a combination of good and evil)? This is not a question about

behavior, but about basic nature. The second question is whether the fundamental nature of people is *changeable or unchangeable*?

The most obvious impact of this orientation can be seen on the extent of control systems in an organization, e.g. like the military's approach to command and control. A dominant *evil orientation* is likely to contribute to a tight control system based on an underlying suspicion of people. Cultural orientations dominated by neutral and mixed values are likely to produce moderately tight controls, with modification based on leaders' experiences with the people involved. Leaders who operate with the assumption that *goodness* is the basic human trait are likely to favor control systems based primarily on the need for leadership information, rather than for surveillance, checking, and control. This orientation provides an indication on the level of trust within the organization, and it also tends to affect leadership style. A culture with a dominant evil orientation supports autocratic management styles characterized by such concept as close supervision, Theory X, and a dominant *Control* function. Neutral or mixed dominant orientations encourage moderate supervision and consultative managers. At the other end of the spectrum, managers are encouraged to engage in a *laissez-faire* style or practice participate management, Theory Y, and a dominant *Nurture* function. An organization's climate may be consistent with the culture's orientation on the human nature dimension. We know that *Auftragstaktik* requires a high degree of trust—some commentators label it as “trust tactics”—and to most North Americans and Europeans, peoples' basic natures are, at best mixed (Maznevski, et al., 2002), which might indicate that in these cultures trust is a two way street that must be earned through cooperation.

The fifth cultural orientation in the COF is *time*. There are two ways to think about time: The first involves a general orientation toward time while the second concerns how people think about or use specific units of time. A culture's general orientation to time reflects the time-related criteria used to make decisions, interpret events, or prioritize actions. In a *past-oriented* culture, people respond to a new challenge by looking to tradition and wondering, “How have others dealt with this kind of problem before?” Past-oriented cultures are more likely to recreate past behavior when planning, while present-oriented leaders will have shorter-term concerns, and *future-oriented* leaders are more likely to consider long-term effects. Rewards, like promotions, in past-oriented cultures are more likely to be based on historically determined systems. This orientation will also influence the organization's ability to adapt to a new and constantly changing environment. A dominant *past variation*

might also contribute to predictable OODA loops because it will influence behavior and decision making to be consistent with past practice. Such practice will most likely make any commander predictable. Another aspect of time and its influence on behavior concerns questions like: “What are the most important units of time?” and “How does time flow?” In *monochromic* cultures, time is broken into small, specific units and flows in linear fashion. In these cultures, such as Anglo cultures, time is a valuable commodity. People save, spend and waste time. People live by their schedules, and punctuality is valued. In *polychromic* cultures, time is seen as elastic and these cultures are often collective. Units of time may be small or large, depending on what is being done or experienced at the time.

The *Activity* orientation of the COF refers to the desirable focus of activity and there are three variations found in cultures. The *being* variation is characterized by spontaneity, which is typical of the Dionysian mode. Here the present is experienced to the fullest. The *doing* variation represents the Promethean mode. The relentless striving to achieve and compulsive attempts to accomplish are the core of the “doing” orientation, which is often associated with the Protestant work ethic. The *thinking* variation is the Apollonian mode, in which senses are moderated by thought, and mind and body are balanced. Thinking-oriented cultures value rationality and carefully thinking everything through before taking action. Lane et al. (2000, 2006) found doing and thinking to be the dominant variations, which also should be the case in the military, because it is a striving and achieving organization. The priority is to achieve a set of specific goals efficiently. At the same time we know that maneuver conflict requires a high mental content, and one would expect the *thinking* variation should have a strong influence as well.

The variation *Relation to Environment* reflects how people in society orient themselves to the world around them and the supernatural. What do people direct their attention to, and what do they see as their roles in the environment? Within a *harmony* variation, the imperative is to behave in concert with the physical and other systems in the world around us, to see the environment and ourselves within a systematic whole, and to keep the system in balance. The second variation is *mastery* over environment, which builds on a profound belief that if enough time, money, and brains are applied to a goal, nearly anything is achievable. The last variation is *subjugation* to the environment. Here people see themselves as dominated by physical forces or subject to the will of a Supreme Being. The pervasive

scope of this variation causes it to influence leadership in many ways, including the strategy for competition and the mitigation of economic and social influences.

Lane et al. (2000, 2006) found that the important cultural differences on this variation seem to be whether mastery or harmony is dominant and the degree to which subjugation is assumed in a relative way, rather than whether it is preferred to the other variations in an absolute way. Members of a military organization typically see themselves as dominating the environment, with their focus on controlling specific parts and fixing problems, indicating a dominant *mastery* variation on the *Environment* relation. This might also indicate a need for mastery and control that is not achievable, leading to an illusion of control. A strong and dominant *mastery* variation contradicts Sun Tzu's harmonious approach to warfighting.

7.5 Summary

Based on the attributes of *Auftragstaktik* discussed in section 3.3, the culture needed to succeed in the forms of conflict most likely to confront the Norwegian Armed Forces, as expressed with the COF, appears to be:

1. On the variation *Relationship Among People*: high on Collectivism and Individualism, and low on Hierarchy.
2. The *Human Nature orientation* would be from neutral or mixed to good, and not evil.
3. The *Time orientation* would be *Future and Present* oriented and *not Past* focused in compliance with Sun Tzu's dictum: "Thus a victorious battle strategy is not repeated" (1984, p.71). By applying the Past we might be predictable and the adversary will find it easier to operate inside our OODA loop.
4. Concerning the orientation *Relation to the Environment*, the variation would be *Mastery over*, or equal to, *Harmony and low* on Subjugation because this concerns the need for initiative to create, find, and explore penetrations through multiple thrusts.

5. The mode of *Activity* requires *both the Doing and Thinking* variation because of the *need for initiative* and high mental content involved in the *cheng/ch'i* game.

Part V

The Royal Norwegian Naval Academy

This part consists of one chapter that gives a brief *description* of The Royal Norwegian Naval *Academy*, and their approach to leadership and leadership development is outlined in greater *detail* to understand how it is related to *Auftragstaktik*.

8. The Royal Norwegian Naval Academy

The purpose of this chapter is to provide an understanding of the Royal Norwegian Naval Academy's (RNoNA) and its approach to leadership development. This will be done by first describing very briefly the education at the RNoNA followed, by a more detailed description of their approach to leadership development. That section, 8.2, will cover the approach chosen by the academy and their developmental goal. Then the reward system at the RNoNA will be covered before the chapter is summarized in section 8.4.

8.1 The Education at the RNoNA

The education at the Royal Norwegian Naval Academy (RNoNA) is a three year bachelor's degree study, and the Academy is organized into three branches: *Operative Branch*, *Technical Branch*, and *Supply/logistic Branch*. The main task for the Academy is to provide future officers with competence for specific jobs as well as—through their leadership training—to develop their capabilities to function as leaders under the extreme conditions that will characterize future conflict. To fulfil this goal, the RNoNA concentrates its leadership education and leadership development program into the first year, see Table 8.1, the one-year common core education.

Table 8.1

An Overview of the Time Spent on Leadership Development Throughout the Bachelor's Program

	First year		Second year		Third year	
	Semester	Semester	Semester	Semester	Semester	Semester
	I	II	III	IV	V	VI
Leadership development	15 w ¹ & 3 d	5 w & 3d	1 w & 3 d	2 w ² , 2 d	1w & 3 d	1 w

Notes: 1) w = weeks, d = days. 2) Just for the Supply/Logistic branch and parts of operative branch

The two last years focus primarily on academics subjects. In the first year, approximately 61% of the cadets' time is devoted to leadership development, decreasing to a maximum of

11% for some branches (see note 2 in Table 8.1) and about 6% for the remaining cadets the second year, while during the third year, it is approximately 7% for all cadets⁴⁰.

Education at the RNoNA has always had a strong position in the Norwegian society, and it has served the country well. The educational program at the RNoNA has been stable with only minor changes in content and form throughout the last 100 years (Nissestad, 1998). During the 1990's, attention paid to leadership and leadership development increased, resulting in a major change in 2001, when the use of SPGR was introduced. The next year the leadership development program was expanded to 10 weeks through the use of the bark Statsraad Lehmkühl⁴¹.

During the first year at the Academy, the cadets are organized in teams consisting of six to eight cadets each. Cadets are randomly assigned to their teams by the Academy staff, blending branches, previous experience, and gender. Each team also has its own facilitator/coach who follows it through this first year of education and training. During their second and the final years, they are organized in classes according to their branches. During this period, which is largely academic, each branch has one facilitator/coach who is in charge of leadership development during these two years.

8.2 The Leadership Development Program at RNoNA

Since, January 2000, when the Chief of Defence signed the first version of the Norwegian Joint Defence Doctrine (NJDD) with the intention to change the Norwegian armed forces by implementing the philosophy of maneuver warfare and *mission command*, or *Auftragstaktik*, as the fundamental leadership doctrine⁴². Maneuver warfare and *Auftragstaktik* represent guiding ideas for the military profession; a way of thinking of war and a philosophy for leading soldiers in war and crises. As such, *Auftragstaktik* represents the *Schwerpunkt* for the ongoing leadership development program at the RNoNA.

⁴⁰ The academic year at the RNoNA consists of approximately 35 weeks, 17 weeks in semester I and 18 weeks in semester II.

⁴¹ A bark is a three-masted sailing ship with a fore-and-aft sail on the rear (mizzen) mast.

To reach this *Schwerpunkt*, the essential parts of the leadership development are carried out during the first year at the RNoNA as illustrated in Table 8.1. By doing this, the academy ensures that those officers who already have a bachelor's degree or are supposed to attend a civilian academic institution to get one, are going through most of the same leadership development as those officers who are commissioned from the RNoNA. The first year consists of Military Leadership, Defence Studies, and Language, in addition to the leadership development program that is built around five exercises within a time frame of 14 weeks. This first year is a blend of academic and practical leadership exercises that are brought together to create a synergetic effect.

The leadership development program at the RNoNA builds on three central factors—*assessment*, *challenge*, and *support*—to make the developmental experience more powerful (Van Velsor & McCauley, 2004). The driving idea behind the RNoNA's approach is that throughout their education, the Academy tries to stretch each cadet and provide both feedback and a sense of support to stimulate the leadership development process. The RNoNA approach to leadership development aligns closely to the pipeline metaphor of Hicks and Peterson (1999), as illustrated in Figure 8.1, and their approach to learning.

In Figure 8.1, *Insight* concerns the question, "Do cadets know what to develop?" This requires first and foremost assessment and an understanding of what the organization needs from them, which in turn requires knowledge of the organization's doctrines, structure, and system of rewards and punishments (chapters 2 and 3). *Insight* includes a sense of how a person's responsibility and actions connect to the organization's actions and purpose, as well as how others view them and their own abilities. *Motivation* concerns a cadet's willingness to invest the time and energy it takes for development. *New skills and knowledge* concern the question of whether cadets know how to acquire the new capabilities they need. *Real-world practice* concerns application—to provide the cadets with opportunities to try their new skills at work. We need to apply what we have learned and reflect on those experiences to solidify learning. *Accountability* concerns the internalizing of the new capabilities to improve performance and results. New knowledge and skills must be incorporated into the

⁴² Mission command is the English translation of *Auftragstaktik*, I will use *Auftragstaktik* throughout this dissertation, while maneuver warfare is equivalent to Boyd's maneuver conflict when applied to armed conflict.

cadets' regular work repertoire so they expand their role repertoire. This is most likely to occur where there is personal or organizational accountability that sustains commitment.

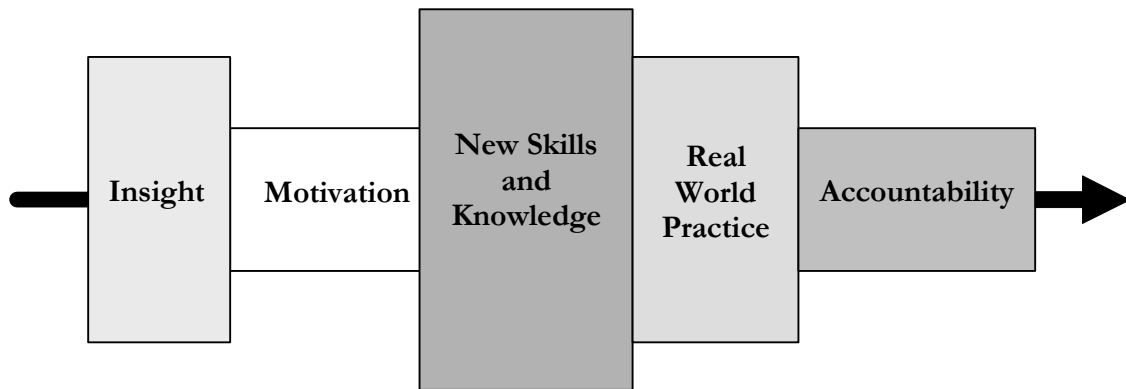


Figure 8.1 The Development Pipeline (Hicks & Peterson, 1999)

The main purpose of this metaphor is to illustrate that a “development pipeline” defines conditions that must exist for the learner. A wide pipe allows a plentiful and smooth flow of development, whereas even one narrow section of the pipe restricts development to trickle. This also indicates that leadership development is considered to be a process that requires both a variety of developmental exercises and the ability to learn from those experiences. The developmental experience and the ability to learn have a direct impact on each other. Cadets who are engaged in developmental experiences can enhance their abilities to learn, and being more readily able to learn can lead them to draw more development from any set of experiences. At the same time, the leadership development process must be embedded in a particular context that includes the Academy’s strategy, its culture, and its various systems and processes. This context, and the Academy’s understanding of the context, shapes the leadership development process, how it is focused, how well integrated and systemic it is, and who is responsible for it. This has led the RNoNA to develop a goal for its ongoing leadership development process.

8.2.1 The Development Goal at the Academy

Based on the current leadership philosophy for the Norwegian Armed Forces at the NJJD, *Auftragstaktik* outlined from maneuver warfare combined with a study of by Bachman (1988) of superior leaders in the U.S. Navy, the RNoNA has formulated a development goal with the aim of guiding the development process. Bachman found that the best commands were run not by Captain Ahab types, but by “nice guys.” The superior leaders managed to balance a people-oriented personal style with a decisive command role. They did not hesitate to take charge and to be purposeful, assertive, and businesslike. The most effective leaders, however, were generally more positive and outgoing, more emotionally expressive and dramatic, warmer and more sociable (including smiling more), friendlier and more democratic, more cooperative, more likeable and “fun to be with,” more appreciative and trustful, and even gentler than those who were merely average. By contrast, mediocre navy leaders reflected the classic stereotype of the military taskmaster. They were lopsided and overbalanced toward being forceful and away from enabling (Kaplan and Kaiser, 2003). They were legalistic, negative, harsh, disapproving, and egocentric. Compared to superior commanders, the average ones were more authoritarian and controlling, more domineering and tough minded, more aloof and self-centered, and needed to show they were right more often. They led by the book, through the rules and assertions of the raw power of their position. These studies document that the emotional tone set by any leader ripples downward with remarkable precision, supporting the findings of Park and Houben (1985), who found that the behavior by someone who is dominant and who is liked leads to modeling and contagion of that behavior. The superior officers were also close to the qualities described by Sun Tzu, in his *Art of War*, see especially chapter one, *Initial Estimations*, and chapter eight, *Nine Changes*.

The field diagram in Figure 8.2 shows a comparison between the RNoNA’s chosen profile; labeled “A,” and a average of Nordic leaders, “B,” which have proven to be successful within business (Sjøvold, 2002). This indicates that there exists a difference between the leadership behavior in a military context and a civilian business context.

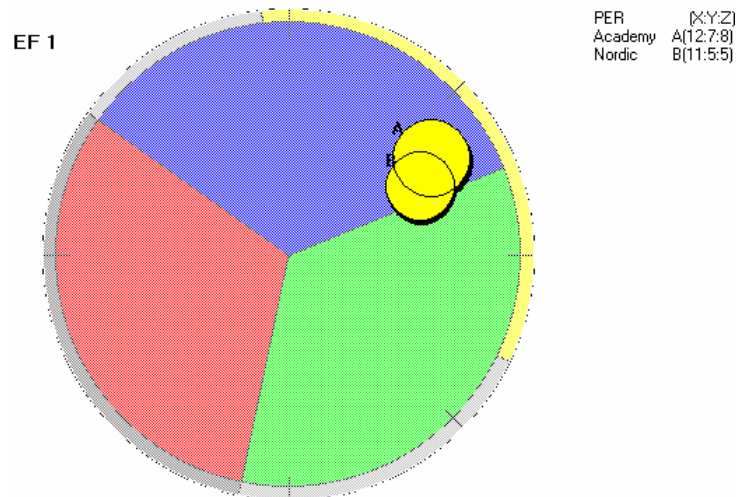


Figure 8.2 The RNoNA - and the Nordic Leadership Profile Presented in the SPGR Field Diagram⁴³

If we look more closely at these differences, using the SPGR 12-vector profile diagram as shown in Figure 8.3, we see how they manifest themselves in leadership behavior. The major differences between the military profile and the Nordic profile are that the military leaders should be more loyal, D1, Loyalty, more task-oriented, C1, Task-orientation, and more caring, N1, Caring. In sum this both gives, and requires that, military leaders have a larger role repertoire available.

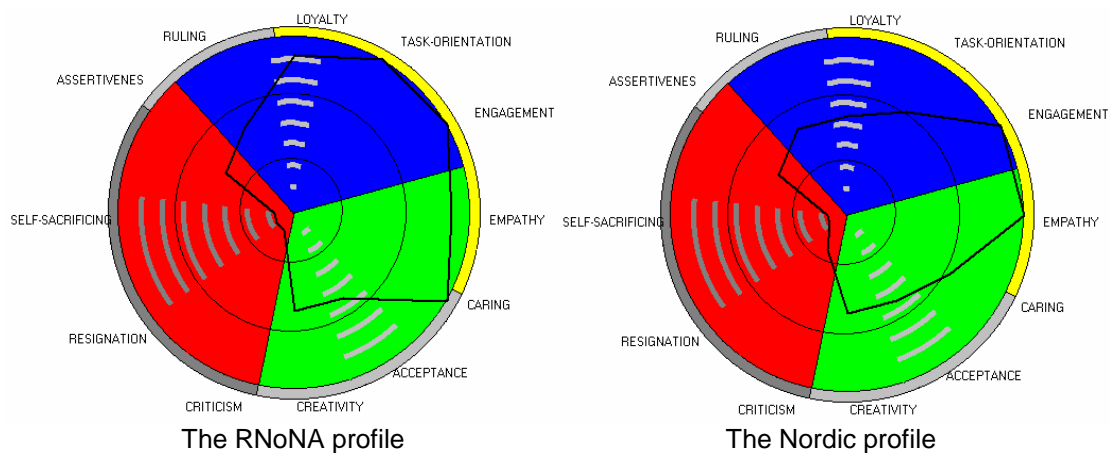


Figure 8.3 The SPGR 12-vector Profiles of the RNoNA and the Nordic Profile

⁴³ See section 10.3.1 for a more detailed description of the SPGR Field diagram

This should give them the necessary flexibility to adapt, respond and handle changing conditions in their internal and external environments. This development goal is sought by means of the RNoNA's assessment, challenge, and support approach, which is outlined in appendix B, see also Van Velsor and McCauley (2004, p. 1-22).

8.3 The Reward System: Military Development Grade

Auftragstaktik as discussed represents a leadership philosophy that demands a high level of mutual trust. To succeed, it requires that the RNoNA implement and enforce a reward system that promotes the development of the chosen leadership philosophy. At the RNoNA this is done through the use of the Military Development (MD) grade. The MD grade is a rating of each cadet's suitability as officer and it is also supposed to provide feedback to each cadet on how he or she performs as an officer (SKSK, 2005, p. 10). The rating of the MD grade is done on a scale from A to F, where A is outstanding and F is not qualified to be commissioned.

Creating such a reward system is a complex and difficult task. In 1990 the "Lieberg commission" asked if the service academies were built on a self-fulfilling prophesy, because the criteria used for entrance at the Academy is also used when they are commissioned. The commission was afraid that the dominant system orientation and rule-obedient behavior among the cadets would inhibit creativity and not contribute to their development as officers. As the commission noted, already at this stage in their careers, careerism tended to be the cadets' primary motivational force, a motivational force that definitely not would promote *Auftragstaktik*.

8.4 Summary

The above described approach at the academy blends the two strong traditions that exists within the world of pedagogy when it comes to learning. The first is the tradition of *phenomenology* and *Gestalt psychology*, which assumes that people construct mental models of the world and then use the models to interpret reality and guide their behavior, which is consistent with the role of orientation in the OODA loop. Here learning is equivalent to constructing new or enhanced mental models, which basically is reorientation. The second is

the tradition of *behaviorism*, which defines learning as a change in behavior after an experience such as training or experimenting. Leadership development involves acquiring or changing behaviors. Behaviorism also covers the concept of skill because a skill is a particular kind of well-honed behavioral capacity. As illustrated by the approach taken at the RNoNA both traditions are important when it comes to leader and leadership development because people learn skills, “knowing how,” and they also learn ways of conceptualizing reality, “knowing that.” Piaget claimed that “thought follows action” and Dewey, “we learn by doing.” These are connected in the sense that thought follows behavior. Reflecting on the outcomes of our actions allows us to understand both their consequences and the reasons for behaving that way in the first place. The chosen assessment, challenge, and support approach at the RNoNA contribute to improve team members’ capabilities for: “(1) evaluating the mental model that they hold regarding their capabilities and others’ expectation of their performance; and (2) how these mental models are expressed in overt or behavioral terms (which is social skill)” (Hogan & Warrenfeltz, 2003, p. 76). In both traditions, which are captured by the OODA loop, it is failures, or mismatches, that challenge our understanding and drive us to reorient or reconceptualize the world. We learn far more from our failures than our successes: Reorientation depends on mismatches or failures, not rewards, because success carries limited information and simply reinforces that we should continue doing what we have been doing.

Leadership development involves both learning and education through and expansion of role-taking ability. The development processes described above with assessment, challenge, and support is similar to Lewin’s (1952) well known approach of *unfreeze*, *move*, and *freeze*, which can be illustrated and summarized with Figure 8.4.



Figure 8.4 The Leadership Development Process at the RNoNA⁴⁴

This chapter has shown that the RNoNA has a systematic and valid approach to leadership development that aligns well with what is considered to be state of the art within this field, see especially Van Velsor and McCauley (2004).

⁴⁴ The colors used are the same as used in SPGR, see section 10.3.1 and appendix A.

Part VI

Research Questions and Methodology

This part of the dissertation consists of two chapters. In chapter 9, seven research questions are outlined. Chapter 10 covers the methodology, including research design, the chosen data collection instruments, considerations on statistical techniques, and the sample procedure applied in this dissertation.

9. The Research Questions

The main purpose of this dissertation is to answer the general research question stated in section 1.1 which was:

Is the leadership development program at the Royal Norwegian Academy effective in preparing officers to execute leadership in today's conflicts and the conflicts in the years ahead?

The purpose of chapter 2 was to put the RNoNA's leadership development effort into context by focusing on those developments within the military realm that indicate a need for reorientation from understanding war in the context of war to understanding "war in the context of everything else." Today's reality indicates that we are facing an adversary that does not resemble a traditional hierarchical organization. We are facing, instead, something more organic, dynamic, and flexible that resembles an open system. Al Qaida is a prime example. In chapter 3, I covered the essentials of Boyd's work, which provides a strategic framework for success in this effort, an effort that requires an emphasis on leadership and leadership development. To succeed we must be able to interact and adapt to a confusing military and political environment in a way that creates sense-making and avoids disintegration of own organizational structures. History has shown that the Germans found a way to meet such challenges (albeit against conventional military forces) through a particular organizational climate that Boyd codified. According to the theories behind the SPGR, which were outlined in chapter 4, it is the teams' and organizations' maturity levels—which are the direct results of their individuals' role-taking abilities and represent the capacity to dissipate entropy—that are the keys to Boyd's organizational climate. A team, or any organization for that matter, on a low maturity level will not be able to dissipate the entropy created by an agile adversary because there will be little ability to reorient. Organizations at a low maturity level possess an organizational climate that does not foster variety, rapidity, harmony, and initiative and therefore provides limited adaptability.

Boyd's concept of Orientation emphasizes the importance of the commander's personality (as representative of genetic heritage, see section 5.2) together with the nation's culture. Research on personality and especially the FFM indicates that personality is particularly important when the opportunity for discretion is high, which is the case with *Auftragstaktik*,

the chosen leadership philosophy in the Norwegian Armed Forces. Hogan, like SPGR theory (see section 4.4), argues that role-taking ability is a characteristic of a mature person, and that maturity can be translated into the FFM (see section 6.7.2), which builds a theoretical and conceptual link between these two approaches. This has made it possible for me to present seven research questions that will contribute to investigating the effectiveness of the leadership development program at the RNoNA.

These questions will be now be outlined.

Research Question Number One

The purpose of the leadership development program at the RNoNA is to prepare future officers to perform leadership in such a way that they can play the interaction and isolation game (interacting with allies and the uncommitted, while isolating opponents), particularly in 4th GW. That would require that the team they are part of reaches the maturity level of Innovation. At this maturity level, the team would be able to operate in very dynamic, unstable environments with a high level of ambiguity, which is a requirement as long as our adversaries resemble an open system, which seems to be the case today with both al Qaida and the Taliban movement. An effective leadership development program should then result in an expansion of each cadet's role-taking ability. If successful, this would result in an increased level of maturity, which indicates an increased level of Synergy. This provides the following research question:

***Q1:** Did the leadership development program at the RNoNA result in an increase in Synergy, hence an increase in maturity and an expansion of role-taking capacity performance among cadets?*

The answer to this research question, as well as to the main general research question will also answer three important questions asked by Hogan (Hogan, 2006): (1) Can people change their behavior? (2) Can people change their identities? and (3) Can people change their reputations? An increase in Synergy and expanded role-taking ability requires a behavioral change, and we know that people can change their behavior if they want to. When it comes to changing identity, people often change the way that they think about themselves, sometimes for better and sometimes not. Such a development would be captured with the SPGR. However, as Hogan and Roberts (2004) show, it is our identity that either contributes to or restricts our role-taking ability, which is the expressed social behavior. This

behavior is in large part guided by forces or processes outside our awareness, or what Boyd labeled our orientation. However, many of these unconscious determinants can be made conscious through social feedback, education, and self-reflection. The distinction between self-knowledge and other knowledge is a key consideration for leadership development. An effective leadership development program would be able to adjust that and the result would be an increase in Synergy. A change in reputation, on the other hand, involves changing other peoples' perceptions and orientations. This is hard work, and according to Goldman, people might have to change their behavior 100% to get a 10% change in how others perceive them (Hogan, 2006). The overall key to the change process is a change in behavior. If we behave differently, we will begin to perceive ourselves differently, and in time, others will, too. A change in reputation indicates change in leadership behavior and an effective leadership program would drive this change toward increased Synergy. However, as discussed in section 6.7, both of these two last issues require a certain level of maturity on the individual level and that makes personality important, which is an issue that will be covered under research question number four.

Any development towards Synergy would be a good and clear indicator of an effective leadership development program.

Research Question Number Two

A development toward Synergy would also require an expansion and adjustment of each cadet's orientation phase of the OODA loop concerning their implicit beliefs, convictions, and assumptions about the attributes and behaviors that distinguish leaders from followers, effective leaders from ineffective leaders, and moral leaders from evil leaders (Lord, Foti, & DeVader, 1984). According to Hare, Hare, and Koenigs (1996) an individual's social perception is influenced by that individual's ideal, which is part of that individual's orientation. These beliefs, convictions, and assumptions are referred to as *individual implicit theories* of leadership. Implicit leadership theory argues that those theories held by individuals influence the way they view the importance of leadership, the values they attribute to leadership, and the values they place in selected leader behaviors and attributes. Implicit leadership theory also predicts that the behaviors seen as effective for organizational leaders will be different for the behaviors seen as effective for other types of leaders (Lord & Maher, 1991a; Hanges, Lord & Dickson, 2000). A major assertion of implicit leadership theory is that leadership is in the "eye of the beholder." That is, leadership is a social label

given to individuals if either (a) their personality attributes, and behaviors sufficiently match the observer's belief about leaders or (b) the observer attributes group success or failure to the activities of perceived leaders (Lord & Maher, 1991b).

Hanges and Dickson (2004) have provided convincing evidence that people within cultural groups agree in their beliefs about leadership and that there are statistically significant differences between cultures in leadership beliefs. This is important because this agreement within cultural groups validates the aggregation of individual ratings to the organizational and societal level of analysis. Then, each cadet's orientation of the type of leadership behavior that constitutes a good officer would, according to this, become an important aspect in the leadership development program. This orientation represents each cadet's individual *Schwerpunkt* because it defines the ideal that the cadet is striving to achieve. At the same time the RNoNA has developed a common *Schwerpunkt* for this process—their leadership development goal that constitutes the leadership behavior needed to handle today's and tomorrow conflicts, hence to thrive in a 4th GW environment. These various *Schwerpunkts* may differ widely.

An effective leadership development program, therefore, must align the cadets' different *Schwerpunkts*' with the Academy's *Schwerpunkt*—the individuals' goals to the Academy's development goal, as illustrated in Figure 8.2 and 8.3. According to implicit leadership theory, it is of the utmost importance that these *Schwerpunkts*' align; if not, the various conceptions of leadership would form many noncooperative centers of gravity, resulting in no effective leadership development. This led to the following research question:

Q2: Did the leadership development program at the RNoNA influence the cadets' orientations of the leadership behaviors needed to be an officer in the 21st century?

An effective leadership development program would contribute to reorientation of the needed leadership behaviors to operate successfully in a 4th GW environment. This would indicate a reorientating toward the RNoNA's chosen leadership profile.

Research Question Number Three

Boyd characterized strategy as a changing set of intentions for improving interaction among the members of our team while at the same time isolating our opponents from themselves, internally, and from the world outside (1987b, p. 33). The purpose of strategy, and the test of

a good strategy, is whether it improves our ability to shape and adapt to the unfolding circumstances that define conflict (1987b, p. 58). Experience from Sun Tzu to the present day suggests that this can only be done in an organizational climate with a high degree of mutual trust and personality traits that foster individual and collectively maturity (Shay, 1998, 2002). The list of desirable traits suggested by strategists is quite long: Sun Tzu (1963, 1984) identified the following as requisite characteristics for any general: wisdom, credibility, benevolence, courage, and strictness. In addition to these strengths, an officer should also be knowledgeable, skilled in analysis, and unconcerned by fame and punishment, that is, an officer should not be affected by careerism. An officer should be qualified by personal characteristics, intelligence, knowledge, and command skills. Officers should be persons of virtue in every sense—benevolent, courageous, righteous, incorruptible, and caring. Officers must not only manifest these positive characteristics, but they must also be free from the innumerable character flaws that can doom a campaign or can be easily exploited, such as arrogance, greed, frivolity, cowardice, indecisiveness, laziness, slowness, brutality, selfishness, argumentativeness, carelessness, doubt, irascibility, and dejection. Intelligence—knowledge gained from study and experience and the wisdom to make appropriate evaluations—was also a requirement.

All of these aspects have always been important for the military, but today's conflicts, with their high moral content, have made them even more important. These requisite traits have much in common with traits expressed with the FFM, and both the idea behind the RNoNA leadership development program and the ultimate purpose of the Academy are based on the recognition that personality will have a great effect on leadership behavior, especially since our leadership doctrine, *Auftragstaktik*, emphasizes high discretion. It is important, therefore, to view personality together with the social interaction analyses from SPGR. Initial findings by Sjøvold & Nissestad (2005), for example, underline the importance of balancing the influence-versus-passivity dimension. They found that the development and the social interaction within a team could be seriously hampered if these problems are not dealt with, resulting in predictable OODA loops and no effective leadership development. Once again this points to the importance of maturity on the individual level. Maturity from the inside is reflected in greater adjustment and role-taking ability, which in the FFM translates into higher agreeableness, conscientiousness, openness, and emotional stability (Hogan & Roberts, 2004). These concern the individual leadership theories held by each cadet. When these theories are measured by the FFM they are found to be stable. Still, we know that these

theories might change (Hogan, 2006), which is confirmed by research (Piedmont, 1998). However, there is no reported study that has examined whether these theories changes as a result of extensive leadership development. This led to the following research question:

Q3: Did the military leadership development program at the Royal Norwegian Naval Academy have any impact on the cadets' personality?

Research Question Number Four

This research question concerns social interaction and is directly linked to the revised OODA loop, Figure 5.1 presented in chapter 5:

Q4: How did personality influence the social interaction patterns within the team, and how did it influence the leadership development process?

The purpose of this question is to gain a better understanding of the leadership development process. This requires that personality and SPGR must be seen together. Research question 3 might be an indicator of the effectiveness of the leadership development while number 4 focuses on the program and its processes.

Research Question Number Five

The ongoing process which was the issue of the previous research question should align in a culture, or organizational climate, that ought to be accordance with the attributes of *Auftragstaktik*, as discussed in chapter 3 and chapter 7. This suggests that a culture of *Auftragstaktik* would be in accordance with the Culture Orientation variations hypothesized in Table 9.1. An orientation that is consistent with the attributes of *Auftragstaktik* would then contribute to a smoother development and function as a catalyst for effective leadership development, hence increased role-taking ability and a higher level of Synergy. This makes culture an important variable and led to the following research question:

Q5: Do the cadets educated at the RNoNA inhabit a culture that enables Auftragstaktik?

Table 9.1

The Culture of Auftragstaktik and COF Hypothesized Preference of Variance

Orientation	Hypothesized Preferences of Variations
Relationship among people	Collectivism \geq Individualism $>$ Hierarchy
Nature of Human	Good \geq Mixed of Bland Slate $>$ Bad
Time	Present = Future \geq Past
Relation to the Environment	Mastery $>$ Harmony $>$ Subjugation
Mode of Activity	Doing \geq Thinking $>$ Being

“ $>$ ” indicates a significant difference at the $p < .05$ level, “ \geq ” indicates significance from the $p < .05$ level to non-significant and “=” indicates a non-significant difference.

Research Question Number Six

Effective leadership development should contribute to reorientation, where culture is a central variable. Many military observers have claimed that implementing maneuver warfare and *Auftragstaktik* in the Norwegian Armed Forces would require a fundamental change in orientation (Rekkedal, 1999a, 1999b), and one of the most important change agents would be the military academies and their leadership development programs. No culture is static or completely homogeneous: Cultures change, and the individuals within cultures differ from each other (Lane, et al., 2000). This is considered to be a normal process, while an effective leadership development program would significantly speed up this process. This generated the following question:

Q6: Did the military leadership development program at the RNoNA have any impact on the cadets' cultural orientations and variations?

Results from this question would provide an indicator of the effectiveness of the leadership development program at the RNoNA. Because one of the RNoNA's central missions is to be an intermediary of Norwegian Navy's culture, its leadership development program should also contribute to a culture that promotes the chosen leadership philosophy, *Auftragstaktik*.

Research Question Number Seven

Another important aspect of the effectiveness of any leadership development program would be its reward system. *Auftragstaktik*, as discussed, represents a leadership philosophy that demands a high level of mutual trust. To succeed, it requires that the RNoNA implement and enforce a reward system that promotes and enforces the development of the chosen leadership philosophy. At the RNoNA this is done through the use of the Military Development (MD) grade as described in section 8.3.

The overall aim of the leadership development program at the RNoNA requires that the cadets be evaluated according to those qualities needed to exercise leadership using *Auftragstaktik* as expressed through the RNoNA leadership development goal. This means that they will be evaluated against requirements needed to cope with the 4th generation conflicts that will likely characterize future warfare. This led to the following research question:

Q7: Did the reward system represented with the MD grade at the RNoNA promote leadership behavior that is in accordance with Auftragstaktik?

Summary

The answers to these seven research questions would contribute to determining whether the leadership development program at the RNoNA is effective. They may also prove useful to businesses and other organizations in designing effective leadership development programs. The next chapter will discuss the methodology to investigate these questions in a valid and reliable manner.

10. Methodology

10.1 Introduction

The purpose of this chapter is to outline the method and design chosen to answer the seven research questions outlined in section 9.2. This study will be performed in natural settings, which suggests that the chosen design will have more threats to its internal validity than what would be the case if this could have been performed as a randomized experimental design. This issue, which concerns the research design, will be discussed in section 10.2 where the aim is to outline an approach to answer my overall question. Section 10.3 outlines the data collection instruments used in this dissertation that concerns internal and external validity and statistical conclusion validity (Cook & Campbell, 1979). This section is followed by a discussion of some important considerations concerning the techniques used to determine statistical validity (Cook & Campbell, 1979). Finally, section 10.5 covers the sample and procedures for this dissertation.

10.2 Research Design

The aim of this dissertation is to investigate the effectiveness of the leadership development program at the RNoNA that takes place during the first year of their education at RNoNA. The leadership development program at the RNoNA represents, as described in chapter 8, a systematic approach to developing and transforming the cadets to become more effective leaders so they can apply *Auftragstaktik* to cope with the demands of 4th Generation Warfare. This indicates a quasi-experimental design, and I found it appropriate to use *The One-Group Pretest-Posttest Design* (Cook & Campbell, 1979). In such a design, all the cadets are observed, and, following a pretest (O_1) measurement, all of them are exposed to the leadership development program (the treatment X). The effect of the leadership development program would then be estimated simply by examining the average difference between the posttest measurement, O_2 , and the pretest measurement, O_1 . This is a widely used design, but unfortunately it has several weaknesses that must be considered. According to Cook and

Campbell (1979) the most important ones are *history, statistical regression, maturation, and testing*.

One of the unique features of the leadership development program at the RNoNA is that it is carried out in real life settings where the respondents work together, performing their normal duties. This increases the validity of this study, especially its external validity, because the experimental situation reflects the natural setting or situation to which I want to generalize. Furthermore, they are also representative because this study covers the whole population of cadets within each cohort of cadets, and because this empirical study covers four cohorts of cadets, it is reasonable to assume that they are representative for those officers commissioned from the RNoNA (Frankfort-Nacmias & Nachmias, 1996).

It would have been unethical (and impossible) to assign individuals to either a control group—cadets that did not participate in the leadership development program—or to an experimental group—those that participated in the program. Although the chosen design is a one-group pretest-posttest design it contains many of the characteristics of a classic experimental design because the teams are composed the same way each time, and they are exposed to the same treatment under similar conditions where data is collected. This contributes to increasing the reliability of treatment implementation and the random heterogeneity of respondents which reduces this effect on statistical conclusion validity (Cook & Campbell, 1979). Concerning the latter issue the population at hand could be considered to be homogenous while the RNoNA focuses on variation to maximize the leadership development effect. Furthermore, the dependent variable can be adjusted equally for the teams within each cohort. All the teams in Cohort 2002, for example, participated in exercise Magellan, giving them all the same treatment, while this exercise was not in the curriculum for Cohort 2001. The cadets are in the similar environment, the treatment environment, most of the time that they are awake. During exercise Magellan, they are in the environment 24 hours per day for 10 to 11 weeks. This significantly reduces the threat of history, since they are in fact partly physically isolated. It also contributes to reducing random irrelevances in the experimental setting and thereby increases the statistical conclusion validity (Cook & Campbell, 1979). These are factors which normally can threaten a quasi-experimental design with existing leader and work teams because they usually operate in and out of different environments, exposing them to a range of variables that can threaten the design and the predictive validity of the study. Because the

development program is an intensive program of one year duration, the difference between the posttest and pretest would most likely not be a result of any historical events intervening during this period.

As previously discussed the aim of the leadership development program is to expand each cadet's role-taking ability, hence maturation. This indicates that an effective program would result in a difference between pretest and posttest. Then if the expected and obtained scores differ, this might be either because the posttest was affected by the leadership development program or knowledge gained at the first testing altered testing on the subsequent testing. The RNoNA, as discussed in chapter 8 and can be seen from appendix A, provides the cadets with feedback on their team and leadership behavior, using the SPGR, to enhance their role-taking abilities. Maturation is a direct goal of the RNoNA's leadership development program, so an ineffective program would not lead to any maturation. By applying their own scores (their identities when it comes to leadership behavior), and peer ratings (their reputations as result of their leadership behavior), the classical maturation threat to this design is limited by data from multiple sources. Consequently, this indicates that if the obtained scores differ, it is most likely because of a change in their peers' orientations of team and leadership behavior, resulting in a different score and not because of maturation as result of any effects other than the leadership development program. Although research on personality does indicate a weak maturation effect as a result of aging—for example, people tend to become more agreeable and less extroverted with age—Costa et al. (2000) showed changes in the five domains of 1 to 2 *T*-score points in nonclinical sample of adults over a 6- to 9- year period, indicating no significant changes. It may, therefore, be concluded that any significant change over a one year period would most likely be a result of the leadership development program.

The threat of statistical regression is partly reduced because the leadership development program at the RNoNA is given to all the cadets, who are randomly distributed within the teams, and not to a special group of them—a group of underachievers, for example. As is illustrated in Figure 10.4, several measurements using the SPGR will also be taken during the intervention in order to study social interaction within each team. This is important since they stay together in teams throughout the program, and so, because they have to function as a team over a long time span, the groups become real teams for each cadet. They will, as result of this, quickly develop a history, and at the same time, they will also have a future

together. In fact, their results and military grades, which become part of their permanent record, depend on how well they function as teams and leaders⁴⁵. In a traditional classic experiment, by contrast, the teams would be ad hoc groups composed of people who neither had a history of working together nor are supposed to do so in the future. Another important aspect of the leadership development program at the RNoNA is that it is designed in such way that the cadets are working with novel outcome behavior because they are progressively exposed to a higher level of novelty, ambiguity, and complexity, measured by the SPGR at the pretest and posttest. This strengthens the internal validity of the study (Cook & Campbell, 1979). Furthermore the cadets were not provided any feedback on the pretest measurement, except from the SPGR, which is used by the RNoNA during the developmental process. There were no changes concerning the instrumentation, questions, or scoring system between the pretest and posttest to reduce the threats of internal validity to the chosen design. This permits more closely approximating the result of the leadership development program at the RNoNA after the exposure. The effect of the leadership development could then be estimated by examining the average difference between posttests and pretests.

10.3 Data Collection Instruments

The purpose of this chapter is to provide a description of the chosen data collection instruments, including their psychometrics. This is important because measures of low reliability could represent a major threat to statistical conclusion validity (Cook & Campbell, 1979). The chosen measurement instruments will be related to the seven research questions that were outlined in section 9.2., whose main purpose is to provide answers that would make it possible to draw a conclusion concerning the effectiveness of the leadership development program at the RNoNA. On the basis of my conceptual model and the important variables that constitute the orientation part of the OODA loop, three data collection instruments were used. These were:

⁴⁵ An example of this is that the cadets have to answer a written exam within the topic “leadership” as a team, which they also have to orally defend as a team. The entire team gets the same grade.

1. SPGR, which measures the social interaction within teams, and how each team member contributes to this, how they are perceived by their team members (their reputation), and how they perceive themselves (their identity).
2. The Revised NEO Personality Inventory (NEO PI-R) (Costa & McCrae, 1992), which measures personality
3. The Cultural Perspective Questionnaire (CPQ) version 8.0, which measures culture.

These instruments will now be described.

10.3.1 The SPGR

Chapter 4 gave a thorough description of the theoretical and social interaction part of the field theory that constitutes the SPGR. This section covers the measurement part of SPGR. The SPGR instrument consists of a category system for observation of overt behavior in groups and several scales for self and peer ratings (Sjøvold, 1995, 2002).

As outlined in chapter four, SPGR, in addition to Bales' (1985, 1999) theory of social interaction systems, also includes the thinking of Parsons' (1953) functional model of group development, and Bion's (1987) theory of group emotionality. The relation to these models were confirmed by Sjøvold (1995) and are represented in the four SPGR dimensions; Control vs. Nurture (C-N), Opposition vs. Dependence (O-D), Withdrawal vs. Synergy (W-S), and Influence vs. Passivity (I-P). As a result of this the SPGR dimensions have different orientations than SYMLOG in the factor-analytical space of social interaction, with its 24 combinations of vectors identified from empirical observational data (see Sjøvold, 1995, 2006, and 2007).

These dimensions are; (1) P-I, **Z**, a continuum from Passivity (lack of initiative) to a very high level of Influence (dominance), (2) **X**, which tracks group-oriented behavior to self-oriented behavior, and (3) **Y**, which tracks behavior that is task-oriented behavior to that which is defined by emotional expressions and spontaneity. These dimensions have different names in the SPGR as compared to SYMLOG because of their different orientations in the factor-analytical space (Sjøvold, 1995, 2007).

Especially worth mentioning here is that the Sjøvold algorithm treats the Z-dimension as equal in importance to the X and Y dimensions, while the SYMLOG algorithm treats scores along the UD (Up-Down) dimension merely as weights on the scoring along the PN (Positive-Negative) and FB (Forward-Backward) dimension. Bales divided the UD dimension into three layers of dominance (like a layer cake). The U (Up) level, which is dominant (UD score greater or equal to 3.0); the mid level which is neither dominant nor submissive (UD score greater than -2.0 and less than 3.0); and the D (Downward) level, which is submissive (UD score less than or equal -2.0) (Hare & Hare, 2005). Therefore the Bales algorithm is not able to effectively identify the existence of polarization along the influence dimension (Sjøvold, 1995, 2005). Here the SPGR is more sensitive than SYMLOG, which has an impact on the Influence-versus-Passivity dimension.

The SPGR dimensions, together with the behavior that support these functions, were outlined in section 4.2. This dissertation is based on peer and peer ratings using a 24-item scale where each item was rated according to whether the behaviors never or seldom (1), sometimes (2), or often or always occurred (3). Each of the 24 items is designed to function as a probe that displays the meaning and evaluations of a given image (for example, what is a good officer?) along a specific vector from the center of the space. As such the location of an image can be measured accurately. The Sjøvold algorithm (1995, 2002) calculates values in dimensions similar to two of the SYMLOG dimensions referred to as X and Y but keeps the SPGR dimension Z intact.

The SPGR inherits the psychometrics of the SYMLOG-instrument (Bales & Cohen, 1979, Koenigs, Hare & Hare 2002, Koenigs et al., 2005, Sjøvold 2002). This gives it an internal consistency (Cronbach's alpha) that is reported at .73 and split-half (Spearman-Brown) that is reported at .80-.86. Inter-rater reliability is typically reported at .98. Coefficient for pattern gestalt is reported to be between .94 and .98. Test-retest typical values are .87, and sample reliability values are between .97 and .99.

Appendix D covers the SPGR analysis applied in this dissertation.

10.3.2 The Revised NEO Personality Inventory (NEO PI-R)

The NEO PI-R was developed by Costa and McCrae (1992). This 240-item questionnaire was developed through rational and factor analytic methods to measure the five major factors of personality: Neuroticism (N), Extraversion (E), Openness (O), Agreeableness (A), and Conscientiousness (C). *Neuroticism* assesses affective adjustment versus emotional stability. Individuals that score high on this domain are prone to experiencing psychological distress, unrealistic ideas, excessive craving or urges, and maladaptive coping responses (Piedmont, 1998). *Extraversion* is defined by Costa & McCrae (1985) as representing the quantity and intensity of interpersonal interaction, the need for stimulation and the capacity for joy. This domain contrasts sociable, active, person-oriented individuals with those who are reserved, sober, retiring, and quiet. *Openness to Experience* is defined as the proactive seeking and appreciation of experience for its own sake, and as toleration for and exploration of the unfamiliar. This domain contrasts curious, original, untraditional, and creative individuals with those who are conventional, unartistic, and unanalytical (Piedmont, 1998). *Agreeableness* examines the attitudes an individual holds towards other people. These attitudes can be pro-person, compassionate, trusting, forgiving, and soft-hearted on one hand to antagonistic, cynical, manipulative, vengeful, and ruthless on the other (Piedmont, 1998). *Conscientiousness* assesses the individual's degree of organization, persistence, and motivation in goal-directed behavior. This dimension contrasts dependable, fastidious people with those who are lackadaisical and sloppy (Piedmont, 1998).

For each of these domains there are six *facets* that are designed to capture more specific traits, see Table 10.1. Items are answered on a 5-point Likert scale ranging from 0 (*strongly disagree*) to 4 (*strongly agree*), and scales are balanced to control for the effects of acquiescence. The items themselves are simple statements describing general tendencies (e.g., "It is often hard for me to make up my mind," and "I often crave excitement"). The Norwegian normative internal consistency estimates for the Form S scales for the individual domain scales range from .92 to .86, and from .54 to .84 on the trait's facets and it consists of 3,468 persons (1,717 males and 1,751 females) (Martinsen, Nordvik, & Østbø, 2003). According to the manual, 6-year stability coefficients range from .68 to .83 for N, E, and O. In addition, 6- to 9-year retest coefficients ranging from .67 to .77 were seen for the A and C facet scales (Costa, Herbst, McCrae, & Siegler, 2000).

Table 10.1

NEO PI-R; Domains and Facets

Domains	Facets
N: Neuroticism	N1: Anxiety, N2: Angry Hostility, N3: Depression, N4: Self-Consciousness, N5: Impulsiveness, and N6: Vulnerability.
E: Extraversion	E1: Warmth, E2: Gregariousness, E3: Assertiveness, E4: Activity, E5: Excitement-Seeking, and E6: Positive Emotions.
O: Openness	O1: Fantasy, O2: Aesthetics, O3: Feelings, O4: Actions, O5: Ideas, O6: Values.
A: Agreeableness	A1: Trust, A2: Straightforward, A3: Altruism, A4: Compliance, A5: Modesty, and A6: Tender-Mindedness.
C: Conscientiousness	C1: Competence, C2: Order, C3: Dutifulness, C4: Achievement Striving, C5: Self-Discipline, and C6: Deliberation.

The NEO PI-R has been validated in studies with other self-reports (Costa, McCrae, & Dye, 1991; McCrae & Costa, 1992; Piedmont & Weinstein, 1993). The NEO PI-R has shown evidence of convergent and discriminate validity across instruments, methods, and observers, and they have been related to a number of life outcomes including frequency of somatic complaints, ability to cope with stress, and burnout (Costa & McCrae, 1989; Piedmont, 1993).

10.3.3 The Cultural Perspective Questionnaire

The Cultural Perspective Questionnaire (CPQ) is a survey that is developed to measure the Cultural Orientation Framework (COF). The CPQ measures the following cultural orientations: Relation to Environment, Relationship among People, Mode of Activity, Human Nature, and Time. The CPQ does not measure the Space orientation. This survey has been developed and tested over a period of 12 years, making it possible to measure the COF. The early development of this survey is described in Maznevski & DiStefano (1995), and the development is still ongoing at the IMD in Lausanne, Switzerland. In the development of the CPQ, confirmatory factor analysis (CFA) and structural equation modeling (LISREL) and other construct validity procedures have been applied to assess the theoretical framework and test how closely the data approximate the specified model suggested by the COF (see Maznevski, et al., 2002).

The previous research done with CPQ 4, which did not include the Time variation, demonstrated adequate psychometric properties for early stages of research; see Maznevski et al. (2002). In Table 10.2 parts of the latest “goodness-of-fit statistics” provided by IMD are reported (Johnsen, 2006⁴⁶): the Goodness-of-fit index (GFI) and the Adjusted goodness-of-fit index (AGFI), which give an estimation of how well the model, the COF, fits the data (Jöreskog and Sörbom, 1996). The difference between the GFI and AGFI is that AGFI is adjusted for the degrees of freedom within the model. Although GFI is not an explicit function of sample size, the distribution of GFI will depend of sample size (Jöreskog and Sörbom, 1996).

Table 10.2

LISREL GFI and AGFI for CPQ 8.0

Culture orientation and variations	All countries ¹ (N = 5738)		Norway (N = 655)	
	GFI	AGFI	GFI	AGFI
Relationship				
Collective	.96	.92	.95	.90
Hierarchical	.98	.97	.97	.94
Individualism	.96	.94	.95	.91
Environment				
Harmony	.98	.95	.97	.94
Mastery	.94	.90	.95	.90
Subjugation	1.00	.99	.99	.97
Human Nature	.95	.84	.91	.74
Activity				
Doing	.97	.94	.97	.95
Being	.98	.97	.97	.95
Thinking	.96	.93	.93	.88
Time				
Past	1.00	1.00	.98	.92
Present	.99	.96	1.00	.98
Future	.99	.93	1.00	.98

Note: This consists of Canada (294), China (159), France (226), Germany (277), Japan (239), Hong Kong (128), India (113), Italy (240), Netherlands (234), Norway (655), UK (381), and US (1009)

⁴⁶ Johnsen, K. (2006). Personal correspondence, e-mail, from Johnsen to Nissestad, 4 October, 2006, 07:20, providing the latest goodness-of-fit index from IMD on the CPQ 8.0.

The standard for acceptable goodness of fit and adjusted goodness of fit indices for established research is .95 or higher, while .90 is acceptable for early exploratory research (Hair, Andersson, Tatham, & Black, 1992). The latest “fit” results, see Table 10.2, indicate that the CPQ 8.0 seems to be close to the standards of established research with an exception for Human nature and the Thinking variation for the Norwegian sample. This indicates that the CPQ 8.0 demonstrates adequate psychometric properties for research.

Even so, the criticism raised against the CPQ concerns reliability. The critiques generally refer to the guidelines of alpha values suggested by Cronbach (1990) as .70 for exploratory and .80 for established. However, these were simply guidelines and should not be taken as “gospel.” He also stated that constructs that have “high bandwidth”, that is, considerable richness, would be difficult to capture with a reasonable-length scale and therefore to accept that constructs with “high bandwidth” will have lower alpha measures (Cronbach, 1990). Mazanevski et al. (2002) have argued that cultural constructs, by definition, are both high bandwidth and deep bandwidth, i.e., the CPQ are capturing something that people don't usually articulate, so the translation is from unconscious thought to scales in a survey that is meant to capture those thoughts across multiple cultures and languages. The CFA results for the CPQ is fine, but of course these can be “manipulated,” e.g., by only including things that fit the scale, but Cronbach's alphas can be manipulated too, simply by having more measures, for example.

Because the aim is to measure individuals' cultural values and assumptions, that is, individuals' deep-level attitudes and values about how shared cooperation and action should take place, then we need to measure these constructs, and for this there is no alternative that is superior to CPQ. Other possible instruments for measuring related constructs include Hofstede (Hofstede, 1980; Bond & Hofstede, 1989), Trompenaars (Hampden-Turner & Trompenaars, 1993; Trompenaars & Hampden-Turner, 1998), GLOBE⁴⁷ (House, et al., 2004); and Schwartz (Schwartz, 1992, 1994; Schwartz and Bilsky, 1990; Schwartz and Sagiv, 1995). None of these, however, report alphas at the individual level of analysis. The first three are only tested at, reported at, and valid to use at the group level of analysis, i.e., we have to compare one country to another or at least one subgroup within a country to

⁴⁷ GLOBE is an acronym for the Global Leadership and Organizational Behavior

another subgroup. We cannot use them to look at, for example, any tendency towards homogeneity or variance within a group (they assume homogeneity within a group). Schwartz is used for the individual level of analysis, but no one using Schwartz's scale reports Cronbach's alphas for the scales. Instead, they do multidimensional scaling and CFA using LISREL.

It's unfortunate that we can't do it better, but we should not automatically use the same standards as for highly established, narrow, relatively superficial constructs. We must conclude that the results must be considered not-so-robust because of the psychometrics, but they are at least an indicator of something that cannot be obtained in any other way. Other scales are available to measure only individualism/collectivism but because I wanted to go beyond that, the CPQ was and still is the only option.

The CPQ 8.0 questionnaire consists of 89 single-sentence statements and asks the respondent to record his or her strength of agreement with each, on a scale from "1" (strongly disagree) to "7" (strongly agree)⁴⁸. Variations are measured with from four to eight items, depending on the variation. Appendix E shows sample items for each variation.

10.3.4 Summary

The purpose of this section is to link the measurement instruments to the seven research questions outlined in section 9.2. SPGR will be applied to answer research question 1, 2, 4, and 7; the personality measure NEO PI-R will be used to answer research question 3, 4, and 7, while CPQ will be used to answer question 5 and 6. This indicates that SPGR and NEO PI-R will be applied together when answering questions about the social interaction patterns within the teams and their influences on the leadership development process. Research question 7 will be analyzed by applying both SPGR and NEO PI-R separately and together.

The next section will discuss some important consideration when it comes to the statistical techniques that follow from the chosen One-Group Pretest-Posttest Design and the outlined research questions.

⁴⁸ Five of these questions measure noncultural orientation but instead regard globalization.

10.4 Considerations in Choices of Statistical Techniques

This section will discuss the statistical techniques that will be applied in this dissertation to determine statistical conclusion validity. According to Cook and Campbell (1979, p. 39) three decisions about covariation have to be made: (1) Is the study sensitive enough to permit reasonable statements about covariation? (2) If it is sensitive enough, is there any reasonable evidence from which to infer that the presumed cause and effect covary? and (3) if there is such evidence, how strongly do the two variables covary? The first of these issues concerns statistical power which is covered in section 10.4.4 and appendix F. This covers both analyses regarding the sample size required for detecting an effect of desired magnitude and of the computation of the magnitude of effects that could have been reasonably detected in the this study. According to Cook and Campbell, “Power analyses are desirable in any report of a study where the major research conclusion is that one variable does not cause another” (1979, p. 13). The most important major threats to statistical conclusion validity that are outlined and covered in this section are; (1) Low statistical power and (2) Violated assumptions of statistical tests. Another classical threat concerns the reliability of measures, which was covered in section 10.3. Three additional threats—the reliability of treatment implementation, random homogeneity of respondents, and random irrelevancies in the experimental setting—were natural parts of the considerations described in section 10.2, where the design was discussed and outlined.

The guiding principle has been to select the simplest statistical technique that would provide a reasonably valid test of the research questions in accordance with the chosen design. This approach, however, requires that these considerations must be examined in detail and dealt with if possible. I will now outline the most important considerations that concern this dissertation, including T-tests, One-Way Analysis of Variance (ANOVA), and Multiple regressions. Finally, statistical power and effect size will be discussed.

10.4.1 T-tests

The most commonly used technique to the chosen design is to apply *T*-tests. *T*-tests are used to compare mean scores on a continuous variable, such as before and after a leadership development program. There are two main types of *t*-tests used in this dissertation: The *paired sample t-test*, or repeated measures, involves two *conditions*, and the same subjects

participate in both conditions. We measure the subjects' behavior in conditions 1 and in condition 2. If there is an experimental manipulation after the first condition, attending the leadership development program at the RNoNA, for example, we would expect a person's behavior to be different in condition 2. The difference between conditions 1 and 2 is the manipulation, in this case, the leadership development program. Therefore, any difference between the means of the two conditions is probably because of the leadership development program, if the performance measure is reliable. The samples are 'related' because the same people are tested each time. In a repeated measure design, differences between the two conditions can be caused by two things: (1) the manipulation that was carried out on the subjects, or (2) any other factor that might affect the way a person performs from one time to the next. The latter factor is likely to be fairly minor compared to the influence of the experimental manipulation (Field, 2004).

Independent sample *t*-tests are used when there are two different (independent) groups of people, and we want to compare their scores, still leaving us with two conditions. In this case, we see how these two groups differ at a given occasion. In an independent design, differences between the two conditions can have one of two causes: (a) the manipulation that was carried out on the subjects or (b) differences between the characteristics of the people allocated to each of the groups. The latter factor in this instance is likely to create considerable random variation both within each condition and between them.

The paired sample *t*-test measures the sample mean, which is adequate for measuring the effect of the leadership development program. However, this might give a misleading picture, especially when it comes to the effect of the larger program. Therefore, an additional analysis was performed, the *Reliable Change Index* (RCI) (Christensen & Mendoza, 1986; Jacobsen & Truax, 1991; Ogles, Lambert, & Masters, 1996).

The Reliable Change Index

This section will outline The Reliable Change Index (RCI). "Individual differences in change" refers to the magnitude of increase or decrease exhibited by each individual over the duration of the study on any given trait. Furthermore, individual differences in change can be and often are unrelated to population indices of change. A given population may demonstrate robust individual differences in change while showing absolutely no mean-level changes. There can also be meaningful individual-level change even when there is

substantial differential consistency at the population level (Kohn, 1980; Roberts & Chapman, 2000). One might find that a large proportion of the population increases substantially, whereas an equally large proportion decreases substantially, so that the groups effectively cancel each other out, resulting in no population-level changes in specific subgroups of individuals. An example from this dissertation illustrates this, shown in Table 11.5, where the paired sample t -test results on Self-sacrificing shows a $t(72) = .416$ and $p < .670$, indicating no change at all. The corresponding RCI analysis, see Table 11.6, however, shows that there was a significant 11% decrease and 11% increase, while 78% of the cadets stayed the same.

The RCI was calculated by following the suggestions outlined by Christensen & Mendoza (1986), Jacobsen & Truax, (1991) and Ogles, Lambert, & Masters (1996) and the details are outlined in appendix F. By applying the RCI it is possible to classify how many cadets as having decreased, increased, or stayed the same on the SPGR 12-vector measures and the NEO PI-R as result of the leadership development program at the RNoNA.

10.4.2 One-Way Analysis of Variance

One-Way Analysis of Variance (ANOVA) was also used as statistical technique. Here, two or more groups are compared in a continuous variable. The ANOVA produces an F -statistic or F -ratio, which is similar to the previous t -statistic in that it compares the amount of systematic variance in the data to the amount of unsystematic variance.

The ANOVA tells whether the groups differ, but it will not tell where the significant difference is. It is, therefore necessary after conducting an ANOVA to carry out further analyses to find which groups differ. There are two options, *planned comparison* and *post hoc comparison* (Field, 2004). The difference between planned comparison and post hoc test can be linked to the difference between one- and two-tailed tests in that planned comparison are done when we have specific hypotheses that we want to test, whereas post hoc tests are done when we have no specific hypotheses. Because of the exploratory approach in answering research question 4, post hoc tests will be applied, and the consideration that was done is outlined in appendix F.

10.4.3 Multiple Regression

Multiple regressions were applied to address the question concerning the types of leadership behavior the RNoNA rewards through its use of the MD grade. Similar analyses were performed for the NEO PI-R data as well. There are several important assumptions concerning these statistical techniques: sample size, multicollinearity and singularity, outliers, normality, linearity, homoscedasticity, and independence of residuals (Tabachnick & Fidell, 2001). Of these, only sample size will be discussed now because sample size strongly influences the ability to generalize. With small samples, the result may not generalize with other samples. Stevens (2002) recommends that about 15 subjects per predictor are needed for reliable equations. Tabachnick and Fidell (2001) give the following formula for calculating sample size requirements, taking into account the number of independent variables: $N > 50 + 8m$, where m = number of independent variables. Because of these considerations, regression analyses will only be performed for all four cohorts together.

10.4.4 Statistical Power and Effect Size

Statistical significance is one of two pillars upon which the process of accepting or rejecting scientific hypotheses rests. The other pillar is *statistical power*, or the probability that statistical significance will be obtained, and that probability is determined by the size of the effect that an experiment is most likely to produce. Experiments must be designed with sufficient power to detect the intervention's true effect size (ES). Otherwise, statistical significance will not be obtained once the data are collected, and the intervention will be declared noneffective, although a clinically relevant difference might actually have occurred as a result of the intervention.

Statistical power is computed before a study's final data are collected and determines how likely a study's data are to result in a statistical significance before the study is conducted. "Power" is the probability of obtaining statistical significance in a properly run study when the hypothesized ES is correct, where ES is the standardized measure of size of the mean difference(s) among the study's groups or the strength of the relationship(s) among its variables (Bausell & Li, 2002). The primary purpose of a power analysis with a fixed alpha level is to estimate one of the three following parameters: (a) the number of subjects needed,

(b) the maximum detectable effect size, or (c) the available power at design phase. Two of these parameters, the acceptable level of power and the significance criterion (alpha), are often set by conventions, and almost without exception the alpha level is set at $p \leq 0.05$ and the minimum acceptable power level is most often considered to be 0.80 (Bausell & Li, 2002). A power level, as suggested, of 0.80 means that if everything goes as planned, the experiment has an 80% chance of achieving statistical significance and a 20% chance of not achieving a statistical significance.

Choosing an independent sample *t*-test with an employed level of power of 0.80 with an alpha level at 0.05 requires *N*/group of 64 for a hypothesized ES of .050. The paired sample *t*-test normally yields significantly more power than an independent sample *t*-test, especially when the correlation between the two paired sets of number is relatively high. Cohort 2000 was the first cohort where the SPGR was tried. Because these data were available, it was possible to derive the Pearson *r*. The average Pearson's *r* for the SPGR Humres was $r = .58$. By employing the tables in Bausell and Li (2002) it was estimated that 28 participants would be needed to enable the detection of an ES of 0.50 between pre- and post-intervention mean, assuming the measures were correlated 0.60. Should the correlation be as low as 0.50 34 participants would be needed. This indicates that there would be enough statistical power in measuring the effect of the leadership development program with the SPGR at the team level because this is a 360 degrees measure. A team which consists of six members yields a total of 36 ratings, which would be similar to 36 participants, that is higher than the number required.

The effect size statistic indicates the relative magnitude of the differences between means. It describes the "amount of total variance in the dependent variable that is predictable from the knowledge of the independent variable" (Tabachnick & Fidell, 2001, p. 52). This measure is important because with large samples, even small differences between groups can become statistically significant. In such a case, however, a statistically significant result may not have any practical or theoretical significance because of a high *N* and low ES.

There are a number of different ES statistics, the most common of which are *eta squared* (η^2) and *Cohen's d* (*d*), these are outlined in appendix F, and I will calculate Cohen's *d* for paired sample *t*-tests according to the formula provided by Dunlap et al. (1996). The discussion outlined in appendix F reveals that there several approaches to calculate Cohen's

d when it comes to the ES of an independent *t*-test: (a) using means and standard deviations, (b) using *t* values and *df*, separate groups *t*-test with equal *n* in each group, and (c) *t* values and *df* with unequal *n*'s in each group. Because a golden standard has not been established for this (Van Etten & Taylor, 1998), I calculate and report Cohen's *d* by using the *t*-test value and the degrees of freedom when these parameters are available. Otherwise it will be calculated by means and standard deviations, and any deviations from this will be footnoted. This calculation will also be checked against the η^2 statistics for independent *t*-tests.

10.5 Sample and Procedure

The empirical study will follow four cohorts of cadets through their leadership development program: 2001, 2002, 2003 and 2004. By following four cohorts, it would be easier to draw conclusions about the effectiveness of the leadership development because this makes it possible to discover patterns or mismatches. By doing this it is also possible to see if the changes implemented throughout the program have the intended effects. There have been several major changes. The first occurred during 2001, when the Academy dramatically changed their leadership development program, introducing the use of SPGR starting with Cohort 2001 after testing it out on Cohort 2000. The second change was use of the bark Statsraad Lehmkuhl for a period of 10 weeks during the first semester. This change was implemented with Cohort 2002. Figure 10.2 shows the measurement schedule of this study.

Data collection followed this schedule by applying the instruments described in section 10.3, with measures before and after the leadership development and with three additional follow up measures provided with the SPGR. Each cadet was given a unique code number, making it possible to follow each respondent throughout this study while preserving anonymity. Cohort 2001 represents the Academy's "old and traditional"⁴⁹ approach to leadership development, where the academic part had a larger influence. Cohort 2001 was the first Cohort where SPGR was used as leadership tool, while Cohort 2002 was the first cohort where the bark Statsraad Lehmkuhl was used as a central part of the leadership development program, during the "Magellan" exercise.

⁴⁹ According to my knowledge, this is the approach that is still applied by Army and Air Force at their academies.

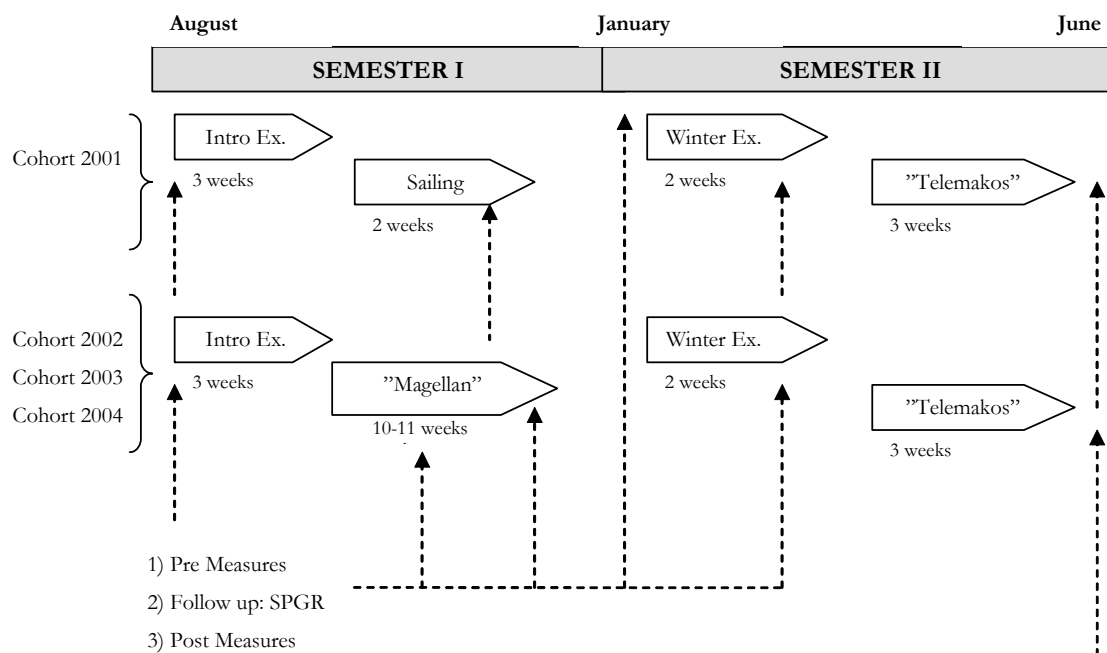


Figure 10.1 Measurement Schedule

The RNoNA introduced SPGR as their main tool for leadership development at the time Cohort 2001 started their education in August 2001. Data collection and preliminary use, however, began in January 2001 with Cohort 2000 (Reitan, 2002)⁵⁰. Culture data, using the CPQ, was only collected for parts of Cohort 2001 and 2002. Culture data was not collected for those cadets who either had a civilian bachelor's degree or were supposed to attend a civilian university to obtain one after finishing the one year officer and leadership development program at RNoNA. They were not cadets at the RNoNA when these data were collected. All measures concerning the pre- and post-measures were handled in cooperation with the RNoNA. Each cadet was given an envelope with the questionnaires and a return envelope together with oral and written instructions. They were given no feedback on the instruments used in the pre- and post-measures during the leadership development program.

⁵⁰ However, SYMLOG had been used as a research instrument at the RNoNA in 1985 and in 1991, which resulted in an article by Polley and Eid (1990).

Part VII

Results and Analysis

This part consists of three chapters. Chapter 11 presents and discusses the SPGR and NEO PI-R results for each of the four cohorts. In this chapter, the culture measured with the CPQ is also discussed, together with how the cadets perceived the leadership behavior of the ideal, “good officer.” Chapter 12 is devoted to an exploration of the style of leadership that the RNoNA actually rewards, while chapter 13 gives a more detailed insight into the social interaction of the leadership development process, or, to reframe Goethe, it provides an explanation of “becoming”.

11. Results and Analysis of the Cohorts

11.1 Organization of this Chapter

This aim of this chapter is to provide answers to six of the seven research questions outlined in section 9.2. The measurement tools and the appropriate statistical techniques were discussed in section 10.2 and 10.4. Each cohort will be analysed separately, starting with Cohort 2001, in section 11.2 and continuing through Cohort 2004, which is covered in section 11.5. Here, results will be provided to answer research questions one, three and four, while research question two will be covered for all the cohorts together in section 11.7, which also is the case for research questions five and six, which covers culture. The results are presented and discussed in section 11.6 and summarized in section 11.8.

The results and analyses of each cohort will be presented as follows:

1. Each section will start with the overall results of the cohort measured by the SPGR. SPGR will provide the results both on “reputation”—the average results of other team members’ perceptions—and their “identity”—how they perceive themselves. The cohorts’ results are the aggregated results of the teams, and these results will provide the results necessary to answer research question number one.
2. Then the personality results provided with the NEO PI-R will be presented and discussed to provide an answer to research question number three.
3. Each team’s SPGR Humres (the SPGR functions) result will also be reported, followed by the in-depth analyses of the teams that were performed to gain understanding of the complex social interaction process involving the cadets that might (or might not) lead to leadership development. This will provide an answer to research question number four.
4. At the end the section, there is a short summary for each cohort.

The results of each cohort are reported uncoded, while the teams and cadets belonging to a specific cohort are coded with letters and numbers to secure anonymity. In addition to the

tables that present the most important statistics, the different SPGR diagrams will be used throughout this chapter to visualize effects and findings.

The central demographics are presented in Table 11.1, which also provides the number of drop-outs during the leadership development program.

Table 11.1

Demography

Cohort	Total <i>N</i> ¹	Male	Female	Age				Drop outs	
				<i>M</i>	<i>SD</i>	Min	Max	Male	Female
2001	73	66	7	24.3	4.19	19	41	6	0
2002	77	68	9	24.3	4.63	20	39	1	1
2003	66	56	10	24.4	3.78	20	33	7	2
2004	86	79	7	24.0	4.01	19	39	12	1
	(302)	(269)	(33)					(26)	(4)

¹ Total *N* consists the number of cadets that finished the leadership development program, the first year of the RNoNA, and the “drop outs” are not included in this number.

11.2 Cohort 2001

Cohort 2001 represents the RNoNA’s “old and traditional” approach to leadership development. Here the focus was on shorter exercises that lasted from five to six days. The only exception was the “Telemakos” exercise, which ran twelve to fourteen days. In 1995, the RNoNA began to use a permanent team structure in their approach to leadership development. Because of academic needs, however, the team structure was not followed during their second semester. This cohort did not use the team organization as its permanent structure because after the first semester, they were organized according to their branches. As a result, the teams became closer to ad hoc teams, which represented the old tradition. Cohort 2001, however, was the first cohort that used a systematic leadership tool in their education, the SPGR.

11.2.1 The SPGR Results

Table 11.2 shows the average paired sample *t*-test of Cohort 2001 SPGR Humres results. These results show that there was no increase in the cohort’s maturity level, indicating no

development of synergetic behavior. There was a significant negative increase of Withdrawal behavior. The lack of development is also confirmed by the fact that the overall Energy available for doing work did not increase. At the same time, both the Control and Opposition functions increased. Unfortunately, this result suggests that the cadets' abilities to play the interaction and isolation game did not increase as a result of RNoNA leadership development program.

Table 11.2

Cohort 2001: Pre and Post Measures SPGR Humres - Others Rating

SPGR Functions	Pre measure	Post Measure	<i>r</i>	<i>t</i> (72)	<i>Sig.</i>	<i>d</i>
	<i>M/SD</i>	<i>M/SD</i>				
Synergy	6.31 (1.20)	6.40 (1.50)	.56	-.720	.474	
Control	3.28 (1.20)	3.75 (1.55)	.64	-3.313	.001	.13
Nurture	5.17 (.92)	5.15 (1.14)	.52	.158	.875	
Opposition	1.07 (.70)	1.71 (.91)	.54	-6.879	.001	.40
Dependence	5.68 (.88)	5.53 (1.05)	.58	1.414	.162	
Withdrawal	.73 (.72)	1.00 (.88)	.63	-3.253	.002	.13
Energy ¹	5.58 (1.70)	5.40 (1.80)	.65	1.018	.312	

¹Energy was calculated by computing the energy available (Synergy with Withdrawal subtracted) within the team.

Figure 11.1 illustrates the average development of the whole cohort measured by team members' ratings in the field diagram, together with the average the SPGR 12-vector profile.

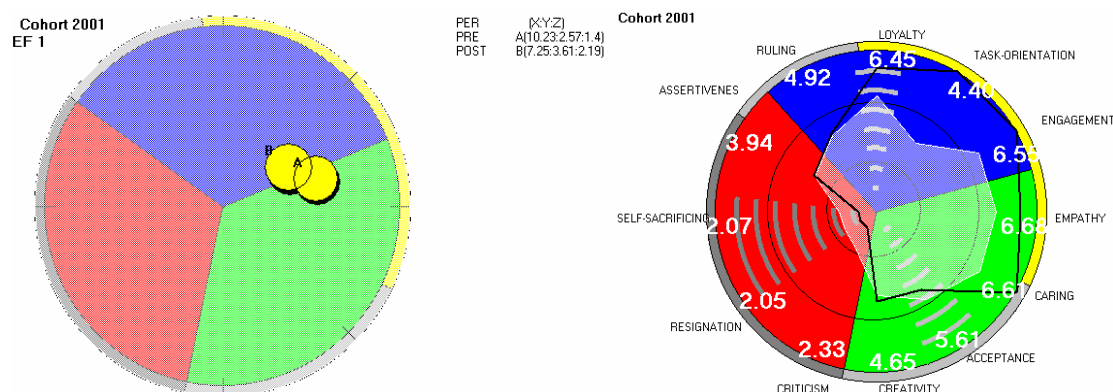


Figure 11.1 The Development of Cohort 2001 in the SPGR Field Diagram and the Cohort's Average Leadership Behavior - Others Rating

The increase of the Control function is clearly illustrated in this figure. This becomes more obvious in Table 11.3, which shows the cohort's development on each vector. The results in Table 11.3 reveal a more complex picture than in Table 11.2, e.g., that there is a decrease in Empathy while there is an increase in Engagement.

Table 11.3

Cohort 2001: SPGR 12-Vector Pre and Post Measures - Others Rating

SPGR Vectors	Pre Measure <i>M/SD</i>	Post Measure <i>M/SD</i>	<i>r</i>	<i>t</i> (72)	<i>Sig.</i>	<i>d</i>
S2: Empathy	7.41 (.75)	6.68 (1.00)	.29	5.886	.001	.82
N1: Caring	6.56 (1.34)	6.61 (1.02)	.58	-.325	.746	
D2: Acceptance	5.66 (.92)	5.61 (1.10)	.54	.441	.661	
N2: Creativity	5.17 (1.51)	4.65 (1.66)	.65	3.294	.002	.32
O1: Criticism	1.58 (.70)	2.33 (.98)	.43	-6.919	.001	.86
W1: Resignation	1.63 (.73)	2.05 (.93)	.59	-4.528	.001	.48
W2: Self-sacrificing	1.60 (.69)	2.07 (1.13)	.40	-3.810	.001	.49
O2: Assertiveness	2.92 (1.29)	3.94 (1.49)	.63	-7.298	.001	.73
C2: Ruling	4.84 (1.29)	4.92 (1.57)	.59	-.467	.642	
D1: Loyalty	6.84 (.90)	6.45 (1.10)	.42	3.082	.003	.39
C1: Task orientation	2.87 (1.38)	4.40 (1.48)	.64	-9.645	.001	.96
S1: Engagement	6.17 (1.24)	6.55 (1.37)	.54	-2.635	.010	.30

The most striking result is that the climate for leadership development worsened throughout the year. There was less room for Empathy—to listen to and show interest in others with a focus on understanding them, which is a necessary condition for development. Instead there was more Criticism—self-centered, provocative, and unruly behavior, together with Assertiveness, which describes self-sufficient, tough, and utterly competitive behaviors. The focus on Task orientation increased: They were trying to be more efficient, analytical and rational. The result of this was an increase in Withdrawal behavior—Resignation and Self-sacrificing. The calculated RCI results presented in Table 11.4 confirm this development. It is worrying that 34% had a significant reduction in their empathic behavior, while at the

same time 36% of the cadets became more critical and self-centered. Such a development in organizational climate will, of course, hamper creativity and lead to an increase in Withdrawal behavior. Although there was a large increase in Task-oriented behavior, 43% had a significant development, it appears that this behavior was focused on getting ahead by oneself and not on developing a climate for leadership development.

Table 11.4

Cohort 2001: Individual-Level Change for the SPGR 12-Vector - Others Rating

SPGR Vectors	Decrease (%)	Stayed the same (%)	Increase (%)	χ^2 (2, $N=73$)
S2: Empathy	34	59	7	309.8***
N1: Caring	1	93	6	3.0
D2: Acceptance	4	92	4	1.6
N2: Creativity	12	85	3	29.0***
O1: Criticism	1	63	36	328.5***
W1: Resignation	3	82	15	47.4***
W2: Self-sacrificing	3	77	20	97.7***
O2: Assertiveness	1	76	23	129.5***
C2: Ruling	10	85	6	18.1***
D1: Loyalty	8	88	4	10.7**
C1: Task orientation	1	56	43	478.4***
S1: Engagement	4	90	6	3.5

Note. $N=73$. Number of cadets for decrease, increase, and staying the same were based on the reliable change index (i.e., change greater than 1.96 or less than -1.96 is considered a reliable change). The chi-square tests whether the observed distribution of changers and nonchangers would differ from the expected distribution if changes were random (e.g., 2.5% each decreases and increase and 95% remain the same). Significance levels indicated as: * $p < .05$, ** $p < .01$, and *** $p < .001$.

The result is a climate that did not foster maturity because the cadets as a group were not able to balance “getting ahead” and “getting along.” The 12-vector figure also reveals an unbalanced relationship between the basic functions, Control and Nurture. According to the SPGR theory, the Nurture function will be dominant at the lower maturity levels, Reservation and Team Spirit. A paired-sample t -test was conducted to evaluate the balance between these two functions. There was a statistically significant imbalance between Control ($M = 3.75$, $SD = 1.55$) and Nurture [$M = 5.15$, $SD = 1.36$, $t(72) = 6.323$, $p < .001$, $d = 1.49$]. The ES statistics indicates that this is a large imbalance towards Nurture. This together with the lack of increase of Synergy and a large increase in self-centered and provocative behavior, Criticism, indicates that the cohort’s overall maturity level was Reservation. This will be discussed in further detail below.

Table 11.5 presents the pre- and post-measures on the cadets' self-ratings on the SPGR 12-vector. This result indicates a similar development on Empathy, Criticism, Assertiveness, and Task orientation, but the differences are much smaller.

Table 11.5

Cohort 2001: Individual-Level Change for the SPGR 12-Vector - Self Rating

SPGR Vectors	Pre Measure <i>M/SD</i>	Post Measure <i>M/SD</i>	<i>r</i>	<i>t</i> (72)	<i>Sig.</i>	<i>d</i>
S2: Empathy	7.44 (1.75)	6.68 (1.96)	.13	2.623	.011	.40
N1: Caring	6.79 (1.75)	6.92 (1.80)	.28	-.494	.623	
D2: Acceptance	6.05 (1.89)	5.84 (2.17)	.33	.890	.429	
N2: Creativity	5.64 (2.00)	5.25 (2.33)	.52	1.587	.117	
O1: Criticism	1.70 (1.31)	2.41 (2.14)	.20	-2.674	.009	.40
W1: Resignation	1.89 (1.48)	1.60 (1.29)	.22	1.416	.161	
W2: Self-sacrificing	1.84 (1.21)	1.75 (1.28)	.09	.416	.670	
O2: Assertiveness	3.42 (2.00)	4.26 (1.83)	.31	-3.175	.002	.44
C2: Ruling	5.25 (1.85)	5.16 (1.77)	.28	.322	.748	
D1: Loyalty	6.58 (1.91)	6.37 (2.10)	.52	.890	.376	
C1: Task orientation	3.70 (2.01)	4.97 (2.39)	.54	-5.111	.001	.57
S1: Engagement	7.05 (1.69)	6.68 (1.96)	.16	.315	.754	

This is clearly seen by looking at the RCI results presented in Table 11.6, where percentages of “increasers” and “decreasers” are significant in the same direction, but smaller. When we look at the Withdrawal behavior, represented with Resignation and Self-sacrificing, there was a large difference in perception. The paired *t*-sample test hides the significant results when it comes to Self-sacrificing, where there was an 11% increase and an 11% decrease. This also indicates a gap between their self and their reputation.

It is also worth noticing the difference on Engagement, where others see a minor development: They were not able to notice it themselves, which is indicated by the fact that the cohort as a whole considered themselves to stay the same.

Table 11.6

Cohort 2001: Individual-Level Change for the SPGR 12-Vector - Self Rating

SPGR Vectors	Decrease (%)	Stayed the same (%)	Increase (%)	χ^2 (2, $N = 73$)
S2: Empathy	16	80	4	59.3***
N1: Caring	3	92	5	2.7
D2: Acceptance	11	81	7	27.7***
N2: Creativity	10	88	3	15.1***
O1: Criticism	8	64	28	197.8***
W1: Resignation	5	90	5	5.4
W2: Self-sacrificing	11	78	11	44.0***
O2: Assertiveness	1	85	14	37.8***
C2: Ruling	4	93	4	1.6
D1: Loyalty	7	89	4	6.6*
C1: Task orientation	1	86	13	29.2***
S1: Engagement	0	100	0	

Note. $N = 73$. Number of cadets for decrease, increase, and staying the same were based on the reliable change index (i.e., change greater than 1.96 or less than -1.96 is considered a reliable change). The chi-square tests whether the observed distribution of changers and nonchangers would differ from the expected distribution if changes were random (e.g., 2.5% each decreases and increase and 95% remain the same). Significance levels indicated as: * $p < .05$, ** $p < .01$, and *** $p < .001$.

11.2.2 The NEO PI-R Results of Cohort 2001

According to the NEO PI-R results, see Table 11.7, the cadets in this cohort tended to be emotionally stable, Extroverted and Conscientiousness. At the same time, however, they as a group tended to be a little less open and Agreeable than the population in general. The most striking aspects of the NEO PI-R result are the low Agreeableness score and that the paired sample t -test revealed a significant reduction in this domain. Although it was moderate, it was in the opposite direction of the intention behind the leadership development program. If we look at the RCI results, Table 11.8, however, we see that only 4% of the cadets had a significant reduction, which is not a significant result

Table 11.7

Cohort 2001: The NEO PI-R Pre and Post Measures

DOMAINS AND FACETS	α Pre measure	Pre measure <i>M/SD</i>	α Post measure	Post Measure <i>M/SD</i>	<i>r</i>	<i>t</i> (71)	<i>Sig.</i>	<i>d</i>
N: NEUROTICISM	.90	46.29 (8.06)	.87	46.36 (6.87)	.75	-.108	.914	
N1: Anxiety	.76	44.47 (8.65)	.63	44.29 (7.41)	.66	.227	.821	
N2: Angry Hostility	.68	47.97 (7.95)	.67	48.19 (7.75)	.69	-.306	.760	
N3: Depression	.73	43.18 (7.36)	.73	43.72 (6.87)	.77	.794	.430	
N4: Self-Consciousness	.69	48.07 (8.55)	.63	47.78 (7.46)	.65	.365	.716	
N5: Impulsiveness	.52	47.49 (8.60)	.62	49.26 (8.78)	.68	-2.160	.034	.20
N6: Vulnerability	.74	49.32 (6.91)	.71	48.74 (6.84)	.57	.780	.438	
E: EXTRAVERSION	.88	53.18 (7.32)	.90	53.85 (7.95)	.83	-1.254	.214	
E1: Warmth	.70	49.88 (7.35)	.70	50.44 (6.76)	.49	-.679	.499	
E2: Gregariousness	.52	52.94 (6.84)	.65	52.11 (7.38)	.67	1.213	.229	
E3: Assertiveness	.83	52.06 (9.27)	.83	54.11 (9.70)	.84	-3.229	.002	.22
E4: Activity	.56	51.13 (7.50)	.68	52.18 (8.16)	.75	-1.604	.113	
E5: Excitement Seeking	.60	54.28 (7.15)	.48	55.86 (6.34)	.66	-2.393	.019	.23
E6: Positive Emotions	.74	56.49 (7.53)	.80	54.90 (8.22)	.76	2.452	.017	.20
O: OPENNESS	.86	45.44 (8.41)	.89	47.97 (8.97)	.83	-.4.239	.005	.29
O1: Fantasy	.78	46.04 (9.43)	.77	50.11 (8.75)	.53	-3.889	.001	.44
O2: Aesthetics	.78	46.51 (9.38)	.77	47.46 (9.06)	.80	-1.367	.176	
O3: Feelings	.67	47.49 (8.77)	.67	48.46 (8.51)	.59	-1.047	.299	
O4: Actions	.66	49.13 (9.75)	.69	50.99 (9.71)	.78	-2.425	.018	.19
O5: Ideas	.82	47.74 (10.88)	.88	49.11 (11.96)	.84	-1.808	.075	
O6: Values	.37	45.81 (7.93)	.52	46.64 (7.84)	.75	-1.277	.206	
A: AGREEABLENESS	.87	47.63 (8.97)	.80	45.81 (7.31)	.81	2.929	.005	.21
A1: Trust	.71	49.07 (7.56)	.71	49.63 (7.26)	.70	-.826	.411	
A2: Straightforwardness	.76	49.43 (9.34)	.79	45.92 (9.82)	.73	4.190	.001	.36
A3: Altruism	.64	50.63 (9.19)	.61	49.33 (8.74)	.55	1.357	.179	
A4: Compliance	.62	46.18 (8.63)	.57	44.86 (8.34)	.64	1.547	.126	
A5: Modesty	.72	48.49 (8.79)	.62	47.03 (7.46)	.73	2.011	.048	.17
A6: Tender-Mindedness	.63	47.03 (8.02)	.44	46.61 (6.72)	.63	.551	.584	
C: CONSCIENTIOUSNESS	.91	51.78 (9.19)	.90	52.43 (8.48)	.82	-1.036	.304	
C1: Competence	.67	53.75 (7.49)	.61	54.19 (6.85)	.62	-.599	.551	
C2: Order	.64	53.33 (8.05)	.66	54.89 (8.56)	.59	-1.759	.083	
C3: Dutifulness	.72	50.99 (9.65)	.68	50.15 (9.41)	.75	1.058	.294	
C4: Achievement Striving	.73	51.33 (8.92)	.79	51.54 (9.13)	.80	-.311	.757	
C5: Self-Discipline	.76	49.90 (9.22)	.80	52.67 (8.51)	.75	-3.723	.001	.31
C6: Deliberation	.75	51.42 (10.03)	.76	49.69 (9.40)	.72	2.012	.048	.05

Table 11.8

Cohort 2001: Individual-Level Change in NEO PI-R Domains and Facets

Domains and facets	Decreased (%)	Stayed the same (%)	Increased (%)	χ^2 (2, $N = 72$)
N: NEUROTICISM	1	92	7	6.1*
N1: Anxiety	1	98	1	.7
N2: Angry Hostility	1	93	6	3.1
N3: Depression	0	97	3	.01 ¹
N4: Self-Consciousness	1	98	1	.7
N5: Impulsiveness	0	97	3	.01 ¹
N6: Vulnerability	7	89	4	6.8*
E: EXTRAVERSION	6	86	8	13.1**
E1: Warmth	4	89	7	3.8
E2: Gregariousness	7	90	3	5.9
E3: Assertiveness	0	94	6	2.6 ¹
E4: Activity	0	99	1	.4 ¹
E5: Excitement Seeking	0	99	1	.4 ¹
E6: Positive Emotions	7	92	1	6.1*
O: OPENNESS	0	89	11	21.1***
O1: Fantasy	2	83	14	38.4***
O2: Aesthetics	0	96	4	.7 ¹
O3: Feelings	0	94	6	2.6 ¹
O4: Actions	0	100	0	
O5: Ideas	4	86	10	16.4***
O6: Values	0	99	1	.4 ¹
A: AGREEABLENESS	4	96	0	.7 ¹
A1: Trust	3	93	4	.8
A2: Straightforwardness	12	88	0	28.5*** ¹
A3: Altruism	8	92	0	9.9** ¹
A4: Compliance	1	98	1	.7
A5: Modesty	0	100	0	22.0***
A6: Tender-Mindedness	1	99	0	.4 ¹
C: CONSCIENTIOUSNESS	3	86	11	22.0***
C1: Competence	3	94	3	1.2
C2: Order	1	95	4	3.1
C3: Dutifulness	0	99	1	.4 ¹
C4: Achievement Striving	0	96	4	.7 ¹
C5: Self-Discipline	0	90	10	14.8*** ¹
C6: Deliberation	4	93	1	3.1

Note: $N = 72$. Number of cadets for decrease, increase, and staying the same were based on the reliable change index (i.e., change greater than 1.96 or less than -1.96 is considered a reliable change). The chi-square tests whether the observed distribution of changers and nonchangers would differ from the expected distribution if changes were random (e.g., 2.5% each decreases and increase and 95% remain the same). Significance levels indicated as: * $p < .05$, ** $p < .01$, and *** $p < .001$. 1) χ^2 (1, $N = 72$).

If we look at the result that is indicated by the facet A2, Straightforwardness, we see that there was a significant negative development—12% of the cadets increased their willingness to manipulate others through flattery, craftiness, or even by the use of deception. The RCI analyses also reveal a significant negative development of 8% on A3, Altruism. Although the leadership program contributed to a significant increase in Openness, 11%, this score was still lower than the average of the general population, $T = 50$.

A closer look at the facets reveals that the paired sample t -test and the RCI analyses differ on O4, Actions, and O5, Ideas, which are important components of adaptability (LePine, et al. 2000). The RCI indicates no development on O4, Actions, but a significant 10% increase on O5, Ideas. The NEO PI-R results reveal an important imbalance between Openness ($M = 47.91$, $SD = 8.82$) and Conscientiousness [$M = 52.57$, $SD = 8.71$, $t(73) = -3.518$, $p > .001$, $d = .82$]. This large difference shows that this cohort as a group preferred a leadership climate that was methodical and organized and that leadership development should be performed according to step-by-step instructions. As a group they also tended to have problems coping with situations that lacked any obviously right answer, indicating a possible lack of coping skills in environments characterized by rapid changes, novelty, and ambiguity, which is the climate of 4th GW. These results indicate that these cadets as a group did not have the necessary maturity level to cope with such challenges, that they were not able to play the interaction and isolation game. The RCI of the NEO PI-R results indicates a stable and consistent pattern concerning personality: If we look at the average figures over the five domains, we find that 90% of the cadets stayed the same throughout the leadership development program.

11.2.3 Cohort 2001: Team Analyses

Paired sample t -analyses were performed for each of the ten teams on the SPGR Humres. These results are presented in Table 11.9.

These indicate that only one team, Team 01AC, had a significant positive almost moderate development on the Synergy score from ($M = 6.64$, $SD = 1.38$) to [$M = 7.37$, $SD = 1.72$, $r = .34$, $t(48) = -2.852$, $p < .006$, $d = .47$] as a result of the RNoNA leadership development program. Four teams; Team 01BG, 01GG, 01JK, and 01ST, showed no development and thus no increase in Synergy or Energy. Team 01QL had a significant development on

Synergy, but it also had a significant increase on Withdrawal behavior, resulting in no development in available Energy for doing work. Four teams had a negative development; Team 01TU, 01PP, 01TV, and 01QK.

Table 11.9

Cohort 2001: SPGR Humres Results on the Team Level

Team	N	SYNERGY		CONTROL		NURTURE		OPPOSITION		DEPENDENCE		WITHDRAWAL		ENERGY	
		Pre M/SD	Post M/SD	Pre M/SD	Post M/SD	Pre M/SD	Post M/SD	Pre M/SD	Post M/SD	Pre M/SD	Post M/SD	Pre M/SD	Post M/SD	Pre M/SD	Post M/SD
01GG	6 (36)	6.10 (2.26)	5.97 (1.84)	3.35 (1.85)	3.57 (2.19)	5.00 (2.12)	4.19 (2.00)	1.50 (1.76)	1.50 (1.52)	5.47 (2.15)	5.00 (2.09)	1.03 (1.27)	1.03 (1.43)	5.06 (3.14)	4.94 (2.67)
01BG	7 (49)	6.43 (2.63)	6.84 (1.83)	3.24 (1.70)	4.34*** (1.95)	5.19 (1.97)	5.42 (1.98)	.85 (1.02)	1.49*** (1.56)	5.51 (2.32)	5.31 (2.27)	.97 (1.61)	1.03 (1.62)	5.46 (2.87)	5.81 (2.74)
01AC	7 (49)	6.64 (1.38)	7.37** (1.72)	2.78 (1.51)	3.26 (1.71)	5.57 (1.40)	5.86 (1.75)	.94 (.81)	1.13 (1.26)	6.07 (2.24)	5.44** (2.82)	.18 (.48)	.27 (1.11)	6.45 (1.55)	7.10 (2.36)
01QL	7 (49)	5.76 (1.98)	6.80** (1.40)	3.52 (1.71)	3.45 (1.90)	4.85 (1.85)	5.35 (1.58)	.80 (1.38)	1.33* (1.43)	6.18 (1.75)	5.67 (1.66)	.51 (1.03)	1.42*** (1.95)	5.26 (2.68)	5.37 (2.91)
01JK	7 (49)	5.72 (1.81)	5.51 (1.72)	2.55 (1.68)	3.38** (2.09)	4.78 (1.53)	4.43* (1.93)	.76 (1.04)	1.24*** (1.06)	5.47 (1.64)	4.20 (2.10)	1.01 (1.48)	1.06 (1.29)	4.71 (2.30)	4.46 (2.68)
01TV	8 (64)	7.05 (1.36)	6.51* (1.48)	3.48 (1.72)	3.36 (1.37)	5.73 (1.23)	5.77 (1.44)	1.07 (.93)	1.50* (1.37)	6.09 (1.65)	5.77 (1.55)	.63 (1.02)	.49 (.77)	6.41 (2.00)	6.01 (2.07)
01TU	7 (49)	6.66 (2.02)	6.61 (1.74)	4.43 (1.89)	3.72** (2.07)	5.10 (1.81)	5.24 (1.76)	2.14 (1.06)	2.30 (1.75)	5.70 (2.17)	4.49 (2.18)	.28 (.75)	.83** (1.19)	6.38 (2.27)	5.79 (2.61)
01QK	8 (64)	6.73 (2.34)	5.91*** (2.23)	3.17 (1.75)	3.87* (2.22)	5.43 (1.90)	4.84* (1.87)	.62 (.80)	1.88*** (1.65)	5.52 (1.76)	6.26** (2.00)	.58 (1.27)	.65 (1.10)	6.15 (3.36)	5.26** (2.90)
01TV	8 (64)	7.05 (1.36)	6.51* (1.48)	3.48 (1.72)	3.36 (1.37)	5.73 (1.23)	5.77 (1.44)	1.07 (.93)	1.50* (1.37)	6.09 (1.65)	5.77 (1.55)	.63 (1.02)	.49 (.77)	6.41 (2.00)	6.01 (2.07)
01ST	8 (64)	6.70 (2.04)	7.05 (1.46)	3.62 (1.82)	4.64** (2.52)	5.33 (1.48)	5.96* (1.96)	1.20 (1.47)	2.38*** (2.03)	5.63 (1.63)	5.80 (2.40)	1.55 (1.56)	1.41 (1.25)	5.15 (2.91)	5.64 (2.38)
01PP	8 (64)	6.21 (2.26)	6.30 (1.56)	3.11 (1.83)	4.19*** (1.97)	5.14 (2.02)	5.14 (1.99)	1.06 (1.19)	2.08*** (1.53)	5.29 (2.43)	5.75 (2.10)	.56 (.96)	1.21** (1.39)	5.64 (2.48)	5.08 (2.11)

Note: A paired sample *t*-test was conducted to evaluate the impact of the leadership development program on the cadets' SPGR Humres scores. Significant changes are indicated with: * $p < .05$, ** $p < .01$, and *** $p < .001$. *N* gives the number of ratings within each team. A team consists of 8 team members who rate themselves and each of the others, producing 64 ratings.

Figure 11.2 shows the field diagram for Team 01AC, with an overall positive development, and Team 01QK, which had a negative development.

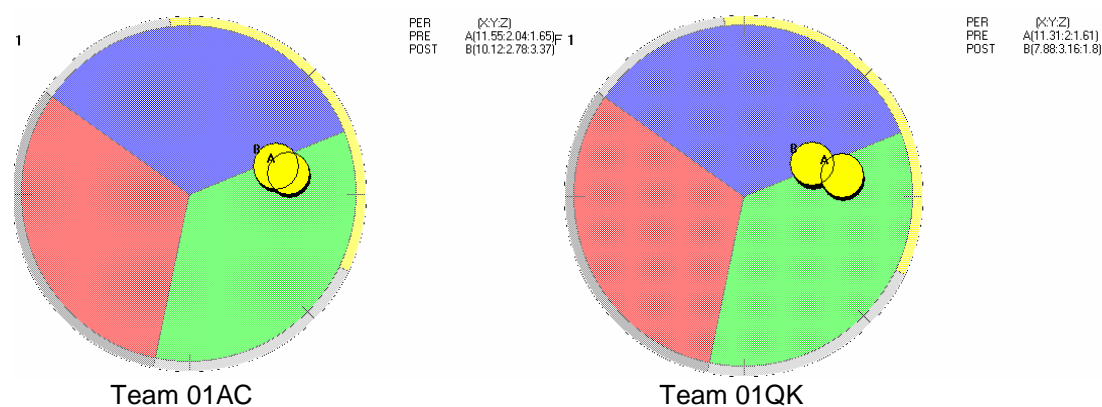


Figure 11.2 The Development of Team 01AC and Team 01QK

The difference on these two teams' Synergy scores was significant, although moderate. This was confirmed by an independent *t*-test. Team 01AC scored ($M = 7.37$, $SD = 1.72$) compared to Team 01QK [$M = 5.91$, $SD = 2.23$, $t(111) = 3.600$, $p < .001$, $d = .68$].

A thorough analysis of those teams that either had none or a negative development revealed an interesting pattern that could be illustrated with Team 01QL. This team had no significant development throughout the leadership development program. The field diagrams in Figure 12.3, shows that one cadet, Cadet F, dominated the team.

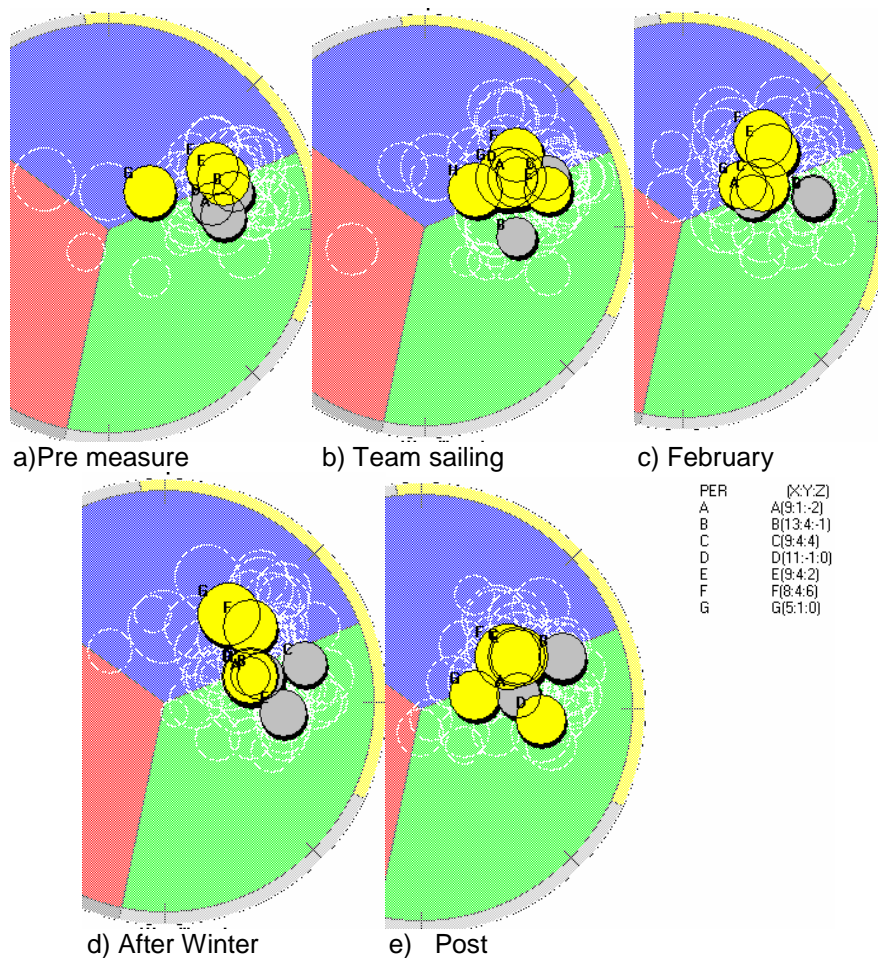


Figure 11.3 Team 01QL's SPGR Field Diagrams Throughout the Leadership Development Program

This cadet was the main contributor to the available Energy within the team ($M = 7.56$, $SD = .85$) compared with the team [$M = 5.01$, $SD = 2.97$, $t(47) = 4.543$, $p > .001$, $d = 1.33$]. The NEO PI-R results also revealed that this cadet scored high on the facet N2, Angry Hostility,

$T = 60$ with a $d = 1.23$, while the team scored 48.14 ($SD = 9.21$). At the same time, Cadet F was dominant and forceful, which was indicated by the E3, Assertiveness, score, $T = 64$ with a $d = 1.57$, and the team score was 51.57, $SD = 5.03$. This cadet's behavior contributed to hampering the team's performance and to the leadership development process within the team. One reason for this was a lack of maturity and the ability to "get along," which was indicated by Cadet F's low score on the Agreeableness domain, $T = 38$. Here the team's score is $T = 48.29$, $SD = 6.24$, $d = 1.35$. Such a personality profile, with a high influence on Social Interaction tends to create a climate that fosters selfish behavior, where cooperation is not a central part of the leadership development process, and the overall result as seen is no development within the team.

Figure 11.4 shows this cadet's 12-vector self-rating and peer ratings. This figure illustrates a lack of self-understanding, adjustment, and role-taking ability. This cadet lacked the necessary social capital to create a leadership climate, which, unfortunately, would be needed for either 3rd GW or 4th GW. At the same time this cadet was allowed to dominate this team throughout the entire leadership development program, and the RCI analyses on the SPGR 12-vector showed that the cadet's only change was in becoming significantly more assertive, according to other team-members. The RCI NEO PI-R showed a significant development on Conscientiousness ($T = 55$).

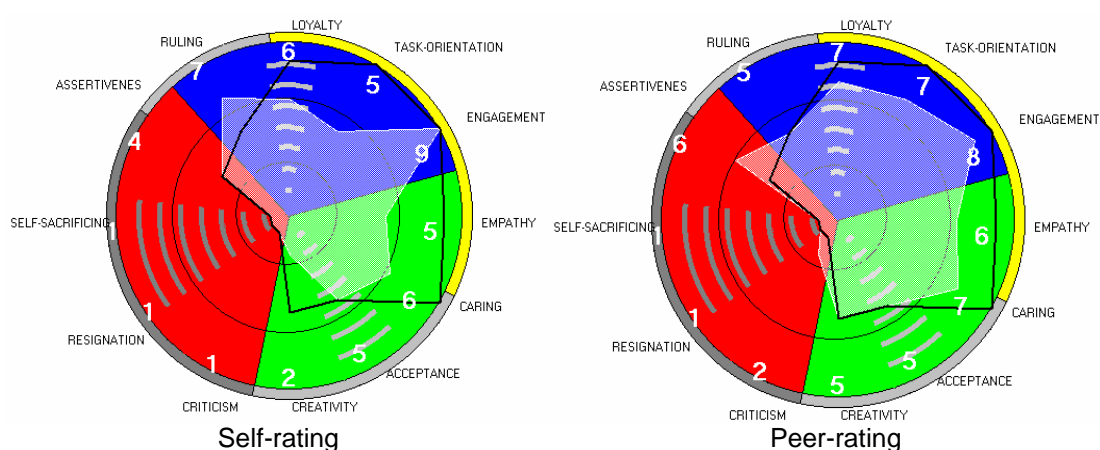


Figure 11.4 The SPGR 12-Vector Diagrams for the Dominant Cadet in Team 01QL

The SPGR and the NEO PI-R data indicate that this was not an isolated case: The SPGR analysis showed that there was at least one dominant cadet in eight out of the ten teams. The only exceptions were Teams 01BG and 01TV.

Even in Team 01AC, which had positive development, there were dominant cadets. In fact, this team had three dominant cadets who partly dominated the team throughout the year. Figure 11.5 illustrates the field diagram of this team at the post measure, after exercise “Telemakos.”

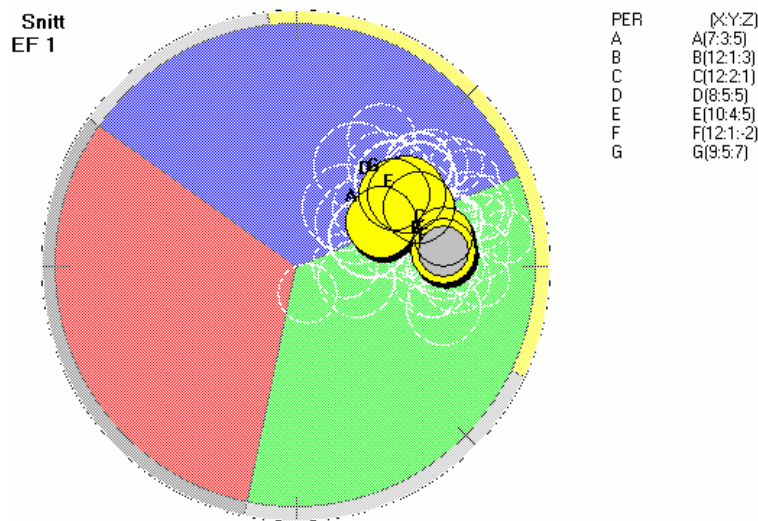


Figure 11.5 Team 01Ac's SPGR Field Diagram After Exercise “Telemakos”

The dominant cadets were A, D, and G. Even with these members, the team had a positive development because the team was not inhibited by these dominant cadets' behavior. The dominant cadets had a decrease in their Synergetic behavior from $M = 6.99$ to $M = 6.75$, while the remaining team members increased their synergetic behavior from $M = 6.36$ to $M = 7.83$. An analysis of the two groups after “Telemakos” comparing the dominant cadets' scores ($M = 6.75$, $SD = 1.81$) to the team-members' [$M = 7.83$, $SD = 1.51$, $t(47) = -2.280$, $p < .023$, $d = .67$] illustrates this positive development.

Team 01TV's field diagram and the team's average 12-vector diagram are shown in Figure 11.6. This team had no dominant cadets, but the 12-vector profile reveals that the teams' overall leadership behavior was limited and restricted. In particular, this team had a decrease in Synergy. A paired sample t -test of the SPGR 12-vector for this team revealed that this was

because of a moderate reduction in Empathy, showing interest in others, listening to and understanding their needs.

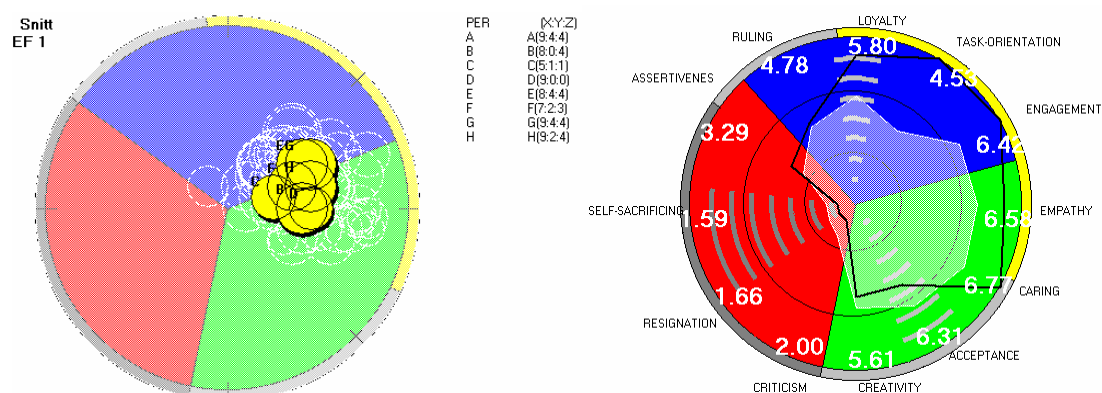


Figure 11.6 Team 01TV SPGR Field Diagram and Average Leadership Behavior

Empathy was reduced from ($M = 7.80$, $SD = 1.56$) to [$M = 6.58$, $SD = 1.91$, $r = .42$, $t(63) = 4.477$, $p < .001$, $d = .60$]. The RCI analyses revealed that five out of eight team-members had a significant negative development on Empathy. This was the largest change within the team. Another significant change was a decreased focus on Loyalty towards accomplishing tasks, which might seem like a paradox because the team's leadership behavior became more Task Oriented—efficient, analytical and rational. However, this, together with stronger focus on Assertiveness and Criticism, indicates an orientation mostly concerned with “getting ahead,” which explains this lack of leadership development and role-taking ability.

Those teams that showed a negative development seemed to follow the same pattern concerning social interaction: They all had a significant increase in Task Orientation, Criticism, Assertiveness, Resignation, and Self-sacrificing and also a decrease in Empathy. These teams were not able to establish the harmony and trust necessary to cope with an environment where they faced new challenges. Because the necessary climate for success was not established, the internal entropy, d_iS , increased due to the external demands created by the tasks given, d_eS . As a result, the teams' performances were inhibited.

The positive development in Energy reported on those teams that also had a negative development requires an explanation because it gives a misleading picture. The answer can be found by analyzing the third SPGR dimension, Influence versus Passivity. Prior research

has shown that one dominant person is enough to change the work environment and inhibit team performance (Barry & Stewart, 1997; Stewart & Barrick, 2004; Williams & Sternberg, 1988). According to SPGR theory, a large variance on the Influence versus Passivity dimension will make development harder, especially if the dominant cadet scores significantly higher on Energy than the remaining cadets of the team. Team 01ST, see Figure 11.7, which also illustrates how this social interaction might work.

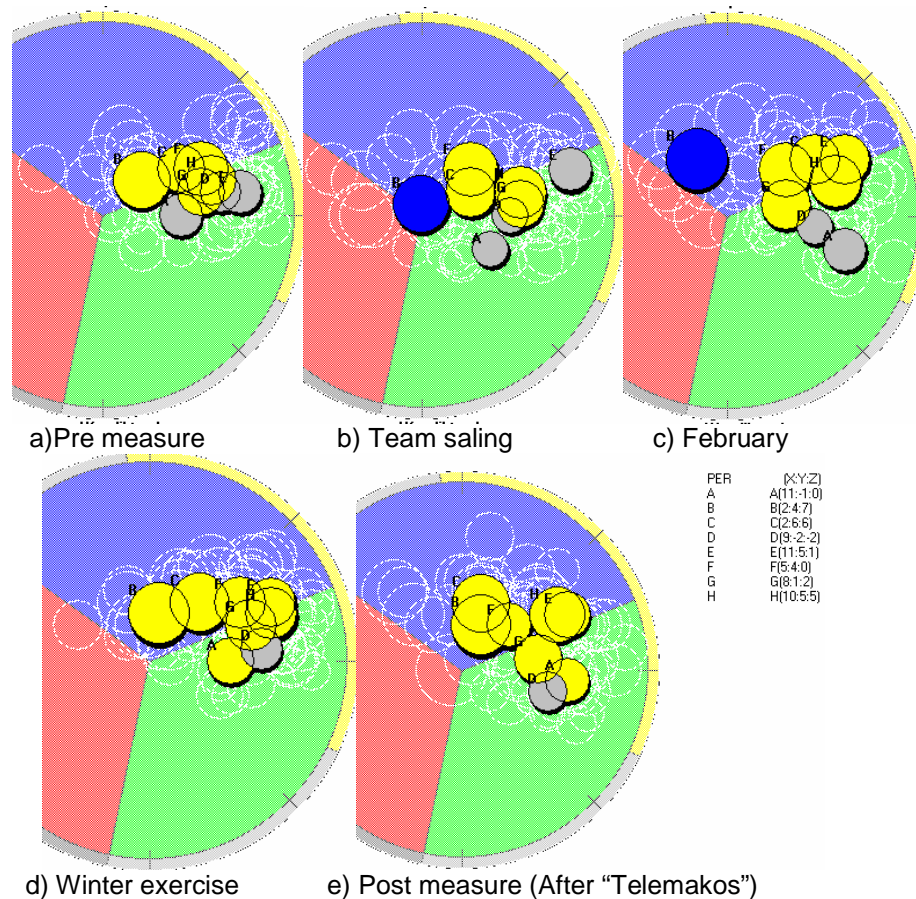


Figure 11.7 Team 01ST SPGR Field Diagram Throughout the Leadership Development Program

These field diagrams illustrate how the various team members acted as noncooperative centers of gravity throughout the leadership development program. This can be seen by studying the cadets' average positions in the field diagrams, together with the scatter. There is obviously no clear direction—no *Schwerpunkt*—for the development process. Throughout the year, this team was dominated by two cadets, B and C. Their scores on NEO PI-R showed that they were more emotionally unstable than the remaining team: Their

Neuroticism T - score was 54 ($SD = 2.83$) while the team score was 45.67 ($SD = 7.34$, $d = 1.50$) and the difference was especially large on N2, Angry Hostility ($M = 62.00$, $SD = 7.07$), compared with the team [$M = 45.33$, $SD = 7.82$, $t(6) = 4.064$, $p < .007$, $d = 3.32$]. Because of their low score on Agreeableness ($M = 36.50$, $SD = .71$) compared with the team [$M = 50.50$, $SD = 6.47$, $t(6) = 5.330$, $p < .003$, $d = 4.35$], they most likely expressed frustration and bitterness toward the team-members. This was probably done in a forceful, dominant, and almost abusive way as suggested by their high score on E3, Assertiveness ($M = 62.00$, $SD = 2.82$) compared with the team [$M = 50.67$, $SD = 7.19$, $p < .040$ ⁵¹, $d = 2.07$]. Based on this, one would not expect to see any development because there was no climate that would make such a complex endeavor possible.

11.2.4 Summary: Cohort 2001

The performed analysis indicates a lack of leadership development because the cadets and the RNoNA were not able to create a climate that would result in leadership development. The result was no significant improvement in insight, orientation, agility, and initiative. Instead, the cadets in their teams tended to coalesce into many noncooperative centers of gravity, each of which was trying, more or less successfully, to “get ahead,” or even “survive” on their own, individual terms. As previously mentioned, this cohort represented the RNoNA’s traditional approach to leadership development. When the post-SPGR results of Cohort 2001 were compared with the SPGR results of the pilot study performed on Cohort 2000, there was a striking similarity, see Figure 11.8. Cohort 2000 consisted of 68 cadets when they were finished with the leadership development program in June 2001. Independent t -test analyses were performed on both the self and others rating of the SPGR 12-vector to see if there were any differences. Two significant differences were found both on others rating: On Creativity, Cohort 2000 came out higher ($M = 5.36$, $SD = 1.54$) compared with Cohort 2001 [$M = 4.60$, $SD = 1.67$, $t(147) = 2.882$, $p < .005$, $d = .48$], and on Empathy, Cohort 2000 also came out higher ($M = 7.03$, $SD = 1.07$) compared with Cohort 2001 [$M = 6.67$, $SD = 1.00$, $t(147) = 2.152$, $p < .033$, $d = .35$]. The calculated ES indicates that these differences were small, and that the differences between these cohorts were minor.

⁵¹ The reported p level in this case is one-tailed because of the importance and strong impact of the UD dimension in SPGR.

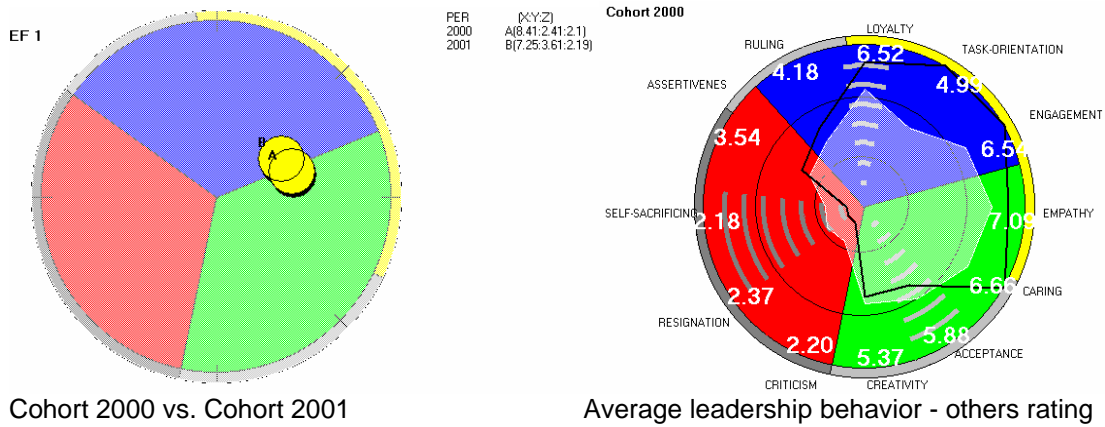


Figure 11.8 Cohort 2001 Compared with 2000 and Cohort 2000 Average Leadership Behavior

These results reinforce the conclusion that Cohort 2001 represents the RNoNA’s old approach to leadership development. As can be seen, both cohorts are at low maturity level, indicating that the general findings for Cohort 2001 also are valid for Cohort 2000.

11.3 Cohort 2002

Cohort 2002 was the first cohort which completed a large part of the leadership development program on board the bark Statsraad Lehmkuhl. This, as previously described, was a ten week long exercise where the intention was that the cohort should be able to take over the command of the vessel in the end of this period. This exercise was conducted in international waters, and Cohort 2002 sailed from Las Palmas in the Canary Islands to the U.S. via the Caribbean before returning to Bergen via Brest, France.

The cohort’s SPGR Humres pre- and post-results are presented in Table 11.10. These results indicate a significant increase in the cohort’s overall maturity level, a significant increase in Synergy, and a significant decrease of Withdrawal, resulting in a significantly higher level of Energy available for doing work. There was also a significant increase, as the result of the leadership development program, in the Control, Nurture, and Opposition functions. These increases, as can be seen in Table 11.11 indicate an increase in Caring, Creativity, and Assertiveness.

Table 11.10

Cohort 2002: Pre and Post Measures SPGR Humres - Others Rating

SPGR function	Pre measure	Post Measure	<i>r</i>	<i>t</i> (76)	<i>Sig.</i>	<i>d</i>
	<i>M/SD</i>	<i>M/SD</i>				
Synergy	6.56 (1.20)	7.23 (.96)	.60	-5.877	.001	.31
Control	2.98 (1.26)	3.66 (1.34)	.65	-5.475	.001	.28
Nurture	4.68 (1.01)	5.66 (1.15)	.58	-8.649	.001	.50
Opposition	1.71 (.81)	1.92 (.84)	.52	-2.318	.023	.07
Dependence	6.17 (1.00)	6.19 (1.01)	.67	-.198	.844	
Withdrawal	1.02 (.92)	.76 (.94)	.69	3.112	.003	.11
Energy	5.55 (1.92)	6.47 (1.73)	.71	-5.748	.001	.30

They also indicate that the cadets as a group have increased their ability to play the interaction and isolation game as the result of RNoNA leadership development program. However, they are still at a low maturity level, Team Spirit. This is indicated by the imbalance between the Control and Nurture functions: the Control function was ($M = 3.66$, $SD = 1.34$) compared with the Nurture function [$M = 5.66$, $SD = 1.15$, $t(76) = 9.409$, $p < .001$, $d = 2.16$], while the Dependence function was high. This indicates that the Nurture and Dependence functions dominated and inhibited the cohort. This development is illustrated in Figure 12.9, which shows the field diagram, together with the average 12-vector peer rating at the end of the leadership development program.

Table 11.11 gives an overview of the cohort's 12-vector development. The calculated Cohen's d , indicates that the leadership development program had a moderate effect, which is considered to be good within the social sciences (Bausell & Li, 2002). This result is consistent with the RCI analysis for the SPGR 12-vector presented in Table 11.12, which also indicates a positive development. All "increasers" and "decreasers" seemed to be going in the "right" directions except for the 10% decrease on Loyalty.

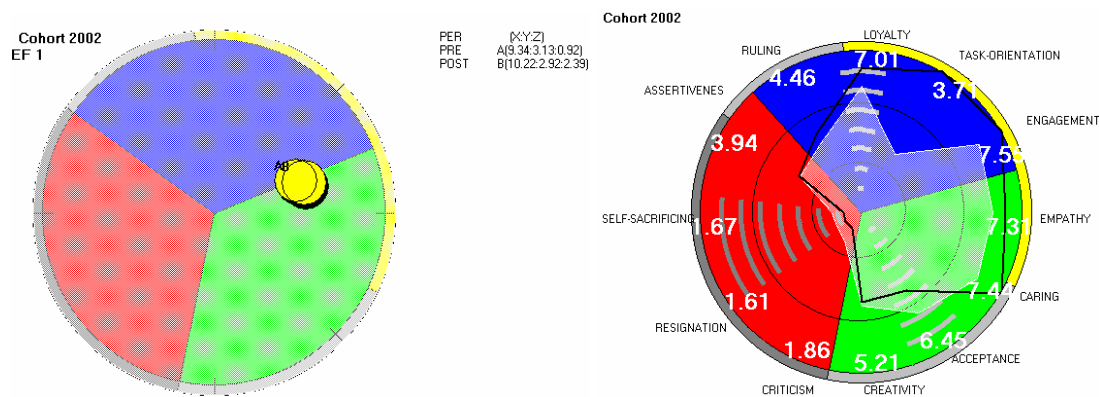


Figure 11.9 The Development of Cohort 2002 Illustrated in the SPGR Field Diagram and the Cohort's Average Leadership Behavior - Others Rating

It is especially worth noting that Acceptance, loyalty towards each other as team members, increased and became closer to Loyalty.

Table 11.11

Cohort 2002: SPGR 12-Vector Pre and Post Measures - Others Rating

SPGR Vectors	Pre Measure M/SD	Post Measure M/SD	<i>r</i>	<i>t</i> (76)	<i>Sig.</i>	<i>d</i>
S2: Empathy	6.86 (1.12)	7.31 (1.13)	.55	-3.720	.001	.40
N1: Caring	6.69 (1.36)	7.44 (1.15)	.52	-5.266	.001	.59
D2: Acceptance	5.80 (1.11)	6.45 (1.00)	.64	-6.350	.001	.61
N2: Creativity	4.35 (1.53)	5.21 (1.53)	.66	-5.988	.001	.56
O1: Criticism	1.74 (.91)	1.86 (.93)	.44	-1.011	.315	
W1: Resignation	1.93 (.75)	1.61 (.77)	.53	3.811	.001	.42
W2: Self-sacrificing	1.70 (.78)	1.67 (.95)	.64	.364	.717	
O2: Assertiveness	2.92 (1.29)	3.94 (1.49)	.70	-3.471	.001	.31
C2: Ruling	3.81 (1.32)	4.46 (1.45)	.65	-4.293	.001	.41
D1: Loyalty	7.29 (.84)	7.01 (1.07)	.49	2.458	.016	.28
C1: Task orientation	3.11 (1.52)	3.71 (1.44)	.66	-4.367	.001	.41
S1: Engagement	7.00 (1.28)	7.55 (1.09)	.56	-4.264	.001	.46

The 9% of the cadets who increased their submissive and trustful behavior moved from $M = 4.34$ ($SD = 1.53$) to $M = 6.82$ ($SD = 1.15$). This might indicate that they as a group prioritized their internal harmony ahead of achieving their given missions. Their low Task oriented behavior might have further contributed to this, indicating the inward focus common at the lower levels of maturity. Table 11.13 and Table 11.14 represent the pre-post measure of the SPGR 12-vector self-ratings. The most significant developments according to these results are that 30% of the cadets became more Caring, 24% became more Empathic, 23% became more Creative, and 13% reduced their Resignation. When the self-rating is compared with their “reputation,” a difference in perception and orientation becomes apparent. On Engagement, Task Orientation, and Assertiveness the cadets, according to themselves, were not able to perceive how they influenced their team members and how they changed their behavior. The same is true for Empathy, Caring, and Creativity, all active behaviors. This indicates that they as leaders were not as able as they ought to be to perceive how their leadership behavior impacted on their team, a mismatch between the real effect and the wanted effect. This indicates a lack of strategic awareness of applied leadership behavior, an issue that will be discussed further in chapter 13.

Table 11.12

Cohort 2002: Individual-Level Change for the SPGR 23-vector - Others Rating

SPGR Vectors	Decrease (%)	Stayed the same (%)	Increase (%)	χ^2 (2, $N = 77$)
S2: Empathy	1	90	9	14.1**
N1: Caring	1	81	18	77.9***
D2: Acceptance	0	91	9	18.5***1
N2: Creativity	1	79	20	91.3***
O1: Criticism	8	86	6	14.3**
W1: Resignation	10	87	3	19.7***
W2: Self-sacrificing	6	90	4	5.7
O2: Assertiveness	1	88	11	20.0***
C2: Ruling	0	81	19	88.2***1
D1: Loyalty	10	87	3	19.7***
C1: Task orientation	0	87	13	33.5***1
S1: Engagement	1	82	17	65.6***

Note. $N=77$. Number of cadets for decrease, increase, and staying the same were based on the reliable change index (i.e., change greater than 1.96 or less than -1.96 is considered a reliable change). The chi-square tests whether the observed distribution of changers and nonchangers would differ from the expected distribution if changes were random (e.g., 2.5% each decreases and increase and 95% remain the same). Significance levels indicated as: * $p < .05$, ** $p < .01$, and *** $p < .001$. 1) χ^2 (1, $N = 77$).

Table 11.13

Cohort 2002: SPGR 12-Vector Pre and Post Measures - Self Rating

SPGR Vectors	Pre Measure	Post Measure	<i>r</i>	<i>t</i> (76)	<i>Sig.</i>	<i>d</i>
	<i>M/SD</i>	<i>M/SD</i>				
S2: Empathy	6.52 (1.92)	7.71 (1.79)	.43	-4.514	.001	.55
N1: Caring	6.62 (1.86)	8.17 (1.43)	.33	-6.040	.001	.80
D2: Acceptance	6.25 (2.07)	6.55 (2.14)	.40	-1.139	.258	
N2: Creativity	4.27 (2.30)	5.43 (2.27)	.42	-4.186	.001	.51
O1: Criticism	1.78 (1.29)	1.60 (1.23)	.12	.952	.344	
W1: Resignation	2.16 (1.34)	1.55 (1.14)	.51	4.330	.001	.49
W2: Self-sacrificing	1.95 (1.50)	1.44 (.98)	.29	2.894	.001	.39
O2: Assertiveness	4.47 (1.88)	4.62 (1.84)	.42	-.681	.498	
C2: Ruling	4.82 (1.82)	4.64 (1.87)	.33	.746	.458	
D1: Loyalty	7.42 (1.81)	7.00 (1.99)	.55	2.008	.258	.22
C1: Task orientation	4.36 (2.06)	4.22 (2.08)	.43	.564	.574	
S1: Engagement	7.34 (1.56)	8.14 (1.36)	.34	-4.171	.001	.55

Table 11.14

Cohort 2002: Individual-Level Change for the SPGR 12-Vector - Self Rating

SPGR Vectors	Decrease (%)	Stayed the same (%)	Increase (%)	χ^2 (2, <i>N</i> = 77)
S2: Empathy	4	73	24	138.9***
N1: Caring	3	67	30	236.8***
D2: Acceptance	6	86	8	14.4**
N2: Creativity	5	72	23	141.0***
O1: Criticism	4	96	0	.5 ¹
W1: Resignation	13	86	1	35.0***
W2: Self-sacrificing	4	96	0	.5 ¹
O2: Assertiveness	3	96	1	.5
C2: Ruling	4	93	3	.6
D1: Loyalty	6	86	8	14.2**
C1: Task orientation	0	99	1	.5 ¹
S1: Engagement	0	92	8	8.4**1

Note. *N* = 77. Number of cadets for decrease, increase, and staying the same were based on the reliable change index (i.e., change greater than 1.96 or less than -1.96 is considered a reliable change). The chi-square tests whether the observed distribution of changers and nonchangers would differ from the expected distribution if changes were random (e.g., 2.5% each decreases and increase and 95% remain the same). Significance levels indicated as: **p* < .05, ***p* < .01, and ****p* < .001.1) χ^2 (1, *N* = 77).

11.3.1 The NEO PI-R Results of Cohort 2002

The paired sample *t*-test of the NEO PI-R results presented in Table 12.15 indicates that this cohort had positive development on Neuroticism, Extraversion, Openness, and Conscientiousness. Cohen's *d* indicated a low to moderate change on these domains. The RCI performed and the results of the individual level change presented in Table 11.16 give a somewhat different and more modest picture of the development that took place. For example, 22% of the showed a significant decrease in their overall Neuroticism score, from $T = 49.41$ ($SD = 9.20$) to $T = 40.00$ ($SD = 8.90$), which is a positive development. 24% of the cadets became more Open, from $T = 45.61$ ($SD = 7.72$) to $T = 58.11$ ($SD = 7.59$); 12% became more Agreeable, from $T = 39.11$ ($SD = 5.95$) to $T = 50.00$ ($SD = 7.01$); and 8% increased on Conscientiousness, from $T = 56.17$ ($SD = 5.85$) to $T = 66.83$ ($SD = 5.42$).

The cohort as a group seemed to be more emotionally stable than the population in general, which indicated that they as a group seemed to have the necessary stability to operate in a dangerous and stressful environment. The analyses also reveal that they became more dominant and forceful—12% of the cadets had significant changes on E3, Assertiveness, which was also indicated by an increase in the Z-dimension in the SPGR results.

Their Conscientiousness score as a group is high (> 55), which is considered to be good because this trait seems to be a solid predictor of leadership emergence and effectiveness (Judge, et al. 2002; Hogan & Holland, 2003). What might cause a problem for this cohort is their relatively lower Openness score, which was below average (< 50). LePine, et al. (2000) found that adaptability seems to be a function of Conscientiousness and Openness, especially when dealing with situations characterized by sudden changes, novelty, and ambiguity. This might indicate that this cohort would have a problem with adaptability, because their Openness score ($M = 48.49$, $SD = 11.34$) was low compared with their Conscientiousness score [$M = 56.25$, $SD = 9.18$, $t(76) = -4.921$, $p < .001$, $d = 1.13$]. This, according to the ES statistics, indicates a large imbalance, which most likely will result in a lack of adaptability and a locked orientation resulting in faulty decisions. Le Pine et al., (2000) also found that “adaptability was hindered by the tendency to be orderly, methodological, and deliberate” (p. 590), which are the C2, Order, C3, Dutifulness, and C6, Deliberation, facets, the dependability facets of the Conscientiousness domain.

Table 11.15

Cohort 2002: The NEO PI-R Pre and Post Measures

DOMAINS AND FACETS	α Pre measure	Pre measure <i>M/SD</i>	α Pre measure	Post measure <i>M/SD</i>	<i>r</i>	<i>t</i> (76)	<i>Sig.</i>	<i>d</i>
N: NEUROTICISM	.92	45.16 (8.40)	.92	41.92 (7.90)	.84	6.036	.001	.39
N1: Anxiety	.79	44.69 (8.50)	.77	40.81 (7.40)	.69	5.340	.001	.48
N2: Angry Hostility	.69	46.17 (7.65)	.69	43.65 (7.25)	.75	4.175	.001	.34
N3: Depression	.80	43.45 (7.53)	.77	40.86 (6.87)	.76	4.551	.001	.36
N4: Self-Consciousness	.68	46.32 (7.96)	.63	43.64 (7.31)	.68	3.861	.001	.35
N5: Impulsiveness	.75	47.03 (10.95)	.80	46.91 (10.94)	.84	.167	.868	
N6: Vulnerability	.74	48.34 (7.31)	.74	46.25 (6.92)	.70	3.353	.001	.30
E: EXTRAVERSION	.92	53.38 (8.08)	.90	55.29 (7.76)	.83	-3.644	.001	.24
E1: Warmth	.77	49.65 (8.97)	.78	51.22 (7.36)	.64	-1.943	.056	
E2: Gregariousness	.78	52.21 (8.07)	.66	53.22 (7.38)	.73	-1.547	.126	
E3: Assertiveness	.84	54.03 (9.37)	.85	56.94 (9.20)	.83	-4.673	.001	.31
E4: Activity	.40	52.39 (6.65)	.64	53.42 (7.67)	.73	-1.684	.096	
E5: Excitement Seeking	.60	55.74 (7.56)	.60	55.14 (7.31)	.78	1.053	.296	
E6: Positive Emotions	.81	53.61 (9.26)	.78	55.52 (8.41)	.74	-2.631	.010	.22
O: OPENNESS	.90	45.27 (10.20)	.93	48.49 (9.29)	.83	-4.402	.001	.29
O1: Fantasy	.80	43.66 (9.97)	.87	44.32 (11.10)	.71	-.719	.474	
O2: Aesthetics	.85	45.65 (11.07)	.88	48.19 (11.04)	.83	-3.496	.001	.23
O3: Feelings	.85	46.70 (11.17)	.82	49.35 (11.38)	.68	-2.584	.012	.24
O4: Actions	.63	50.12 (9.29)	.68	53.34 (9.39)	.72	-4.007	.001	.34
O5: Ideas	.84	47.99 (11.18)	.85	50.52 (11.31)	.83	-3.417	.001	.23
O6: Values	.58	48.44 (8.78)	.43	50.23 (7.49)	.62	-2.200	.031	.22
A: AGREEABLENESS	.88	49.23 (9.29)	.86	50.16 (8.61)	.78	-1.356	.179	
A1: Trust	.85	52.06 (9.66)	.85	53.81 (9.51)	.75	-2.268	.026	.18
A2: Straightforwardness	.64	50.35 (9.06)	.68	51.13 (8.13)	.63	-.919	.361	
A3: Altruism	.66	51.14 (9.12)	.72	53.26 (9.62)	.64	-2.323	.023	.22
A4: Compliance	.64	45.91 (9.76)	.50	47.30 (7.89)	.64	-1.598	.114	
A5: Modesty	.67	48.62 (8.60)	.59	47.38 (7.66)	.65	1.603	.113	
A6: Tender-Mindedness	.46	47.91 (7.54)	.58	47.49 (7.89)	.63	.548	.585	
C: CONSCIENTIOUSNESS	.92	53.95 (9.77)	.92	56.25 (9.18)	.90	-4.686	.001	.22
C1: Competence	.64	54.04 (7.50)	.63	58.16 (8.03)	.79	-7.081	.001	.52
C2: Order	.66	54.00 (8.68)	.68	53.36 (8.26)	.77	.966	.337	
C3: Dutifulness	.67	54.09 (9.22)	.66	54.42 (8.47)	.82	-.535	.595	
C4: Achievement Striving	.77	53.69 (9.18)	.81	56.05 (9.08)	.83	-3.905	.001	.26
C5: Self-Discipline	.82	52.60 (9.71)	.80	55.22 (8.30)	.76	-3.597	.001	.28
C6: Deliberation	.73	51.48 (9.91)	.64	52.86 (9.13)	.81	-2.041	.045	.14

Table 11.16

Cohort 2002: Individual-Level Change in NEO PI-R Domains and Facets

Domains and facets	Decreased (%)	Stayed the same (%)	Increased (%)	χ^2 (2, $N=77$)
N: NEUROTICISM	22	77	1	121.2***
N1: Anxiety	13	87	0	33.5***1
N2: Angry Hostility	5	94	1	2.7
N3: Depression	8	92	0	8.4**1
N4: Self-Consciousness	4	96	0	.5 ¹
N5: Impulsiveness	0	99	1	.5 ¹
N6: Vulnerability	7	92	1	5.4
E: EXTRAVERSION	3	91	6	5.1
E1: Warmth	4	91	5	3.0
E2: Gregariousness	0	96	4	.5 ¹
E3: Assertiveness	1	87	12	30.0***
E4: Activity	0	97	3	0 ¹
E5: Excitement Seeking	0	99	1	.5 ¹
E6: Positive Emotions	3	93	4	.6 ¹
O: OPENNESS	1	75	24	137.8***
O1: Fantasy	12	73	15	82.8***
O2: Aesthetics	0	90	10	18.9***1
O3: Feelings	1	83	16	54.3***
O4: Actions	1	93	6	5.4
O5: Ideas	1	93	6	5.4
O6: Values	0	99	1	.5 ¹
A: AGREEABLENESS	2	86	12	26.7***
A1: Trust	3	88	9	13.7***
A2: Straightforwardness	1	92	7	5.4
A3: Altruism	0	91	9	13.1***1
A4: Compliance	0	97	3	0 ¹
A5: Modesty	4	96	0	.5 ¹
A6: Tender-Mindness	3	94	3	.0
C: CONSCIENTIOUSNESS	1	91	8	9.2**
C1: Competence	0	97	3	0 ¹
C2: Order	3	96	1	.5
C3: Dutifulness	0	99	1	.5 ¹
C4: Achievement Striving	0	96	4	.5 ¹
C5: Self-Discipline	0	92	8	8.4**1
C6: Deliberation	0	96	4	.5 ¹

Note. $N = 77$. Number of cadets for decrease, increase, and staying the same were based on the reliable change index (i.e., change greater than 1.96 or less than -1.96 is considered a reliable change). The chi-square tests whether the observed distribution of changers and nonchangers would differ from the expected distribution if changes were random (e.g., 2.5% each decreases and increase and 95% remain the same). Significance levels indicated as: * $p < .05$, ** $p < .01$, and *** $p < .001$. 1) χ^2 (1, $N = 77$).

All facets of the Openness domain had influences that were either significant or approaching significance, where O3, Feelings, O4, Actions, and O5, Ideas were the most important. A 16% significant increase on the O3 Feeling facet from $T = 39.33$ ($SD = 9.39$) to $T = 56.20$ ($SD = 11.38$) was a positive development. However, because 75% of the cadets' T -scores were below 50, this might represent a potential challenge for these officers in 3rd and 4th GW environments, especially in light of the findings of LePine et al. (2000).

11.3.2 Cohort 2002: Team Analyses

Because leadership development is based on the development of each team, an in-depth analysis of each team and the social interaction within each team was performed by conducting a paired sample t -test for each team's Humres results, which are presented in Table 11.17.

Table 11.17

Cohort 2002: SPGR Humres Results on the Team Level

Team	N	SYNERGY		CONTROL		NURTURE		OPPOSITION		DEPENDENCE		WITHDRAWAL		ENERGY	
		Pre M/ <i>SD</i>	Post M/ <i>SD</i>	Pre M/ <i>SD</i>	Post M/ <i>SD</i>	Pre M/ <i>SD</i>	Post M/ <i>SD</i>	Pre M/ <i>SD</i>	Post M/ <i>SD</i>	Pre M/ <i>SD</i>	Post M/ <i>SD</i>	Pre M/ <i>SD</i>	Post M/ <i>SD</i>	Pre M/ <i>SD</i>	Post M/ <i>SD</i>
02AS	8 (64)	6.86 (1.72)	7.05 (1.91)	3.73 (2.03)	3.76 (2.08)	4.99 (1.52)	5.63* (1.83)	1.23 (1.89)	.79* (1.50)	6.66 (1.62)	5.96 (2.22)	1.23 (1.89)	.79** (1.50)	5.63 (3.28)	6.26* (3.09)
02MN	7 (49)	6.59 (1.59)	7.17* (1.67)	3.19 (1.71)	3.91* (1.95)	4.48 (1.93)	5.12* (2.02)	1.24 (1.03)	1.86** (1.16)	6.02 (2.48)	5.58 (2.53)	.39 (.75)	.80 (.80)	.620 (2.07)	6.82 (1.69)
02KK	8 (64)	6.65 (1.60)	7.16* (1.60)	3.27 (1.88)	3.94** (1.89)	4.47 (1.54)	5.31*** (1.37)	1.48 (1.36)	.82** (1.13)	6.19 (1.71)	6.17 (1.94)	1.48 (1.36)	.81*** (1.13)	5.17 (2.36)	6.35*** (2.13)
02BN	8 (64)	6.37 (2.10)	7.28** (1.91)	3.38 (1.78)	3.82 (1.71)	5.26 (1.79)	5.96* (2.05)	1.23 (1.67)	.81 (1.92)	5.15 (2.75)	4.57 (2.81)	1.23 (1.67)	.81 (1.92)	5.13 (3.16)	6.47** (3.57)
02LT	8 64	7.28 (1.44)	8.44*** (.80)	2.25 (1.27)	3.38*** (1.59)	4.98 (1.50)	6.88*** (1.24)	1.69 (.90)	1.74 (.84)	7.05 (1.42)	7.45 (1.58)	.56 (.80)	.56 (.78)	6.72 (1.66)	7.87*** (1.06)
02BV	8 (64)	6.22 (1.71)	7.38*** (1.64)	3.31 (1.91)	3.68 (1.89)	3.78 (1.62)	5.56*** (1.97)	1.37 (1.01)	1.44 (.72)	5.22 (1.85)	5.94** (1.84)	.98 (1.01)	.35** (.72)	5.23 (2.22)	7.03*** (1.90)
02XY	7 (49)	7.00 (1.85)	7.28 (1.44)	3.22 (2.04)	3.91* (2.26)	4.96 (2.01)	5.67* (1.93)	1.98 (2.04)	1.89 (1.61)	6.73 (1.55)	6.84 (1.76)	.92 (1.21)	1.15 (1.18)	6.08 (2.45)	6.13 (2.13)
02UA	8 64	7.02 (1.60)	7.28 (1.60)	3.11 (2.19)	4.17*** (1.81)	5.08 (1.79)	6.19*** (1.54)	1.37 (1.57)	1.48 (1.49)	6.93 (1.74)	6.93 (1.88)	1.37 (1.57)	1.48 (1.49)	5.64 (2.59)	5.80 (2.51)
02LA	7 (49)	5.79 (1.70)	7.10*** (1.13)	3.01 (2.17)	3.33 (1.73)	4.00 (1.64)	5.42*** (1.70)	1.17 (1.85)	.55 (.86)	6.18 (1.90)	6.06 (1.95)	1.17 (1.85)	.55* (.86)	4.62 (2.97)	6.55*** (1.52)
02LK	8 (64)	6.27 (2.18)	7.07** (1.67)	3.04 (1.62)	3.02 (1.93)	4.73 (1.83)	5.80** (2.22)	1.83 (1.28)	1.83 (1.55)	6.21 (1.72)	6.93** (1.89)	1.16 (1.42)	.69* (1.32)	5.12 (3.14)	6.38*** (2.76)

Note: A paired sample t -test was conducted to evaluate the impact of the leadership development program on the cadets' SPGR Humres scores. Significant changes are indicated with: * $p < .05$, ** $p < .01$, and *** $p < .001$. N gives the number of ratings within each team. A team consists of 8 team members who rate themselves and each of the others, producing 64 ratings.

These results indicate that eight out of the ten teams had a significantly positive development, and only two teams, 02XY and 02UA, showed no development. A closer look at the pre-Energy scores for Teams 02XY and 02UA indicates overall high scores, $M = 6.08$,

and $M = 5.64$; only Team 02LT had a higher score. However, the post score reveals that Team 02UA scored lowest with $M=5.80$ and Team 02XY the second lowest with $M = 6.13$ indicating that these two teams had no significant development. The in-depth analyses of the SPGR 12-vector results indicated that Team 02XY had a significant development on Ruling behavior, from ($M = 3.78, SD = 2.14$) to [$M = 4.84, SD = 2.48, r = .48, t(48) = -3.116, p < .003, d = .62$]. This implies a stronger focus on controlling, autocratic behavior where the main focus is on attention to rules and procedures. Because the Ruling behavior ($M = 3.65, SD = 2.29$) was stronger than Task-orientation [$M = 4.84, SD = 2.48, t(48) = -4.239, p < .001, d = 1.22$], this hampered efficient, rational, and analytical behavior and instead resulted in controlling and pedantic behavior. The team's different field diagrams throughout the year showed that one cadet, Cadet G, had an overly influential and dominant position within the team, as can be seen from Figure 11.10.

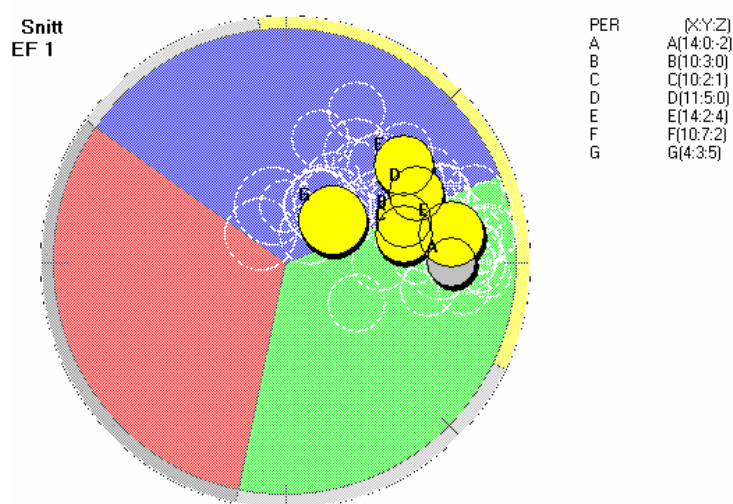


Figure 11.10 Team 02XY Post Field Diagram

An independent t -test revealed that the dominant cadet scored significantly higher on Ruling ($M = 7.71, SD = 2.55$) compared with the team-members [$M = 4.36, SD = 2.27, t(47) = 2.979, p < .001, d = .86$] and on Criticism ($M = 4.71, SD = .49$) compared with the team [$M = 1.36, SD = .91, t(47) = 9.520, p < .001, d = 2.78$]. Cadet G also scored lower on Empathy ($M = 6.14, SD = 1.95$) compared with the team [$M = 7.64, SD = 1.81, t(47) = -2.014, p < .050, d = .59$]. An examination of Cadet G's personality, measured with the NEO PI-R, indicated that this cadet was focused on "getting ahead," with a T -score on Agreeableness of

42, which indicates a tendency to be egocentric, skeptical of others' intentions and to be competitive rather than cooperative (Costa & McCrae, 1992). The team's average score was $T = 53$ ($SD = 7.4$), and the difference between Cadet G and the team members was large, $d = 1.25$.

This situation was made worse because of Cadet G's high N2, Angry Hostility, $T = 62$, while the average for the team was 39.67 ($SD = 5.32$, $d = 2.79$). The low Agreeableness score suggests that Cadet G tended to express anger towards the other team members, behavior made more likely because of that cadet's high N6, Impulsiveness, $T = 66$, the team average was 48.17 ($SD = 8.47$, $d = 1.92$), and by the cadet's low C6, Deliberation, $T = 35$, the team average was 55.67 ($SD = 13.55$, $d = 1.74$), and high E3, Assertiveness, $T = 66$, while the team average was 53 ($SD = 8.83$, $d = 1.38$). This paints a picture of a dominant, forceful cadet who was not able to control cravings and urges, who was hasty, and who often spoke or acted without considering the consequences.

Cadet G created a climate that became focused on critical, opposing, controlling, and autocratic behavior and one not able to show empathy and interest in others. This is not a climate that is supportive of leadership development. The team's field diagram further showed that one cadet, Cadet A, had a negative influence score on the Z-dimension of -2 . This indicates a submissive leadership behavior with no initiative. This cadet showed this behavior throughout the year: -4 , -1 , -2 , -2 and -2 , indicating a lack of development. Cadet A's personality indicated a person who is closed, the Openness domain T score was 38 , suggesting a conventional and conservative outlook with little curiosity about either the inner or outer worlds (Costa & McCrae, 1992). Compared with the team, the difference, $d = .78$, is close to large ($M = 48.67$, $SD = 16.55$). This cadet also scored low on Conscientiousness, $T = 42$, indicating a lack of the purposeful, strong-willed, and determined behavior that is necessary to develop as a leader. Here the difference was large, $d = 1.60$ ($M = 60$, $SD = 12.35$), indicating a need for (a) special incentives to learning and development, (b) help in organizing own work, (c) reminders to keep on schedule, and (d) problems maintaining attention (Costa & McCrae, 1998). These are certainly not qualities desired in an officer in the 21st century. It proved impossible to create a positive climate for leadership development in this team, most likely because of the dominant cadet's behavior. This resulted in a team operating at a low maturity level, showing a lack of adjustment and role-taking ability, and thus producing no leadership development.

Figure 11.11 shows the 12-vector profile of the dominant cadet, Cadet G, from both self rating and peers' ratings. This illustrates a behavior that is concerned with “getting ahead,” and, as the analysis showed, this cadet lacked the resources needed to contribute to a climate that could have made interaction and development possible.

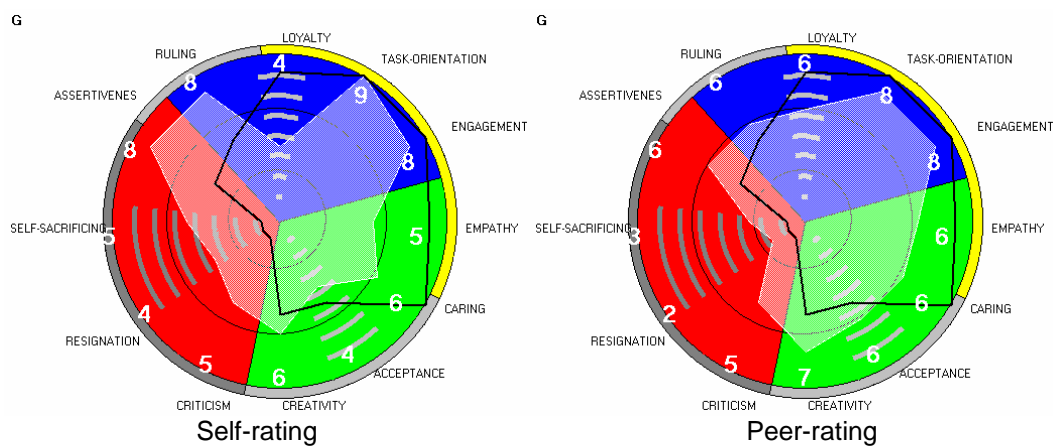


Figure 11.11 Cadet G in Team 02XY SPGR 12-Vector Profiles

Figure 11.12 shows the similar 12-vector profile for the submissive cadet, Cadet A. These two profiles, self rating and peer rating, were nearly identical. Here the situation is the opposite of the dominant cadet's. This is a cadet who will not take any initiative—the Z-dimension was -2—and who lacked the ability to take on and perform those roles that are concerned with the control function, Ruling and Task oriented behavior, which this cadet sorely needed. As can be seen from Figure 11.11, however, this role was occupied by the dominant cadet.

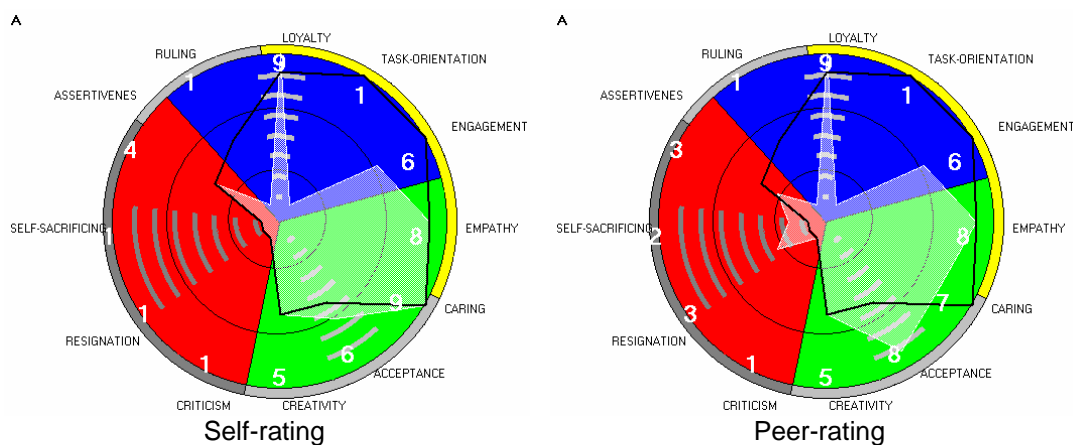


Figure 11.12 Cadet A in Team 02XY SPGR 12-Vector Profiles

From a leadership development perspective, it is worth noting that this pattern was established early in the leadership program. This can be seen by studying Figure 11.13 that shows the team's field diagram half way into the leadership development program. Unfortunately, these issues were not resolved, and as a result, this team did not mature, and no real leadership development took place.

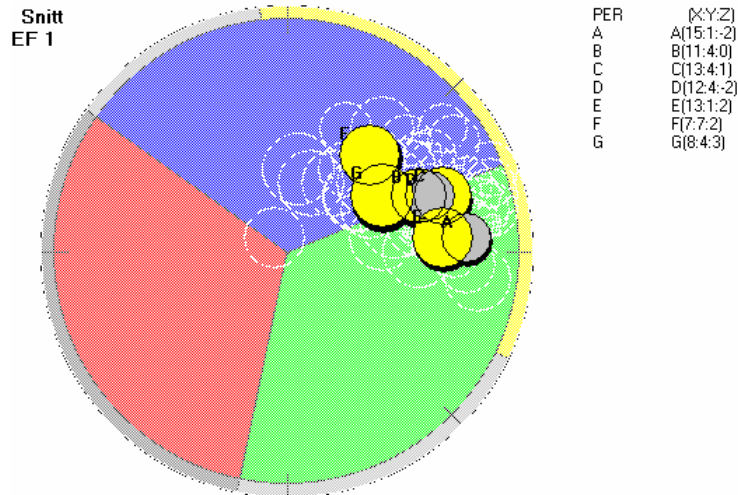


Figure 11.13 Team 02XY SPGR Field Diagram Half Way Through the Leadership Development Program

Team 02UA, which also had no development, showed a similar pattern, although it may not be that obvious. Here, two cadets had a dominating and influential role within in the team, Cadets C and D.

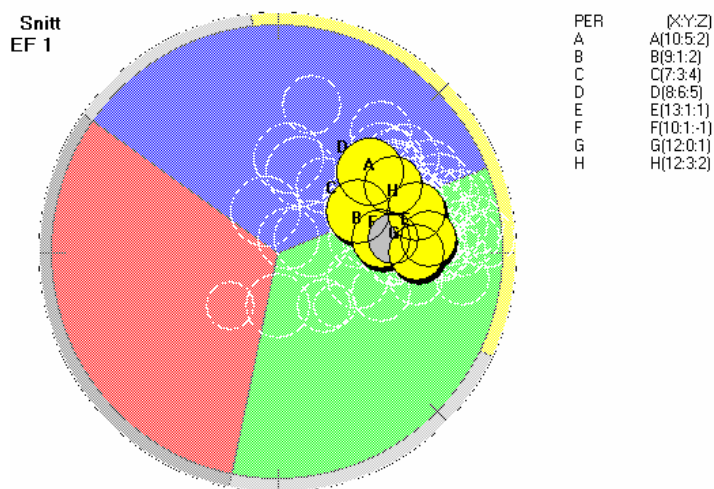


Figure 11.14 Team 02UA SPGR Field Diagram - Post Measure

The scatter (white circles) indicates a polarization tendency among team members, resulting in negative energy within in the team (the circles close to opposition). An independent t -sample test revealed that these two cadets were significantly more concerned with Task-oriented behavior ($M = 6.31$, $SD = 1.58$) compared with their team [$M = 3.88$, $SD = 1.95$, $t(62) = 4.517$, $p < .001$, $d = 1.14$] and Ruling behavior ($M = 6.25$, $SD = 2.21$) compared with their team [$M = 4.33$, $SD = 1.64$, $t(62) = 3.700$, $p < .001$, $d = .94$]. They were less concerned with Caretaking ($M = 6.75$, $SD = 1.73$) compared with their team [$M = 8.06$, $SD = 6.76$, $t(62) = -2.868$, $p < .006$, $d = .73$] and Empathy ($M = 6.50$, $SD = 2.00$) compared with their team [$M = 8.00$, $SD = 1.54$, $t(62) = -3.120$, $p < .001$, $d = .79$]. At the same time, these two cadets were significantly more assertive, than the remaining team members; ($M = 6.00$, $SD = 2.19$) compared with their team [$M = 4.44$, $SD = 2.15$, $t(62) = 2.504$, $p < .015$, $d = .64$]. Figure 11.13 shows the self and peer ratings for Cadets C and D in the 12-vector space.

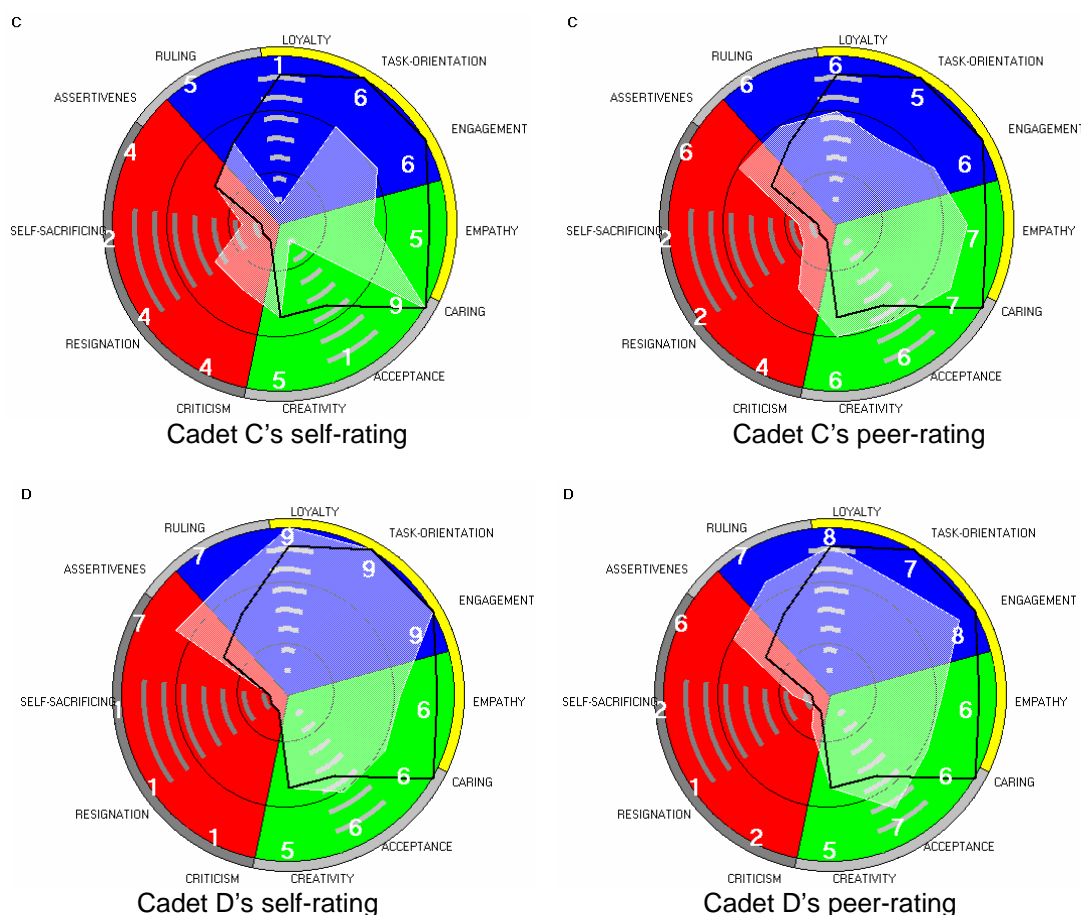


Figure 11.15 The SPGR 12-Vector Ratings of the Two Dominant Cadets in Team 02UA

The profiles of Cadet C also suggest that this cadet lacked the ability to perceive and understand the impact on those the cadet led. The profile of Cadet D indicates that this cadet was aware of this, but did not understand the negative impact of such leadership behavior.

The NEO PI-R data confirmed the SPGR pattern. These results of the two dominant cadets on the Agreeableness domain, $T = 42$, ($SD = 4.24$), were low compared to the general population, $d = 1.46$, while the average T -score of the remaining team-members was 49.00 ($SD = 5.27$, $d = .88$). They also scored higher on N2, Angry Hostility, $T = 53$ ($SD = 2.83$) compared with the team which scored 46.50 ($SD = 7.89$, $d = 1.10$), while the cohort scored as low as 43.65 ($SD = 7.2$, $d = 1.71$). These results suggest that these dominant cadets most likely would express their anger towards the other team members, resulting in a negative influence on the team climate and its social interaction pattern and role-taking ability. This was amplified by their lower scores on C6, Deliberation, $T = 45.50$ ($SD = 4.95$) compared with the team, which scored $T = 54.67$ ($SD = 6.15$, $d = 1.65$) and their relatively higher score on E3, Assertiveness, $T = 62$ ($SD = 8.49$) against the team score, which was $T = 55.33$ ($SD = 6.41$, $d = .89$). This team was dominated by two cadets who were forceful and expressed their opinions, even actions, without considering the consequences. At its best, they might be able to make snap decisions. Their low scores, however, on Openness, $M = 38$ ($SD = 4.24$) and high scores on Conscientiousness, $M = 56.50$ ($SD = 9.12$), indicate that they will not be able to make good decisions in situations, such as warfighting in the 21st century, characterized by ambiguity, novelty and unexpected changes in tasks (LePine, et al., 2000). They are diligent, methodical, and organized, and they abide by all the rules. But because they lack imagination, have a strong need for structure and closure, and prefer step-by-step instructions, they will have difficulties in situations that have no right answers (Costa & McCrae, 1998).

The profiles presented in Figure 11.15 also indicate that these two cadets represent a challenge for a leadership development program, especially Cadet C, who showed a large difference between self understanding and the peer ratings. This pattern was already established half way through the leadership development program when there was still time to deal with it.

Several of the others teams that did show significantly positive development also had cadets who tended to influence and dominate their team. Within Team 02LK, Cadets A and E had

strong influences on the team throughout the year. As the field diagram in Figure 12.16 shows, it was Cadet E who had the strongest influence on the team showing a score of 6 on the Z-dimension. However, both of these cadets' scores on Synergy were moderately lower than the rest of team's ($M=6.68$, $SD=1.72$) compared with ($M=7.20$, $SD=1.65$, $d = .31$). A more thorough analyses revealed that these dominant cadets showed more Ruling behavior ($M = 5.56$, $SD = 2.98$) compared with their team members [$M = 2.98$, $SD = 1.36$, $t(62)= 4.442$, $p < .001$, $d = 1.13$] and they scored lower on Empathy ($M = 6.06$, $SD = 2.18$) compared with their team members [$M = 7.79$, $SD = 1.87$, $t(62)= -3.078$, $p < .003$, $d = .78$].

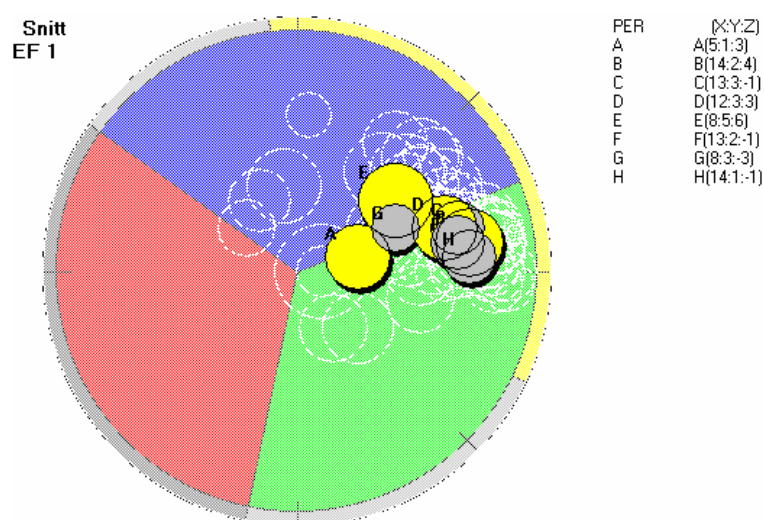


Figure 11.16 Team 02LK's SPGR Field Diagram - Post Measure

The NEO PI-R results were once again consistent with SPGR pattern: The dominant cadets' scores on Agreeableness were low, $T = 40.50$ ($SD = 7.78$), the team's T score was 54.17 ($SD = 7.17$), which was a large difference, $d = 1.83$. Their personalities also showed a higher N2, Angry Hostility, $T = 53.50$ ($SD = 12.02$) compared with the team ($M = 39.67$, $SD = 7.23$, $d = 1.53$). On Conscientiousness, which contains the previously mentioned facet C6, Deliberation, the pattern is slightly different. Here, the dominant cadets scored low, $d = 1.18$, $T = 41.50$ ($SD = 4.95$) while the team scored 53.67 ($SD = 13.66$). This is once again a negative result because conscientiousness is related to leader effectiveness (Hogan & Holland, 2003; Judge, et al., 2002). The major difference between the dominant cadets and the remaining team-members, which most likely contributed to the team's overall positive development, was that these two cadets were not as dominant and forceful as the previously mentioned dominant cadets in Teams 02XY and 02UA. On E3, Assertiveness, they scored M

= 59 ($SD = 4.23$), while the team scored $M = 55$ ($SD = 10.07$). This difference was moderate, $d = .58$, but these cadets did tend to be more dominant and forceful than the general population.

This indicates that it was the ability of the remaining team members to create a positive social climate that contributed to this team's development. Although this team did show a positive development, there are some reasons for concern because four cadets; C, F, G, and H, scored negative on the Z-dimension. This indicates submissive behavior that lacks initiative, and also suggests that they were not eager to try out new leadership behaviors and expand their role repertoire. The team's variance on the Z-dimension, $M = 14.98$, $SD = 3.87$, with a minimum of -8 to a maximum of 13 (a range of 21), indicates this. This large variation was most likely a result of the polarization caused by the two dominant cadets, and the negative fluctuation this causes hampers leadership development within the team, suggesting that variation on the Z-dimension might provide a significant indicator of effective leadership development.

Team 02BN also had a large variance on the Z-dimension, $M = 27.80$, $SD = 5.27$, with a minimum of -11 to a maximum of 10 (a range of 21). However, the field diagram in Figure 11.17 shows that this variation was driven by one team-member, Cadet F.

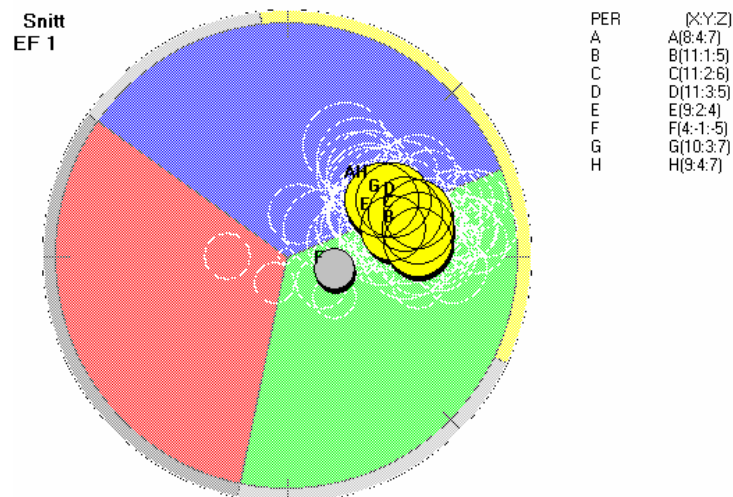


Figure 11.17 Team 02BN SPGR Field Diagram - Post Measure

The team did not have the one or two dominant cadets who hampered the team's performance and the leadership development process, but rather Team 02BN offers a case where one cadet clearly lacked the ability to take on and perform leadership roles. The scatter diagram, however, shows that although Cadet F did cause negative fluctuations, this cadet did not have the influence to hamper the development of leadership within the team.

When Cadet F was deleted from the analysis, the variance on the Z-dimension was dramatically altered, $M = 12.88$, $SD = 3.59$, with a minimum of -1 to a maximum of 12 (a range of 13). A look at this cadet's 12-vector profile in Figure 11.18 might indicate why this is so.

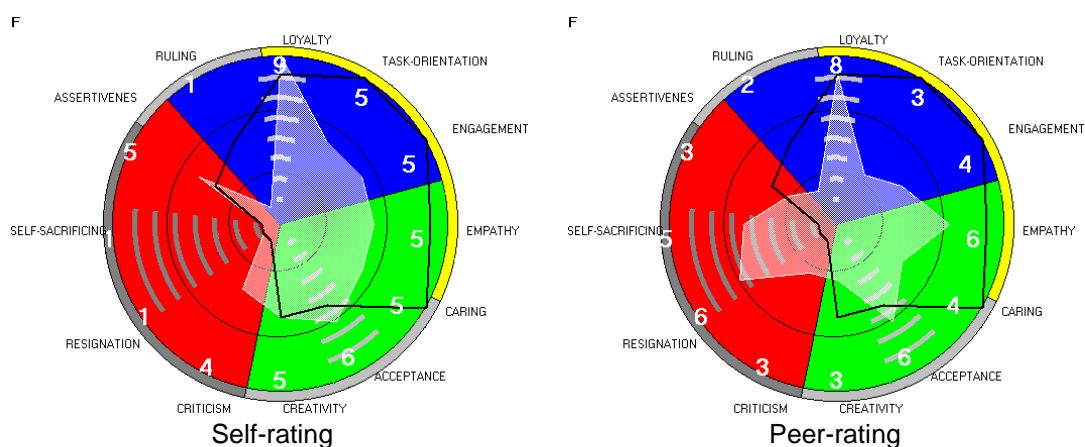


Figure 11.18 Cadet F in Team 02BN 12-Vector Profiles

Once again the data reveal that this pattern was established early in the leadership development program. This is illustrated by Cadet F's score on the Z-dimension throughout the leadership development program; -2, -6, -5, -6, -2 and finally as shown -6. Also worth noting here was this cadet's low score on NEO PI-R Openness domain, $T = 42$, while the team scored $T = 55.43$ ($SD = 10.57$). This difference was large, $d = 1.31$, and it is also lower than the population in general. A low score on Openness indicates lack of ability to adapt to change (George & Zhou, 2001). This might be a reason why this Cadet had no development during the year.

The last team that will be discussed is Team 02AS, see Figure 11.17. This team had two cadets who showed submissive behavior; Cadets C and G. The team also had one member, Cadet E, who exhibited dominant behavior throughout the year. The data revealed that this

cadet showed the same behavioral pattern as previously discussed: A significant stronger focus on Ruling behavior ($M = 7.00$, $SD = 1.41$) compared with the team [$M = 4.20$, $SD = 1.88$, $t(62) = 4.450$, $p < .001$, $d = 1.13$], and a lower focus on Empathy ($M = 6.50$, $SD = 1.85$) against [$M = 7.91$, $SD = 1.46$, $t(62) = -2.479$, $p < .016$, $d = .63$]. Cadet E also scored significantly higher on Assertiveness ($M = 5.75$, $SD = 1.67$) compared with the team-members [$M = 3.66$, $SD = 1.65$, $t(62) = 3.338$, $p < .001$, $d = .85$], which reinforced a negative climate for development that hampers leadership development. This is indicated by the lack of development of Synergy, see Table 11.17. Although the team showed an increase in Energy ($M = 5.63$, $SD = 3.28$) compared to [$M = 6.26$, $SD = 1.52$, $r = .73$, $t(63) = -2.172$, $p < .034$, $d = .20$], the effect of that increase was low.

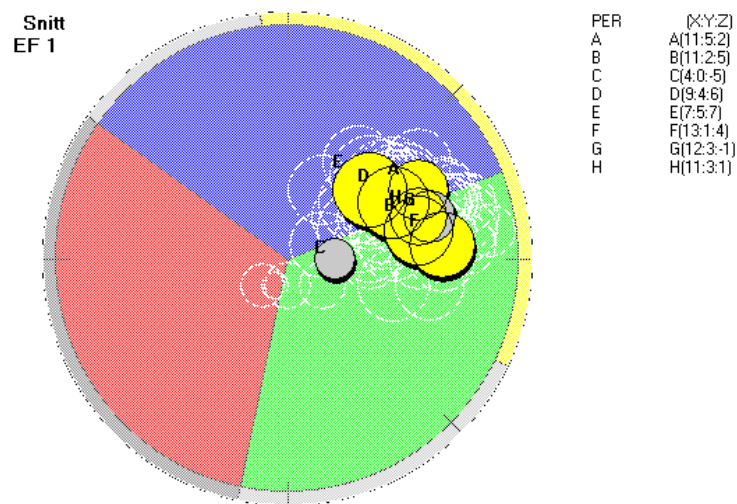


Figure 11.19 Team 02AS's SPGR Field Diagram - Post Measure

The dominant cadet's score on E3, Assertiveness, $T = 70$, was also high compared with the team members ($M = 59.14$, $SD = 11.71$, $d = 1.00$). The variance on the Z-dimension within the team was also large, $M = 21.82$, $SD = 4.67$, with a minimum of -11 to a maximum of 11 (a range of 22).

These results, particularly for Teams 02XY, 02UA, and 02AS, clearly indicate that one dominant cadet can hamper a team's leadership development.

11.3.3 Summary: Cohort 2002

These results and the analyses of the teams illustrate that leadership development is a complex process. The overall results for Cohort 2002 might appear favorable, especially because 22% of the cadets became significantly more emotionally stable (N), 24% became more open (O), and 12% became more agreeable (A). This clearly indicates that a leadership development program might have a positive effect on the participants' personalities measured with the NEO PI-R. Further analyses of the teams, however, revealed some interesting patterns, particularly that the teams did not seem able to reach a maturity level higher than Team Spirit. As can be seen from Table 11.18, the predominant function for all ten teams was Nurture. Figure 11.20 illustrates the average balance of the four SPGR functions, showing that the other predominant function was Dependence. The Synergy score is high and the Withdrawal low, see Table 11.10, indicating the maturity level of Team Spirit.

Table 11.18

Cohort 2002: The Teams' Balance Between the SPGR Functions, Control and Nurture

Teams	Control <i>M/SD</i>	Nurture <i>M/SD</i>	<i>t</i>	<i>df</i>	<i>Sig.</i>	<i>d</i>
Team 02XY	3.91 (2.26)	5.67 (1.93)	-4.016	48	.001	1.15
Team 02LK	3.02 (1.93)	5.80 (2.22)	-7.185	63	.001	1.81
Team 02MN	3.91 (1.95)	5.12 (2.02)	-3.160	48	.003	.91
Team 02KK	3.94 (1.89)	5.31 (1.37)	-4.266	63	.001	1.07
Team 02LT	3.38 (1.59)	6.88 (1.24)	-12.580	63	.001	3.17
Team 02UA	4.17 (1.81)	6.19 (1.54)	-5.819	63	.001	1.47
Team 02BV	3.68 (1.89)	5.56 (1.97)	-5.790	63	.001	1.46
Team 02AS	3.76 (2.08)	5.63 (1.83)	-6.421	63	.001	1.62
Team 02LA	3.33 (1.73)	5.42 (1.70)	-6.438	63	.001	1.62
Team 02BN	3.82 (1.71)	5.96 (2.05)	-7.090	63	.001	1.79

The skewed balance between Control and Nurture indicates that these teams will perform well in situations and contexts that are well structured, with concrete goals that can be broken down to standard operating procedures with well defined roles. Authoritative

leadership is not required at this maturity level, although teams at this maturity easily tend to such leadership styles (Sjøvold, 2006). This might explain why it seems to be so easy for one or two dominant cadets to influence and control the team. Teams at this level are not open to change and tend to ignore or minimize impulses from the outside.

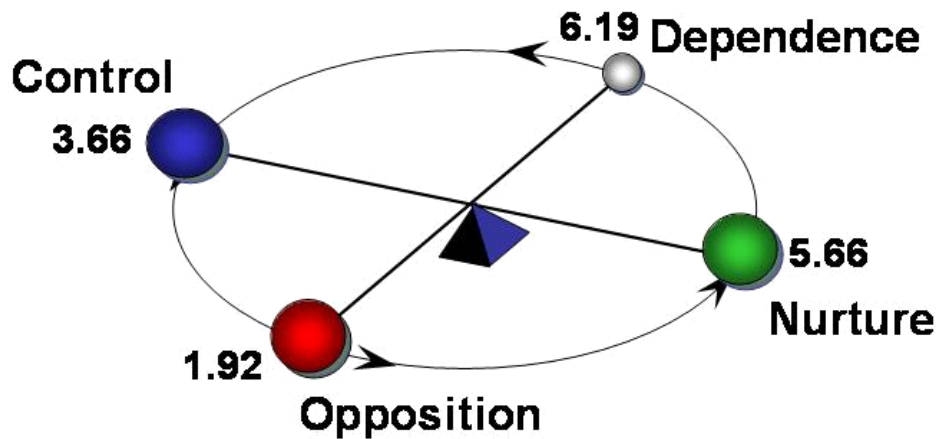


Figure 11.20 Cohort 2002: Basic SPGR Functions - Post Measure

Teams at the maturity level Team Spirit definitely do not incorporate cultures that appreciate the mismatches that reveal a locked orientation and therefore a predictable OODA loop. This is clearly not a maturity level that is suited for 4th GW because it lacks Boyd's essentials asymmetries of insight, orientation, agility, and initiative. To reach higher maturity levels, the Control function must come into play, which requires that the stable role structure must be broken and a culture instilled where leadership is delegated. Further development also requires that the team's established power structures be challenged, which seems to be a task that none of these teams was able to perform. According to Table 11.18, Team 02LT was especially inhibited by the Nurture function. The field diagram of the team and the 12-vector profile of the team's average scores illustrate this maturity level. Another important aspect is Team 02LT's high score on Acceptance behavior compared to Loyalty. Both are part of the Dependence function, and this result indicates that the team has higher loyalty towards each other than to accomplishing the given tasks. As can be seen from the figure, this score is much higher than the RNoNA developmental goal. This does not indicate a strong "we" culture that allows criticism nor one that values pointing out mismatches.

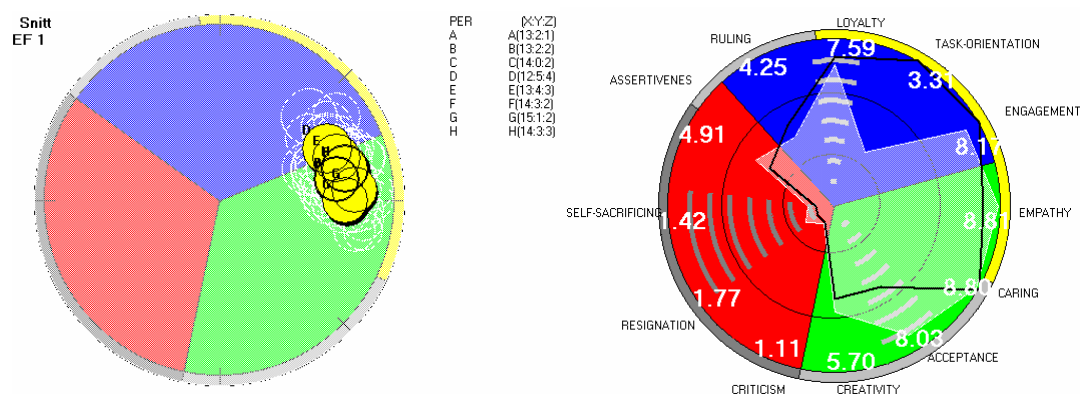


Figure 11.21 Team 02LT's SPGR Field Diagram and Average 12-Vector Profile

At this maturity level, attempts to delegate or lead according to the philosophy of *Auftragstaktik* would be considered a “weak” approach to leadership because there is no authoritative leader who will tell them how to solve the task to achieve the intent. This maturity level represents a strong culture that is difficult to change (Sjøvold, 2006, 2007).

From a development perspective, the established role pattern within Team 02LT should have been challenged early in the program. This would have increased the focus on Task-oriented behavior to reach a higher maturity level by challenging them to try out new leadership roles so that they could have expanded their role set. This might have been possible because of their high level on the Nurture function. At the same time, the team should also have concentrated more on a critical approach towards their own functioning. This team lacked fluctuations—there was almost no variation or diversity, making development difficult. There was no ability to rapidly change between the basic functions because their orientation was “locked” and inhibited by the Nurture and Dependence functions, which led to a high level of Synergy within a stable and predictable environment.

The different SPGR field diagrams reveal that this pattern was established early in the leadership development program. This is illustrated by team 02LT's field diagram and 12-vector diagram after exercise Magellan in December. The team's locked orientation and their strong “we” culture managed to dampen out every further leadership development attempt from the RNoNA. As Table 11.17 showed, this was representative not just for this team but for the entire cohort. This is clearly illustrated by the cohort's balance between the

Control function ($M = 3.82$, $SD = 1.48$) and the Nurture function [$M = 5.49$, $SD = 1.04$, $t(78) = -7.437$, $p < .001$, $d = 1.68$] measured after exercise Magellan. The fact that this relationship became more unbalanced throughout the year indicates that most of the external perturbations represented with the RNoNA leadership development program after exercise Magellan were dampened out.

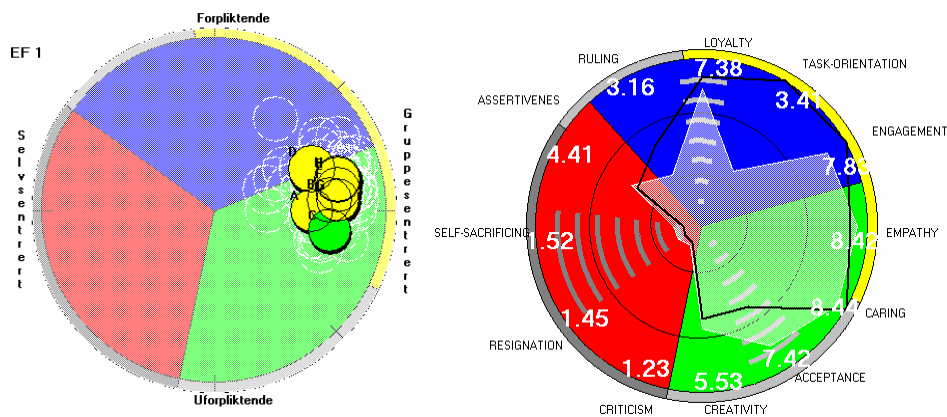


Figure 11.22 Team 02LT SPGR Field Diagram and Average 12-Vector Leadership Behavior after Exercise Magellan

This is because of the low degree of fluctuations or variety within in the teams, which resulted in little development throughout the last part of the leadership development program. This indicates mechanistic OODA loops with a low ability to reorient because the cadets as a group lacked the variation and agility that would enable them to continue the whirl of reorientation, mismatches, analyses, and synthesis necessary to develop as leaders. Although the initial results indicated positive development, their level of maturity suggested that they were inward-looking and that they, as officers, will not perform well in a 3rd GW or 4th GW environment.

11.4 Cohort 2003

Cohort 2003 was the second cohort that used the training bark Statsraad Lehmkuhl as a major part of their leadership development program. Unlike Cohort 2002, however, they did not cross the Atlantic and thereby gain the experience of a long voyage without seeing

anything more than blue waters and each other. Instead they sailed in the Mediterranean, which allowed more visits into different ports.

11.4.1 The SPGR Results

The cohort's SPGR Humres results are presented in Table 11.19.

Table 11.19

Cohort 2003: Pre and Post Measures SPGR Humres - Others Rating

SPGR functions	Pre measure	Post Measure	<i>r</i>	<i>t</i> (65)	<i>Sig.</i>	<i>d</i>
	<i>M/SD</i>	<i>M/SD</i>				
Synergy	6.91 (1.02)	6.95 (1.12)	.43	-.253	.801	
Control	3.47 (1.50)	3.80 (1.55)	.79	-2.743	.008	.10
Nurture	5.05 (1.00)	5.40 (.95)	.58	-3.130	.003	.13
Opposition	1.56 (.76)	1.97 (.94)	.34	-3.351	.001	.14
Dependence	6.84 (.96)	6.77 (.96)	.63	.658	.513	
Withdrawal	1.20 (.85)	1.20 (1.33)	.48	.032	.974	
Energy	5.71 (1.61)	5.75 (2.25)	.41	-.152	.880	

These results indicate a minor increase in the Control and Nurture functions, together with a similar minor increase in the Opposition function. This did not, however, lead to an increase in the cohort's overall maturity level: There was no increase in synergetic behavior or decrease in Withdrawal behavior. This is confirmed by the absence of any increase in their overall Energy available for doing work. These results show that the cadets' ability as a group to play the interaction and isolation game did not increase as the result of RNoNA leadership development program. Figure 11.23 illustrates this lack of development; it also shows the cohort's average leadership behavior illustrated with the SPGR 12-vector profile. Table 11.20 gives an overview of the development on each vector. These results support the overall findings and also show that the main development was an increase in Task-Oriented and Assertive behaviors and in behavior related to Criticism.

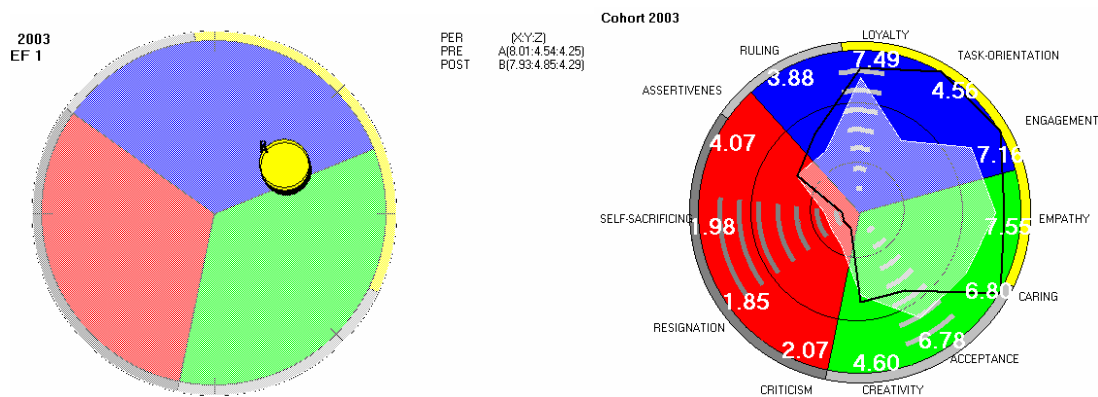


Figure 11.23 The Development of Cohort 2003 in the SPGR Field Diagram and the Cohort's Average Leadership Behavior - Others Rating

Table 11.20

Cohort 2003: SPGR 12-Vector Pre and Post Measures - Others Rating

SPGR Vectors	Pre Measure M/SD	Post Measure M/SD	r	t(65)	Sig.	d
S2: Empathy	7.22 (1.05)	7.55 (.85)	.51	-2.797	.007	.34
N1: Caring	6.77 (1.54)	6.80 (1.02)	.42	-.162	.872	
D2: Acceptance	6.40 (1.09)	6.78 (1.07)	.68	-1.347	.183	
N2: Creativity	4.39 (1.45)	4.60 (1.45)	.70	-1.555	.125	
O1: Criticism	1.69 (.77)	2.07 (1.08)	.13	-2.442	.017	.40
W1: Resignation	1.96 (1.23)	1.85 (.74)	.12	.209	.835	
W2: Self-sacrificing	1.85 (.74)	1.98 (1.23)	.43	-.911	.366	
O2: Assertiveness	3.55 (1.33)	4.07 (1.23)	.57	-3.611	.001	.41
C2: Ruling	4.24 (1.39)	3.88 (1.55)	.64	2.275	.026	.24
D1: Loyalty	7.54 (1.01)	7.49 (.90)	.47	.451	.654	
C1: Task orientation	3.37 (1.81)	4.56 (1.48)	.71	-7.529	.001	.71
S1: Engagement	7.34 (1.07)	7.16 (1.44)	.32	.952	.345	

The individual level change analysis presented in Table 11.20 confirms the development found on Criticism and Task orientation. However, it also indicates that there was no

significant increase on Assertiveness, indicating that none of the cadets became significantly more assertive as a result of the leadership development program. The RCI results show an 11% significant decrease on Engagement, which is clearly a regression and not in accordance with the intentions of the leadership development program at the RNoNA.

Table 11.21

Cohort 2003: Individual-Level Change for the SPGR 12-Vector - Others Rating

SPGR Vectors	Decrease (%)	Stayed the same (%)	Increase (%)	χ^2 (2, $N = 66$)
S2: Empathy	2	94	4	1.4
N1: Caring	3	89	8	7.1*
D2: Acceptance	0	97	3	.06 ¹
N2: Creativity	2	95	3	.3
O1: Criticism	3	80	17	54.6***
W1: Resignation	3	92	5	1.2
W2: Self-sacrificing	2	92	8	7.2*
O2: Assertiveness	0	100	0	
C2: Ruling	8	89	3	7.1*
D1: Loyalty	3	92	5	1.2
C1: Task orientation	0	88	12	24.1***1
S1: Engagement	11	86	3	17.9***

Note. $N=66$. Number of cadets for decrease, increase, and staying the same were based on the reliable change index (i.e., change greater than 1.96 or less than -1.96 is considered a reliable change). The chi-square tests whether the observed distribution of changers and nonchangers would differ from the expected distribution if changes were random (e.g., 2.5% each decreases and increase and 95% remain the same). Significance levels indicated as: * $p < .05$, ** $p < .01$, and *** $p < .001$.1) χ^2 (1, $N = 66$).

The cadets' own self-perception is presented in Table 11.22. These results indicate a discrepancy concerning the developmental effects of the leadership development program compared to the results in Table 11.20. Specifically, they converge on Task Orientation. Otherwise these results, according to the cadets themselves, indicate that they did not change their behavior. A better understanding is gained by studying their perceived individual-level changes, presented in Table 11.23. Here we can see that there was a significant change on Empathy, an 8% decrease and a 15% increase; 18% of the cadets perceived that they became significantly more assertive; and 12% reported a decrease in Self-sacrificing behavior. These results indicate a lack of willingness to try out and perform the new roles needed to drive development. If these results are compared with their reputations, we find the same pattern for Criticism and Ruling. There is also a coherent perception on the reduction of Engagement within the cohort. This decrease, however, is not so perceived by the other team members, indicating a lack of self-awareness.

Table 11.22

Cohort 2003: SPGR 12-Vector Pre and Post Measures - Self Rating

SPGR Vectors	Pre Measure	Post Measure	<i>r</i>	<i>t</i> (65)	<i>Sig.</i>	<i>d</i>
	<i>M/SD</i>	<i>M/SD</i>				
S2: Empathy	7.14 (1.86)	7.71 (1.55)	-.05	-1.895	.063	
N1: Caring	6.77 (1.94)	7.39 (1.64)	.37	-2.488	.015	.09
D2: Acceptance	6.82 (1.92)	6.86 (1.95)	.35	-.167	.868	
N2: Creativity	4.61 (2.29)	4.95 (2.30)	.49	-1.222	.226	
O1: Criticism	1.58 (1.16)	1.82 (1.45)	-.07	-1.029	.307	
W1: Resignation	2.11 (1.64)	1.68 (1.34)	.08	1.697	.094	
W2: Self-sacrificing	2.17 (1.63)	1.58 (1.16)	.38	2.986	.004	.12
O2: Assertiveness	3.85 (1.85)	4.23 (1.90)	.24	-1.331	.188	
C2: Ruling	4.39 (1.83)	3.85 (1.69)	.30	2.119	.038	.06
D1: Loyalty	7.65 (1.63)	7.52 (1.83)	.38	.572	.569	
C1: Task orientation	3.85 (2.12)	4.80 (2.15)	.44	-3.417	.001	.15
S1: Engagement	8.00 (1.52)	7.76 (1.63)	.03	.896	.063	

Table 11.23

Cohort 2003: Individual-Level Change for the SPGR 12-Vector - Self Rating

SPGR Vectors	Decrease (%)	Stayed the same (%)	Increase (%)	χ^2 (2, <i>N</i> = 66)
S2: Empathy	8	77	15	51.2***
N1: Caring	3	91	6	3.5
D2: Acceptance	6	88	6	7.0
N2: Creativity	0	98	2	.3 ¹
O1: Criticism	9	73	18	79.3***
W1: Resignation	6	89	5	4.7
W2: Self-sacrificing	12	88	0	24.1***1
O2: Assertiveness	2	95	3	.3
C2: Ruling	11	89	0	17.1***1
D1: Loyalty	6	86	8	10.7*
C1: Task orientation	2	94	4	1.4
S1: Engagement	12	82	6	29.0***

Note: *N*=66. Number of cadets for decrease, increase, and staying the same were based on the reliable change index (i.e., change greater than 1.96 or less than -1.96 is considered a reliable change). The chi-square tests whether the observed distribution of changers and nonchangers would differ from the expected distribution if changes were random (e.g., 2.5% each decreases and increase and 95% remain the same). Significance levels indicated as: **p* < .05, ***p* < .01, and ****p* < .001.1) χ^2 (1, *N* = 66).

11.4.2 The NEO PI-R Results of Cohort 2003

The personality results, measured by the NEO PI-R in Table 11.24, indicate that this cohort is emotionally stable, scoring roughly at the population average on the remaining domains, although they tended to be a bit low on both Openness and Agreeableness. They experienced both positive and development on the Neuroticism domain and on the facets N1, Anxiety, N3, Depression, and N4, Self-Consciousness. They also showed a significant decrease in the E5, Excitement Seeking, facet of the Extraversion domain. The η^2 statistics also indicate that the effects on the domain and facets were moderate. The results on Neuroticism are confirmed by the RCI results in Table 11.25, indicating that 30% of the cadets became significantly more emotionally stable. There were also some interesting changes on the remaining domains, where the largest increase was a significant 17% on Conscientiousness, although 7% decreased.

The cohort's overall score on the domains Openness and Agreeableness are of some concern because they are important to effective leadership. The Openness domain represents a significant element in the ability to adapt, cope, and make appropriate decisions in an environment characterized by ambiguity, novelty and rapid change (LePine, et al., 2000), which is what we will meet in future conflict. The cohort's relatively low score on Agreeableness might indicate that they lacked the ability to establish a climate that fosters trust and cooperation and so would enable them to apply *Auftragstaktik*.

Cohort 2003: The NEO PI-R Pre and Post Measures

DOMAINS AND FACETS	α Pre measure	Pre measure <i>M/SD</i>	α Post measure	Post measure <i>M/SD</i>	<i>r</i>	<i>t</i> (68)	<i>Sig</i>	<i>d</i>
N: NEUROTICISM	.91	48.19 (7.58)	.92	46.23 (8.17)	.75	2.880	.005	.25
N1: Anxiety	.87	47.14 (10.07)	.85	44.70 (9.12)	.72	2.800	.007	.25
N2: Angry Hostility	.63	47.35 (6.14)	.73	46.41 (7.42)	.38	1.013	.315	
N3: Depression	.75	45.97 (6.36)	.77	43.97 (7.12)	.58	2.687	.009	.30
N4: Self-Consciousness	.65	45.97 (6.37)	.73	47.91 (8.36)	.77	2.218	.030	.18
N5: Impulsiveness	.69	48.83 (9.46)	.67	48.07 (8.32)	.54	.748	.457	
N6: Vulnerability	.81	50.42 (7.27)	.80	49.68 (7.13)	.67	1.054	.296	
E: EXTRAVERSION	.91	52.55 (7.91)	.89	51.93 (7.13)	.62	.783	.436	
E1: Warmth	.67	49.00 (7.56)	.65	48.93 (7.57)	.58	.086	.931	
E2: Gregariousness	.75	50.72 (9.07)	.76	50.38 (8.76)	.76	.464	.644	
E3: Assertiveness	.85	52.00 (9.90)	.77	52.75 (7.86)	.81	-1.077	.285	
E4: Activity	.55	52.54 (7.02)	.49	51.36 (6.61)	.63	1.665	.100	
E5: Excitement Seeking	.50	56.20 (6.52)	.59	54.30 (7.32)	.49	2.244	.028	.27
E6: Positive Emotions	.72	53.87 (7.02)	.74	54.30 (7.32)	.51	-.084	.933	
O: OPENNESS	.89	47.88 (9.26)	.91	47.42 (9.33)	.82	.683	.497	
O1: Fantasy	.77	46.55 (9.61)	.80	46.38 (8.49)	.67	.194	.847	
O2: Aesthetics	.83	46.55 (9.77)	.85	45.75 (9.70)	.83	1.179	.243	
O3: Feelings	.73	49.43 (9.31)	.74	48.20 (8.99)	.68	1.407	.164	
O4: Actions	.53	52.72 (8.34)	.57	52.65 (7.80)	.72	.100	.921	
O5: Ideas	.87	50.33 (11.68)	.88	50.57 (11.41)	.80	-.264	.792	
O6: Values	.52	47.57 (8.16)	.58	47.81 (7.96)	.56	-.271	.787	
A: AGREEABLENESS	.80	47.52 (7.41)	.83	47.39 (7.88)	.69	.181	.857	
A1: Trust	.62	49.72 (6.37)	.76	49.80 (8.18)	.50	-.080	.936	
A2: Straightforwardness	.63	48.96 (8.00)	.65	48.78 (7.80)	.70	.158	.875	
A3: Altruism	.65	50.30 (8.73)	.65	48.78 (8.68)	.41	1.337	.186	
A4: Compliance	.52	46.58 (7.94)	.45	47.86 (6.98)	.48	-1.378	.173	
A5: Modesty	.68	48.87 (8.07)	.63	48.87 (7.71)	.69	.001	1.000	
A6: Tender-Mindedness	.54	46.00 (7.62)	.52	45.36 (7.52)	.68	.872	.386	
C: CONSCIENTIOUSNESS	.91	51.29 (8.89)	.91	52.06 (8.93)	.73	-.965	.338	
C1: Competence	.77	51.45 (8.74)	.75	52.75 (8.44)	.68	-1.574	.120	
C2: Order	.58	50.90 (7.92)	.69	51.78 (8.34)	.65	-1.075	.286	
C3: Dutifulness	.58	52.00 (8.06)	.67	51.54 (8.97)	.63	.525	.602	
C4: Achievement Striving	.77	52.78 (8.93)	.79	52.65 (8.73)	.68	.154	.878	
C5: Self-Discipline	.79	50.41 (8.81)	.81	51.52 (8.87)	.60	-1.175	.244	
C6: Deliberation	.64	50.14 (8.16)	.57	50.84 (7.45)	.43	-.691	.492	

Table 11.25

Cohort 2003: Individual-Level Change in NEO PI-R Domains and Facets

Domains and facets	Decreased (%)	Stayed the same (%)	Increased (%)	χ^2 (2, $N = 69$)
N: NEUROTICISM	30	61	9	234.4***
N1: Anxiety	6	90	4	4.1*
N2: Angry Hostility	9	83	9	22.2***
N3: Depression	14	80	6	44.4***
N4: Self-Consciousness	7	88	4	7.5*
N5: Impulsiveness	6	93	1	3.3
N6: Vulnerability	6	90	4	4.1
E: EXTRAVERSION	13	81	6	35.1***
E1: Warmth	6	91	3	3.1
E2: Gregariousness	4	96	0	.9 [†]
E3: Assertiveness	1	99	0	.3 [†]
E4: Activity	3	96	1	.4
E5: Excitement Seeking	9	91	0	10.4*** [†]
E6: Positive Emotions	13	80	7	38.6***
O: OPENNESS	7	81	12	30.4***
O1: Fantasy	6	93	1	3.3
O2: Aesthetics	7	93	0	6.1* [†]
O3: Feelings	4	94	1	1.3
O4: Actions	0	99	1	.3 [†]
O5: Ideas	7	88	4	7.5*
O6: Values	6	91	6	3.1
A: AGREEABLENESS	7	83	10	32.5***
A1: Trust	13	75	12	56.3***
A2: Straightforwardness	1	96	3	.4
A3: Altruism	4	93	3	1.0
A4: Compliance	0	96	4	.9 [†]
A5: Modesty	0	100	0	
A6: Tender-Mindness	0	100	0	
C: CONSCIENTIOUSNESS	7	75	17	70.2***
C1: Competence	3	93	4	1.0
C2: Order	3	94	3	.1
C3: Dutifulness	4	90	6	4.1
C4: Achievement Striving	3	91	6	3.1
C5: Self-Discipline	7	80	13	38.6***
C6: Deliberation	3	93	4	1.0

Note. $N = 69$. Number of cadets for decrease, increase, and staying the same were based on the reliable change index (i.e., change greater than 1.96 or less than -1.96 is considered a reliable change). The chi-square tests whether the observed distribution of changers and nonchangers would differ from the expected distribution if changes were random (e.g., 2.5% each decreases and increase and 95% remain the same). Significance levels indicated as: * $p < .05$, ** $p < .01$, and *** $p < .001$.) χ^2 (1, $N = 69$).

11.4.3 Cohort 2003: Team Analysis

The Humres pre-post measures are reported in Table 11.2, indicating that none of the teams had a significant increase in their Synergy scores.

Table 11.26

Cohort 2003: SPGR Humres Results on the Team Level

Team	N	SYNERGY		CONTROL		NURTURE		OPPOSITION		DEPENDENCE		WITHDRAWAL		ENERGY	
		Pre M/SD	Post M/SD	Pre M/SD	Post M/SD	Pre M/SD	Post M/SD	Pre M/SD	Post M/SD	Pre M/SD	Post M/SD	Pre M/SD	Post M/SD	Pre M/SD	Post M/SD
03OP	7 (49)	6.77 (1.91)	7.05 (1.31)	3.79 (2.33)	4.82 (1.73)	4.32 (1.97)	4.82 (1.73)	1.89 (1.50)	1.72 (1.10)	7.23 (1.85)	7.21 (1.64)	1.61 (1.57)	1.36 (1.54)	5.17 (2.85)	6.36** (1.66)
03VG	6 (36)	7.22 (1.46)	7.56 (1.56)	3.16 (1.90)	6.10 (1.09)	5.85 (1.68)	6.10 (1.09)	1.35 (1.23)	2.41** (1.70)	6.97 (1.31)	7.25 (1.48)	1.44 (1.41)	1.41 (1.53)	5.78 (2.05)	6.78** (2.02)
03ER	5 (25)	6.62 (1.64)	7.20 (1.52)	3.56 (2.44)	5.63* (1.08)	4.50 (1.45)	5.63** (1.08)	.99 (1.05)	1.53 (1.52)	7.02 (1.46)	6.80 (1.47)	1.04 (1.38)	1.35 (1.49)	5.58 (2.58)	6.89* (1.79)
03UY	7 (49)	6.88 (1.77)	7.37 (1.69)	3.77 (1.69)	5.58 (1.19)	4.64 (1.31)	5.58*** (1.19)	1.61 (1.27)	1.84 (.94)	6.75 (1.58)	7.42** (1.64)	1.20 (1.57)	.23*** (.61)	5.69 (2.82)	6.96 (2.08)
03NB	5 (25)	7.47 (1.45)	7.74 (1.43)	4.95 (1.95)	6.71 (1.64)	5.85 (2.00)	6.71* (1.64)	1.67 (1.30)	2.30 (1.36)	7.56 (1.54)	7.65 (1.41)	1.08 (1.28)	1.26 (1.75)	6.38 (2.38)	6.57 (2.84)
03KJ	7 (49)	7.83 (1.32)	6.60*** (1.67)	3.77 (1.70)	5.21 (2.07)	4.99 (1.81)	5.21 (2.07)	1.45 (.97)	2.05* (1.77)	7.21 (1.23)	7.33 (1.69)	.81 (1.00)	1.52** (1.65)	7.03 (1.76)	5.69*** (2.41)
03SX	8 (64)	7.12 (1.64)	6.52* (1.91)	3.27 (2.97)	5.51 (2.09)	5.40 (1.45)	5.51 (2.09)	1.55 (1.48)	1.64 (1.62)	7.02 (1.65)	6.28* (1.60)	.97 (1.23)	1.11 (2.16)	6.15 (2.47)	5.41 (3.00)
03FO	7 (49)	6.52 (1.30)	6.80 (1.69)	2.83 (1.51)	5.15 (1.60)	5.15 (1.62)	5.15 (1.60)	1.56 (1.14)	1.40 (1.04)	7.14 (2.05)	6.96 (1.97)	1.40 (1.18)	.78* (1.20)	5.12 (1.67)	6.54*** (1.93)
03AA	7 (49)	6.80 (1.99)	6.43 (2.05)	4.07 (1.72)	5.51** (1.36)	5.67 (1.59)	5.51 (1.36)	1.82 (1.39)	3.26*** (1.63)	6.75 (1.54)	6.45 (1.82)	.94 (1.24)	1.93*** (2.19)	5.83 (2.84)	5.36 (2.65)
03UF	7 (49)	6.84 (1.52)	7.06 (1.52)	2.85 (1.49)	4.78 (1.73)	5.08 (1.20)	4.78 (1.73)	1.43 (1.23)	1.34 (.68)	5.88 (1.88)	5.21* (2.62)	1.22 (1.76)	.55** (1.03)	5.63 (2.79)	6.33 (2.01)

Note: A paired sample *t*-test was conducted to evaluate the impact of the leadership development program on the cadets' SPGR Humres scores. Significant changes are indicated with: * $p < .05$, ** $p < .01$, and *** $p < .001$. *N* gives the number of ratings within each team. A team consists of 8 team members who rate themselves and each of the others, producing 64 ratings.

Two teams, Team 03KJ and 03SX, had a negative development, while the eight remaining teams had no development at all on Synergy. However, Team 03UY and 03UF had a significant reduction in Withdrawal, but that did not increase the teams' overall Energy available for doing work. Four teams—03ER, 03VG, 03OP, and 03FO—showed a significant increase in their overall Energy score, which could suggest a small positive development. However, this conclusion requires an analysis of the third SPGR dimension, Influence versus Passivity, because this dimension is a central contributor to Synergy and Withdrawal, hence to the Energy available within the team to do work. As previously discussed, one dominant cadet can be enough to inhibit a team's performance and a large variance on the Influence-versus-Passivity dimension will make leadership development harder, especially if the dominant cadet scored significantly higher on Energy than the remaining cadets on the team.

All four of the teams that showed positive development on Energy had one dominant cadet. With the exception of Team 03VG, the dominant cadet's score on Energy was higher than the remaining team members', which indicates that the development results from the dominant cadet's score. This is illustrated by looking at the field diagram of Team 03ER, Figure 11.24. The dominant cadet is Cadet A, whose high influence, 4 on the Z-dimension, made this cadet the leader of the team.

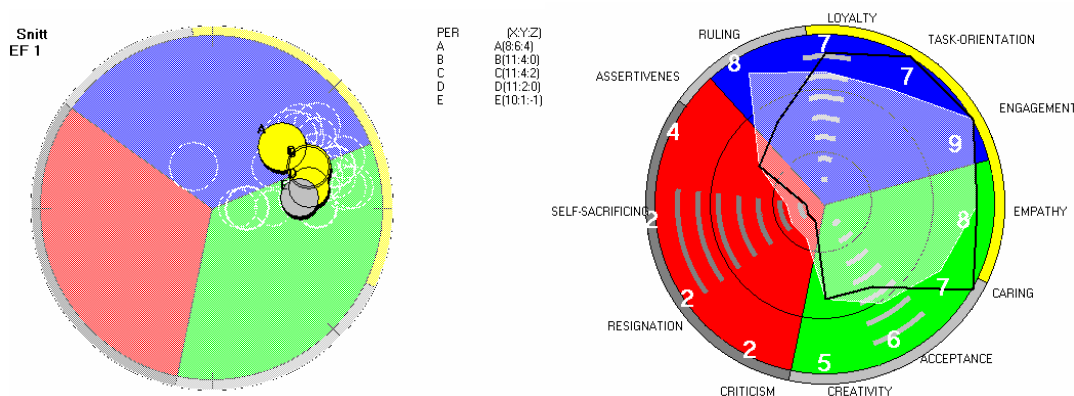


Figure 11.24 Team 03ER Field Diagram and 12-Vector Profile of the Dominant Cadet - Peer Rating

Cadet A's reputation and role flexibility is illustrated by the peer ratings on the SPGR 12-vector profile. This profile indicates a rigid and authoritative leadership behavior. This cadet also scored high on the NEO PI-R facet E3, Assertiveness, $T = 68$, while the team's average score was 53.60 ($SD = 7.98$), a difference, $d = 1.58$, which was large. This cadet's high influence within the team, the Z-dimension, was a major contributor to the lack of development by forcing the other cadets into fixed role patterns.

This pattern of social interaction is well illustrated by Team 03KJ. This team had negative development throughout the year, and the field diagrams in Figure 12.25 illustrate their negative social interaction patterns. From the premeasure until after the winter exercise, this team's dominant functions were Nurture and Dependence indicating the maturity level of Team Spirit. As previously discussed, this maturity level is characterized by a fixed role pattern, often with an authoritative leader, together with a "we against them" attitude.

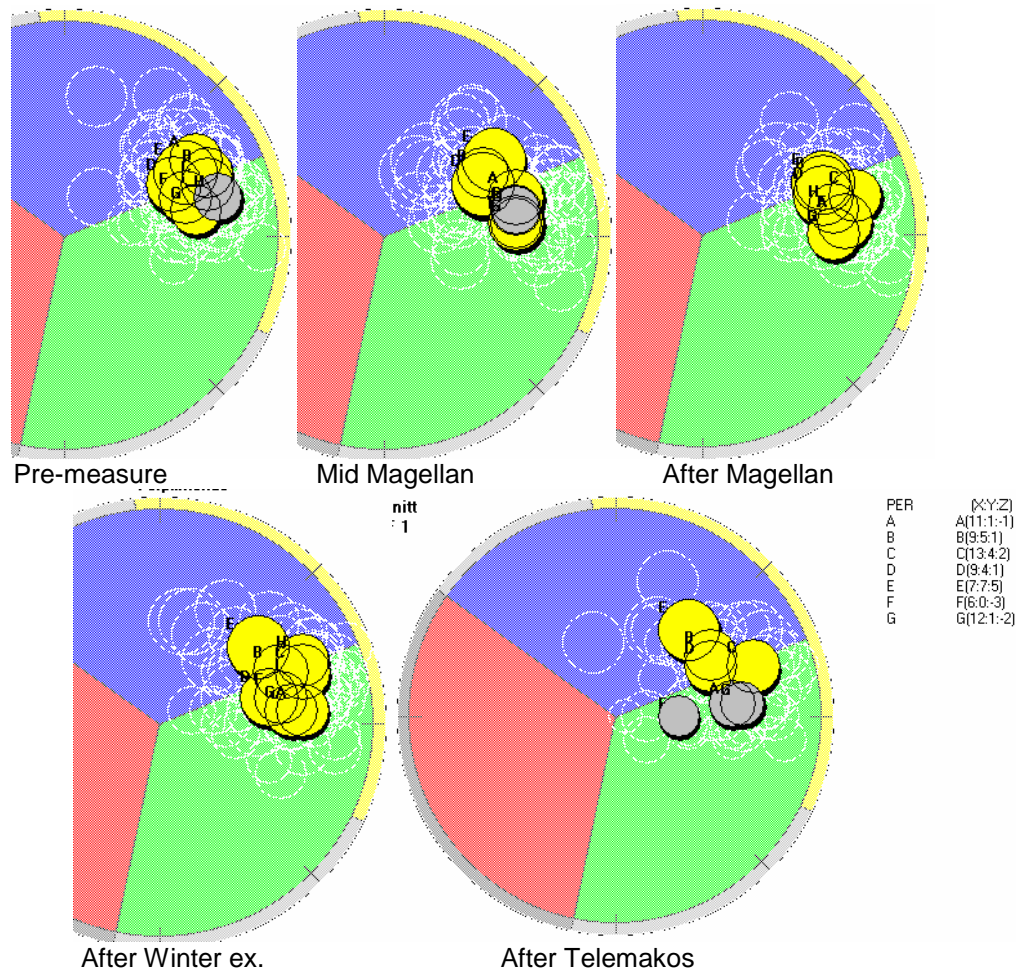


Figure 11.25 Team 03KJ' s SPGR Field Diagram Throughout the Leadership Development Program

However, already at the mid-Magellan measurement, the polarizations that occurred after exercise Telemakos could be observed, where Cadet E tended to dominate the team. This is confirmed by a high E3, Assertiveness, score, $T = 70$, compared with the team's $M = 50.80$ ($SD = 4.15$) and a $d = 2.51$, indicating that this difference was large. Cadet E's low score on the Openness domain, $T = 43$, and high Conscientiousness, $T=61$, indicated that this cadet lacked the ability to adjust. The difference on Openness was moderate, $d = .65$, while on Conscientiousness, it was large, $d = 1.34$. Once again we see the pattern: a team with leaders who are methodical and organized but lack imagination and prefer step-by-step instructions, and thereby inhibit every leadership development attempt.

The Magellan exercise did not represent a major challenge for the teams because this finding is consistent for all teams. The result was a fewer fluctuations among the cadets. This indicates that the teams did not develop their maturity levels, resulting in a lack of leadership development. The final result of this is seen after exercise Telemakos, where the team was fragmented, with Cadet E as the dominant actor. Since the team was not able to break the fixed role pattern, they were not able to dampen out the effect of the Academy's upcoming challenges, resulting in increased entropy. The final result, as illustrated with Team 03KJ, is that it became dysfunctional because of the lack of social capital. The paired sample *t*-test for Team 03KJ illustrates this lack of development, see Table 11.27.

Table 11.27

Team 03KJ: SPGR 12-Vector Pre and Post Measures

SPGR Vectors	Pre Measure	Post Measure	<i>r</i>	<i>t</i> (48)	<i>Sig.</i>	<i>d</i>
	<i>M/SD</i>	<i>M/SD</i>				
S2: Empathy	7.22 (1.05)	7.55 (.85)	.41	-1.547	.128	
N1: Caring	7.65 (1.32)	6.98 (2.24)	.40	2.250	.029	.35
D2: Acceptance	6.80 (1.74)	7.39 (1.84)	.42	-2.140	.037	.33
N2: Creativity	4.69 (2.56)	4.43 (2.25)	.09	.570	.571	
O1: Criticism	1.53 (1.23)	2.55 (1.97)	.33	-3.679	.001	.61
W1: Resignation	1.65 (1.32)	2.22 (1.83)	.08	-1.843	.071	
W2: Self-sacrificing	1.67 (1.16)	2.27 (1.63)	.08	-2.152	.036	.41
O2: Assertiveness	4.00 (1.97)	3.71 (2.18)	.27	.800	.428	
C2: Ruling	4.49 (2.06)	4.18 (2.23)	.61	1.131	.264	
D1: Loyalty	7.94 (1.48)	7.90 (1.66)	.35	.159	.875	
C1: Task orientation	3.67 (2.03)	4.69 (2.35)	.45	-3.087	.003	.46
S1: Engagement	8.18 (1.47)	6.59 (1.99)	.33	5.434	.001	.90

There is large and significant decrease in Engagement, and the ES statistics indicate a large decrease. They also had an increase in self-sacrificing behavior while at the same time the protective, sociable behavior was reduced.

There was also a large increase in Opposition behavior represented with Criticism, indicating a more self-centered, provocative and unruly behavior. It might seem paradoxical that there was also a significant increase in Task-oriented behavior, indicating that the team is becoming more efficient, analytical, and rational. An independent *t*-sample analyses within the team, however, indicates that the dominant cadet contributes to the task oriented behavior ($M = 8.14$, $SD = 1.46$) against [$M = 4.12$, $SD = 1.94$, $t(47) = 6.396$, $p < .001$, $d = 1.87$]. A paired sample *t*-test was conducted among the remaining cadets on Engagement. This analysis showed that, because of the dominant cadet, there was a significant reduction in engagement and involvement within the team ($M = 8.05$, $SD = 1.55$) to [$M = 6.86$, $SD = 1.84$, $r = .29$, $t(41) = 5.534$, $p < .001$, $d = .98$] while they also experienced an increase in W1, Resignation behavior ($M = 1.69$, $SD = 1.35$) to [$M = 2.43$, $SD = 1.90$, $r = .06$, $t(41) = 2.113$, $p < .041$, $d = .45$], which illustrates the importance of social interaction within the team and its implications for leadership development. Although this increase was moderate, it illustrates that the team and its members were not able to cope with the external entropy that the “Telemakos” exercise represented. It is also worth noting that the reduction in Caring is mostly a result of a change in the dominant cadet’s reputation: ($M = 8.57$, $SD = .54$) to [$M = 6.29$, $SD = 2.14$, $r = -.75$, $t(6) = 2.359$, $p < .023$ one tailed, $d = 1.67$], which also illustrates the importance of the social interaction within the team and its implications for leadership development. The dominant cadet’s 12-vector profile, self and peer rating are shown in Figure 11.26.

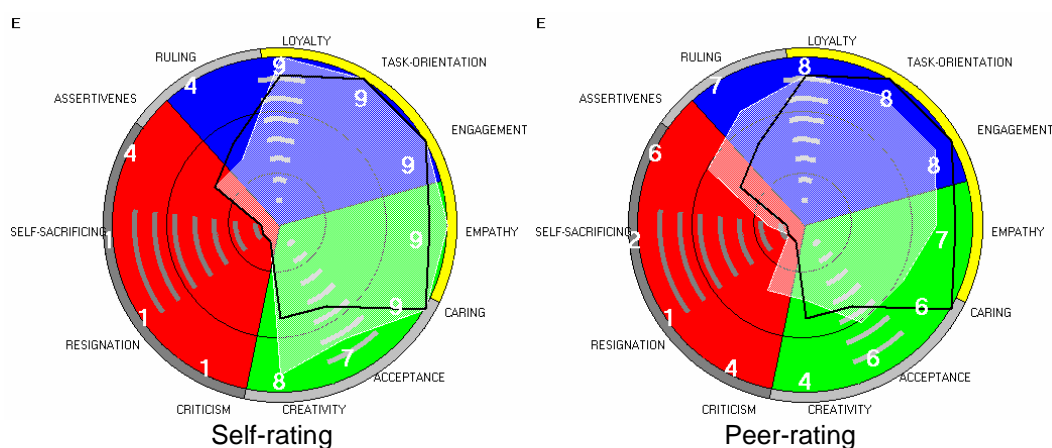


Figure 11.26 The Dominant Cadet's SPGR 12-Vector Profile

11.4.4 Summary: Cohort 2003

The Magellan exercise for Cohort 2003 differed from the one the RNoNA conducted for Cohort 2002. It had more visits to harbors in the Mediterranean area, while Cohort 2002 had a much longer voyage from Las Palmas—The Caribbean—Washington and back to Bergen across the Atlantic Ocean via Brest in France. The consequence of this was that the challenges represented by the exercise for Cohort 2003 was much smaller than the previous exercise. The cadets were given many more possibilities to go “backstage” (Goffman, 1959) and fix their make up before they once again entered the stage due to shorter intervals at sea. This was not possible for Cohort 2002, and the social interaction problems that were created as a result of that exercise had to be solved onboard the vessel within the teams. Cohort 2003 was also often within the working range of their mobile phones, which meant that considerable entropy was dissipated in a nonconstructive manner and “solved” outside the teams, resulting in fewer fluctuations and less development, see the Humres result of the cohort, Table 11.19.

11.5 Cohort 2004

Cohort 2004 was the largest of the cohorts in this research, consisting of twelve teams. Based on feedback from Cohort 2003, the “Magellan” exercise was changed back to a longer period at sea, and the destination was Natal in Brazil. The SPGR Humres pre-post measures for the cohort are presented in Table 11.28. These results indicate a very limited change—there was no increase in synergetic behaviors such as Engagement and Empathy. Figure 11.27 illustrated the cohort’s average development, as measured by the team members’ ratings in the field diagram together with the average leadership behavior illustrated with the SPGR 12-vector. As seen both from Table 11.28 and Figure 11.27, development was minimal. The Nurture function was dominant, together with Dependence, and the imbalance between Control ($M = 3.68$, $SD = 1.62$) and Nurture [$M = 5.08$, $SD = 1.17$, $t(85) = -6.264$, $p < .001$, $d = 1.36$] was very large. This indicates a maturity level of Team Spirit. The most positive development was a significant but moderately positive reduction in Withdrawal, which led to less self-pitying and complaining, see Table 11.29.

Table 11.28

Cohort 2004: SPGR Humres Pre and Post Measures - Others Rating

SPGR Functions	Pre measure	Post Measure	<i>r</i>	<i>t</i> (85)	<i>Sig.</i>	<i>d</i>
	<i>M/SD</i>	<i>M/SD</i>				
Synergy	6.87 (1.18)	6.90 (1.06)	.56	-.093	.926	
Control	3.41 (1.32)	3.68 (1.62)	.73	-2.307	.023	.06
Nurture	5.03 (1.12)	5.08 (1.67)	.61	-.366	.716	
Opposition	1.90 (.88)	1.86 (1.02)	.59	.434	.665	
Dependence	6.83 (1.04)	6.54 (.99)	.45	2.508	.014	.07
Withdrawal	1.20 (.94)	.87 (1.09)	.65	3.524	.001	.13
Energy	5.69 (1.88)	6.02 (1.91)	.63	-1.858	.067	

The 12-vector analysis revealed two other significant changes: There was a small reduction in unconventional, spontaneous, and amusing behavior (Creativity), and there was a moderate increase in sociable and protective behavior (Care taking).

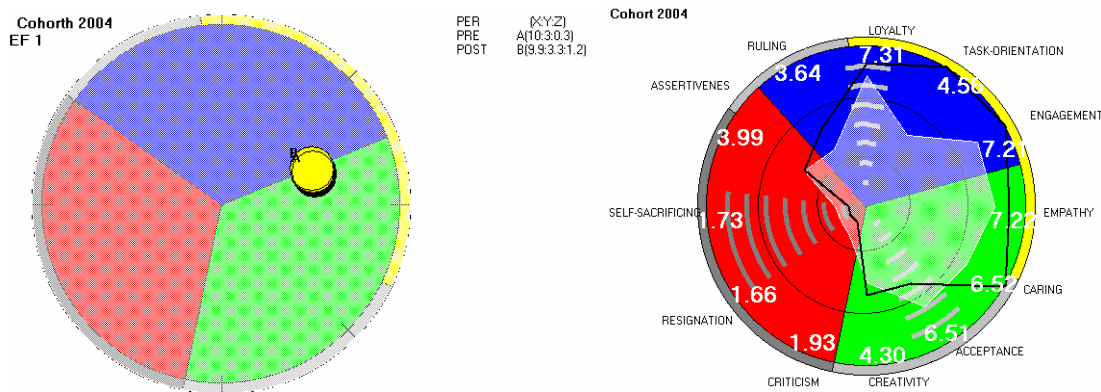


Figure 11.27 The Development of Cohort 2004 in the SPGR Field Diagram and the Cohort's Average Leadership Behavior - Others Rating

The Individual-Level Change results, however, do not support this conclusion, see Table 11.30. According to these results there was no significant development on Creativity and Caring, and the percentages of increasers and decreases were almost the same. Both analyses reveal only small and moderate changes.

Table 11.29

Cohort 2004: SPGR 12-Vector Pre and Post Measures - Others Rating

SPGR Vectors	Pre Measure <i>M/SD</i>	Post Measure <i>M/SD</i>	<i>r</i>	<i>t</i> (85)	<i>Sig.</i>	<i>d</i>
S2: Empathy	7.22 (1.02)	7.22 (1.05)	.57	-.027	.978	
N1: Caring	6.16 (1.43)	6.52 (1.14)	.58	-2.741	.007	.27
D2: Acceptance	6.52 (1.16)	6.51 (1.04)	.44	.081	.935	
N2: Creativity	4.59 (1.65)	4.30 (1.66)	.71	2.144	.035	.18
O1: Criticism	1.85 (.93)	1.93 (1.11)	.54	-.788	.315	
W1: Resignation	1.70 (1.70)	1.66 (1.65)	.65	.552	.583	
W2: Self-sacrificing	2.14 (1.02)	1.73 (.99)	.71	4.909	.001	.40
O2: Assertiveness	3.92 (1.31)	3.99 (1.35)	.56	-.496	.621	
C2: Ruling	3.41 (1.49)	3.64 (1.62)	.64	-1.605	.112	
D1: Loyalty	7.66 (.91)	7.31 (.91)	.29	2.938	.004	.38
C1: Task orientation	4.08 (1.23)	5.56 (1.71)	.67	-3.523	.001	.31
S1: Engagement	7.33 (1.28)	7.21 (1.30)	.62	1.005	.318	

It is also worth noting that the moderate increase in the Control function was a result of more efficient, analytical, rational behavior, Task Orientation, which was positive because it contributed to a lesser degree of imbalance between the Control and Nurture functions. The Individual-Level Change analysis confirms this, indicating a significant development of 23% on Task-Oriented behavior.

A comparison of Tables 11.29 and 11.31 shows that there were both agreements and disagreements on how the cadets perceived themselves compared with how others perceived them. There was agreement on the Self-sacrificing and Task-Oriented behaviors. Although each team member perceived that teammates became more Caring, they did not perceive it in themselves, and the picture is the opposite for Engagement. The most striking differences between self and peer ratings are found by comparing Tables 11.30 and 11.31. While the team members reported a 23% increase in Task Orientation, the cadets' self-ratings reported a significant 11% decrease.

Table 11.30

Cohort 2004: Individual-Level Change for the SPGR 12-Vector - Others Rating

SPGR Vectors	Decrease (%)	Stayed the same (%)	Increase (%)	χ^2 (2, $N = 86$)
S2: Empathy	5	89	6	5.6
N1: Caring	5	89	6	5.6
D2: Acceptance	8	85	7	18.8***
N2: Creativity	8	86	6	15.4***
O1: Criticism	6	87	7	11.2**
W1: Resignation	0	100	0	
W2: Self-sacrificing	5	95	0	1.5 ¹
O2: Assertiveness	5	88	7	8.9*
C2: Ruling	3	85	12	29.9***
D1: Loyalty	12	85	12	29.9***
C1: Task orientation	5	72	23	154.5***
S1: Engagement	5	93	2	1.6

Note. $N = 86$. Number of cadets for decrease, increase, and staying the same were based on the reliable change index (i.e., change greater than 1.96 or less than -1.96 is considered a reliable change). The chi-square tests whether the observed distribution of changers and nonchangers would differ from the expected distribution if changes were random (e.g., 2.5% each decreases and increase and 95% remain the same). Significance levels indicated as: * $p < .05$, ** $p < .01$, and *** $p < .001$. 1) χ^2 (1, $N = 86$).

Once again we see that the RCI provides additional information that is not covered by the traditional t -analyses, especially the significant increase on Acceptance and Creativity. This also shows that these cadets lacked the ability to perceive how their own behavior affected their team members, suggesting a lack of strategic awareness. This lack of strategic awareness represents a challenge for the leadership development program at the RNoNA because it is a large contributor to the lack of development.

The cohort's maturity level was Team Spirit, indicating that the cadets' ability as a group to play the interaction and isolation game did not increase as a result of the RNoNA leadership development program, as was illustrated in Figure 11.27. This result and finding is consistent with and in accordance with the previous findings.

Table 11.31

Cohort 2004: SPGR 12-Vector Pre and Post Measures - Self Rating

SPGR Vectors	Pre Measure <i>M/SD</i>	Post Measure <i>M/SD</i>	<i>r</i>	<i>t</i> (85)	<i>Sig.</i>	<i>d</i>
S2: Empathy	7.59 (1.78)	7.60 (1.92)	.36	-.051	.959	
N1: Caring	6.80 (1.95)	6.79 (1.70)	.45	.056	.956	
D2: Acceptance	7.37 (1.73)	6.55 (1.88)	.15	3.248	.002	.46
N2: Creativity	4.91 (2.10)	4.86 (2.35)	.54	.201	.841	
O1: Criticism	1.92 (1.66)	1.81 (1.36)	.20	.505	.615	
W1: Resignation	1.98 (1.31)	1.42 (.87)	.19	3.626	.001	.50
W2: Self-sacrificing	2.05 (1.44)	1.45 (.98)	.32	3.771	.001	.47
O2: Assertiveness	4.33 (1.90)	4.53 (1.99)	.38	-.892	.375	
C2: Ruling	3.72 (2.25)	3.93 (2.01)	.37	-.810	.420	
D1: Loyalty	7.42 (1.72)	7.58 (1.75)	.26	-.714	.477	
C1: Task orientation	4.41 (1.97)	5.17 (2.07)	.42	-3.259	.002	.38
S1: Engagement	7.52 (1.66)	7.95 (1.51)	.22	-2.009	.048	.27

Table 11.32

Individual-Level Change for the SPGR 12-Vector - Self Rating

SPGR Vectors	Decrease (%)	Stayed the same (%)	Increase (%)	χ^2 (2, <i>N</i> = 86)
S2: Empathy	3	91	6	4.3
N1: Caring	2	93	5	1.6
D2: Acceptance	7	80	14	54.1***
N2: Creativity	0	86	14	44.7***1
O1: Criticism	2	89	9	16.3***
W1: Resignation	0	94	6	3.6 ¹
W2: Self-sacrificing	0	93	7	6.7* ¹
O2: Assertiveness	4	95	1	1.0
C2: Ruling	0	99	1	.7 ¹
D1: Loyalty	7	86	7	14.5***
C1: Task orientation	11	87	2	22.4***
S1: Engagement	0	91	9	15.6***1

Note. *N*=86. Number of cadets for decrease, increase, and staying the same were based on the reliable change index (i.e., change greater than 1.96 or less than -1.96 is considered a reliable change). The chi-square tests whether the observed distribution of changers and nonchangers would differ from the expected distribution if changes were random (e.g., 2.5% each decreases and increase and 95% remain the same). Significance levels indicated as: **p* < .05, ***p* < .01, and ****p* < .001. 1) χ^2 (1, *N* = 86).

11.5.1 The NEO PI-R Results of Cohort 2004

The NEO PI-R results are reported in Table 11.33. The Cohort's personality score was consistent with the population in general. During the year, the cadets became more emotionally stable, which was a positive development, and the Individual-Level Change results presented in Table 11.34 indicate that 13% of the cadets became significantly more emotionally stable. The significant reduction on N1, Anxiety (11%), and N6, Vulnerability (9%), were the major contributors to this development. The paired sample *t*-test showed a moderate to large decrease in their overall Agreeableness score, resulting in 9% who decreased and 5% who increased. This was, however, a negative development because the Agreeableness domain is important in cooperation. Especially worth noting was the significant 17% decrease on A1, Trust, and the 8% decrease on A2, Straightforwardness. These were negative developments because *Auftragstaktik* requires a high degree of trust that is created through cooperation. How this played out within the teams will be discussed in section 11.5.2. Overall, this result is consistent with SPGR findings indicating a partly dysfunctional development because of a decrease in Agreeableness.

Cohort 2004: The NEO PI-R Pre and Post Measures

DOMAINS AND FACETS	α Pre measure	Pre measure M/SD	α Post measure	Post measure M/SD	<i>r</i>	<i>t</i> (84)	<i>Sig</i>	<i>d</i>
N: NEUROTICISM	.91	49.76 (8.39)	.90	48.53 (7.61)	.78	2.151	.034	.15
N1: Anxiety	.73	49.64 (8.24)	.75	46.64 (7.87)	.68	4.281	.001	.37
N2: Angry Hostility	.72	47.78 (8.13)	.68	49.49 (7.71)	.67	-.688	.506	
N3: Depression	.79	48.00 (7.44)	.72	46.45 (6.46)	.78	2.985	.004	.21
N4: Self-Consciousness	.62	49.67 (8.18)	.68	49.49 (8.39)	.67	.240	.811	
N5: Impulsiveness	.68	50.75 (10.17)	.71	50.00 (9.97)	.62	.788	.433	
N6: Vulnerability	.80	50.42 (8.12)	.77	50.41 (7.14)	.57	.015	.988	
E: EXTRAVERSION	.86	52.34 (7.56)	.86	53.20 (7.71)	.78	-1.572	.120	
E1: Warmth	.71	49.58 (8.43)	.77	50.25 (8.36)	.66	-.898	.372	
E2: Gregariousness	.52	51.46 (7.98)	.69	50.82 (8.43)	.63	.828	.410	
E3: Assertiveness	.76	52.89 (8.58)	.78	53.98 (8.04)	.74	-1.634	.106	
E4: Activity	.61	51.28 (7.90)	.63	51.47 (5.89)	.64	-.256	.799	
E5: Excitement Seeking	.56	55.01 (7.88)	.23	55.01 (8.74)	.75	-1.992	.050	.15
E6: Positive Emotions	.76	53.21 (8.07)	.81	54.29 (8.64)	.72	-1.565	.121	
O: OPENNESS	.85	47.69 (8.81)	.86	48.65 (2.29)	.82	-1.700	.093	
O1: Fantasy	.75	48.09 (9.14)	.75	48.82 (8.64)	.68	-.948	.346	
O2: Aesthetics	.83	46.55 (11.17)	.84	47.01 (10.32)	.83	-.677	.500	
O3: Feelings	.74	48.51 (10.74)	.78	49.85 (10.30)	.66	-1.432	.156	
O4: Actions	.59	51.09 (8.90)	.40	50.99 (7.35)	.64	.139	.890	
O5: Ideas	.78	48.65 (10.71)	.85	50.06 (10.91)	.83	-2.087	.040	.13
O6: Values	.45	49.36 (8.02)	.45	49.88 (8.28)	.47	-.571	.570	
A: AGREEABLENESS	.88	50.08 (8.94)	.84	47.51 (8.40)	.69	3.463	.001	.30
A1: Trust	.78	51.99 (8.17)	.79	50.49 (8.82)	.47	1.578	.118	
A2: Straightforwardness	.65	49.00 (8.71)	.71	46.60 (9.83)	.63	2.758	.007	.26
A3: Altruism	.77	52.07 (10.13)	.70	50.21 (9.67)	.58	1.893	.062	
A4: Compliance	.53	48.48 (8.67)	.38	47.73 (7.34)	.64	1.005	.318	
A5: Modesty	.52	49.34 (7.22)	.66	47.51 (7.93)	.67	2.734	.008	.24
A6: Tender-Mindness	.70	49.09 (9.19)	.49	47.72 (7.00)	.60	1.684	.632	
C: CONSCIENTIOUSNESS	.91	49.86 (9.03)	.91	50.16 (9.22)	.79	-.478	.634	
C1: Competence	.65	52.56 (8.74)	.73	52.94 (8.94)	.63	-.481	.632	
C2: Order	.65	50.07 (7.92)	.67	50.76 (8.99)	.74	-.971	.334	
C3: Dutifulness	.71	51.62 (8.06)	.68	51.44 (9.39)	.67	.238	.812	
C4: Achievement Striving	.68	49.84 (8.93)	.79	50.58 (9.60)	.72	-.999	.320	
C5: Self-Discipline	.70	49.96 (8.81)	.73	49.96 (8.39)	.67	.001	1.000	
C6: Deliberation	.73	48.34 (8.16)	.63	47.62 (8.76)	.67	.872	.385	

Table 11.34

Cohort 2004: Individual-Level Change in NEO PI-R Domains and Facets

Domains and facets	Decreased (%)	Stayed the same (%)	Increased (%)	χ^2 (2, $N=85$)
N: NEUROTICISM	13	82	5	40.2***
N1: Anxiety	11	88	1	23.2***
N2: Angry Hostility	2	96	2	.2
N3: Depression	2	98	0	.2 ¹
N4: Self-Consciousness	2	96	2	.2
N5: Impulsiveness	4	92	4	.8
N6: Vulnerability	9	85	6	21.1***
E: EXTRAVERSION	1	92	7	7.8*
E1: Warmth	4	88	8	12.0**
E2: Gregariousness	5	94	1	2.3
E3: Assertiveness	2	93	5	1.7
E4: Activity	0	96	4	.3 ¹
E5: Excitement Seeking	0	100	0	
E6: Positive Emotions	2	88	8	16.7***
O: OPENNESS	2	93	5	1.7
O1: Fantasy	2	91	7	3.3
O2: Aesthetics	1	97	2	6.1* ¹
O3: Feelings	2	87	11	22.8***
O4: Actions	2	98	0	.3 ¹
O5: Ideas	2	91	7	7.5*
O6: Values	2	96	2	3.1
A: AGREEABLENESS	9	86	5	18.6***
A1: Trust	17	75	8	81.0***
A2: Straightforwardness	8	90	2	11.5**
A3: Altruism	5	94	1	2.3
A4: Compliance	0	100	0	
A5: Modesty	5	94	1	2.3
A6: Tender-Mindness	1	98	1	1.3
C: CONSCIENTIOUSNESS	8	83	9	28.6***
C1: Competence	5	93	2	1.7
C2: Order	1	96	1	.6
C3: Dutifulness	6	93	1	4.5
C4: Achievement Striving	0	91	9	16.0***
C5: Self-Discipline	4	92	4	.8
C6: Deliberation	7	93	0	6.9**

Note. $N=85$. Number of cadets for decrease, increase, and staying the same were based on the reliable change index (i.e., change greater than 1.96 or less than -1.96 is considered a reliable change). The chi-square tests whether the observed distribution of changers and nonchangers would differ from the expected distribution if changes were random (e.g., 2.5% each decreases and increase and 95% remain the same). Significance levels indicated as: * $p < .05$, ** $p < .01$, and *** $p < .001$.1) χ^2 (1, $N=85$).

11.5.2 Cohort 2004: Team Analysis

The pre-post measures of the SPGR Humres results are presented in Table 11.35. These results indicate that that four out of the twelve teams, Team 04UT, 04XY, 04DA, and 04HB, had significant positive development; four teams, Team 04JK, 04LF, 04SN, and 04KV, had no development; while four teams, Team 04NN, 04QP, 04PO, and 04KZ, had significant negative development. Team 04UT and 04HB had one dominant cadet each, but the overall Synergy for the remaining team members was higher than the dominant cadets’.

Table 11.35

Cohort 2004: SPGR Humres Results on the Team Level

	N	SYNERGY		CONTROL		NURTURE		OPPOSITION		DEPENDENCE		WITHDRAWAL		ENERGY	
		Pre M/SD	Post M/SD	Pre M/SD	Post M/SD	Pre M/SD	Post M/SD	Pre M/SD	Post M/SD	Pre M/SD	Post M/SD	Pre M/SD	Post M/SD	Pre M/SD	Post M/SD
04JK	7 (49)	6.64 (2.06)	7.05 (1.97)	4.34 (1.76)	4.32 (2.05)	4.92 (5.07)	5.08 (2.19)	2.41 (1.69)	2.57 (1.49)	6.84 (1.81)	7.12 (1.93)	1.10 (1.36)	1.45 (2.00)	5.53 (2.93)	5.60 (3.55)
04QP	9 (81)	8.12 (1.34)	7.39*** (1.72)	2.72 (1.24)	3.61*** (1.75)	6.22 (1.49)	6.14 (1.73)	1.21 (1.19)	1.57* (.95)	7.21 (1.40)	6.79* (1.85)	.49 (.69)	.46 (.90)	7.64 (1.68)	6.93** (2.04)
04HB	7 (49)	6.32 (1.55)	6.75 (1.92)	2.85 (1.82)	3.74** (1.97)	4.59 (1.75)	5.24* (1.70)	1.75 (1.92)	1.61 (1.30)	6.52 (2.10)	6.18 (1.63)	1.59 (1.23)	.92** (1.60)	4.73 (2.30)	5.83** (2.96)
04LF	8 (64)	6.71 (1.56)	6.15** (1.58)	3.08 (1.89)	3.69 (2.38)	5.17 (1.92)	4.96 (1.99)	1.93 (1.34)	1.43** (1.21)	6.75 (1.21)	5.17*** (1.66)	.78 (1.38)	.32*** (1.03)	5.92 (2.08)	5.83 (1.85)
04NN	7 (49)	6.91 (1.45)	6.25** (1.54)	3.40 (2.30)	4.32** (2.85)	4.57 (1.77)	4.30 (1.74)	2.02 (1.67)	3.06** (2.03)	6.71 (1.57)	6.45 (1.90)	1.22 (1.12)	1.40 (1.31)	5.69 (2.09)	4.84* (2.24)
04PO	8 (64)	7.14 (1.32)	6.61* (1.68)	2.97 (1.81)	2.87 (1.92)	5.13 (1.31)	4.52* (1.66)	1.57 (1.23)	1.30 (1.10)	6.52 (1.86)	5.94* (1.84)	1.37 (1.14)	1.51 (1.76)	5.77 (2.04)	5.10 (2.92)
04KV	8 (64)	6.79 (1.66)	6.77 (1.79)	3.69 (2.31)	3.73 (1.96)	4.84 (1.64)	4.61 (1.96)	1.90 (1.43)	2.02 (1.46)	6.40 (1.68)	6.01 (2.04)	1.53 (1.78)	1.27 (2.05)	5.26 (2.92)	5.50 (3.35)
04SN	6 (36)	6.47 (1.71)	7.03 (1.64)	2.85 (1.65)	4.53*** (1.77)	4.88 (2.19)	4.78 (1.62)	1.66 (1.06)	2.16 (1.58)	7.00 (1.40)	7.35 (1.43)	1.25 (1.26)	.81 (1.06)	5.22 (2.30)	6.22* (2.13)
04UT	8 (64)	7.26 (1.68)	7.65 (1.41)	3.83 (1.64)	4.13 (1.62)	5.40 (1.38)	5.79 (1.33)	2.78 (1.92)	2.39 (1.14)	7.44 (1.26)	7.89* (1.09)	1.41 (1.57)	.55*** (.80)	5.85 (2.32)	7.10*** (1.84)
04XY	7 (49)	6.25 (2.00)	7.88*** (1.38)	3.79 (2.11)	3.90 (1.63)	4.87 (1.81)	6.45*** (1.70)	2.25 (1.69)	1.68* (1.30)	6.73 (1.58)	6.94 (2.03)	1.51 (1.33)	.48*** (.92)	4.73 (2.57)	7.39*** (1.91)
04KZ	6 (36)	8.07 (1.03)	6.69*** (1.50)	2.78 (1.33)	3.44* (1.82)	5.94 (1.55)	4.66*** (1.75)	1.44 (.83)	.94** (.87)	8.43 (.87)	6.50*** (1.55)	.31 (.51)	.47 (.57)	7.78 (1.15)	6.22*** (1.44)
04DA	6 (36)	6.60 (1.70)	7.41* (1.13)	3.82 (2.17)	3.78 (1.73)	4.44 (1.64)	4.97 (1.70)	1.97 (1.85)	1.72 (.86)	6.47 (1.90)	6.37 (1.95)	1.88 (1.85)	.28*** (.86)	4.72 (2.97)	7.13*** (1.52)

Note: A paired sample *t*-test was conducted to evaluate the impact of the leadership development program on the cadets’ SPGR Humres scores. Significant changes are indicated with: **p* < .05, ***p* < .01, and ****p* < .001. *N* gives the number of ratings within each team. A team consists of 8 members who rate themselves and each others, producing 64 ratings.

Team 04DA showed positive development. Figure 11.28 illustrates the team’s development throughout the leadership development program. What appeared to cause this positive development was that the troublesome Cadets, C and F, were not members of the team during the demanding “Telemakos” exercise.

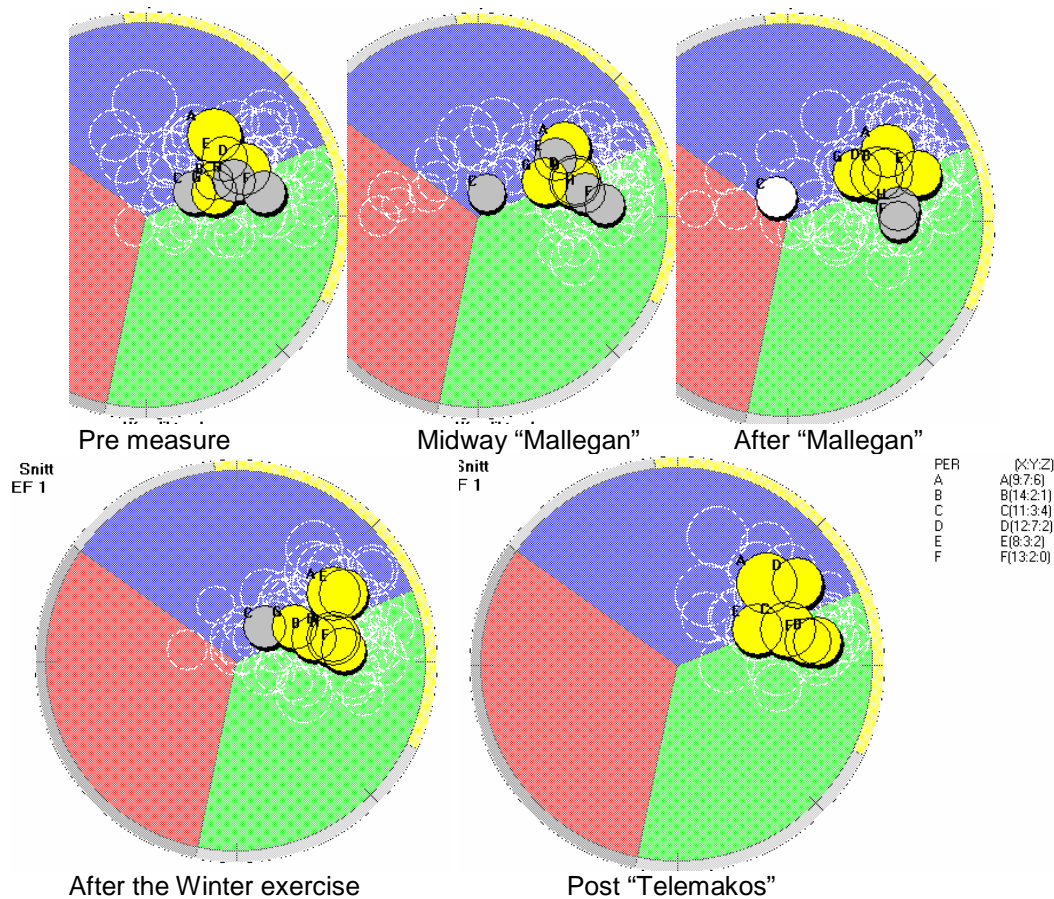


Figure 11.28 The SPGR Field Diagrams of Team 04DA Throughout the Leadership Development Program

This seems to have reduced the inward focus of the team. The field diagrams, however, show that team was still dominated by one cadet, Cadet A. The field diagrams also reveal that this cadet was located in approximately the same position throughout the year, indicating a lack of flexibility in leadership behavior. Figure 11.29 shows Cadet A's SPGR 12-vector profiles after "Telemakos." The 12-vector, together with the field diagrams, indicate that this cadet lacked the ability necessary to perform different leadership roles, which resulted in a lack of development in that cadet's role repertoire. The balance between Control and Nurture is skewed for the team: Control was ($M = 3.78$, $SD = 1.73$) compared with Nurture [$M = 4.97$, $SD = 1.70$, $t(35) = -2.674$, $p < .011$, $d = .90$], which was a large imbalance, indicating that Nurture is the dominant function. The Dependence function is also high (see Table 11.35) indicating the maturity level of Team Spirit.

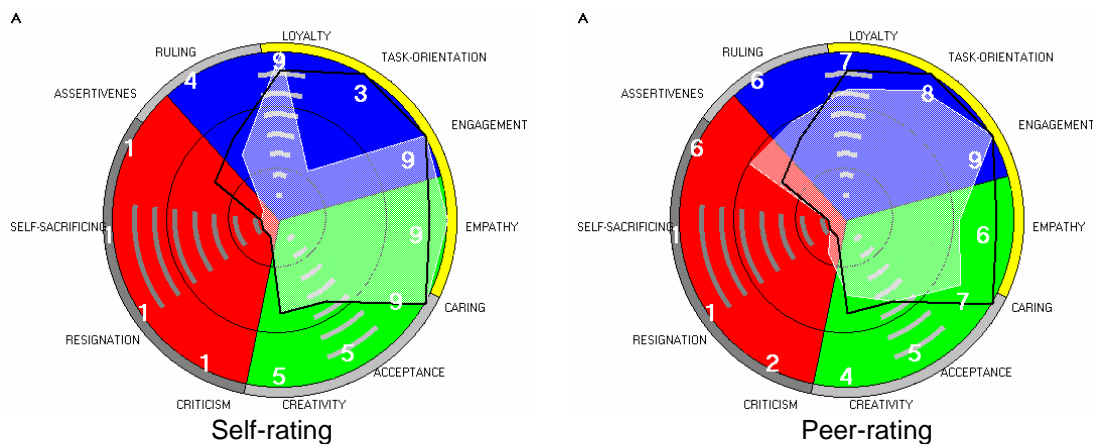


Figure 11.29 The Dominant Cadet A in Team 04DA's SPGR 12-Vector Profiles

Team 04XY, which showed positive development, and Team 04QP, which had negative development, appear according to the statistics to have the “opposite” development. Both teams, however, reached the maturity level Team Spirit, but via a different path. The pre measure showed that Team 04XY, see Figure 11.30, had four cadets with a submissive behavior, lacking initiative.

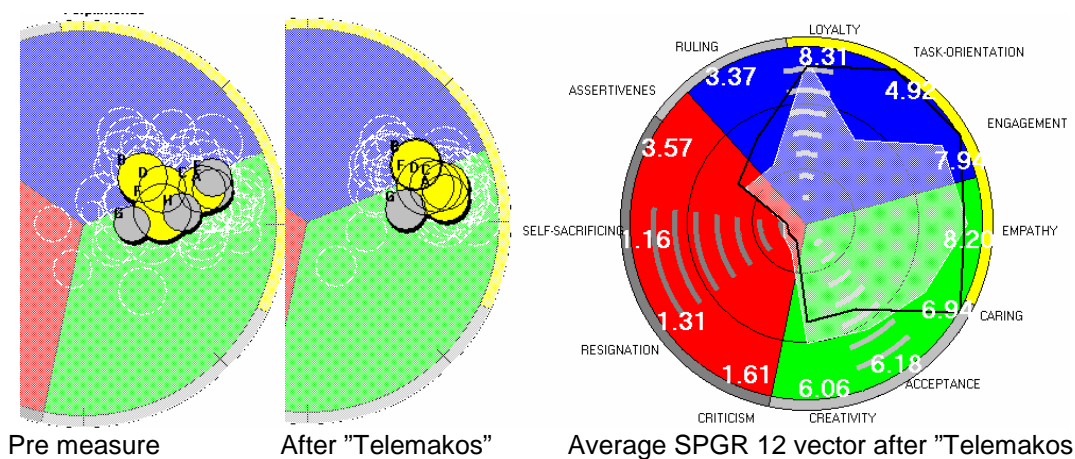


Figure 11.30 Team 04XY: Their Development and Average Leadership Behavior

During the leadership development program, this changed, and by the end there was only one cadet who showed submissive behavior, Cadet G (one dropped out). The 12-vector

diagram illustrates the imbalance between Control and Nurture, which was large $t(47) = -8.644, p < .001, d = 2.52$. At the start of the program it was also unbalanced ($M = 3.36, SD = 2.09$) against [$M = 4.78, SD = 1.84, t(63) = -4.748, p < .001, d = 1.20$], but not as large as in the end of the program, which is indicated by the ES statistics.

Team 04QP, as the field diagram in Figure 11.31 indicates, started with a strong focus on nurturing behaviors, which are the most common things to do. Table 11.35 also shows a strong Dependence function, indicating that this team, after a short time together, was at the maturity level of Team Spirit. The development issue for this team was to challenge its role structure before it could begin to inhibit the team's performance.

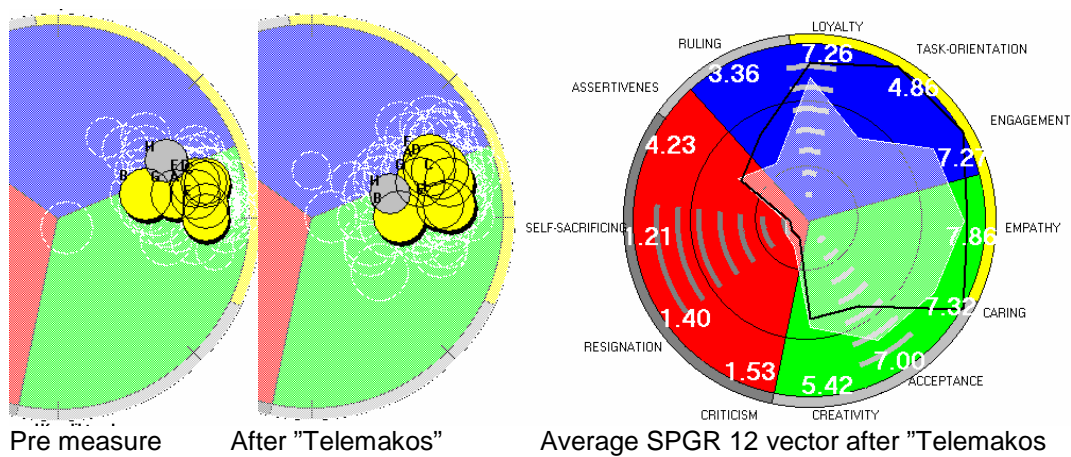


Figure 11.31 Team 04QP: Their Development and Average Leadership Behavior

This was accomplished, to some degree, because there were significant increases in controlling behavior and opposition behavior, which, according to 12-vector analyses, were on (a) Task-oriented behavior ($M = 3.90, SD = 1.60$) to [$M = 4.86, SD = 1.85, r = .19, t(80) = -3.921, p < .001, d = .55$], (b) Rule oriented behavior, ($M = 2.44, SD = 1.70$) to [$M = 3.36, SD = 2.00, r = .51, t(80) = -4.472, p < .001, d = .49$], (c) Criticism ($M = 1.19, SD = .78$) to [$M = 1.53, SD = 1.30, r = .39, t(80) = -2.537, p < .013, d = .31$], and (d) Assertiveness ($M = 3.44, SD = 2.28$) to [$M = 4.23, SD = 1.87, r = .34, t(80) = -3.069, p < .001, d = .39$]. The reduction in Synergy was a result of less behavior related to inspiring and motivating, Engagement; ($M = 8.19, SD = 1.45$) to [$M = 7.27, SD = 2.03, r = .42, t(80) = 4.229, p < .001, d = .51$]. The ES statistics indicate that these changes were moderate, and the field diagram

reveals these changes were not enough to challenge the role structure. The established imbalance between the Nurture and Control functions, which at the end of the program was $t(81) = -8.209, p < .001, d = 1.82$, was reduced but still large; at the pre-measure it was: $t(81) = -15.359, p < .001, d = 3.41$.

The last team that will be covered in detail is Team 04NN, which had negative development. This is a case which requires special attention because it represents a fundamental lack of understanding concerning leadership behavior and leadership development. Figure 11.32 shows the field diagrams for this team throughout the leadership development program.

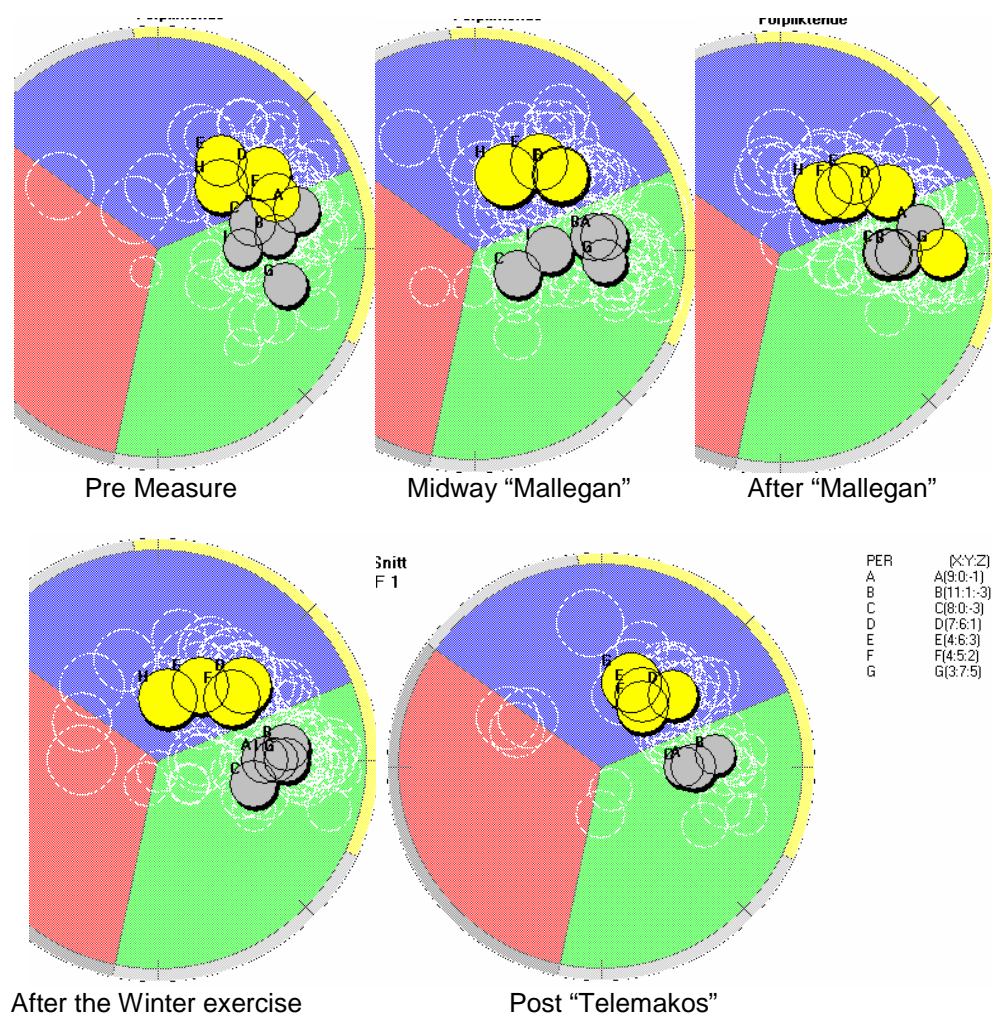


Figure 11.32 The SPGR Field Diagrams of Team 04NN Throughout the Leadership Development Program

This team was dominated by one cadet, Cadet H, who was Cadet G in the last measurement because the original Cadets G and I dropped out before or during the “Telemakos” exercise. The dominant cadet was closely followed by Cadets E and F. The team was polarized from the beginning with four cadets showing submissive behavior. This relationship became more polarized whenever the team was put under pressure. The external challenges created an internal entropy, d_iS , and because the team had not, or was not able to, or did not care to create the internal harmony necessary to dampen out the external entropy, represented by new and demanding leadership tasks, the team experienced a negative development as a result of the social interaction within the team. The result, unfortunately, was a team that fragmented into many noncooperative centers of gravity and thus lacked the mutual trust and cohesion necessary to implement *Auftragstaktik*.

How could this happen? One answer might be that the RNoNA did not know what they were doing because the facilitators should have been able to control this. Insights from complexity theory, however, suggest that complex group behavior can not be explicitly controlled (Stacey, 2001; Stacey & Griffin, 2005; Streatfield, 2001). Therefore it is of the utmost important to understand what happened and what led to this lack of development or negative bifurcation. A look at the dominant cadet’s personality score on the NEO PI-R provides an explanation, and it shows the same pattern as previously discussed. This dominant cadet, H, was exceptionally forceful, as indicated by that cadet’s score on E3, Assertiveness, $T = 64$, while the team score was $M = 54.67$ ($SD = 9.44$). This was a large difference, $d = .96$. This cadet also scored high on N2, Angry Hostility, $T = 55$, compared to the team ($T = 47.83$, $SD = 3.25$, $d = .96$), and together with an even higher score on N5 Impulsiveness ($T = 60$), compared with the team $M = 45.17$ ($SD = 9.30$, $d = 1.54$), indicated a lack of tolerance for frustration. Because of Cadet H’s low C6, Deliberation, $T = 35$, compared to the team score of $M = 54.67$ ($SD = 3.20$, $d = 2.65$), Team 04NN had a leader who lacked the personal discipline necessary to control this kind of behavior. Because Cadet H’s T -score was as low as 38 (both on pre- and post-measure) on the Agreeableness domain the cadet’s frustration was directed toward the team (Piedmont, 1998), whose score was $M = 50.83$ ($SD = 9.07$), and the ES statistics of $d = 1.34$ indicates a large difference. The result, as illustrated by SPGR, was the creation of a negative climate that hampered leadership development. This cadet’s SPGR 12-vector profiles are shown in Figure 11.33.

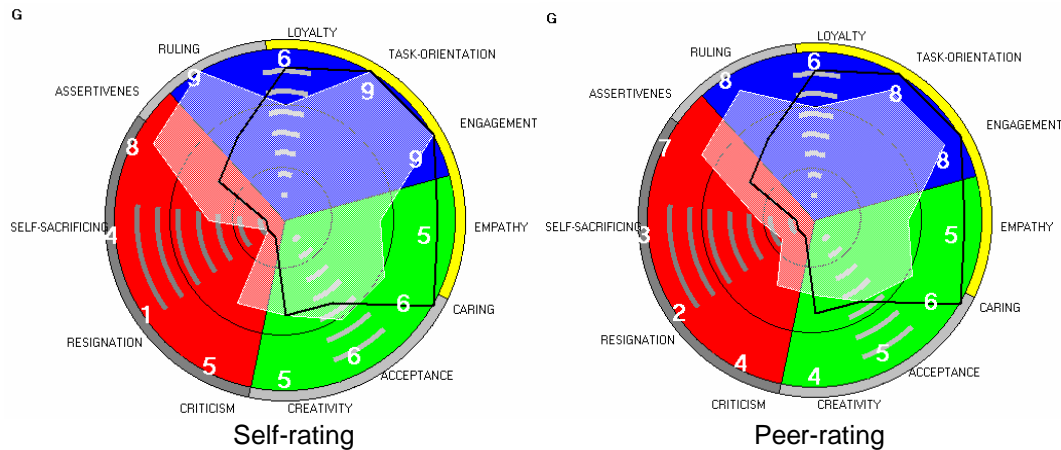


Figure 11.33 The SPGR 12-Vector Profiles of the Dominant Cadet in Team 04NN

The behavior of Cadet H revealed in Figure 11.33 represents a dysfunctional leadership focusing on “getting ahead.” It appears, however, that this cadet was followed by the majority of the team, which illustrates the weakness and danger of a culture that at the maturity level of Team Spirit. How this could happen will be further discussed in chapter 13.

11.5.3 Summary: Cohort 2004

The performed analysis indicates a lack of leadership development as a result of a low level of maturity, producing an unfavorable climate for leadership development. The results are similar to those of Cohort 2001. These results indicate, as was also the case with Cohort 2001, see section 11.2.4, no significant improvement in insight, orientation, agility, and initiative, hence no leadership development. The cadets in their teams tended to coalesce into many noncooperative centers of gravity, each of which was trying more or less successfully to “get ahead,” or even survive on their own, individual terms. The SPGR results clearly indicate the maturity level of Team Spirit, which consists of behaviors appropriate for 2nd GW, that is, for a centralized, bureaucratic hierarchy, where decisions go from the top down, information is reported up, and there is little trust. The leadership development has not resulted in a development of adaptive leaders suited for 4th GW.

11.6 Culture

This section provides the result and analyses necessary to answer research questions 5 and 6. Culture is an important element of the orientation phase of the OODA loop because it influences perceptions, decisions, and actions. As such it is of utmost importance when it comes to *Auftragstaktik* and developing a climate for operational success. For Cohorts 2001 and 2002, culture data was collected with the CPQ 15 months and three months respectively after they had finished exercise “Telemakos.” Cohorts 2003 and 2004 were measured when they started their leadership development and again after exercise “Telemakos.” The results for Cohort 2001 and 2002 are presented in Table 11.36 while the pre- and post-measures for Cohort 2003 and 2004 are presented in Table 11.37 and 11.38 respectively. The important within orientation, following the procedure from Maznevski et al. (1995), is also reported either as a part of the table or as notes following the table.

These results reveal a culture that is patriarchic when it comes to Relationship, with high Collectivism and Hierarchy. They indicate a culture with a strong tendency to Control and Master its environment through a preferred mode of Doing by applying yesterday’s solution to today’s and tomorrow’s problems. It is also worth noting that there was little variation within the orientation, indicating a homogenous culture. The Relationship-among-People orientation and the pattern of Collectivism > Hierarchy > Individualism is consistent with a culture that values being part of a group and sharing responsibility and serving society, through a hierarchy and distributed power. The importance of individual responsibility and empowerment, which is the essence of *Auftragstaktik*, is not strong. The higher collectivism is consistent with Norwegian and Scandinavian culture, but the higher hierarchy and lower individualism are not. According to Maznevski:

The pattern of collectivism > hierarchy > individualism is consistent with a culture that values being a part of a group and sharing responsibility and serving society, through a hierarchy of distributed power. The importance of the individual responsibility and empowerment, although not negative, is not very strong. [...] This is more like the pattern we see in Latin American cultures and East Asian cultures, very patriarchal cultures (a patriarch looks after the family for the good of everyone, but also has the power over every one)⁵².

Table 11.36

Culture Results for Cohorts 2001 and 2002

Culture orientation and variations	Cohort 2001 (N= 44)		Cohort 2002 (N= 49)	
	M (SD)	Within Orientation and Pattern ^a	M (SD)	Within Orientation and Pattern ^a
Relationship				
Collective	4.92 (.49)		4.98 (.48)	
Hierarchical	4.69 (.57)	C* > H* > I	4.79 (.64)	C ≥ H > I, C* > I
Individualism	4.41 (.67)		4.51 (.67)	
Environment				
Harmony	4.59 (.54)		4.57 (.58)	
Mastery	5.19 (.56)	M** > Ha** > S	5.31 (.58)	M* > Ha* > S
Subjugation	2.88 (.92)		2.62 (.71)	
Human Nature	4.53 (.89)		4.79 (.83)	
Activity				
Doing	4.66 (.76)		4.86 (.64)	
Being	4.09 (.78)	D** > B ≥ T	3.83 (.49)	D* ≥ B > T
Thinking	3.69 (.84)		3.50 (.77)	
Time				
Past	4.89 (.57)		4.78 (.69)	
Present	4.57 (.70)	Pa > Pre ≥ F,	4.40 (.74)	Pa ≥ Pre ≥ F, Pa > F
Future	4.30 (.69)		4.40 (.74)	

^a Significance tested using paired *t*-tests of pairs within each orientation. Initials denote variations within the same orientation.

Variation Abbreviations: C = Collective, H = Hierarchical, I = Individualism, M = Mastery, Ha = Harmony, S = Subjugation, D = Doing, B = Being, T = Thinking, Pa = Past, Pre = Present, and F = Future.

Patterns show preference in rank order from highest to lowest. A “≥” sign indicates that preferences, although ordered this way, are not statistically significantly different from each other. A “>” sign indicates that the differences are statistically significant different according to **> at $p < .001$, *> at $p < .01$, and > at $p < .05$

⁵² Personal communication, e-mail, from Maznevski to Nissestad, October 22, 2003, 23:35.

The Activity dimension also reveals a strong Doing culture, with preference for taking action instead of spending time on analysis. Today's conflicts, however, require officers who can outthink their adversary, and these findings reveal a culture that does not prefer to work at the mental level of conflict. The preference for past over present and future is understandable in terms of tradition. However, this orientation is counterproductive when the overall aim is to implement *Auftragstaktik*, requiring empowerment through individualism and collectivism. Not only will the current relationship culture prove resistant, as these analyses show, but the preference for the past and for tradition will reinforce this resistance.

The more fundamental the grouping, the deeper the culture, the greater its influence on members' values and beliefs, and the less the members are aware of this influence. The low preference for Individualism indicates a lack of concern about leadership based on commitment to the mission. Instead we see a pattern where the focus is on regulated, formal, clear leadership and norms based on status of the membership in the group, which in the military organization is obvious because it will always be toward the highest ranking officer. It is almost impossible in such a culture to implement a leadership practice founded on the philosophy of *Auftragstaktik* because this philosophy is a trade-off between hierarchy and initiative, focusing on commitment to the mission, as defined by the *Schwerpunkt* and the commander's intent. The culture found and reported is a culture that fits 2nd GW, which is dysfunctional in implementing *Auftragstaktik* and in succeeding in 3rd and 4th GW, because of its low ability to adapt and cope with dynamic and ambiguous environments.

The culture found might be a result of recruitment and or socialization. Table 11.36 and 11.37 reports the results of the RNoNA socialization process. The results for Cohort 2003 indicate that the leadership development program had a minor, insignificant impact on the cadets' general cultural orientation; they even had a small decrease in their thinking variation. For Cohort 2004 there seems to have been some small changes, but the main trend is kept. This Cohort showed a moderate reduction in both the Collectivism and Hierarchical variations within the Relationship-among-People orientation, resulting in the pattern $\text{Collectivism} > \text{Hierarchy} \geq \text{Individualism}$, which indicates a change in a more positive direction. There has, however, been no change in individualism, indicating that the RNoNA has not been able to create an empowering culture. This finding is consistent with the reported SPGR findings. The most worrying issues are the large negative changes in Human

Nature, indicating a move towards a more dominant autocratic leadership approach with closer supervision.

Table 11.37

Cohort 2003: Pre and Post Culture Measures

Culture orientation and variation	Pre	Post	<i>r</i>	<i>t</i> (67)	<i>Sig.</i>	<i>d</i>
	<i>M/SD</i>	<i>M/SD</i>				
Relationship						
Collective	4.93 (.52)	4.91 (.45)	.44	.224	.824	
Hierarchical	4.67 (.69)	4.55 (.69)	.53	1.478	.144	
Individualism	4.46 (.62)	4.34 (.61)	.37	1.479	.144	
Environment						
Harmony	4.78 (.68)	4.55 (.64)	.45	2.780	.007	.36
Mastery	5.22 (.59)	5.17 (.64)	.35	.637	.527	
Subjugation	3.07 (.82)	3.01 (.83)	.43	.603	.549	
Human Nature	4.70 (.77)	4.86 (.75)	.36	-1.493	.140	
Activity						
Doing	4.87 (.64)	4.92 (.52)	.46	-.735	.465	
Being	4.05 (.54)	3.98 (.48)	.48	1.007	.317	
Thinking	4.12 (.77)	3.88 (.65)	.61	3.200	.002	.34
Time						
Past	4.92 (.69)	4.75 (.71)	.46	1.901	.062	
Present	4.46 (.80)	4.47 (.67)	.29	-.138	.891	
Future	4.61 (.78)	4.69 (.75)	.29	-.701	.486	

Note: The variation within each orientation, significance tested using paired *t*-test. **Variation Abbreviations:** C = Collective, H = Hierarchical, I = Individualism, M = Mastery, Ha = Harmony, S= Subjugation, D = Doing, B= Being, T = Thinking, Pa = Past, Pre = Present, and F = Future. Patterns show preference in rank order from highest to lowest. A “?” sign indicates that preferences, although ordered this way, are not statistically significantly different from each other. A “>” sign indicates that the differences are statistically significantly different according to **> at $p < .001$, *> at $p < .01$, and > at $p < .05$.

In the Pre measure the variation within each orientation was as follow ($N = 73$): Relationships: C > H *> I, Environment: M **> Ha **> S, Activity: D **> T ≥ B, and Time: Pa > F ≥ Pre.

In the Post measures ($N = 71$): Relationships C > H* > I, Environment: M *> H *> S, Activity: D *> T = B, and Time: Pa > F > Pre.

This is consistent with the NEO PI-R results of Agreeableness for this cohort. It could also be argued that these cadets, as a result of the leadership development program, had a more

realistic understanding of the human nature. The mode of Activity showed that the desired state of focus was Doing, which indicates a relentless striving to achieve, followed by Being, which is characterized by spontaneity.

Table 11.38

Cohort 2004: Pre and Post Culture Measures

Culture orientation and variations	Pre	Post	<i>r</i>	<i>t</i> (87)	<i>Sig.</i>	<i>d</i>
	<i>M/SD</i>	<i>M/SD</i>				
Relationship						
Collective	5.04 (.64)	4.90 (.57)	.61	2.479	.015	.21
Hierarchical	4.55 (.64)	4.39 (.57)	.51	2.544	.013	.27
Individualism	4.25 (.63)	4.29 (.59)	.67	-.587	.559	
Environment						
Harmony	4.55 (.61)	4.37 (.61)	.27	2.269	.026	.29
Mastery	5.23 (.64)	5.17 (.63)	.45	.862	.391	
Subjugation	2.73 (.77)	2.73 (.79)	.26	.000	1.000	
Human Nature	4.62 (.80)	4.20 (.76)	.45	4.853	.001	.54
Activity						
Doing	4.74 (.67)	4.81 (.61)	.54	-1.043	.300	
Being	3.86 (.65)	4.41 (.53)	.56	-9.232	.001	.92
Thinking	3.73 (.91)	3.68 (.67)	.60	.773	.441	
Time						
Past	4.95 (.84)	4.97 (.71)	.51	-.343	.733	
Present	4.40 (.70)	4.37 (.69)	.36	.389	.698	
Future	4.40 (.89)	4.66 (.68)	.30	-2.643	.010	.33

Note: The variation within each orientation, significance tested using paired *t*-test. **Variation Abbreviations:** C = Collective, H = Hierarchical, I = Individualism, M = Mastery, Ha = Harmony, S = Subjugation, D = Doing, B = Being, T = Thinking, Pa = Past, Pre = Present, and F = Future. Patterns show preference in rank order from highest to lowest. A “≥” sign indicates that preferences, although ordered this way, are not statistically significantly different from each other. A “>” sign indicates that the differences are statistically significantly different according to **> at *p* < .001, *> at *p* < .01, and > at *p* < .05.

In the Pre measure the variation within each orientation was as follow (*N* = 97): Relationships; C *> H > I, Environment: M *> Ha *> S, Activity: Do *> Be ≥ T, and Time: Pa *> Pre ≥ F.

In the Post measure (*N* = 88) it was: Relationships: C *> H ≥ I, Environment: M *> Ha *> S, Activity: D *> B *> T, and Time: Pa *> F > Pre.

It is also worth noting the large change on the Being variation, indicating that they appreciated the moment much more, and valued their time off to a greater extent. Their low

Thinking orientation indicates that they did not prefer to make decisions on criteria that were highly logical and that it was not even worth the while to create a good argument for the chosen decision. This is indicated by the thinking score, which is below the midpoint of 4, or into the “disagree” range, a result that indicates a major challenge when it comes to the mental part of the conflict spectrum that is dominant in 3rd GW because their desire is so dominated by the Doing mode. The culture reported here is a culture that is not well suited to cope with an environment that is characterized by ambiguity, novelty, and changing contexts. It is more suited for stable and predictable environments, which can be broken down to standard operating procedures. It is a culture that is highly counterproductive to 3rd GW, with its high focus on mental content (thinking mode), and 4th GW, which has a high moral content and which requires the ability play to the interaction theme.

The culture is patriarchic because of its high Collectivism and Hierarchy and low Individualism. It is a conforming culture with little appreciation for initiative. It is also concerned about mastering its environment through a preferred Doing activity by applying already proven solutions. This makes it possible for a forceful cadet to take charge, control, and dominate the team through authoritative leadership behavior. This corresponds well to the maturity level Team Spirit in SPGR terms because the hierarchy tends to promote and focus on “one-person-one-functional-role.”

According to these results, the leadership development program has not been able to influence the cadets’ general assumptions about how work and interaction with other people should proceed. The leadership development program has not been able to change the value system, beliefs, assumptions, and norms among these cohorts of cadets. There has been no reorientation and the results on culture are consistent with the maturity level found with SPGR that also indicates a lack of ability to perform the leadership roles necessary to cope and strive in a dynamic environment.

11.6.1 Summary of the Culture Findings

The results from the RNoNA indicate that the cadets educated at the RNoNA do not inhabit a culture that enables *Auftragstaktik*, a result that was consistent across all four cohorts. The results from Cohort 2003 and Cohort 2004 also indicate that the leadership development program at the RNoNA had only a minor impact on the cadets’ cultural orientations and

variations, and that this impact was mostly negative. However, the CPQ results presented in Table 11.39 demonstrate that the culture found at the RNoNA is not in any way unique to the RNoNA but appears to be consistent across all services and ranks. Furthermore, the results reported here appear to differ with the general Norwegian culture on the Relationship among people orientation. The Within orientation that is found is Collectivism > Hierarchy > Individualism, which indicates a culture lacking empowerment, and this lack will influence leadership. This is important because Dorfman, Hanges, and Brodbeck (2004) found that culture influences leadership in several ways. They found that leadership attributes from the Charismatic/Value-Based⁵³ and Team-Oriented⁵⁴ leadership dimensions were universally seen as positive within their 10 clusters, which were: (a) Eastern Europe, (b) Latin America, (c) Latin Europe, (d) Confucian Asia, (e) Nordic Europe, (f) Anglo, (g) Sub-Saharan Africa, (h) Southern Asia, (i) Germanic Europe, and (j) the Middle East, see Gupta and Hanges (2004). Human-Oriented⁵⁵ leadership was reported among cultures to be somewhat of a contributor to effective leadership, but not nearly as important as the two previously mentioned ones.

Participative⁵⁶ leadership was found to contribute to effective leadership for all culture clusters. The Germanic Europe, Anglo, and North Europe clusters were particularly attuned to Participative leadership according to the GLOBE results, whereas this was not the case for the Middle East, Eastern Europe, Confucian Asia, and Southern Asia. They further found that both societal and organizational culture values had significant links to beliefs about effective leadership.

⁵³ Charismatic/Value-Based leadership is a broadly defined leadership dimension that reflects the ability to inspire, motivate, and to expect higher performance from others on the basis of firmly held core values (Dorfman, Hanges, & Brodbeck, 2004).

⁵⁴ Team-Oriented leadership is a leadership dimension that emphasizes effective team building and implementation of a common purpose or goal among team members (Dorfman, Hanges, & Brodbeck, 2004).

⁵⁵ Human-Oriented leadership is a dimension that reflects supportive and considerate leadership but also includes compassion and generosity (Dorfman, Hanges, & Brodbeck, 2004).

⁵⁶ Participative leadership is a dimension that reflects the degree to which managers involve others in making and implementing decisions (Dorfman, Hanges, & Brodbeck, 2004).

Table 11.39

Culture Results from the Norwegian Armed Forces

	Army Cadets Level I N = 63		Army Cadets Level II N = 48		Navy Cadets Level II N = 34		Operational Military Unit N = 93	
	Mean (SD)	Within Orientation	Mean (SD)	Within Orientation	Mean (SD)	Within Orientation	Mean (SD)	Within Orientation
Relationship								
Collective	4.96 (.53)		4.86 (.48)		4.92 (.53)		5.01 (.62)	
Hierarchical	4.82 (.60)	C ≥ H **> I	4.56 (.61)	C *>H > I,	4.61 (.71)	C > H **> I	4.84 (.64)	C > H **> I
Individualism	4.53 (.60)		4.36 (.49)		4.15 (.70)		4.35 (.59)	
Environment								
Harmony	4.72 (.61)		4.61 (.55)		4.51 (.69)		4.63 (.62)	
Mastery	5.19 (.62)	M **> H **> S	5.04 (.45)	M **> H **> S	5.06 (.60)	M **> H **> S	5.26 (.50)	M **>H **> S
Subjugation	2.97 (.70)		2.85 (.81)		2.64 (.84)		2.90 (.81)	
Human Nature	4.53 (.80)		4.80 (.60)		4.71 (.77)		4.51 (.86)	
Activity								
Doing	4.65 (.68)		4.46 (.63)		4.43 (.56)		4.60 (.61)	
Being	4.04 (.61)	D **> B **> T	3.77 (.63)	D **> B ≥ T	3.57 (.68)	D **> B ≥ T	3.82 (.58)	D **> B ≥ T
Thinking	3.90 (.94)		3.61 (.71)		3.53 (1.00)		3.80 (.77)	
Time								
Past	5.06 (.63)		4.90 (.72)		4.45 (.73)		4.77 (.72)	
Present	4.34 (.73)	Pa **>Pre ≥ F	4.07 (.91)	Pa **> Pre ≥ F	4.44 (.67)	Pa ≥ Pre ≥ F	4.29 (.76)	Pa **> Pre ≥ F
Future	4.33 (.63)		4.4 (.81)		4.35 (1.14)		4.26 (.86)	

	Applicant Navy OFC, 2004 N = 275		Applicant Navy OFC, 2005 N = 72		Applicants Air OFC 2006 N = 62		Applicants Mil Acad. 2005 N = 199		Applicants Mil Acad., 2006 N = 226	
	Mean (SD)	Within Orientation	Mean (SD)	Within Orientation	Mean (SD)	Within Orientation	Mean (SD)	Within Orientation	Mean (SD)	Within Orientation
Relationship										
Collective	5.08 (.51)		4.99 (.51)		4.86 (.65)		4.84 (.53)		4.91 (.58)	
Hierarchical	4.76 (.66)	C **>H **> I	4.94 (.66)	C ≥ H **> I	4.92 (.58)	H ≥ C **> I	4.87 (.57)	H ≥ C **>I	4.82 (.57)	C > H **> I
Individualism	4.41 (.60)		4.13 (.61)		4.42 (.55)		4.22 (.61)		4.26 (.61)	
Environment										
Harmony	4.95 (.58)		4.81 (.59)		4.72 (.63)		4.68 (.62)		4.66 (.59)	
Mastery	5.18 (.55)	M **> Ha **> S	5.23 (.49)	M **> Ha **> S	5.13 (.58)	M **> Ha **> S	5.28 (.56)	M **> Ha **> S	5.20 (.57)	M **>Ha **> S
Subjugation	3.01 (.88)		2.67 (.77)		2.90 (.82)		2.63 (.77)		2.66 (.79)	
Human Nature	3.99 (.56)		4.11 (.84)		3.81 (.68)		4.28 (.75)		4.23 (.70)	
Activity										
Doing	4.76 (.56)		4.77 (.54)		4.74 (.63)		4.70 (.60)		4.65 (.58)	
Being	4.05 (.56)	D **> T **> B	4.22 (.50)	D ** > B ≥ T	4.42 (.56)	D **> B **> T	4.20 (.50)	D **> B **>T	4.10 (.51)	D **> B **>T
Thinking	4.29 (.78)		4.20 (.73)		3.92 (.85)		3.96 (.70)		3.88 (.78)	
Time										
Past	4.98 (.71)		5.25 (.66)		5.19 (.78)		5.27 (.66)		5.19 (.65)	
Present	4.52 (.69)	Pa **> F > Pre	4.19 (.91)	Pa **> Pre > F	4.55 (.75)	Pa **> F ≥ Pre	4.19 (.77)	Pa **> F **> Pre	4.13 (.79)	Pa **> F **> Pre
Future	4.65 (.72)		4.53 (.79)		4.60 (.67)		4.60 (.74)		4.71 (.70)	

Note: Those officers who attended level II at the Academies were officers who were commissioned and specially selected for this educational level. Normally they had the rank of Lieutenant or Lieutenant Commander.

Those who applied for the Officer Candidate School are recruited with a high school background.

The variation within each orientation, significance tested using paired *t*-test. **Variation Abbreviations:** C = Collective, H = Hierarchical, I = Individualism, M = Mastery, Ha = Harmony, S = Subjugation, D = Doing, B = Being, T = Thinking, Pa = Past, Pre = Present, and F = Future. Patterns show preference in rank order from highest to lowest. A "≥" sign indicates that preferences, although ordered this way, are not statistically significantly different from each other. A ">" sign indicates that the differences are statistically significantly different according to **> at $p < .001$, *> at $p < .01$, and > at $p < .05$.

The most important negative cultural value was Uncertainty Avoidance⁵⁷ which refers to the extent that members of collectives seek orderliness, constancy, structure, formalized procedures, and laws to cover situations in their daily lives. Technology, rules, policies, and rituals are all means used by organizations to deal with uncertainty.

Another way to look at this is through Pelto's (1968) concept of *tight* and *loose cultures*. Tight cultures are characterized by many rules supervising actions, and individuals are expected to conform to standard practices (Trandis, 1989). DeLuque and Javidan (2004) found that uncertainty avoidance had implications for which leadership styles were perceived to be the most effective. Higher Uncertainty Avoidance values were associated with higher Team-Oriented, Human-Oriented, and Self-Protective leadership⁵⁸ and with lower Participative and Charismatic and Value-Based leadership. Both Southern-Asia and Latin America scored relatively high on GLOBE Uncertainty Avoidance values measures. Here Self-protective leadership is more likely to be a part of the shared leadership belief system and the GLOBE study found that this leadership style generally impeded outstanding leadership. Also worth noting is that both Future Orientation and Human Orientation (values) were positive predictors of Human-Oriented, Team-Oriented, and Charismatic and Value-Based leadership. The CPQ results, which indicate a military culture that is patriarchic, not especially high on Human Nature, and past oriented, fits the Self-protective leadership style as defined in the GLOBE study. Military organizations have a high power distance, which is assertive and intolerant of uncertainty. The military culture reported in this dissertation seems to represent a subculture, because in general, organizations tend to mirror the culture of power distance practices and values in their society so they can gain legitimacy and also appeal to people from their host societies. However, military organizations do most of their business with other military organizations and within a Norwegian culture that tends to be highly egalitarian. This might lead to a need to buffer themselves from the Norwegian societal culture and values.

⁵⁷ Uncertainty Avoidance involves the extent to which ambiguous situations are threatening to individuals, to which rules and order are preferred, and to which uncertainty is tolerated in society (DeLuque & Javidan, 2004).

⁵⁸ Self-protective Leadership focuses on ensuring the safety and security of the individual or group members. The GLOBE Self-protective Leadership dimension included five primary subscales labeled (a) self-centered, (b) status conscious, (c) conflict inducer, (d) face saver, and (e) procedural (Dorfman, Hanges, & Brodbeck, 2004).

Zander (1997) found that employees in the Nordic countries⁵⁹ preferred a high degree of empowering, but with a low intensity when it came to interpersonal leadership. She labeled this leadership approach as *empowering coaching*. Furthermore, the employees in the Nordic countries had the lowest preference for supervision of all employees in her study which included 18 countries and a total of 15,679 respondents. According to Zander, a paternalistic type of management, where managers or leaders are authoritarian and autocratic in their decision-making style, is not compatible with empowering. The Nordic societies tend in general to be high on collectivism, relatively high on individualism, but low on hierarchy. Additional CPQ data collected outside the military seems to confirm this, $N = 126$ ⁶⁰, these results gave the following within orientation; $C^{**} > I^{*} > H$. These findings were consistent with results reported by Whitener et al. (1999). This might indicate that the culture found at the RNoNA and in the Norwegian Armed Forces differs from the culture of the larger society and as such it represents a subculture, which is not an uncommon phenomenon (Lane et al., 2006). However, this is a subculture that is not constructive. Smith (2005) goes as far as to claim that: “On the whole our armies, navies, and air forces—for in essence air forces as military entities were in one way or another spawned from the other two services—still carry much of the structure and organization Napoleon created when he remodeled the armies of France and set out to conquer Europe” (p. 30). This is isomorphism, where the, in this case military, organizations are pressured to become isomorphic with, or conform to, a set of institutional beliefs and processes (DiMaggio and Powell, 1983). There are three types of isomorphism: (a) coercive, (b) mimetic, and (c) normative. *Coercive isomorphism* is a response to formal and informal pressures exerted on the organizations by other organizations on which they are dependent, for example, in the case of Norway, NATO, and the United States. *Mimetic isomorphism* generally involves a transformation that takes place in face of uncertainty, where an organization may model itself after another, more successful organization. An example might be the adoption of network-centric warfare because the U.S. military is also adopting it. Finally, educational or professional pressures to conform to a set of rules and norms characterize *normative isomorphism*. Educational or training programs and professional societies or associations influence members operating

⁵⁹ The Nordic countries include Denmark, Norway, and Sweden.

⁶⁰ This group consisted of civilian consultants ($N = 41$), students at a psychology course at the University in Bergen ($N = 59$), and the remaining ($N = 26$) from different companies.

within those professions. These isomorphic processes have caused the Norwegian military to become a subculture that separates them from the general Norwegian culture on some important values. This development, which follows Schneider's (1987) ASA model, has led to a lack of variance within the subculture that can cause difficulties when attempting to implement *Auftragstaktik*.

The findings in this dissertation, confirmed by the SPGR team analysis, the NEO PI-R, and the CPQ, indicate that the members of the military organization definitely form an organization with higher power distance. Carl, Gupta, and Javidan (2004) found that organizational power distance had positive associations with Self-Protective leadership, which focuses on behaviors that are status and class conscious, ritualistic, procedural, normative, secretive, evasive, indirect, and self-centered. Thus, organizational members from high power distance and assertive organizations, and organizations intolerant of uncertainty, are not likely to use participative leadership effectively, and the result is an organization at a low maturity level.

The military culture found in this empirical study is a culture that is deficient in the key qualities of variety, rapidity, harmony, and initiative that permit the organization to shape and adapt to an ever-changing environment. It is a closed and shared culture with little variance. This might be one of the reasons why change and leadership development has proven so difficult—the culture might be too closed. These findings are of concern because one of the important functions of a culture is to act as “software” for the group, allowing its members to interact with each other efficiently and with a relatively smooth flow of activity, and to provide guidance for decision making and scripts for behavior.

11.7 The Good Officer - the Cadets' Implicit Theories

This section will provide the answer to whether the leadership development program at the RNoNA was able to influence the cadets' orientations of the leadership behavior needed to be an officer in the 21st century. The “good officer” was defined by asking the cadets in Cohorts 2002, 2003 and 2004 to describe what they considered to be the leadership behavior of such an officer, using the SPGR questionnaire. Unfortunately this was not done for Cohort 2001. According to implicit leadership theory, individuals have implicit beliefs, convictions, and assumptions concerning those attributes and behavior that distinguish a

“good officer” from an ordinary one. It is argued that the implicit leadership theories held by individuals influence the way they view selected leadership behavior and attributes. Implicit leadership theory postulates that leadership perceptions are a function of the overlap between the observer’s leadership belief system and the attributes of the person being rated. Substantial experimental evidence supports this theory (Hanges, Braverman, & Rentsch, 1991; Hanges et al., 1997; Lord & Maher, 1991; Sipe & Hanges, 1997). Implicit leadership theory also implies that there ought to be a significant within-society agreement with respect to the effectiveness, attributes, and behavior of leadership. These are, in other words, culturally connected, and it is considered important for a leader to exhibit behavior consistent with cultural specific expectations.

Figure 11.34 illustrates these three cohorts’ perceptions of the “good officer” at the end of the leadership development program, while Figure 11.35 shows the leadership behaviors of the “good officer” for each of the cohorts. The changes in their perceptions as a result of the leadership development program for both the SPGR Humres and 12-vector are reported in Table 11.40.

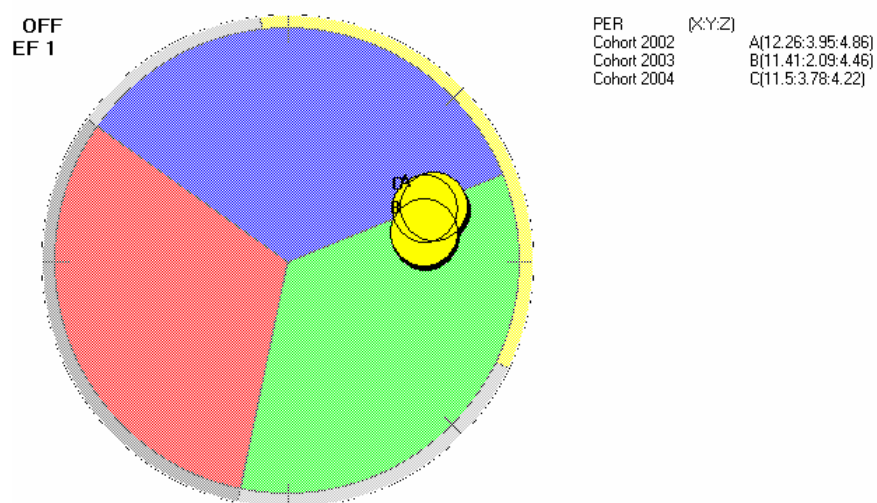


Figure 11.34 Cohorts 2002, 2002, and 2003 SPGR Field Diagram of the “Good Officer” - Post Measure

These results indicate that the “good officer” is one where the Nurture and Dependence functions are dominate, indicating that such an officer will be operating at the maturity level of Team Spirit. These findings also suggest that the cadets’ ideal officer will need to know

what is wanted, when it is wanted, and how it will be evaluated. For such an officer, it is structure that matters. Because Dependence is dominant, the “good officer” also values a high degree of conformity and obedience. This is the SPGR characterization of the same patriarchic culture found by the use of the CPQ.

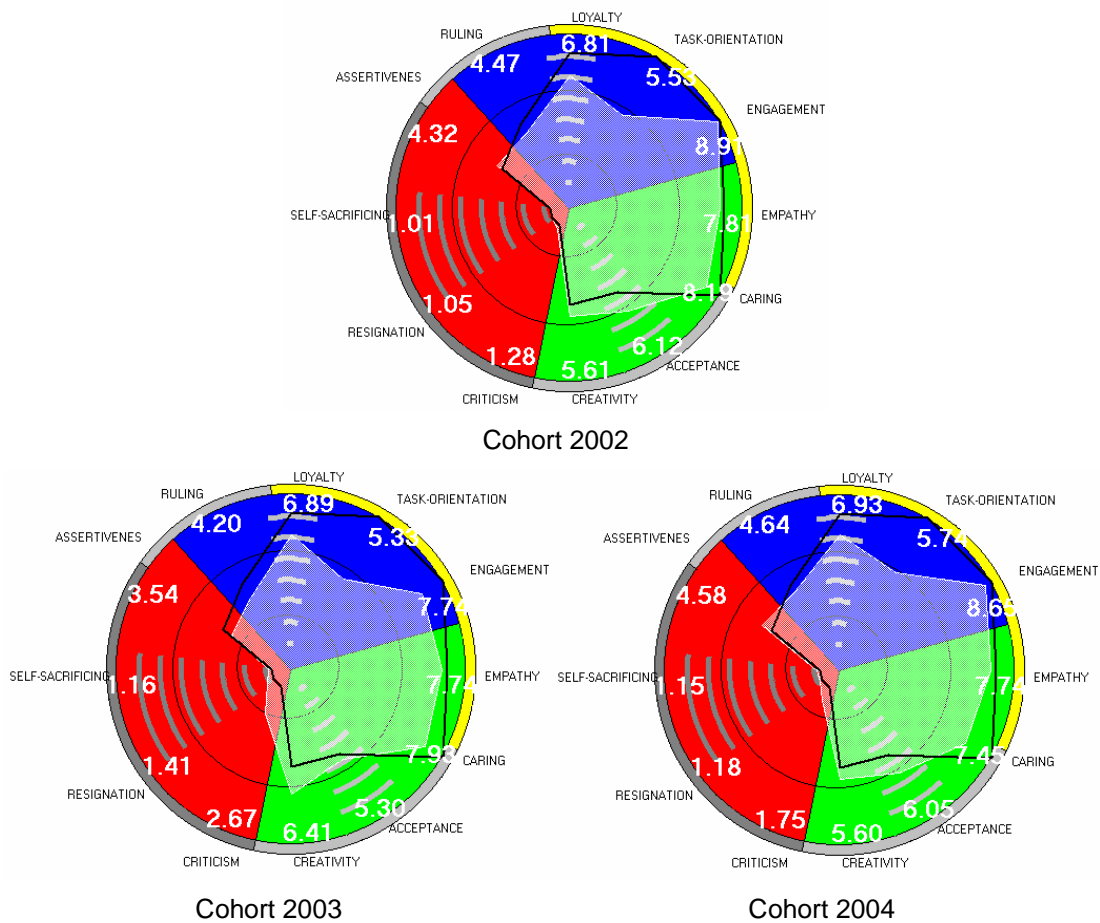


Figure 11.35 Cohorts 2002, 2003, and 2004 12-Vector Post Perception of the Leadership Behavior of the “Good Officer”

This “good officer” will function well at lower maturity levels because at these levels there is no need for a highly developed role taking ability and no need to play the interaction and isolation game—a game which this officer is not able to play.

Table 11.40

Cohorts 2002, 2003, and 2004: SPGR Pre and Post Measures of the "Good Officer"

SPGR Functions and vectors	Cohort 2002, N= 74		Cohort 2003, N= 70		Cohort 2004, N= 85	
	Pre	Post	Pre	Post	Pre	Post
	M/SD	M/SD	M/SD	M/SD	M/SD	M/SD
Synergy	7.56 (1.31)	8.53*** (.67)	7.06 (2.12)	8.10*** (1.02)	7.67 (1.18)	8.19*** (.98)
Control	4.50 (1.25)	4.40 (1.31)	5.77 (1.66)	4.00*** (1.46)	4.09 (1.44)	4.63** (1.16)
Nurture	5.28 (1.68)	6.43*** (1.51)	4.73 (2.04)	6.85*** (1.56)	6.94 (1.39)	6.32** (1.45)
Oposition	1.51 (.86)	1.42 (.87)	1.92 (1.31)	1.87 (1.28)	2.28 (1.24)	1.80* (1.00)
Dependence	5.82 (2.17)	6.04 (2.14)	6.41 (1.60)	5.71 (2.35)**	5.93 (2.25)	6.17 (2.02)
Withdrawal	.17 (.48)	.09 (.31)	.88 (1.05)	.48* (1.06)	1.03 (1.03)	.21*** (.66)
S2: Empathy	6.32 (2.07)	7.81*** (1.58)	6.31 (1.92)	7.74*** (1.60)	8.04 (1.41)	7.84 (1.66)
N1: Caring	6.51 (1.95)	8.19*** (1.40)	7.21 (1.68)	7.93** (1.48)	7.67 (1.69)	7.45 (1.62)
D2: Acceptance	5.51 (1.93)	6.12* (2.09)	6.26 (1.55)	5.30** (2.57)	5.20 (2.77)	6.05* (2.21)
N2: Creativity	5.10 (2.08)	5.61 (1.66)	4.81 (2.08)	6.41*** (2.00)	6.31 (1.94)	5.60** (1.95)
O1: Criticism	1.18 (.69)	1.28 (.88)	1.17 (.70)	2.67*** (2.46)	3.47 (2.77)	1.75*** (1.52)
W1: Resignation	1.05 (.23)	1.01 (.12)	1.03 (.24)	1.41*** (1.00)	1.92 (1.12)	1.18*** (.68)
W2: Self-sacrificing	1.18 (.63)	1.18 (.69)	1.49 (1.14)	1.16*** (.69)	1.16 (.65)	1.15 (.70)
O2: Assertiveness	4.65 (1.90)	4.32 (1.90)	4.27 (1.51)	3.53** (1.93)	3.12 (2.10)	4.58*** (1.96)
C2: Ruling	4.47 (1.62)	4.47 (1.36)	4.96 (1.65)	4.20*** (1.41)	4.75 (1.65)	4.64 (1.45)
D1: Loyalty	6.66 (2.23)	6.81* (2.18)	7.77 (1.71)	6.89*** (2.29)	7.27 (1.71)	6.93 (1.87)
C1: Task orientation	5.69 (1.65)	5.59 (1.48)	6.20 (1.39)	5.33*** (1.66)	5.19 (1.52)	5.74** (1.09)
S1: Engagement	8.56 (.92)	8.91** (.50)	8.93 (.26)	8.20*** (1.38)	7.49 (1.93)	8.65*** (.97)

Note: Paired sample *t*-test was conducted to evaluate the impact of the leadership development program on the cadets' implicit theories of what characterizes a good officer. Significant changes are indicated with: * $p < .05$, ** $p < .01$, and *** $p < .001$

The cadets do in fact hold an ideal of an officer who is not suited for participation in environments that are characterized by 3rd and 4th GW warfare because this officer lacks the ability to adapt to ambiguity and novelty. This officer will most likely only perform well in a stable and predictable environment. This indicates that leadership development program was not able to reorient the cadets to bring their orientations of a good officer into accordance with what is needed in the 21st century when they are facing 4th GW.

Another interesting finding is that the cadets' leadership development seems to follow the changes in the cadets' orientation, or *Schwerpunkt*, of the "good officer" as a result of the leadership development, although the path is weaker. Figure 11.36 illustrates this by showing post measures of these cadets' other ratings, and their perception of the "good officer." This once again emphasizes the importance of the orientation aspect of the OODA loop. The RNoNA has not been able to reorient the cadets' orientations towards the requirements of today's and tomorrow's conflicts. One important contributing factor to the overall lack of development seemed to be the cadets' strongly held and unfortunately outdated social cognition applied to what it means to be an officer in the 21st century.

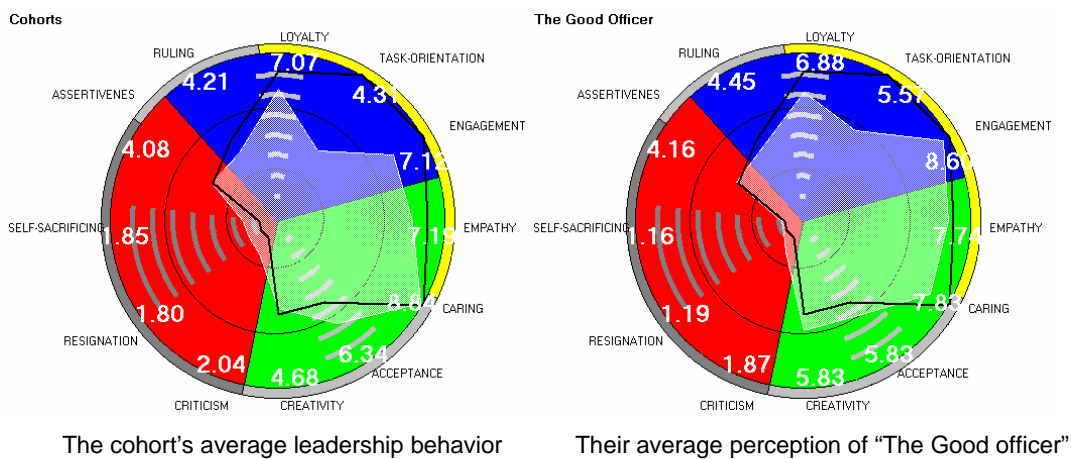


Figure 11.36 Cohorts 2002, 2003, and 2004 average leadership behaviors - others rating, and their perception of the "good officer"

11.8 Summary

This chapter has presented and analyzed the results of the leadership development program at the RNoNA for four cohorts with the purpose of answering research questions 1 to 6. Measured by the SPGR, only one cohort, Cohort 2002, had a positive, although minor, development. Eight out of that cohort's ten teams had a positive development, but unfortunately none of the teams reached a maturity level higher than Team Spirit. The three remaining cohorts showed no development, hence no increase in role-taking ability. The results at the team level were supported, as can be seen from Table 11.41.

Table 11.41

Summary of SPGR Humres Results

Cohort	SPGR Humres results on team level		
	Negative development	No development	Positive development
2001	4	5	1
2002	0	2	8
2003	2	8	0
2004	4	4	4

Here Cohort 2004 had the most mixed results. A striking pattern was that none of the teams were able to reach a higher maturity level than Team Spirit, which indicates a restricted role-taking ability. The predominant functions at this maturity level are Nurture and Dependence, which indicates that these commissioned officers will most likely perform well only in situations and contexts that are well structured, with concrete goals that can be broken down to standard operating procedures with well defined roles. The personality results measured with the NEO PI-R also support this: The large imbalance between Openness and Conscientiousness indicates that they, as a group, would have trouble in a dynamic environment characterized by novelty and ambiguity. As seen through the in-depth team analyses, personality plays an important role in the maturity and development of both the team members and the teams. This important issue will be further addressed and covered in chapter 13.

Although authoritative leadership is not required at the Team Spirit maturity level, teams at this maturity easily tend to such leadership styles (Sjøvold, 2006). This might explain why it is common for one or two dominant cadets to influence and control a team, which centralizes it, makes its actions predictable, and makes it easier for an adversary to operate inside its OODA loops. The cadets, together with the RNoNA, have not been able to create a climate for leadership development. The result, as seen above, was no improvement in insight, orientation, agility, and initiative. Instead, there seems to be a pattern where the cadets in their teams tended to coalesce into many non-cooperative centers of gravity, each trying more or less successfully, to “get ahead,” or even “survive” on its own terms.

These cadets and their teams have only reached a maturity level, Team Spirit, that is definitely not suited for 4th GW because it lacks Boyd’s essential asymmetries of insight, orientation, agility, and initiative. Instead they tend to ignore or even minimize impulses from the outside. Team Spirit represents a culture that does not appreciate the mismatches

that indicate a locked orientation, and this maturity level results, therefore, in a predictable OODA loop.

These findings were supported by the results on SPGR measuring the type of leadership behavior that characterizes the good officer. These results revealed an officer on the maturity level of Team Spirit, which indicates that the cadets have a strongly, but unfortunately outdated, social cognition, or orientation, of what it means to be an officer facing the challenges of 4th GW. The culture found, as measured with the CPQ, confirms this pattern. These findings indicate that the shared, commonly held body of general beliefs among the cadets (and most likely within the Armed Forces in Norway) represents an outdated “software” to cope with 4th GW or even 3rd GW because it is simply not well suited to deal with an environment characterized by changing contexts, novelty, and ambiguity. The low Thinking orientation, mostly on the negative side since it was less than four, also indicates a major challenge when it comes to mental part, the *ch'i/cheng* part, of the conflict spectrum, because their desire is so dominated by the Doing mode. The result is that they prefer not to make decisions based upon highly logical criteria, and their attitude is that it is even not worth the while to create a good argument for the chosen decision, an attitude that is at complete odds with the German approach. Especially telling, the importance of individual responsibility and empowerment—the essence of *Auftragstaktik*—is not strong. The low preference for Individualism (always the last preferred) indicates lack of concern for leadership based on commitment to the mission. Instead, a cultural pattern was found that indicates a Self-protective leadership style where the focus is on regulated, formal clear leadership and norms based on the status of the membership in the group, which is the level of rank in the military.

When all these findings are summarized, it appears that the leadership development program has not been able to reorient the cadets, that the leadership development program has not had the impact that it was supposed to have. In particular, the RNoNA has not been able to implement a leadership practice founded on the philosophy of *Auftragstaktik*, which requires a culture that can perform trade-offs between hierarchy and initiative, focusing on commitment to the mission as defined by the *Schwerpunkt* and the commander’s intent. Development of such a culture was effectively blocked out by the dominant Self-protective leadership style. The dominant organizational climate is one that is deficient in key qualities

of variety, rapidity, harmony, and initiative that permit organizations to shape and adapt to an ever-changing environment. It is actually a climate with little variance.

To reach maturity levels higher than Team Spirit, the Control function must come into play, which requires that the stable role structure be broken and a culture instilled where leadership is delegated. Further development also requires that the team's established power structures be challenged, which seems to be a task that none of these teams was able to perform.

12. What You Reward is What You Get

12.1 Introduction

The purpose of this chapter is to provide an answer to research question number 7 outlined in section 9.2. The stated strategic objective at the RNoNA is to educate, train, and develop officers that are able to apply *Auftragstaktik* as solutions within today's and tomorrow's conflicts. As such the RNoNA must "walk the talk" through their reward system. The Academy can not operate in contradiction to its own statements because to do so would be to attack its own strategic objective, and the result will be confusion and the emergence of many noncooperative centers of gravity among both the faculty and cadets. What they reward is supposed to express itself in the *military development grade* (MD grade), which according to the Academy is an evaluation of how well each cadet is suited to become as an officer in the 21st century. This requires both self-awareness and strategic awareness when it comes to performing leadership. The RNoNA further states that:

A central aspect of the assessment of each cadet's suitability as an officer is determined by ability and willingness to work systematically towards development as an officer. Suitability is a result of how much insight and knowledge cadets as officers have about themselves and how they apply this when leadership is performed (Sjøkrigsskolen, 2006, p. 10, my translation)

To find out what kind of leadership behavior the RNoNA actually rewards, several multiple regressions, where the MD grade is the dependent variable, were performed. The first one, outlined in section 12.2, applied the SPGR 12-vector and the cadets' reputations (others rating). The second, section 12.3 determined how strongly personality, as measured with NEO PI-R, explains the given MD grade. Finally, the SPGR-others and NEO PI-R were combined in section 12.4.

12.2 The MD Grade and SPGR

A standard multiple regression was performed between MD Grade as the dependent variable and 12-vector SPGR as independent variables. Analysis was performed using SPSS REGRESSION and SPSS FREQUENCIES for evaluation of assumptions. Criticism had a small positive skewness (1.79) while Resignation and Self-sacrificing had small positive skewness (2.13 and 1.98) and a positive kurtosis (5.91 and 4.33). These variables were not transformed because in a large sample, a variable with significant skewness often does not deviate enough from normality to make a substantive difference in the analyses. Underestimation of variance associated with positive kurtosis disappears with samples of 100 or more cases; with negative kurtosis, underestimation of variance disappears with samples of 200 or more (Tabachnick and Fidell, 2001). The number of outliers was reduced by applying the Mahalanobis distance and multivariate outliers were determined by applying χ^2 at $\alpha = .001$ (Tabachnick and Fidell, 2001), resulting in deleting two outliers. This resulted in an immediate improvement of the model. The next step was to look at measure of influence. This was done by applying Cook's D and students residuals E , cut off by using $D_i > 4/n - k - 1$ and $E^* = \pm 2$ and (Fox, 1997), resulting in deleting nine influential cases which gave a new N of 291. Table 12.1 displays the unstandardized regression coefficients (B), the standardized regression coefficients (β), the semi partial correlations (sr_i^2), R^2 , and adjusted R^2 .

The R for the regression was significantly different from zero, $F(12, 278) = 14.09, p < .001$. For the three regression coefficients that differed significantly from zero, 95% confidence limits were calculated. The confidence limits for Engagement were 0.168 to 0.353, for Caring were 0.041 to 0.221, and those for Ruling were 0.009 to 0.162.

Only three of the IV's contributed significantly to prediction of the MD grade, (a) Engagement ($sr_i^2 = .07$), (b) Caring ($sr_i^2 = .02$), and (c) Ruling ($sr_i^2 = .02$). The SPGR vectors in combination contributed another .24 in shared variability. Altogether 38% (35% adjusted) of the variability in MD grades was predicted by knowing how others perceived each cadet, measured by the SPGR. Although the correlations between MD grade and Task orientation ($r = .296$), Creativity ($r = .248$), Acceptance ($r = -.138$), Assertiveness ($r = .336$), Resignation ($r = -.342$), and Self-sacrificing ($r = -.342$) were significant, they did not contribute significantly to regression. Apparently, the relationship between the MD grade

given at the RNoNA and the cadets' behavior is mediated by the relationship between Engagement, Caring, and Ruling.

Table 12.1

Multiple Regression of The MD Grade and SPGR 12-Vector - Others Rating

Variable	<i>B</i>	<i>SE B</i>	β	<i>sr</i> ² (unique)
Engagement	.260	.047	.436***	.07
Caring	.131	.046	.202**	.02
Ruling	.085	.039	.180*	.02
Self-sacrificing	-.108	.064	-.127	
Assertiveness	.025	.040	.045	
Empathy	-.024	.055	-.032	
Criticism	.014	.054	.018	
Loyalty	-.012	.048	-.016	
Creativity	-.013	.029	-.027	
Acceptance	-.035	.051	-.051	
Task-orientation	-.063	.039	-.135	
Resignation	-.108	.067	-.127	

Intercept = 0.846

$R^2 = .38^a$
Adjusted $R^2 = .35$
 $R = .62^{***}$

^a Unique variability = .11; shared variability = .24.

Significance levels indicated as: * $p < .05$, ** $p < .01$, and *** $p < .001$

A similar regression analysis was also performed by applying their SPGR 12-vector self-ratings as independent variables. R for this regression was also significantly different from zero, $F(12, 276) = 6.88$, $p < .001$. Here, four of the IV contributed significantly to the prediction of the MD grade: Engagement ($sr_i^2 = .04$), Caring ($sr_i^2 = .03$), Self-sacrificing ($sr_i^2 = .03$), and Empathy ($sr_i^2 = .02$). These four IV contributed uniquely 12% of the variability, while together with the eight remaining IV they contributed another 11% in shared variability. Altogether, 23% (20% adjusted) of the variability in the MD grade was predicted by the self-rating on the SPGR 12-vector. This reveals, however, a difference between self-rating and observers rating. The most interesting part is that Empathy is negatively related to the MD grade, which should be of some concern. This also tells us that the reputation (peer ratings) explained much more of the variability of the MD grade than the cadets' own perception. It also indicates that the RNoNA perception, represented primarily by their facilitators, of the cadets' reputations explains much more of the

variability of this grade than their own identities. This finding also supports the findings that their “identity” is not in alignment with their “reputation” as measured with the SPGR. It also indicates that the MD grade is a result largely of visible behavior, which implies a lack of connoisseurship and appreciation among the facilitators because they only reward visible leadership behavior.

12.3 The MD Grade and Personality

An analysis was performed by applying a standard multiple regression between MD Grade as the dependent variable and NEO PI-R facets as independent variables. Initial analyses were performed on both domain and facet levels. These analyses revealed that the facets predicted the MD grade much more accurately than did the domains. Outliers were checked by applying the Mahalanobis distance and multivariate outliers were determined by applying χ^2 at $\alpha = .001$ (Tabachnick and Fidell, 2001). The initial step indicated 8 outliers. Deletion of these, however, did not improve the model, and as a result they were retained. The next step was to look at measure of influence. This was done by applying Cook’s *D* and students residuals *E*, cut off by using $D_i > 4/n - k - 1$ and $E^* = \pm 2$ and (Fox, 1997), resulting in deleting those cases with a high influence, resulting in a new *N* of 295. Table 12.2 displays the *M* and *SD*, unstandardized regression coefficients (*B*), the standardized regression coefficients (β), the semipartial correlations (sr_i^2) and R^2 , and adjusted R^2 for the best model.

The *R* for the regression was significantly different from zero, $F(12, 28) = 9.03, p < .001$. For the ten regression coefficients that differed significantly from zero, 95% confidence limits were calculated. The confidence limits for Assertiveness were 0.027 to 0.050; for Self-Discipline, 0.008 to 0.035; Activity, 0.005 to 0.030; Values, 0.002 to 0.023; Self-Consciousness, 0.003 to 0.030; Dutifulness, -0.028 to -0.005; Ideas, -0.018 to -0.003; Gregariousness, -0.027 to -0.002; and those for Tender-Mindedness were -0.027 to -0.002. Ten of the IV’s contributed significantly to a positive prediction of the MD grade: Assertiveness ($sr_i^2 = .11$), Self-Discipline ($sr_i^2 = .03$), Activity ($sr_i^2 = .02$), Values ($sr_i^2 = .02$), Self-Consciousness ($sr_i^2 = .01$), Dutifulness ($sr_i^2 = .02$), Ideas ($sr_i^2 = .02$), Gregariousness ($sr_i^2 = .01$), and Tender-Mindedness ($sr_i^2 = .01$). The remaining NEO PI-R facets in combination did not contribute to the variability. Altogether 25% (22% adjusted) of the variability in MD grades was predicted by NEO PI-R facets.

Table 12.2

Multiple Regressions of the MD Grade and the NEO PI-R Facets

Variable	<i>M/SD</i>	<i>B</i>	<i>SE B</i>	β	<i>sr</i> ² (unique)
E3 Assertiveness	54.64 (8.98)	.040	.006	.484***	.13
N4 Self-Consciousness	47.18 (8.21)	.023	.006	.261***	.04
E4 Activity	52.21 (7.62)	.019	.006	.198**	.02
O6 Values	48.85 (8.02)	.013	.005	.144**	.02
E1 Warmth	50.17 (7.60)	.016	.006	.166*	.02
C5 Self-Discipline	52.27 (8.81)	.013	.006	.161*	.01
A6 Tender-Mindedness	46.79 (7.31)	-0.16	.006	-.162**	.02
C3 Dutifulness	51.94 (9.23)	-.015	.005	-.182*	.01
O5 Ideas	50.22 (11.32)	-.008	.004	-.125*	.01
A2 Straightforwardness	48.01 (9.12)	.010	.005	.118	
C6 Deliberation	50.10 (8.95)	.009	.005	.161	
E2 Gregariousness	51.69 (8.01)	-.011	.006	-.120	
Intercept = -1.610					
$R^2 = .28^a$					
Adjusted $R^2 = .25$					
$R = .53^{***}$					

a Unique variability = .28; shared variability = .0
Significance levels indicated as: * $p < .05$, ** $p < .01$, and *** $p < .001$.

Apparently, the relationship between the MD grade given at the RNoNA and personality is mediated by the relationship between these ten facets. They reveal an interesting pattern. The Academy rewards those who are dominant, forceful, and decisive—cadets who speak without hesitation. As seen in the previous analyses on team level, sections 12.2 to 12.5, a pattern emerged characterized by a few dominant and submissive cadets, with a group of cadets in-between, also see Chapter 13 for a detailed discussion of this pattern. A one-way between-groups ANOVA with post hoc test revealed that there was a statistically significant difference at the $p < .01$ level in MD grade for the three groups of cadets [$F(2,299) = 17.96$,

$p < .001$, $\eta^2 = .11$]. Post hoc comparison using the Games-Howell test indicated that the mean MD grade for the “dominant” cadets ($M=3.44$, $SD= .69$) was significantly higher than for the “submissive” cadets ($M= 2.70$, $SD= .81$). The “dominant” cadets did not differ significantly from the “other” cadets ($M= 3.32$, $SD= .76$), but the “other” cadets were given significantly better MD grades than the “submissive” ones. This indicates that the “dominant” are rewarded, even if the difference was not statistically significant.

The facet O6, Openness to Values, indicates the readiness to reexamine social, political, and religious values. When the cadets with the outstanding MD grade, A, ($N = 16$) were compared with those given low MD grades, D and E ($N = 33$), the outstanding ones had an average higher score on Values ($M = 49.44$, $SD = 10.58$) compared with the low MDs' [$M = 46.73$, $SD = 6.82$]. This difference, however, was not significant. High scorers on Values are generally described as tolerant, broad-minded, nonconforming, and open-minded. It would be difficult, however to describe those given the highest MD grade, A, in this manner. To further investigate this potential discrepancy, an independent t -sample test was carried out to see how those high on this facet, $T > 55$, were MD-graded compared to the others cadets. The high O6 (Openness to Values) scorers were given a significantly lower MD grade ($M = 3.2$, $SD = .77$) against [$M = 3.5$, $SD = .77$, $t(297) = 2.219$, $p < .027$, $d = .26$, $\eta^2 = .02$]. Although the magnitude in the means was small, I believe it would be misleading to conclude that the academy rewards those who are tolerant, broad-minded, nonconforming, and open-minded. The average scores in these areas as seen in Table 12.2 are also below average, $T = 50$, which indicates that these traits are not highly rewarded by the Academy. The regression analyses also indicate a significantly negative relationship between the MD grade and the neurotic facets Depression and Self-Consciousness because low scores are perceived as being better than high scores. A one-way between-group ANOVA where the cadets were classified according to NEO PI-R's low (< 45), normal (45-55) and high ($56 >$) (Costa & McCrae, 1992) revealed that those high on both Depression and Self-Consciousness received better MD grades, but the difference was not significant. It is important to keep in mind that low scorers on N4, Self-Consciousness, do not necessarily have grace or good social skills; they are simply less disturbed by awkward social situations (Piedmont, 1998).

The most interesting part of this result was that Dutifulness, Ideas, Gregariousness, and Tender-Mindedness influenced the MD grade negatively. High Gregariousness and Tender-

Mindedness make sense because too much of other people's company, always seeking social contact, might indicate a lack of independence, while being friendly, warm, kind, and gentle might give the impression of not being able to cope with demanding situations. More surprising was that to be perceived as dependable, mannerly, organized, and thorough influenced the MD grade negatively. Being too open for ideas indicates that a cadet is intellectually curious, analytical, and theoretically oriented, which are traits that traditionally do not fit in well in a Doing culture. By rewarding a high energy Doing culture, the reward system at the RNoNA does not support the transformation towards managing conflicts on the more subtle mental level. Instead, the Academy tends to reward only that which is visible and which represents the traditional focus on the physical level.

12.4 MD Grade and the SPGR and Personality Combined

The last regression that was performed was the SPGR others rating and NEO PI-R in combination. Table 12.3 displays the unstandardized regression coefficients (B), the standardized regression coefficients (β), the semipartial correlations (sr_i^2) and R^2 , and adjusted R^2 for the best model.

The R for the regression was significantly different from zero, $F(12, 269) = 12.46, p < .001$. This regression confirms the previous ones. It also illustrates, once again, that reputation provides the strongest impact. Both E3, Assertiveness, and S1, Engagement, explained the MD grade, but now to a lesser degree, which is only normal because there is correlation between these two of $r = .43$, see Appendix G and Table G4.

Table 12.3

Multiple Regressions of MD Grades and SPGR 12-Vector and NEO PI-R Facets.

Variable	<i>B</i>	<i>SE B</i>	β	<i>sr</i> ² (unique)
N1 Caring	.142	.035	.224***	.03
C2 Ruling	.064	.027	.137*	.01
S1 Engagement	.092	.042	.158*	.01
W1 Self-sacrificing	-.077	.044	-.101	
N4 Self-Consciousness	.024	.006	.252***	.03
E3 Assertiveness	.019	.006	.226**	.02
E1 Warmth	.017	.006	.177**	.02
C5 Self-Discipline	.015	.006	.168*	.01
C1 Competence	.014	.029	.145*	.01
A2 Straightforwardness	.009	.005	.110*	.01
O6 Values	.009	.005	.092	
E4 Activity	.010	.006	.105	
C3 Dutifulness	-.015	.005	-.185**	.02
O5 Ideas	-.009	.004	-.142**	.01
A6 Tender mindedness	-.012	.005	-.116*	.01
E2 Gregariousness	-.012	.006	-.124*	.01

Intercept = -2.029

R² = .43^a
Adjusted R² = .39
R = .65***

^a Unique variability = .20; shared variability = .23.

Significance levels indicated as: * $p < .05$, ** $p < .01$, and *** $p < .001$

12.5 Discussion and Conclusion

The results of the performed regression analyses and the discussion above suggest that what the RNoNA says it values and what it actually rewards differ greatly. The stated objective is to develop leaders who can apply *Auftragstaktik* and who therefore can command groups capable of dealing successfully with the types of unstructured, rapidly developing “asymmetric” situations that most strategists predict will characterize future conflicts. In fact, the RNoNA tends to reward only highly visible, forceful, and aggressive styles and it does not seem to appreciate the deeper and more complex aspects of leadership behavior. This indicates almost none or little has changed since the “Lieberg commission” evaluated the educational programs at the Norwegian service academies in 1990. Although this was

not an academically rigorous undertaking, the commission concluded that the education focused too much on “system thinking” and conformity to rules. They stated that:

The cadets’ learning process is a continuous search for the Academy or the “system’s” solutions, or the “correct” solution instead of searching for optimal solutions on complicated problems. This conformity and rule obedience does not enhance creativity or stimulate leadership development (Forsvarsdepartementet, 1990, p. 49, my translation)

The result reported here seem to support their statement. One possible explanation to these results might be found at looking at the leadership facilitators at the Academy. These results suggest that they lack the ability to be connoisseurs of leadership, at least of the style of leadership required for future conflict in the Gap. This becomes apparent when we look at their own orientation of what behavior that constitutes a “good officer”, see Figure 12.1⁶¹. Their ideal officer clearly points toward an officer at the maturity level of Team Spirit, indicating an outdated social cognition of the behaviors needed to perform well in a 4th GW environment.

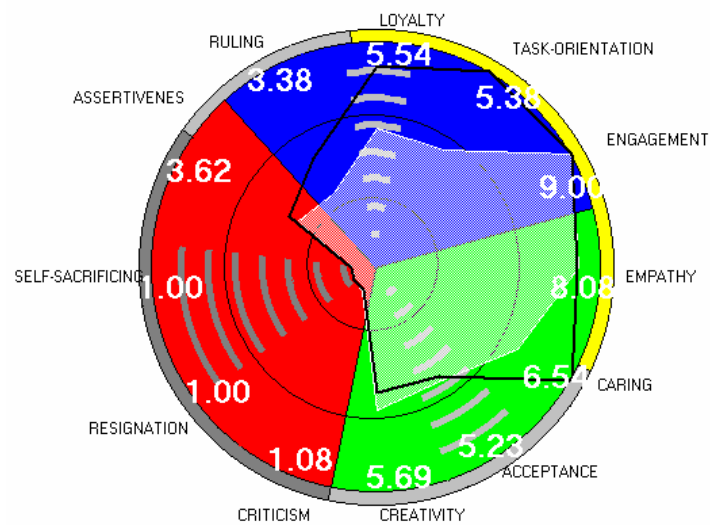


Figure 12.1 The SPGR 12-Vector Profiles of the Facilitators at the RNoNA Perception of the “Good Officer”

⁶¹ This 12-vector SPGR profile is 13 officers’ average rating of what they considered to be a “good officer.” These officers worked as facilitators at the RNoNA during the time these data were collected.

This officer showed a large imbalance between Control ($M = 3.81$, $SD = .86$) and Nurture [$M = 6.41$, $SD = 1.68$, $t(12) = -4.518$, $d = 2.61$], which indicates a dominating Nurture function. It is also worth noting that Acceptance is almost as high as Loyalty. This together with a low Control function might indicate that they as facilitators, are not willing to or able to facilitate when the teams need to challenge their role structures, something that is necessary in order to develop and reach a higher maturity level. In particular, facilitators must challenge their teams to examine and if necessary change their orientations. This might be one explanation why the “dominant” cadets tend to be rewarded. At the maturity level Team Spirit, these cadets will stand out because within this culture, these energetic cadets are perceived as leader-like. They are organized, thorough, energetic, capable and efficient, which fits well with a high Doing and Mastery culture, and they consider themselves to be energetic, fast-paced, and vigorous, which is fully in accordance with what is needed at the maturity level Team Spirit. Because both Nurture and Dependence are dominant functions at this level, these teams tend to expect and to accept that someone will act as strong leader, taking and showing responsibility, while trying to solve the challenges they are currently facing. These are things the “dominant” cadets will do. These cadets’ leadership behaviors are filling the teams’ “gaps” at the Control function, Ruling and Task-Oriented, which is carried out in combination with a high level of Engagement. Their leadership behaviors, although flawed, are intended to make a positive impression on an outside observer, and they do, as these regression analyses confirm. They do not, however, necessarily have a positive effect on those who experience their leadership behavior first hand. Dominant cadets might seem confident and even charismatic, but over time as this dissertation has shown, these features turned into a sense of entitlement and an inability to learn from mistakes and develop—behavior for which they have been rewarded.

Another possible explanation might be that because the facilitators must grade the cadets’ suitabilities as officers, they tend to look for the hard facts that can be defended in the grading process. This need for recordable data might well influence what they perceive to be good leadership, and once again their own orientation becomes central. These explanations may also work together, and in any case, they aggravate the challenge of leadership development at the RNoNA.

A facilitator’s primary task is to assist the cadets in the leadership development process. In this case, as illustrated with Figure 12.1, they are supposed to enhance a development that

goes against their own perception of what defines a good officer, which makes this a hard if not an impossible endeavor. It should be pointed out, however, that the facilitators' perception and orientation is found in throughout the Navy (Fauskanger, 2006; Larsen & Johannessen). Simply put, their appreciations are not able to provide assessment when it comes to developing those officers needed in future conflicts. They are not connoisseurs of that leadership style and their criticisms do not function as midwives for it. Their implicit understanding and orientation of what defines a good officer do not align with the Academy's official *Schwerpunkt*. As a result, the RNoNA has several *Schwerpunkts*: the official one from the Academy (*Auftragstaktik*), the facilitators', and the cadets'. Because the facilitators themselves are not reoriented but bring the conventional orientation with them, they lack the ability to perceive the desired leadership behavior, which is a subtle and complex undertaking that requires them to question their own definition and labeling of leadership. The facilitators' orientation is more in alignment with the cadets' and such it is difficult to appreciate and spot the necessary mismatches need to enhance development. This issue could most likely be solved by training and preparing the facilitators to appreciate the required leadership style.

The result and the answer to research question number seven is that the reward system represented with the MD grade at the RNoNA does not promote leadership behavior that is in accordance with *Auftragstaktik*. It tends to reinforce the existing culture, which makes change even harder. This is a theme of utmost importance because it addresses the Norwegian Armed Forces' ability to engage successfully in future conflict and must be dealt with in a constructive way.

13. Leadership Development and the Social Interaction Pattern

13.1 Introduction

The purpose of this chapter is to examine the complex process of leadership development in greater detail, and as such, it is an elaboration of research question number 4 outlined in section 9.2. The focus will be on the social interaction pattern found in chapter 11, where in each team, one or two cadets tended to dominate, and they most likely hampered the leadership development, resulting in a maturity level of Team Spirit. The question of the type of behavior that will emerge as a result of the leadership development program at the RNoNA must be asked with each new cohort, with each new situation, and with each new team and new team member. This is the situation that every leader confronts on a daily basis and the Academy instructor every hour. This issue will be addressed in section 13.2, which will focus on the pattern that was found as a result of the in-depth team analyses in chapter 11. Section 13.3 focuses on the implications of the imbalance found in personality traits, while section 13.4 addresses the importance of strategic self-awareness and its consequences. Section 13.5 will discuss the necessary ingredients for any leadership development program aiming at expanding role-taking ability. The chapter is summarized in section 13.6

13.2 The Essentials of Social Interaction

The aim of this section is to apply the SPGR data to analyze the dominant social interaction pattern found in chapter 11. Leadership development could be characterized as releasing a type of potential energy, making it available for doing work and thereby dissipating entropy. As discussed in chapter 4, an effective strategy for leadership development is to increase the role repertoire of group members, which enables the degree of role swapping that leads to the maturity level Innovation required for Aufstragtaktik. When applied to leadership development, this requires the ability to see beyond the current roles of the members—beyond what the group is currently capable of—and to develop a deep understanding, to

become a connoisseur, of leadership and appreciate the more subtle interactions. This requires reorientation, which is a change in the characterization of what is relevant toward an attitude of “becoming relevant.” It is the team’s dynamic social interaction patterns that determine how process and interaction will matter and matter together. I will first turn to the SPGR results and then the NEO PI-R results found in chapter 11.

13.2.1 The SPGR Results

The SPGR analyses at the team level for the different cohorts presented in sections 11.2 to 11.5 revealed a disturbing yet consistent pattern, where one or several dominant cadets inhibited the leadership development process. The analyses also demonstrated how this dynamic, or more precisely lack of dynamic, tended to create a static social interaction pattern with fixed roles within the teams, resulting in submissive and accepting behavior by some of the cadets. A thorough analysis of the different SPGR field diagrams revealed that this pattern was established early in the leadership development program, and thus it should have and could have been dealt with in a more constructive manner that could have led to leadership development. The different SPGR analyses covered four different cohorts, 42 teams, and 302 cadets. Out of these 302 cadets, 45 were classified to be relatively dominant within their teams, while 60 were considered to be submissive (with an average score lower than -0.50 on the Z-dimension). This left a group of 197 cadets between “dominant” and “submissive.” The average positions of these three groups in the SPGR field diagram are illustrated in Figure 13.1.

The dominant cadets were less group-oriented (the X-axis), more task oriented (the Y-axis), and more influential (the Z-dimension, Z-axis) compared to the two other groups of cadets. The group labeled “others” seems to balance the different basic functions better than both the dominant and submissive cadets, see Figure 13.1.

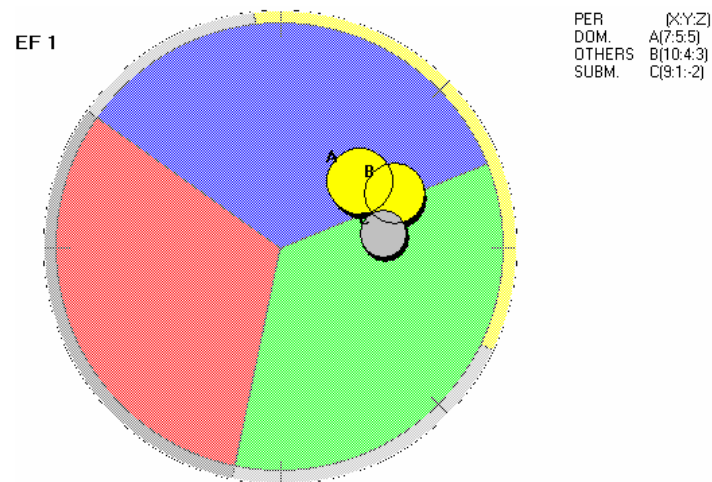


Figure 13.1 The SPGR Field Diagram of the “Dominant,” “Others,” and “Submissive” Cadets

The 12-vector profiles, Figure 13.2, and analyses presented in Table 13.1 show a large difference on Empathy, and the post hoc comparison applying the Games-Howell indicated that the Dominant cadets showed significantly less of this behavior than both the “others” and the “submissive” ones at the $p < .01$ level.

As officers, they were not interested in understanding and listening to their team members. Their behavior moved the team away from satisfaction with interpersonal relations, and they were more critical, self-centered, provocative, and self-sufficient (Criticism) than the two other groups, showing a high level of disagreement and unfriendly behavior that was significant at the $p < .01$ level compared with both groups. As team members and leaders, these cadets tended to reject, refuse, or even purposefully ignore their other team members. At the same time, they showed much more assertive, tough, and competitive behaviors that were significant at the $p < .01$ level. This behavior contributed to moving the team away from the satisfaction that could have been obtained from positive interpersonal relationships and climate.

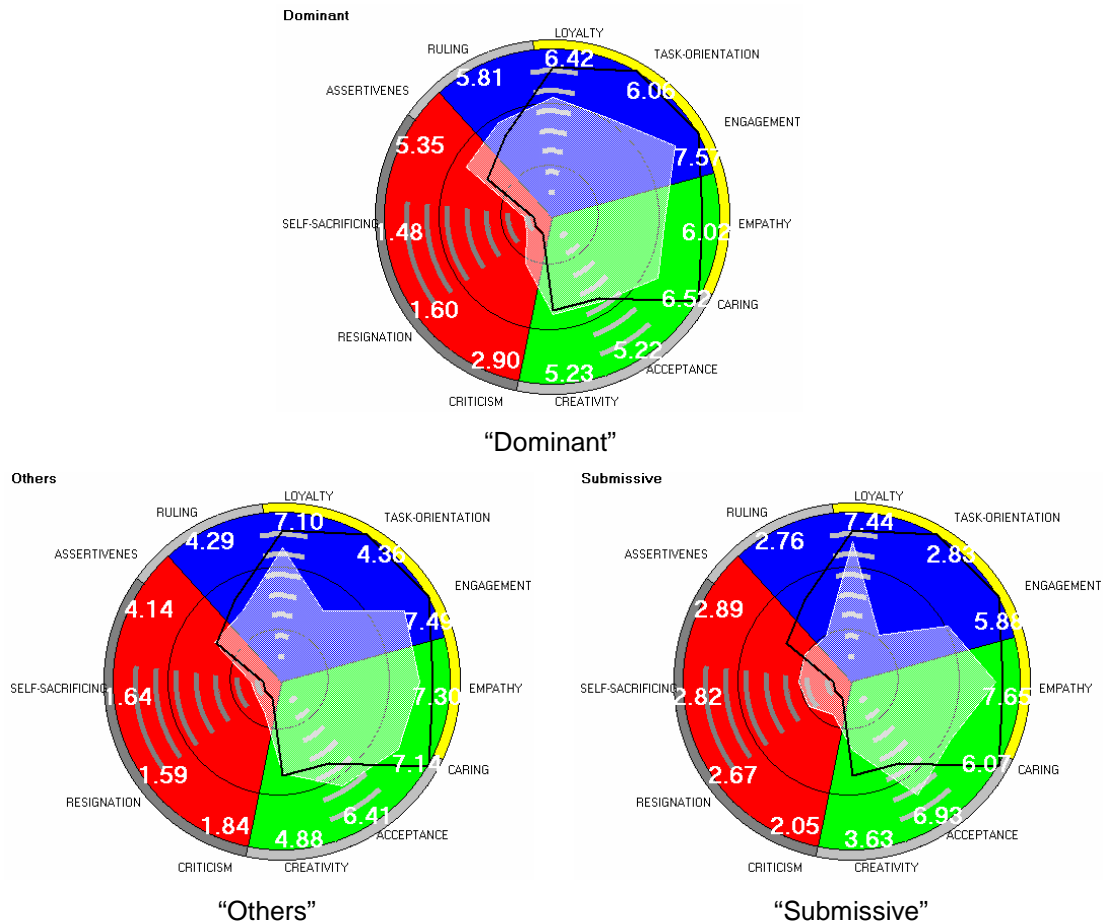


Figure 13.2 The Average SPGR 12-Vector Profiles of the "Dominant-" "Others-" and "Submissive" Cadets

This was further fueled by an authoritarian, controlling, and pedantic leadership behavior that did not inspire positive feelings among the other team members. These cadets as group were unable to reward others, focusing only on getting the job done even at considerable cost. They willingly sacrificed satisfaction with interpersonal relations for satisfaction with task-achievement. Task-achievement was gained by trying to be efficient, analytical, and rational while they controlled (micromanaged) their team members in their pursuit of assigned goals. Because of their lower Loyalty, which was significant at the $p < .01$ level compared with both other groups, these cadets were less willing to carry out tasks when they were not in the formal leadership role. This was reinforced by their lesser Acceptance of their team members, which was significant at the $p < .01$ level. Only when the "dominant" cadets were compared with the "submissive" ones were there significant differences at the $p < .01$ level on inspiring and inviting others to contribute.

Table 13.1

SPGR 12-Vector One-way ANOVA of the “Dominant,” “Others,” and “Submissive” Cadets,

SPGR vectors	Dominate	Others	Submissive	F	Sig.	η^2
	M/SD (N = 45)	M/SD (N = 197)	M/SD (N = 60)			
S2: Empathy	6.07 (.85)	7.30 (1.01)	7.65 (.78)	40.68	.001	.21
N1: Caring	6.52 (.93)	7.14 (1.12)	6.07 (1.33)	22.78	.001	.13
D2: Acceptance	5.22 (.86)	6.41 (1.07)	6.93 (.91)	38.24	.001	.20
N2: Creativity	5.23 (1.22)	4.88 (1.60)	3.63 (1.46)	19.12	.001	.11
O1: Criticism	2.90 (1.17)	1.84 (.88)	2.05 (1.10)	18.70	.001	.11
W1: Resignation	1.60 (.70)	1.59 (.77)	2.67 (1.43)	31.23	.001	.17
W2: Self-sacrificing	1.48 (.61)	1.64 (.80)	2.82 (1.53)	26.82	.001	.15
O2: Assertiveness	5.35 (1.02)	4.14 (1.22)	2.89 (.99)	59.42	.001	.28
C2: Ruling	5.81 (1.47)	4.29 (1.43)	2.76 (.96)	65.63	.001	.31
D1: Loyalty	6.42 (.96)	7.10 (1.01)	7.44 (1.11)	13.08	.001	.08
C1: Task orientation	6.06 (1.31)	4.36 (1.36)	2.83 (1.25)	75.73	.001	.34
S1: Engagement	7.57 (.96)	7.49 (1.05)	5.58 (1.34)	73.62	.001	.33

Note: The Levene’s test for homogeneity of variance indicates a violation of the assumption of homogeneity of variance for vectors: C2: Ruling, S2 Empathy, O1: Criticism, O2: Assertiveness, W1: Resignation, and W2: Self-sacrificing. O1, W1, and W2 were transformed according to the guidelines in Tabachnik & Fidell (2001) so they did not violate this assumption, while this could not be done for C2, S2, and O2, which indicates that an inaccurate *F* value is reported for these vectors. To confirm these results a Kruska-Wallis Test was performed on C2, S2 and O2. This test confirmed the results reported above.

The “submissive” cadets’ profiles indicate that these cadets needed to be told or even ordered what to do. They lacked initiative and were not able to balance the basic SPGR functions: They were low on task-oriented behavior, they were not sociable, warm nor protective, and they also lacked the ability to inspire others. At the same time they were obedient and conforming and accepted those tasks they were ordered to do, but these were often carried out in a sacrificing, self-pitying, and complaining way. Perhaps the most worrying pattern with this group of cadets was that they possessed a self-centered, provocative and unruly behavior in combination with Resignation and Self-sacrificing.

Because of their low influence, which most likely was a result of a high Withdrawal function, they did not state their opinions about the different issues within in the team. This might indicate a dysfunctional behavior, where they moved away from their team members because their strategy for managing their own security was primarily by avoiding contact with others and, when needed, to be obedient and conforming.

In general these findings revealed a pattern that did not and could not foster a development towards implementing *Auftragstaktik*, and as shown, it defiantly hampered the leadership development process. To gain further insight into this pattern, a similar analysis was carried out on the NEO PI-R data applying the categorization found with the SPGR.

13.2.2 The NEO PI-R Results

The NEO PI-R result was consistent with the SPGR findings, revealing a pattern in which the dominant cadets lacked the maturity needed to expand their leadership roles. They seemed unable to think about themselves from the perspective of others and they lacked role-taking ability. This strongly points toward a lack of dynamic balance—the ability to shift rapidly among the basic SPGR functions, as described in section 4.4—that is necessary if increased Synergy is the goal. This lack of agility indicates a static leadership behavior, which results in predictable OODA loops and they are not, and most likely will not become, able to play the interaction and isolation game in modern conflict situations. Alport (1961) noted that maturity involves tolerance, a capacity to develop and maintain close relationships, and self-insight. The mature person is perceived as resilient, unselfish, and able to laugh at himself or herself. We know, according to Hogan and Roberts (2003), that maturity as seen from the inside is reflected in greater adjustment and role-taking ability, which within the FFM translates to higher Agreeableness, Conscientiousness, Openness, and Emotional stability/Neuroticism.

Maturity from the outside is reflected in a reputation for being Agreeable, Conscientiousness, and Emotionally Stable (N) (Hogan & Roberts, 2003). This indicates that Agreeableness is an important domain for effective leadership. As can be seen in Table 13.2, the “dominant” cadets scored significantly lower on this domain than the two other groups, a

difference significant at the $p < .01$ level⁶². This finding is consistent with the findings of Barrick et al., (1998) that when a team member lacked desirable interpersonal traits, that member could negatively affect team processes and performance.

Table 13.2

NEO PI-R One-way ANOVA Between "Dominant," "Others," and "Submissive" Cadets

	Dominant	Others	Submissive			
	<i>M/SD</i> (N=43)	<i>M/SD</i> (N=203)	<i>M/SD</i> (N=60)	<i>F</i>	<i>Sig.</i>	η^2
N2: Angry Hostility	50.79 (8.83)	46.37 (7.80)	44.70 (6.62)	8.68	.001	.05
N4: Self-Consciousness	44.72 (9.03)	47.15 (8.00)	49.40 (7.94)	4.18	.016	.03
N6: Vulnerability	47.00 (4.65)	48.69 (7.54)	50.48 (7.24)	3.05	.049	.02
EKSTRAVERTION	55.63 (7.43)	53.98 (7.60)	50.67 (7.58)	6.29	.002	.04
E3: Assertiveness	61.58 (6.78)	54.73 (8.45)	48.37 (7.85)	33.54	.001	.18
E4: Activity	55.07 (7.36)	52.60 (7.36)	48.35 (7.62)	11.59	.001	.07
AGREEABLENESS	41.37 (6.30)	48.33 (8.12)	50.28 (7.41)	18.30	.001	.11
A1: Trust	46.63 (8.18)	51.54 (8.56)	52.05 (8.28)	6.23	.002	.04
A2: Straightforwardness	43.98 (8.22)	48.56 (9.26)	49.55 (8.69)	5.54	.004	.04
A3: Altruism	42.98 (8.84)	51.63 (9.04)	51.65 (8.08)	17.74	.001	.10
A4: Compliance	40.60 (6.64)	47.36 (7.61)	50.38 (5.85)	24.07	.001	.14
A5: Modesty	46.21 (8.16)	47.25 (7.81)	49.70 (6.98)	3.14	.045	.02
C1: Competence	54.00 (6.26)	55.25 (8.78)	52.18 (8.14)	3.20	.042	.02
C6: Deliberation	45.44 (10.35)	50.85 (8.51)	50.19 (8.20)	7.48	.001	.05

This becomes more pronounced when the least agreeable member is also the one with most influence, E3, Assertiveness. The "bad apples" results on Agreeableness were also significantly lower than for people in general, Cohen's $d = 1.03$. This indicates that they had

⁶² The Games-Howell procedure was applied in the post hoc procedure.

trouble balancing their egoistic and altruistic impulses because they had problems trusting and accepting other people.

They were not able to be self-critical and restrain their own self-accepting tendencies. They also experienced higher levels of anger and related states such as frustration and bitterness (N2), and on these, their level was significantly higher than the two other groups at the $p < .01$ level. Their low score on Agreeableness implies that this anger was expressed toward the team. Although their score was within the normal range compared with the general population, the effect was not strong. Their low Agreeableness was made worse by their high E3, Assertiveness, and their lack of any tendency to think carefully before acting. This is indicated by their low score on C6, Deliberation. On both of these two facets, the difference was significant at the $p < .01$ level. The NEO PI-R results also revealed that submissive cadets' scores as a group were within the "norm" range (T scores from 45 to 55). They were significantly less Assertive than the remaining cadets at the $p < .01$ level, although these cadets as a group seemed to be as assertive as people in general.

This might indicate that personality scores within the "norm" range may not be a valid predictor of leadership behavior⁶³, and from a selection point of view, this indicates a need for multiple selection approaches.

13.2.3 Summary

The SPGR results, together with the NEO PI-R results, revealed a clear and striking result. Approximately 50% of the cadets⁶⁴ (103 of 207) seemed to lack role-taking ability. As discussed in Chapter 3, a lack of role-taking ability leads to lack of adaptation, which will restrict the group's performance in highly unstructured situations. An outward focus would have manifested itself in a commitment to social causes, putting aside one's own selfish interests for a collective effort. Another important finding was a uniformly low maturity level. An important indication of maturity according to Hogan and Roberts (2003) is the degree to which a person is self-accepting while at the same time realizing that people are

⁶³ Foster & Hogan (2006) used scores above the 65th percentile on the Hogan Personnel Inventory when they labeled individuals as having high leadership potential, which would indicate a T -score lower than 45 on Neuroticism, and higher than 55 on the remaining domains

⁶⁴ The figures applied here are from Table 11.2

not perfect. Within the context of leadership development, mature cadets will listen carefully to negative feedback from others and especially others with less status than themselves. This is an attitude that too many (35%) of these cadets lacked, and if it had been present it would most likely have resulted in a significantly more positive leadership development at the RNoNA.

These results points toward the importance of balance among the SPGR functions, *Influence* versus *Passivity*. In appendix G two Pearson's product moment correlations tables between SPGR (self and peer ratings) and NEO PI-R are presented. It is especially worth noticing how strong the correlations were between the NEO PI-R facet E3 Assertiveness and the Z-dimension, $r = .55$, and $r = .52$ for the Control function for peer ratings. But as shown, the important issue is where the dominant cadet is located in the SPGR Field diagram. The SPGR functions seem to cover the related behavioral aspects of the FFM very well, the overall correlations are in general below medium, indicating a small to medium overlap, which indicates that the SPGR, which measures behavior, and NEO PI-R, which measures personality traits, are different but related.

The next section will examine more closely the three personality matrixes found at the RNoNA—*The Learning style Matrix*, *The Attitude Matrix*, and *The Character Matrix*—that might contribute to the lack of leadership development.

13.3 The Importance of the Openness, Agreeableness and Conscientiousness Domains

The results on personality measured with the NEO PI-R indicated a strong imbalance between the Openness and Conscientiousness domains. The same imbalance was also found by Nordvik, Moldejord, and Gravråkmø (2005). They reported the average NEO PI-R score of 516 cadets at Royal Norwegian Air Force Academy, (p. 152-153), which on Conscientiousness was 55.1 ($SD = 9.0$), while their score on the Openness domain was 46.9 ($SD = 9.8$). This gives a large imbalance, indicated by a large Cohen's $d = .87$. Their results are consistent with the findings in this dissertation concerning these issues. The findings among those who have applied for the Officer Candidate School in the Navy since 2004 and the services academies since 2005 show exactly the same pattern. The patterns found are interesting and important when it comes to leadership development.

The Consciousness and Openness domains make up the “Learning style” matrix (Costa & McCrae, 1998). By dividing the cadets by their *T* score using the values of 48 and 52, which was done to avoid including too many who lacked a clear style or preference, some interesting patterns were found, as can be seen in Table 13.3. The results show that a majority of the cadets, because of their low score on Openness, are not willing to let outer events—like the leadership development program at the RNoNA—impact their inner lives or let the potential of such an impact on their inner dynamics find expression in their outer behavior.

Table 13.3

The NEO 4 Learning Style Matrix

O+ C-; Dreamers 12.1 %	O+ C+; Good Students 26.7 %
They are attracted to new ideas with imaginative elaborations, but they may get lost in flights of fancy. They are good at starting innovative projects, but they are less successful in completing them and may need help in staying focused. They are able to tolerate uncertainty and ambiguity.	Although they are not necessarily more intelligent than others, they combine a real love of learning with the diligence and organization to excel. They have a high aspiration level and are often creative in their approach to solving problems. They are likely to go as far academically as their gifts allow.
O- C- ; Reluctant Scholars 24.2 %	O- C+; By-the-Bookers 37.1 %
Academic and intellectual pursuits are not their strengths or preference. They need special incentives to start learning and to stick with it. They may need help in organizing their work and reminders to keep them on schedule. They may have problems maintaining attention.	These individuals are diligent, methodical and organized, and they abide by all the rules, but they lack imagination and prefer step-by-step instructions. They excel at rote learning but have difficulties with questions that have no right answer. They have a need for structure and closure.

Note: *N* = 240 of 306, indicating that 22 % of the cadets are likely to show some features of any or of all the styles.

Those high on Openness, on the other hand, have a value system that is available for evaluation and modification: Their inner world is always being “updated” as new information becomes available. Their internal orientations tend to match well with the ongoing events in the environment. Closed individuals, in contrast, have more rigid and fixed orientations, where the commitment to tradition and respect for authority restrict opportunities for change and development. Such fixed orientations do not need nor will they accept updates. Their belief appears to be that what is already in place will protect them, no matter what happens in their environments. The results in Table 13.3 indicate that the majority of the cadets lack the ability to adapt: Only 26.7% of them are well suited and

might be able to thrive in uncertainty, make sense of complex environments, provide solutions in ambiguous situations, and help others to do the same. Such adaptability involves the capacity to quickly learn one's way out problems and not expect to be able to simply apply previous solutions.

Judge et al. (2002) showed in their review that there was no relationship between Leadership and the traits Openness and Agreeableness when the study setting was government or military. One of the reasons, they speculated, was that Openness is not considered to be important within military organizations because these cultures tend to be highly rule oriented, which might suppress dispositional effects (Judge et al., 2002). Such cultures are often characterized by a low level of discretion where the shared assumption is that the situation (rules and regulations), rather than their personalities, controls how organizational members behave. As has been shown, however, in modern conflict the Openness trait is important because open leaders are more creative and divergent thinkers, they are risk takers, and because their tendencies for esoteric thinking and fantasy (McCrae, 1996) make them more likely to be the type of visionary leaders needed for future conflict.

When the Openness domain is combined with the Agreeableness domain, they make up the "Attitude matrix" (Costa & McCrae, 1998), which is presented in table 13.4. Agreeableness reflects a style or philosophy towards life and reflects one's orientation toward others, an evaluation of how one perceives the motives, intentions, and goals of others. Agreeable people tend to see the best in others and wish to reach out to them, while those with low Agreeableness tend to see others as being disingenuous and self-oriented, and therefore view others with suspicion and distrust (Piedmont, 1998). The Attitude matrix reveals that the Navy will have a great challenge when it comes to playing the interaction and isolation game because there are too few "adapters" and too many rigid and inflexible officers. The results presented in the Table 13.4 must be seen together with the "Character matrix" presented in Table 13.5.

Table 13.4

NEO 4 Attitude Matrix

O+ A-; Free Thinkers 22.0 %	O+ A+; Progressives 18.1 %
They are critical thinkers who are swayed neither by tradition nor by sentimentality. They consider all views but then make their own judgments about right and wrong, and they are willing to disregard others' feelings in pursuing their own idea of the truth.	They take a thoughtful approach to social problems and are willing to try new solutions. They have faith in human nature and are confident that society can be improved through education, innovation, and cooperation. They believe in reason and being reasonable.
O- A-; Resolute Believers 41.8 %	O- A+; Traditionalists 18.1 %
These individuals have strong and unchanging beliefs about social policies and personal morality. Because they view human nature with considerable skepticism, they support strict discipline and a get-tough approach to social problems. They expect everyone to follow the rules.	These individuals rely on the values and beliefs of their family and heritage in seeking the best way for people to live. They feel that following the established rules without questions is the best way to ensure peace and prosperity for everyone.

Note: $N = 232$ of 306, indicating that 24 % of the cadets are likely to show some features of any or of all the styles.

The Character matrix consists of the two domains, Conscientiousness and Agreeableness (Costa & McCrae, 1998). The character matrix indicates that only 29.2% of these cadets could be classified as officers with character (see Piedmont, 1998), which combine high A and high C. Low Agreeableness and Low Conscientiousness, 7.2% of the cadets, represent a selfish, manipulative style that tries to find immediate gratification for personal needs. Other people are valued only in terms of what they can offer. This is a combination that is frequently found with the Antisocial and Passive-Aggressive Personality disorders (Piedmont, 1998).

On the other hand, Effective Altruists, who are mature and able to balance the “getting ahead” with “getting along,” may be described as the antithesis of the psychopath. Self-promoters are only concerned with getting ahead, and there is an overwhelming possibility that their lack of interpersonal skills might derail the team’s performance.

The results shown in the Learning style, Attitude, and Character matrixes define a climate that was not suited for leadership development. The cadets’ rigid and fixed value systems and their suspicion of and distrust towards other people kept the leadership development program from being able to penetrate the cadets’ orientations, making reorientation and development impossible and limiting their role-taking abilities.

Table 13.5

NEO 4 Character Matrix

A+ C-: Well-Intentioned 29.7 %	A+ C+: Effective Altruists 29.2 %
They are giving, sympathetic, and genuinely concerned about others. However, their lack of organization and persistence means that they sometimes fail to follow through on their good intentions. They may be best at inspiring kindness and generosity in others.	They are individuals who work diligently for the benefit of the group. They are high in self-discipline and endurance, and they channel their efforts to the service of others. As volunteers, they are willing to take on difficult or thankless tasks and will stick to them until they get the job done.
A- C-: Undistinguished 7.2 %	A- C+: Self-Promoters 33.9 %
They are more concerned with their own comfort and pleasure than with the well-being of others. They tend to be weak-willed and are likely to have some undesirable habits they find difficult to correct.	They are concerned first and foremost with their own needs and interests, and they are effective in pursuing their own ends. They may be highly successful in business or politics because of their single-minded pursuits of their own interests.

Note: $N = 236$ of 306, indicating that 23 % of the cadets are likely to show some features of any or of all the styles.

This indicates that they are not able to play the interaction and isolation game because they seem to lack the strategic self-awareness need to do so, an issue that will be addressed in the next section.

13.4 Strategic Self-awareness and the Interaction and Isolation Game at the Individual Level

This section addresses *strategic self-awareness* and its importance in a leadership context. Mature people and those with a high leadership potential tend to continuously seek information and feedback on themselves. They consider this as the only way to get better. We all have these opportunities, but it seems that only the most capable people will learn how to address the feedback that is given (Hogan & Warrenfeltz, 2006). They have, or develop, strategic self-awareness, which means that they can align their identities with their reputations and fulfill the Delphic admonition to “Know thyself!” Perhaps the essence and importance of strategic self awareness is best summarized by Sun Tzu:

Thus it is said that one who knows the enemy and knows himself will not be endangered in a hundred engagements. One who does not know the enemy but knows himself will sometimes be victorious, sometimes meet with defeat. One who knows neither the enemy nor himself will invariably be defeated in every engagement (1984, p. 52).

The leadership development program at the RNoNA, as exemplified by the leadership development report in appendix A, addresses this topic and provides the necessary assessment and feedback to develop this awareness. An effective leadership development program should contribute to an increased self-awareness, and one indication of success of both the program and the maturity of those who participate would be the degree of overlap between the cadets' self-rating, their "identities", and the peer-ratings, their "reputations." It would be reasonable to expect a high degree of overlap between the changes that occurred during the leadership program, expressed through the Individual-Level change on the SPGR. Table 13.6 gives an overview of the Individual-Level change (RCI) for the four cohorts SPGR 12-vector self-rating while Table 13.7 shows the SPGR 12-vector results of their reputation presented by the "others ratings."

If we examine Tables 13.6 and 13.7, and use Empathy as an example, one should expect to find that the 7% of the cadets who reported a significant increase in Empathy would also be found among the 12% group of the team members considered as having a significant development. There should be a fit between the "increasers," "decreasers," and "stayed the same." To control for this, a cross-tabulation was performed, and the results are reported in Table 13.8.

To illustrate these results, I will continue to use Empathy. Out of those 20 cadets (7%) who reported a significant increase on Empathy, only four (1%) were perceived by their team members to have shown significant development. Fourteen of these (5%) were considered to have "stayed the same," while two (.06%) were considered to have had significant negative development. Out of those 251 cadets (83%) who reported that they stayed the same on Empathy, 30 (10%) were considered to have had significant positive development, while 17 (6%) had a significant negative development, leaving 204 (68%) who stayed the same. For those who self-reported a negative development, two (.06%) were perceived as having significant positive development, 25 (8%) stayed the same, and four (1%) had a significant negative development.

Table 13.6

Cohorts 2001, 2002, 2003, and 2004: Individual-Level Change on the SPGR 12-Vector - Self Rating

	Decrease (%)	Stayed the same (%)	Increase (%)	χ^2 (2, N = 302)
S2: Empathy	10	83	7	97.9***
N1: Caring	3	88	9	56.9***
D2: Acceptance	3	91	6	15.8***
N2: Creativity	6	86	8	52.8***
O1: Criticism	4	80	16	239.2***
W1: Resignation	4	91	5	12.7**
W2: Self-sacrificing	3	88	8	42.5***
O2: Assertiveness	2	87	11	81.3***
C2: Ruling	5	85	10	83.5***
D1: Loyalty	9	88	4	48.3***
C1: Task orientation	2	75	23	513.1***
S1: Engagement	5	88	7	32.8***

Note. N= 302. Number of cadets for decrease, increase, and staying the same were based on the reliable change index (i.e., change greater than 1.96 or less than -1.96 is considered a reliable change). The chi-square tests whether the observed distribution of changers and nonchangers would differ from the expected distribution if changes were random (e.g., 2.5% each decreases and increase and 95% remain the same). Significance levels indicated as: * $p < .05$, ** $p < .01$, and *** $p < .001$.

Table 13.7

Cohorts 2001, 2002, 2003, and 2004: Individual-Level Change on the SPGR 12-vector - Others Rating

	Decrease (%)	Stayed the same (%)	Increase (%)	χ^2 (2, N = 302)
S2: Empathy	8	80	12	145.5***
N1: Caring	3	87	10	69.7***
D2: Acceptance	7	79	14	204.8***
N2: Creativity	4	89	7	27.7***
O1: Criticism	6	81	13	157.4***
W1: Resignation	6	90	4	19.3***
W2: Self-sacrificing	6	89	5	24.0***
O2: Assertiveness	3	93	4	4.1
C2: Ruling	4	94	2	4.3
D1: Loyalty	6	88	6	43.2***
C1: Task orientation	4	91	5	9.3**
S1: Engagement	3	91	6	14.9**

Note. N= 302. Number of cadets for decrease, increase, and staying the same were based on the reliable change index (i.e., change greater than 1.96 or less than -1.96 is considered a reliable change). The chi-square tests whether the observed distribution of changers and nonchangers would differ from the expected distribution if changes were random (e.g., 2.5% each decreases and increase and 95% remain the same). Significance levels indicated as: * $p < .05$, ** $p < .01$, and *** $p < .001$.

The lack of consistency is seen with a low Cramer's V value. The illustrated results on Empathy are consistent with the overall finding, indicating that the cadets lacked strategic awareness. The exception tends to be on Criticism, Resignation, and Assertiveness, where

the Cramer's V values were significant. However, although these reached a significant value, the Cramer's V statistics were not higher than .208 out of the maximum possible value of 1, indicating a weak but significant association between their self rating and their reputation on these three SPGR vectors.

Table 13.8

The Fit Between Self Perception and Others Perception

	Cramer's V	Exact Sig.
S2: Empathy	.078	.457
N1: Caring	.062	.719
D2: Acceptance	.043	.933
N2: Creativity	.020	1.000
O1: Criticism	.173	.004
W1: Resignation	.208	.002
W2: Self-sacrificing	.129	.056
O2: Assertiveness	.152	.030
C2: Ruling	.037	1.000
D1: Loyalty	.060	.722
C1: Task orientation	.114	.093
S1: Engagement	.117	.100

In Table 13.9 the results of the correlation between the self rating and others ratings at the beginning of the leadership development program and the post measures are reported. This was the result after one year of intensive leadership development and extensive feedback. During this period the cadets had received at least five leadership development reports as shown in appendix A.

The average correlation for the SPGR 12-vector was, at the pre measure, .33, which indicates a shared variance of 10.9% while the average correlation at the end was .39, which indicates a shared variance of 15.2%. This indicates a modest increase of shared variance of 4.3%. The highest shared variance at the end was 29.2%, which was found on Creativity, while the lowest was on Loyalty with an only 3.6% shared variance. Table 13.9 also suggests that the cadets as a group tended to perceive themselves as better than their reputations. This pattern confirms a lack of strategic awareness, which indicates that they as a group lacked the ability to perceive how their leadership behavior affected those whom

they led. Of great concern to the future of the Norwegian Navy, the cadets did not appear to be interested in better understanding themselves. Let me just requote a part of Sun Tzu: “One who knows neither the enemy nor himself will invariably be defeated in every engagement.” The consequences will be addressed implicitly in the next section.

Table 13.9

Mean, SD, and Correlation Between SPGR Self Rating and Others Rating

S P G R Vectors	Pre Measure			Post Measure		
	Self-Rating <i>M/SD</i>	“Reputation” <i>M/SD</i>	<i>r</i>	Self-Rating <i>M/SD</i>	“Reputation” <i>M/SD</i>	<i>r</i>
S2: Empathy	7.19 (1.87)	7.17 1.01	.47	7.43 (1.86)	7.19 (1.06)	.26
N1: Caring	6.75 (1.87)	6.53 (1.43)	.45	7.30 (1.73)	6.84 (1.22)	.48
D2: Acceptance	6.65 (1.96)	6.15 (1.15)	.18	6.44 (2.06)	6.34 (1.31)	.25
N2: Creativity	4.86 (2.22)	4.63 (1.57)	.50	5.22 (2.33)	4.68 (1.59)	.54
O1: Criticism	1.75 (1.39)	1.72 (.84)	.28	1.90 (1.59)	2.03 (1.04)	.36
W1: Resignation	2.02 (1.43)	1.80 (.77)	.22	1.55 (1.16)	1.80 (1.02)	.28
W2: Self-sacrificing	1.98 (1.43)	1.82 (.83)	.25	1.56 (1.02)	1.85 (1.10)	.40
O2: Assertiveness	4.05 (1.93)	3.59 (1.36)	.36	4.42 (1.89)	4.08 (1.36)	.36
C2: Ruling	4.52 (2.04)	4.04 (1.47)	.41	4.39 (1.62)	4.21 (2.03)	.49
D1: Loyalty	7.27 (1.80)	7.35 (.97)	.14	7.21 (1.06)	7.07 (2.19)	.19
C1: Task orientation	4.13 (2.06)	3.38 (1.55)	.47	4.80 (2.19)	4.31 (1.63)	.52
S1: Engagement	7.47 (1.63)	6.97 (1.31)	.24	7.68 (1.64)	7.12 (1.34)	.49

Note: $N = 302$.

Strength of the correlation, r : .10 to .29 = small, .30 to .49 = medium, .50 to .69 = large, and .70 to 1.0 = very large

13.5 A Key to Leadership Development; Entropy

The SPGR analyses of all the cohorts showed that only Cohort 2002 had a significant positive development. To gain a better understanding and further expand the insight into the leadership development process, the different cohorts will be compared with each other. According to Hogan and Roberts (2004) development is a result of the individual’s maturity,

suggesting that one explanation of why Cohort 2002 had significant positive development might be a result of the cadets' personalities: They simply were more mature, hence they scored better on the NEO PI-R at entrance of the program and therefore they would benefit more from it because they would have a higher role taking ability. Another explanation might be that Cohort 2002 managed to create a climate more favorable for leadership development. These issues will be investigated in this section by applying one-way analyses of variance between groups with post hoc tests. First the pre measures of both the SPGR and NEO PI-R will be analyzed followed by the post measures.

13.5.1 The Pre Measures

Table 13.10 presents a one-way ANOVA of the SPGR Humres data between the four cohorts at the beginning of the leadership development program. These results reveal significant differences for Synergy, Nurture and Withdrawal. These differences, however, are small, as indicated by the η^2 statistics. The Games-Howel post hoc statistics showed that on Synergy, Cohort 2001 scored significantly lower than both Cohort 2003 at the $p < .01$ level and Cohort 2004 at the $p < .05$ level. On Withdrawal, both Cohorts 2003 and 2004 scored significantly higher than Cohort 2001 at the $p < .01$ level. But if we look at the available Energy within each cohort there was no difference between the cohorts. On the Opposition function, Cohort 2001 scored significantly lower than the three other cohorts at the $p < .01$ level, while there was no difference between Cohorts 2002 and 2004 and between Cohorts 2002 and 2003 on this function.

The largest difference was found on the Dependence function, where the only nonsignificant difference was between Cohorts 2003 and 2004; all other differences were significant at the $p < .01$ level.

From a leadership development perspective, this difference might indicate that Cohorts 2003 and 2004 were more in need of clear cut directives and development goals at the initial phase of the development.

Similar analyses were performed for NEO PI-R to control any differences in personality at the pre measures that could explain the difference after one year of leadership development. The analyses of the NEO PI-R -measure revealed only small to moderate differences, where the most interesting difference was on Neuroticism, $F(3, 322) = 5.36, p < .005, \eta^2 = .05$. The

Games-Howell post hoc test revealed a significant difference between Cohort 2004 ($M = 49.90$, $SD = 8.24$), Cohort 2001 [$M = 46.17$, $SD = 7.82$, $p < .025$], and Cohort 2002 [$M = 45.24$, $SD = 8.40$, $p < .003$].

Table 13.10

SPGR Humres One-way ANOVA Between Cohorts 2001, 2002, 2003, and 2004 at the Beginning of the Leadership Development Program

	2001 <i>M/SD</i> (<i>N</i> =80)	2002 <i>M/SD</i> (<i>N</i> =79)	2003 <i>M/SD</i> (<i>N</i> =76)	2004 <i>M/SD</i> (<i>N</i> =97)	<i>F</i>	<i>Sig.</i>	η^2
Synergy	6.23 (1.22)	6.53 (1.21)	6.82 (1.09)	6.76 (1.25)	4.16	.007	.04
Control	3.33 (1.21)	2.98 (1.25)	3.33 (1.49)	3.27 (1.42)	1.24	.297	
Nurture	5.10 (.94)	4.65 (1.03)	5.06 (.98)	6.82 (1.09)	3.10	.027	.03
Opposition	1.11 (.78)	1.71 (.80)	1.53 (.74)	1.91 (.92)	14.77	.001	.12
Dependence	5.61 (.91)	6.17 (.99)	6.85 (.93)	6.79 (1.04)	29.64	.001	.21
Withdrawal	.80 (.84)	1.03 (.94)	1.27 (.90)	1.29 (.98)	5.15	.002	.05
Energy	5.42 (1.83)	5.50 (1.95)	5.55 (1.73)	5.47 (1.33)	.07	.978	

Both of the one-way between-groups ANOVA with post hoc tests indicate that there was nothing measured either with the SPGR or with the NEO PI-R that could contribute to an explanation of why Cohort 2002 had the development they had compared with the three other cohorts.

13.5.2 The Post Measures

Table 13.11 gives a complete overview of the post differences measured by the SPGR Humres. As can be seen, the differences are mostly small and moderate except for the Dependence function. The Games Howell post hoc analyses revealed that Cohort 2002 had the highest results on Synergy. It was significantly higher than Cohort 2001 at the $p < .01$ level and at the $p < .05$ level for the Cohorts 2003 and 2004.

Cohort 2002 also scored lowest on Withdrawal behavior. Although the difference was not significant, it contributed to the highest Energy available for doing work (lowest entropy),

which was significantly higher than Cohort 2001 at the $p < .05$ level. It is also worth noting that Cohort 2001 came out with the least favorable result. These results indicate that all four cohorts were on the same low maturity level, Team Spirit, because the dominant functions were Nurture and Dependence. Cohort 2002 was the best functioning at this maturity level. Unfortunately none of the Cohorts were suited for 3rd and 4th GW for reasons previously stated, see especially the discussion in section 11.3.3.

Table 13.11

SPGR Humres One-way ANOVA Between Cohorts 2001, 2002, 2003, and 2004 After Exercise "Telemakos"

	2001	2002	2003	2004			
	<i>M/SD</i> (<i>N</i> = 73)	<i>M/SD</i> (<i>N</i> = 77)	<i>M/SD</i> (<i>N</i> = 66)	<i>M/SD</i> (<i>N</i> = 86)	<i>F</i>	<i>Sig.</i>	η^2
Synergy	6.40 (1.15)	7.22 (.96)	6.95 (1.11)	6.90 (1.06)	7.65	.001	.07
Control	3.75 (1.55)	3.66 (1.34)	3.80 (1.55)	3.68 (1.62)	.13	.629	
Nurture	5.15 (1.14)	5.66 (1.15)	5.40 (.95)	5.08 (1.17)	4.44	.005	.04
Opposition	1.71 (.91)	1.92 (.84)	1.97 (.94)	1.86 (1.02)	1.02	.385	
Dependence	5.53 (1.05)	6.19 (1.01)	6.77 (.96)	6.54 (.99)	21.02	.001	.17
Withdrawal	1.00 (.88)	.76 (.94)	1.20 (1.33)	.87 (1.09)	2.19	.089	
Energy	5.40 (1.80)	6.46 (1.73)	5.75 (2.25)	6.02 (1.91)	4.12	.007	.04

The differences found on the NEO PI-R are presented in Table 13.12. Although these differences were small to modest, there is a striking pattern: Cohort 2002 always showed the most favorable results. They were, according to the Games-Howell post hoc test, significantly more emotionally stable (N) than the three other cohorts, all at the $p < .01$ level. They were more Agreeable than Cohort 2001 at the $p < .01$ level, and more Conscientious than Cohort 2004 at the $p < .01$ level and at $p < .05$ level compared with both Cohorts 2001 and 2003.

The same pattern was found on the Agreeableness facets, A1, Trust, A2, Straightforwardness, and A3, Altruism. This might indicate that Cohort 2002 was able to build a climate that promoted a certain level of mutual trust, which contributed to their positive leadership development process. This conclusion is consistent with Hogan's

statement that the ability to balance the needs of “getting along” with “getting ahead” requires a certain maturity level. This finding, seen together with the SPGR results, supports Hogan and Roberts (2004), who claim that Agreeableness, Conscientiousness and Neuroticism are important elements of maturity when it comes to a person’s reputation. These findings are illustrated in Figure 13.3. Leadership is a collective phenomena and when defined in terms of the ability to build and maintain a team that performs well compared to its competitors, leadership concerns building cohesive and goal oriented teams that are effective by relating their own maturities to task and context. If they are not able to do so, and team members do not reorient but remain as a “one-person-one-role” group as was the case at most of the teams at the RNoNA, the team will be less flexible and much less competitive.

The analysis in section 13.3 discusses the importance of the Openness domain. This domain also has a significant influence on adjustment and role-taking ability (The overall openness score for all the cohorts were $M = 48.20$ ($SD = 9.49$, $N = 306$)). As discussed in section 6.7.3 maturity from the inside, the identity part that decides which roles we are willing to take on, depends on openness as well as on agreeableness, conscientiousness, and emotional stability. Open individuals are curious about their inner and outer worlds. They are willing to entertain novel ideas and willing to questions authority. Those who score low on Openness tend to be conventional in behavior and conservative in outlook, and they tend to have a narrower scope of interests (Costa & McCrae, 1992). This might explain the results found at the individual level change reported for the SPGR 12 vector in Table 13.6. These results indicate a lack of willingness to take on new roles and expand the leadership behavior repertoire. The behaviors that support Synergy—Empathy and Engagement—show a decrease, and furthermore there is an increase in Withdrawal behavior (Resignation and Self-sacrifice), all negative results when it comes to the willingness to take on new roles and expand their leadership behavior repertoire. These findings support that this domain is important when it comes to leadership development.

Figure 13.3 illustrates the causal link between leadership and team performance. It also illustrates the interdependence of leadership and team development. As team members expand their behavioral repertoire and skills through expanded role-taking ability, the team becomes a better arena for learning and development. The individual needs the team to develop, and the team will only develop through its members (Mills, 1984).

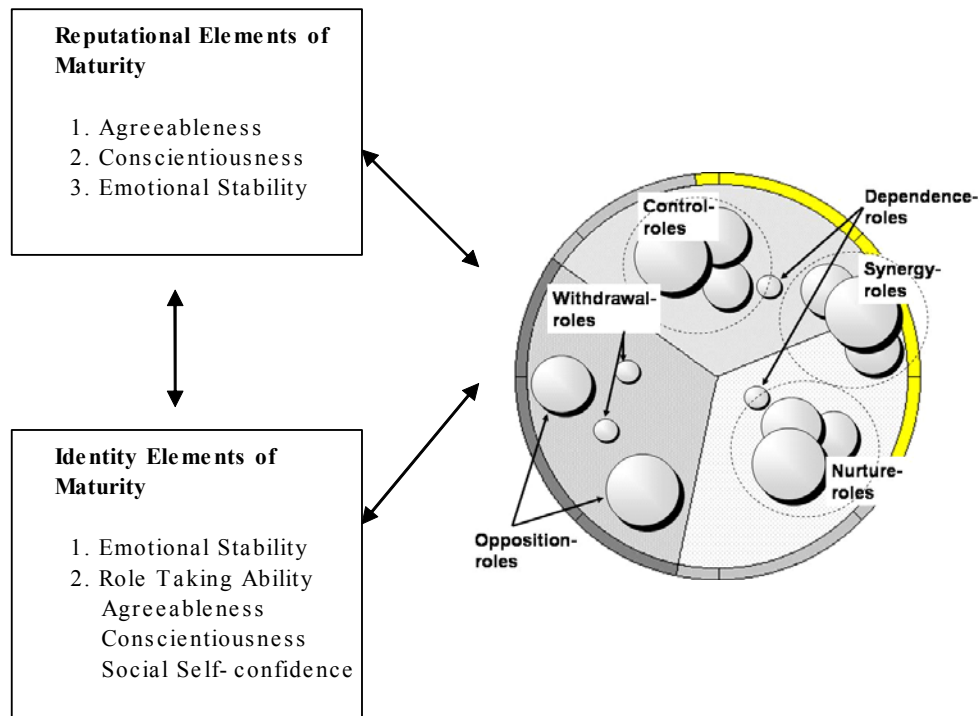


Figure 13.3 The Relationship Between SPGR and Socioanalytic Theory

This finding also gives strong support to the general leadership development approach taken at the RNoNA, which was outlined in chapter eight.

Table 13.12

NEO PI-R One-way ANOVA Between Cohorts 2001, 2002, 2003, and 2004 after Exercise "Telemakos"

Domains and facets	2001	2002	2003	2004	<i>F</i>	<i>Sig.</i>	η^2
	<i>M/SD</i> (<i>N</i> =74)	<i>M/SD</i> (<i>N</i> =77)	<i>M/SD</i> (<i>N</i> =70)	<i>M/SD</i> (<i>N</i> =85)			
NEUROTICISM	46.39 (7.09)	41.92 (7.90)	46.19 (8.12)	48.53 (7.61)	10.33	.001	.09
N1: Anxiety	44.26 (7.38)	40.81 (7.40)	44.59 (9.10)	46.64 (7.87)	7.40	.001	.07
N2: Angry Hostility	48.18 (7.64)	43.65 (7.26)	46.47 (7.39)	48.25 (7.71)	6.42	.001	.06
N3: Depression	43.78 (6.88)	40.86 (6.87)	43.94 (7.07)	46.45 (8.82)	9.09	.001	.09
N4: Self-Consciousness	47.81 (7.72)	43.64 (7.31)	47.91 (8.36)	49.49 (8.39)	7.82	.008	.07
N6: Vulnerability	48.82 (7.06)	46.25 (6.92)	49.66 (7.08)	5.51 (8.82)	5.19	.002	.05
E3: Assertiveness	53.89 (9.80)	56.94 (9.20)	52.86 (7.84)	50.41 (7.14)	2.95	.033	.03
O1: Fantasy	49.97 (8.77)	44.32 (11.10)	46.54 (8.55)	48.82 (8.64)	5.52	.001	.05
O6: Values	46.73 (7.76)	50.23 (7.49)	48.06 (8.17)	49.88 (8.28)	3.25	.022	.03
AGREABLENESS	45.92 (7.29)	50.16 (8.60)	47.27 (7.89)	47.51 (8.40)	3.65	.013	.03
A1: Trust	49.66 (7.18)	53.81 (9.51)	49.73 (8.14)	50.49 (8.82)	4.04	.008	.04
A2: Straightforwardness	46.14 (9.78)	51.13 (8.13)	48.71 (7.80)	46.60 (9.83)	5.01	.002	.05
A3: Altruism	49.27 (8.69)	53.26 (9.62)	48.76 (8.62)	50.21 (9.67)	3.62	.014	.03
CONSCIENTIOUSNESS	52.27 (8.71)	56.25 (9.18)	51.99 (8.82)	50.16 (9.22)	6.41	.001	.06
C1: Competence	54.03 (7.07)	58.16 (8.03)	52.74 (8.38)	52.49 (8.94)	7.35	.001	.07
C2: Order	54.73 (8.56)	53.36 (8.26)	51.47 (8.68)	50.76 (8.99)	3.37	.019	.03
C3: Dutifulness	50.08 (9.40)	54.42 (9.47)	51.50 (8.91)	51.44 (9.39)	3.10	.027	.03
C4: Achievement Striving	51.38 (9.30)	56.05 (9.08)	52.71 (8.69)	50.58 (9.60)	5.43	.001	.05
C5: Self-Discipline	52.49 (8.62)	55.22 (8.30)	51.46 (8.39)	49.96 (8.39)	5.37	.001	.05
C6: Deliberation	49.73 (9.45)	52.86 (9.13)	50.86 (7.39)	47.62 (8.76)	5.04	.002	.05

Note: The Levene's test for homogeneity of variance indicates a violation of the assumption of homogeneity of variance for the A2 Straightforwardness facet, which indicates that an inaccurate *F* value is reported for A2. To confirm these results a Kruska-Wallis Test was performed on A2 Straightforwardness ($p < .005$). This test confirmed the results reported above.

13.5.3 Creating a Climate for Leadership Development

This section will focus on entropy—an important element affecting leadership development. Entropy seems to be a topic that is difficult to comprehend, which makes it difficult to understand how important it is for effective leadership development. In the introduction, leadership development was defined as building the capacity for groups of people to learn their way out of problems that could have not predicted or that arise from disintegration of traditional organizational structures and associated loss of sense-making. As mentioned the RNoNA has experimented several times with the Magellan exercise, where, as noted above, differences between the cohorts at the pre measures were minor and small. Because the teams were composed the same way each time, and they were exposed to the same treatment under similar equal conditions, these experiments performed by the RNoNA represent a change of the dependent variable that was adjusted equally for the teams within each cohort, see section 10.2. The Magellan experiments will now be discussed in further detail.

As previously explained, leadership development requires assessment, commitment, and support to be effective. SPGR was introduced for Cohort 2001 and provided the necessary tool to gain both assessment and support. Because of the way the program was structured, however, it might not have been possible to gain the needed commitment and support for each cadet's development because those who were supposed to support and facilitate the development were organized into different organizational entities after each exercise, hence the individual and team were separated. Then the training bark, Statsraad Lehmkuhl, was introduced as a replacement for the military training vessel, KNM Horten. The initial focus for the Statsraad Lehmkuhl was seamanship, navigation, and the experience of being at sea for a longer time span, and leader and leadership development was not seen as the primary target. However, it soon became clear that the use of the Lehmkuhl had a significant, although unintended, impact on the cadets' leadership development, as measured by the SPGR (see Table 13.13).

As a consequence of these uplifting SPGR results, team interviews were conducted so that the cadets could explain in their own words this development in SPGR and their experience onboard the Statsraad Lehmkuhl. However, the outcome of these interviews was surprising and suggested that this development was more a result of coincidence than an intended, planned, and structured program. In particular, the cadets described the situation on board

the Lehmkuhl as chaotic and unstructured, indicating and that the Academy lacked insight into what was happening on board the vessel.

Table 13.13

Cohort 2002: SPGR Humres, Pre and Post Exercise “Magellan” - Others Rating

	Pre Magellan	Post Magellan				
	<i>M/SD</i>	<i>M/SD</i>	<i>r</i>	<i>t</i> (76)	<i>Sig.</i>	<i>d</i>
Synergy	6.54 (1.22)	7.16 (.97)	.60	-5.400	.001	.53
Control	2.97 (1.25)	3.82 (1.49)	.57	-5.758	.001	.61
Nurture	4.64 (1.04)	5.50 (1.15)	.69	-9.174	.001	.82
Opposition	1.71 (.79)	1.90 (1.03)	.52	-1.824	.072	
Dependence	6.21 (.97)	6.14 (1.07)	.69	.712	.478	
Withdrawal	1.04 (.95)	.76 (.70)	.58	2.019	.047	.21
Energy	5.50 (1.97)	6.30 (1.44)	.61	-4.475	.001	.45

According to the cadets, the Magellan exercise lacked an overall *Schwerpunkt* and this contributed to a huge frustration among the cadets. As one cadet said: “Nothing happened, there was no development, and nobody challenged us. ... I had expected that there was a plan, that someone had an idea of what I was supposed do. I had not expected that I should be onboard for ten weeks wasting my time.”

This statement sums up the frustration, or the internal entropy, onboard the vessel, even if most of it was unintended (and, as will be shown below, the end result was actually positive). As can be seen in Table 13.13 there is moderately significant increase in Synergy as a result of the moderate increase in Controlling behavior by becoming more analytical, task-oriented, or even autocratic if needed, and a large change in Nurturing behavior by becoming caring, empathic, or even spontaneous. This development points to an expansion of behavioral repertoire and skills as a result of reorientation during the exercise.

What was unique with the Magellan exercises, in contrast to most other leadership development exercises at the RNoNA, was that it lasted for ten weeks, not the five to eight days allotted to previous exercises. In the interviews, the teams also reported that it took about four weeks before they saw the need to deal with behavior among themselves, which

also contributed to increased level of entropy. Although this entropy frustrated some of the cadets, it is important to recognize that it had an overall positive effect on the program. As previously discussed, some level of entropy is needed because it creates the fluctuations needed for growth and development. As seen with Cohort 2002, and as Boyd (1976) described in “Destruction and Creation,” the entropy resulted in a high level of fluctuation—within each team, among the teams, and against the staff—and contributed to an increased level of complexity that in the end led to a positive development. What led to success and a positive outcome was how the teams chose to deal with each other through their social interaction, which is a process that can not be controlled from the outside. So there were a considerable number of unintended actions that led to development. It should be noted, however, that because this increase in entropy was coincidental and not the intended result of a well-designed program, it could as well have resulted in negative development or no development at all. That is, entropy is necessary for leadership development, but it is certainly not sufficient.

With Cohort 2003, the RNoNA swung to the other extreme of trying to control all parts of the Magellan exercise. This approach was adopted as a result of the negative feedback from the previous year. The approach chosen by the RNoNA represented an understanding of leadership development that resembles an engineer’s notion of control, building on the implicit assumption that successful change only occurs when the program is properly designed. Any lack of leadership development would represent a failure in engineering. From a research perspective, the stimuli were changed for the whole group in a real life setting. The result of this change in the dependent variable can be seen in Table 13.14. The SPGR Humres result indicates no development on Synergy, but because of a reduction of Withdrawal, the Energy available for doing work had a small, but significant positive development representing a *decrease* in entropy. With this “engineering” approach, in combination with its dominant Dependence function, see Table 13.10, this cohort was given an exercise that did not create the fluctuations necessary to get move cadets out their comfort zones. As mentioned above, one of the strongest criticisms that were raised against the RNoNA after the initial use of the Statsraad Lehmkuhl was lack of planning and control of the exercise, that it was not methodical and organized, that there were no step-by-step instructions. What all analyses have shown so far is that this is not a valid criticism when the goal is leadership development. The RNoNA showed the ability to learn from this experience and for Cohort 2004 the Magellan exercise was changed again.

Table 13.14

Cohort 2003: SPGR Humres Pre and Post Exercise "Magellan" - Others Rating

	Pre Magellan	Post Magellan	<i>r</i>	<i>t</i> (74)	<i>Sig.</i>	<i>d</i>
	<i>M/SD</i>	<i>M/SD</i>				
Synergy	6.80 (1.09)	6.85 (.92)	.55	-.437	.663	
Control	3.34 (1.50)	3.40 (1.15)	.78	-.552	.583	
Nurture	5.04 (.98)	5.34 (.90)	.57	-2.991	.004	.32
Opposition	1.53 (.74)	1.51 (.78)	.35	.230	.819	
Dependence	6.85 (.94)	6.53 (.98)	.65	3.426	.001	.33
Withdrawal	1.27 (.91)	.87 (.99)	.60	4.032	.001	.42
Energy	5.53 (1.74)	6.03 (1.49)	.60	-2.911	.005	.30

The result of this can be seen in Table 13.15. Although Cohort 2004 was dominated by a strong Dependence function at the pre measures, the exercise managed to create the necessary fluctuations, resulting in a small, but significant positive development. As can be seen, there was a significant, but small increase in both the Control and Nurture functions, Opposition was reduced, and there was a positive decrease of Withdrawal behavior. The Dependence function remained the same, which indicates that their Loyalty and Acceptance had not changed (which was positive). Even if these changes were small, they indicated an expansion in role taking capability, which resulted in a moderate but significant increase of Synergy. When these positive post-Magellan results are compared with the results after the complete leadership development program, however, see Table 11.28, we can see that this cohort was not able to take advantage of the positive development that occurred as a result of the Magellan exercise.

This finding is best illustrated by the change in Synergy, which at the end of the program was $M = 6.90$ ($SD = 1.06$), a significantly negative development [$r = .70$, $t(85) = 4.113$, $p < .001$, $d = .34$]. Although this development was small, it was significantly negative. One reason might be that the second semester represents a high degree of stability—a traditional, lecture-based program—making it difficult to continue practicing the newly acquired skills and knowledge that they had gained through real world practice onboard Lehmkuhl.

Table 13.15

Cohort 2004: SPGR Humres Pre and Post Exercise "Magellan" - Others Rating

	Pre Magellan	Post Magellan	<i>r</i>	<i>t</i> (96)	<i>Sig.</i>	<i>d</i>
	<i>M/SD</i>	<i>M/SD</i>				
Synergy	6.76 (1.25)	7.14 (.97)	.59	-3.544	.001	.33
Control	3.27 (1.42)	3.66 (1.32)	.71	-3.649	.001	.28
Nurture	4.98 (1.16)	5.31 (1.20)	.69	-3.408	.001	.27
Opposition	1.91 (.92)	1.60 (.68)	.52	3.680	.001	.37
Dependence	6.79 (1.04)	6.84 (.95)	.60	-.562	.575	
Withdrawal	1.29 (.98)	.98 (.75)	.58	3.570	.001	.33
Energy	5.47 (2.01)	6.14 (1.54)	.62	-4.117	.001	.36

They regressed significantly, and the end result as we have seen was no leadership development. The results for Cohort 2001, Table 13.16, with a post measure in January 2002 confirms this.

Table 13.16

Cohort 2001: SPGR Humres Result Pre Measure - January 2002 - Others Rating

	Pre Measure 01	January 02	<i>r</i>	<i>t</i> (77)	<i>Sig.</i>	<i>d</i>
	<i>M/SD</i>	<i>M/SD</i>				
Synergy	6.23 (1.23)	6.39 (1.15)	.62	-1.355	.179	
Control	3.29 (1.20)	3.79 (1.68)	.64	-3.408	.001	.33
Nurture	5.12 (.94)	4.94 (1.01)	.55	1.717	.090	
Opposition	1.11 (.79)	1.79 (1.04)	.45	-6.098	.001	.72
Dependence	5.64 (.89)	5.83 (1.06)	.54	-1.731	.088	
Withdrawal	.82 (.85)	1.16 (1.03)	.65	-3.758	.001	.56
Energy	5.41 (1.85)	5.23 (2.02)	.69	1.061	.292	

These results reveal a significant development of critical, assertive, and even self-sufficient behavior represented with the Opposition function, together with a small increase in the

Control function, which led to a restriction in contributing to the common team work. This, in turn, resulted in a moderate, but significant more passive leadership behavior among the cadets.

Summary

The theories of Sun Tzu, Boyd, and the SPGR all imply that the effectiveness of a leadership development program depends on internal dynamics and in particular, on how social interaction dissipates the entropy created within a team by interaction with its environment. Figure 13.4 illustrates the Synergy while Figure 13.5 illustrates the Energy for all the cohorts throughout the leadership development program (the differences were discussed in section 13.5.1 and 13.5.2).

Both Cohorts 2002 and 2004 had, as measured half way into the Magellan exercise, either a significant reduction in their Synergy (or Energy available for doing work) as is illustrated clearly in Figure 13.4 and 13.5, while Cohort 2003 stayed the same. This indicates that the approach chosen for the Magellan exercise for Cohort 2003 was not able to create the necessary entropy needed for effective leadership development, which also seemed to be the case with the RNoNA traditional approach to leadership development.

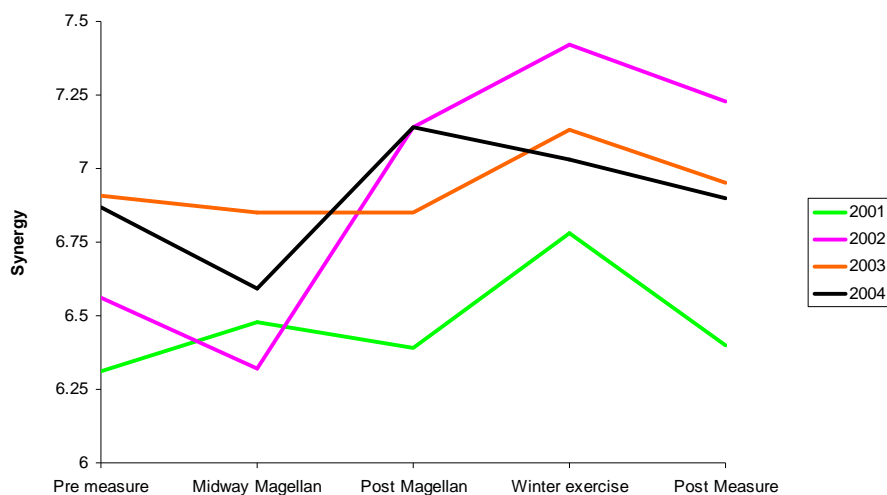


Figure 13.4 Average Synergy Results for the Four Cohorts - Others Rating

This cohort did not create the organizational climate necessary to handle entropy, simply because the exercise did not challenge them sufficiently. So when they were challenged

during the demanding exercise “Telemakos,” they did not have the necessary role-taking ability to cope these challenges—they were not able to dissipate entropy.

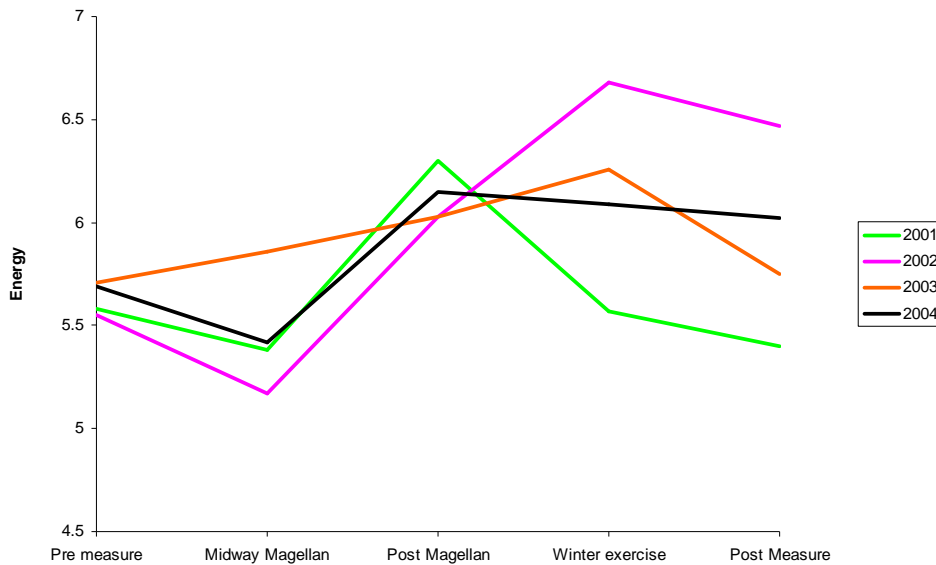


Figure 13.5 Average Energy Results for the Four Cohorts - Others Rating

As previously discussed Cohort 2004 had a positive development until after exercise Magellan, as both figures illustrate, but they were not able to internalize the new behavior into their repertoire. When they were exposed to more entropy, they regressed to their old leadership behavior. What is worth noticing with the Energy score for Cohort 2001 is the result, which was measured after a long, stable period with academic subjects at the RNoNA (from late September), showing that there was no increase in Synergy. There was, however, a large increase in Energy, which resulted from fewer cadets showing withdrawal-like behavior. As the figures illustrates, this changes when they have to perform as teams again, and after exercise “Telemakos” they are back on the same level as they started—demonstrating no increase in their leadership behavior repertoire. This indicates that that the key to development seems to be an internal dynamic or organizational climate that enables cooperation and expansion of role-taking ability by balancing the basic functions, “getting ahead” and “getting along,” in an environment characterized by some degree of chaos, complexity, ambiguity, and novelty.

13.6 Summary

The first aim of this chapter was to provide an insight to how personality influenced the social interaction pattern within the teams and how it influenced the leadership development process. The second aim was to gain a better understanding of leadership development in general. It is obvious that personality matters, and particularly those traits that constitute the maturity part of personality because they are important for an effective leadership development process, as illustrated with Figure 13.3. This becomes especially important when the aim is to develop leaders that are supposed to lead according to *Auftragstaktik*, a technique requiring high discretion, see Figure 6.3, and high mutual trust. Personality directly influences the team development and as such the overall role-taking ability. However, it is difficult to judge beforehand how each individual personality will affect social interaction because there will be some moderating effects, where discretion is very important. As the in depth team analyses showed, and that was confirmed here, there is a connection between personality and actual leadership behavior. The correlation between SPGR and NEO PI-R results, see appendix G, indicate that although they are different, they are related and therefore provide added value when used together. The results presented here support the findings on personality reported in chapter six. It is important, however, to emphasize the following observations concerning personality:

1. Agreeableness seems to be an important trait for creating a positive climate within a team, especially if the team must mature in order to cope with an environment characterized by high levels of complexity, novelty, and ambiguity.
2. Openness to Experience is an important trait affecting the willingness to take on new roles as part of the effort to expand each cadet's leadership behavior.
3. A balance is required between Openness to Experience and Conscientiousness. Openness to Experience is related to creativity, divergent thinking abilities, being able to "think outside the box," and it influences the ability to adapt to change (George & Zhou, 2001; LePine, Colquitt, & Erez, 2000; McCrae, 1987). Lack of this trait hampered leadership development at the RNoNA. By remaining receptive to different ideas, people, and situations, open people have at their disposal a wide range of thoughts, feelings, and problem-solving strategies, the combination of which may lead to novel and useful solutions or ideas (McCrae, 1987). However this

requires that Openness to Experience and Conscientiousness must be balanced, especially if the organizational culture simultaneously encourages conformity, being self-controlled, meeting predetermined expectations, and lacking support for creative behavior, as was the case at the RNoNA.

4. Extraversion is also important, and particularly the facet E3, Assertiveness. This must be considered together with the balance of the profile, and especially, if available, together with the SPGR peer or subordinate ratings, as this study has shown.

This dissertation has also shown that major personality “flaws” are captured by the SPGR and its measurement of social interaction. The existing organizational culture, however, might reinforce or even amplify these flaws, turning team and leadership development into an almost impossible mission.

This chapter has also provided additional insights on leadership development. Leadership development requires situations where organizational members can collectively engage in leadership roles in an environment (depending on the organizational context) characterized by the entropy needed to create fluctuations so they can build the capacity through expanded role-taking ability to learn their way out of problems that they could not have predicted. In other words, to learn to operate in a chaotic environment, the cadets must experience such environments during their training. Such an approach to leadership development will prevent disintegration of traditional organizational structures and the associated loss of sense making in 21st century conflicts.

Part VIII

Conclusion

This part consists of one chapter. In chapter 14, results of the overall findings from the empirical study are summarized and possible implications outlined. At the end of the chapter, limitations of the present study are discussed and directions for future research on leadership are proposed. This chapter also provides suggestions for improving leadership development in both the RNoNA and the Norwegian Armed Forces. Finally, it offers speculation and discussion concerning the future of warfare.

14. Conclusions

14.1 Introduction

The objective of this dissertation was to examine leadership and the effectiveness of the leadership development program at the RNoNA and to gain insight into the complexity of leadership development, generating propositions for leadership development in general. This was accomplished by conceptualizing leadership and leadership development in terms of the ability to build and maintain teams, groups, and organizations that outperform their competition, which, in turn, depends on the ability to “play the interaction and isolation game.” When leadership is defined in terms of the ability to build and maintain high performing teams—persuading people to give up, for a while, their selfish pursuits and purposes for a common goal—leadership becomes a function of personality and social interaction rather than organic status (Judge et al., 2002).

Leadership and leadership development are important for two primary reasons. First, with good leadership, organizations thrive and prosper. Second and even more important, from a moral perspective, bad leaders perpetrate terrible misery on those subject to their dominion. The theory applied in and the findings of this dissertation strongly support that leadership matters, that it is an adaptive tool for individual and group survival, where the OODA loop and the ability to remain a relatively more open “system” than the competition are keys to success.

Unlike most studies, which define leadership in terms of emergence—the person in a group of strangers who exerts the most influence—or in terms of ratings—of an individual “leader” by more senior “leaders”—the focus of this research has been on the maturity both of the members of the team and of the team itself. Both of these strongly affect team performance. Section 14.2 summarizes my findings and outlines some of its consequences. In section 14.3 some suggestions are made that might help to improve this situation. Section 14.4 discusses limitations of this study, while section 14.5 provides a few suggestions for further research, and finally, section 14.6 speculates a bit further on the future of warfare.

14.2 Certain to Lose?

The aim of this dissertation was to determine whether the leadership development program at the RNoNA is effective. To answer this question, I described the context of the military profession of the 21st century, primarily the need for understanding war “in the context of everything else,” within (a) Boyd’s strategic framework and (b) his concept of the primacy of orientation. From this, I outlined a theoretical foundation that resulted in seven additional research questions that would contribute to answering the main research question. An empirical investigation was conducted to answer these questions by gathering data from four cohorts of cadets at the RNoNA during their leadership development programs. Chapters 11, 12, and 13 discussed and analyzed these results.

I can now summarize the answer to my main question:

Is the leadership development program at the Royal Norwegian Academy effective in preparing officers to execute leadership in today’s conflicts and the conflicts in the years ahead?

The data and analyses demonstrate that only Cohort 2002 showed a significant positive development. None of the cohorts or teams, however, was able to reach a higher maturity level than Team Spirit, a level characterized by stable, fixed, and predictable role patterns. Figure 14.1 illustrates the imbalance between the Control and Nurture functions by applying the t -value to illustrate how dominant the Nurture function actually is. This imbalance was large, which is indicated by the Cohen d value at the post measure; 1.49, 1.84, 1.86, and 1.37 for the four cohorts beginning with Cohort 2001. This suggests that the cadets were only capable of efficient performance in stable environments with clearly stated goals. The leadership preferred at this level tends to be authoritative, and although it may not be optimal, at this maturity level the teams accepted it.

The results reported here are striking and straightforward. The leadership development program at the RNoNA has not been effective because there was no increase in the cadets’ role repertoires. They lacked, and are lacking, those qualities that would make them significant contributors to resolving the types of unstructured, asymmetric conflicts that the Norwegian Armed Forces are likely to face.

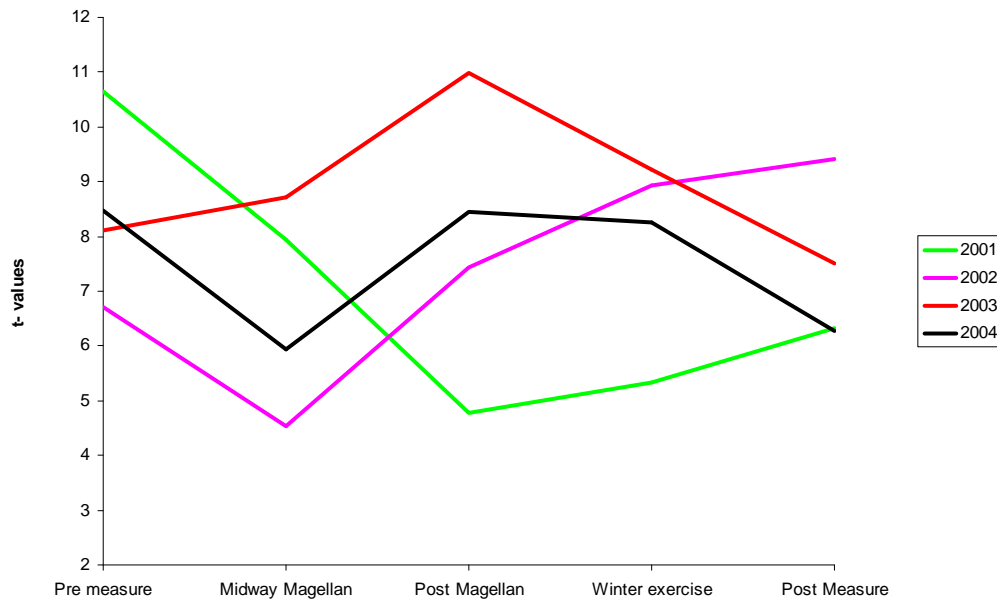


Figure 14.1 The Imbalance between the Control and Nurture Function Illustrated with the t -value - Others Rating.

The main reason for this is that they, together with RNoNA, were not able to uncover those interactions that foster the harmony and initiative that would have made it possible to reach a maturity level higher than Team Spirit. The initiative that was observed was mostly performed by the dominant cadets, which left little room for increasing variety and rapidity by tapping the initiative and creativity of all team members, as illustrated with Team 04NN, Figure 11.29. The result was an overall increase of entropy—energy unavailable for performing work—which led to a reduction, or at best preservation, of Synergy. The result was leadership behavior that was rigid, micromanaging, uniform, and predictable.

The teams reached a stability or equilibrium by settling into fixed role patterns, without the ability to balance dynamically the basic SPGR functions that would have produced an adequate capacity for adaptability. The leadership development program was not able to reorient the cadets, and the results found in this research indicate that they would struggle very hard to handle the type of dynamic, organic, and unpredictable adversary that they are likely to encounter in the future. The ability to reorient the teams to better deal with such adversaries would have required the maturity level of Innovation.

Instead of morally isolating their 4th GW adversary by connecting with the local population faster than their adversary, these results indicate that they most likely will isolate themselves from the local population, and ultimately from their own, because they are not able to maintain the peoples' trust and confidence by interacting with them. This is moral isolation as seen both in Afghanistan and Iraq, a process facilitated by actions that violate the codes of conduct or behavior patterns that they profess to uphold and others expect them to uphold. These violations, some of which are inevitable in 4GW and counterinsurgency, include brutality against civilians, bombing of wrong houses, and misconduct against prisoners. Each violation of the moral code of conduct that is performed and then reported by the media drains away support among both the local population and the people at home (Boyd, 1987, p. 49). At the level of Team Spirit, the teams will not be able to detect and correct these mismatches faster than their adversaries can exploit them.

Unfortunately the findings in this dissertation indicate that we lack this competitive advantage throughout the Norwegian Armed Forces. The same maturity level, Team Spirit, has been found among Norwegian submarine commanders and their crews (Larsen & Johannessen, 2005) and within the Coast Guard (Fauskanger, 2006). The ability to cope with morally-charged situations requires rapid OODA loop speed and leadership by *Auftragstaktik* using "implicit guidance and control," which operates fully only at the maturity level Innovation. At this level, effective actions can flow smoothly and instantaneously from orientation.

As Richards (2004) has pointed out, the OODA loop is a way of thinking of about organizational behavior. Boyd in fact, used to refer to the loop as "an operational scheme for organizational success" because it provides a common framework to help individuals and organizations focus on ways to improve their competitiveness. The essential purpose of the OODA loop model is help people understand how to change their environments before their opponents can comprehend, that is, how to operate inside their opponents' loops. It can be manifested in different ways depending on the form of conflict:

1. In business it will be the ability to change markets before competitors can offer more alluring products and services as, for example, Apple has done with the iPod line.
2. In 3rd GW, it is the ability to employ *cheng/ch'i* maneuvers against state military forces to create and exploit ambiguity and deception.

3. In 4th GW it provides a moral foundation for our efforts to win over the population by ensuring that our actions align with our stated intentions.

Perhaps the most important observation regarding the OODA loop is that we get the quickness we deserve. Our ability, in other words, to operate inside the opponents' OODA loops is largely a function of the organizational climate or the culture that we have done the hard work to instill. This is important because the general model is that leader personality influences the dynamics and culture of the top management team, and the characteristics of the top management team influence the performance of the organization (Hogan, 2006). Peterson, Smith, Martorana, and Owens (2003) showed that personality of the CEOs of 17 very large corporations powerfully affected the dynamics and culture of the top management team, with correlation in the .50 range for the most hypothesized relationship between personality and various aspect of team functioning. Moreover, the characteristic of the top management team was substantially correlated with business outcomes.

The culture found among the cadets, which seems to be representative of the Norwegian Armed Forces, indicates a major challenge. It is a culture that is rigid and lacks variety, making adaptability a hard and demanding enterprise. These findings are in accordance with Schneider's (1987) ASA model. The Norwegian Armed Forces have evolved into a homogenous organization that struggles severely to adapt to and respond to change. On the issue of conflict resolution, Norwegian officers follow the traditional logic of the sequence peace-crisis-war-resolution, which will result in peace again. In this sequence, war, the military action, is the deciding factor. This is an understanding of war within the context only of war. The problem with this approach in the 21st century is that we are generally not able to identify the enemy—typically an opposing army, navy, or air force—that we need in order to form a strategy, and without a strategy it is impossible to make a plan to use military force (Smith, 2005). It should be emphasized that “terrorism” is not a formulated enemy; it is a threatening concept or a tactic, occasionally implemented by individuals, some of whom work together in loosely defined organizations, as described in section 2.3.

Without a defined enemy, hence a centralized organization, it has not proven possible for Western militaries to formulate strategies, and without a strategy it is not possible to make anything but the broadest decisions on training, education, leadership development, weapons and equipment. This has resulted in a situation where we have allowed technological

development to drive policy and strategy, which can be seen in the information pamphlet from the ongoing Defense Study 07 (FS 07) in Norway. Here we read that: “New technology and the new doctrines that follow from the technological development transform the Armed Forces in a fundamental way” (FS 07, p. 5, [my translation]). The fundamental argument in this approach is that some unknown adversary might, at some time, acquire this technology, and to be safe we need it too. In a world of limited resources, though, this is neither a viable nor a sustainable strategy. We also tend to forget what actually determines the outcomes of wars. As Boyd stated it: “Machines don’t fight wars. People do, and they use their minds.” Instead of chasing technology for technology’s sake, we should follow the advice of Sun Tzu: “Warfare is the greatest affair of state, the basis of life and death, the Tao to survival or extinctions. *It must be thoroughly pondered and analyzed*” (1984, p. 40, emphasis added). Because of our lack of examination, we tend to replace as much of the old equipment as we can with new high tech equipment for as long as we can afford it. The result is that our forces enter the world of the “few and costly,” too few to matter and too expensive to use, resulting in risk adverse leadership behavior and limiting initiative.

In the concept of war “within the context of everything else,” on the other hand, the enemy is an international social, political, and economic condition—disconnectedness, for example (Barnett, 2004). Under this concept, the ends for which we are fighting change from defense of own territory to eliminating the causes of disconnectedness. This is a highly moral endeavor because we fight to extend connectivity in every way possible in order to provide a better life for the people involved. Although such connectivity is also in our ultimate best interest, to achieve it we must show the populations involved that we are willing to die not just *by* example but *for* example. To interact with the people and isolate our adversaries, we have to be in among the people; we should be in the villages, not assaulting the villages, realizing that the people are not the enemy but the objective (Smith, 2005). When we fight among the people on a highly moral (and mental) level, eventually, they will stop supporting the criminals, “terrorists,” and other 4th GW opponents who threaten the prosperity and well being of all parties involved.

14.3 Suggestions: Hope After All?

These results and their consequences may not be uplifting, but they represent important mismatches. I would also argue that in contrary to most other institutions that claim that they are developing leaders the, RNoNA, in spite of these results, has a sound academic approach and solid foundation to what they do. Their framework is unique and represents an outstanding approach that is in accordance with “best practices” within this field. The results of this research, however, have raised several issues that require attention and must be solved. I will address four of these.

1. The Navy and the Armed Forces in general must be able to attract a wider variety of people. The results regarding culture and personality traits indicate that the majority of those who apply to become officers are attracted to an organization with an outdated identity, making the necessary changes more difficult. The Navy must also recognize that “who you are, is how you lead,” which implies a need for a more rigorous selection procedure. This dissertation has pointed to the importance of both Agreeableness, for creating effective teams and leadership development, and Openness to experience, which is necessary for adaptability.
2. The RNoNA, together with the Navy, must reorder their priorities. Leadership development is a complex endeavor that requires a well defined *Schwerpunkt*. The unity of purpose represented by a *Schwerpunkt* will be difficult to achieve while many of the noncooperative centers of gravity that the Lieberg commission (1991) identified still function at the RNoNA. The most important element in defining this *Schwerpunkt* concerns the question, “Training to do what?” Answering this question requires achieving a balance between traditional academic subjects and what constitutes leadership development and officer training. About this topic, the Lieberg commission feared that because the emphasis at that time was in favor of traditional academic subjects, an imbalance could result that would lead to lack of adaptability within the military academies and that could serve as the basis for dysfunctional goals and content (1991, p. 44). That noncooperative centers of gravity are forming around this issue is evident from the fact that those who teach within in the Sea Power subject area do not, in general, agree with this dissertation’s approach of defining training with reference to the question of “Training to do what?” Those

responsible for leadership development, however, understand the fundamentals of this approach and agree with it. If basic disagreements over purpose are allowed to persist within the RNoNA, the institution will be attempting to function with several noncooperative *Schwerpunkts*, a situation that will diffuse the focus of the leadership development process and limit its effectiveness.

3. Another serious issue that the Academy must address involves the selection and training of facilitators. Facilitators are supposed to be connoisseurs and appreciators of leadership, arts that require extensive experience as well as specialized education and training. This is perhaps the most complex undertaking at the Academy, and officers who are chosen to perform it should receive at least a half year, preferably one year, of focused education and preparation before they start facilitating and coaching cadets. Today they are assigned to the Academy as to any other posting within the Navy, which suggests that any training they do receive, they get on the job.
4. The worst thing that the Navy and the RNoNA could do with this research would be to put it a drawer. Such an action would be understandable, because this dissertation represents a sharp break with the predominant mindset of state-versus-state attrition warfare. However, the leadership of the Navy and of the Academy should reassess this mindset, taking into account events in Afghanistan, Iraq, and elsewhere, where several significant armed conflicts are always in progress and threatening to ignite wider confrontations⁶⁵. In particular, they should address the fundamental finding of this research, that today's cadets, are not receiving the type of leadership development they will need to represent Norway's interests in conflict with nonstate and other Third World opponents.

I believe that this dissertation offers an answer to the question of how much impact the Academy now has on its targets (the cadets), and as such, it represents an opportunity to do something about it. Unfortunately, history indicates that until something comes along and

⁶⁵ As of this writing, a partial list of significant conflicts includes Israel-Palestinians, Israel-Hezbollah, the Horn of Africa, civil wars in Sri Lanka, Colombia, Ivory Coast, Georgia, the Philippines, and Moldova, and guerrilla-style uprisings in Russia (Chechnya), India (Naxalites and Assam), Iran (Baluchis), Algeria, and Thailand.

destroys the validity of the existing orientation, it is almost impossible to change. Ohno's (1988) writing on this is worth reflecting upon:

Modern industry also seems stuck in this way of thinking. A person in business may feel uneasy about survival in this competitive society without keeping some inventory of raw materials, work-in-progress, and products. ...This requires what I call a revolution in consciousness, a change of attitude and viewpoint by business people (p. 15).

Top management must change its way of thinking and make a commitment to reverse the conventional flow of production, transfer, and delivery. This will meet with lots of resistance and requires courage. ...Production workers have a good deal of psychological resistance to the idea that simply producing as much as possible in no longer a priority (p. 30).

By just changing a few words this could have been a description of the military culture and leadership behavior found in this dissertation. My biggest fear is that we will have to take major losses to shatter the existing orientation, which is becoming increasingly driven by technology.

14.4 Limitations of the Present Study

There will be limitations to any study of leadership. Although some of these can be eliminated through proper design, others are inherent to the nature of the subject. The most important ones were discussed in chapter 10. Here, I will focus on two issues: (1) the extent to which one can generalize the results of this study to other organizations outside the military realm, and (2) I will also address the issue of possible maturity effects at the RNoNA.

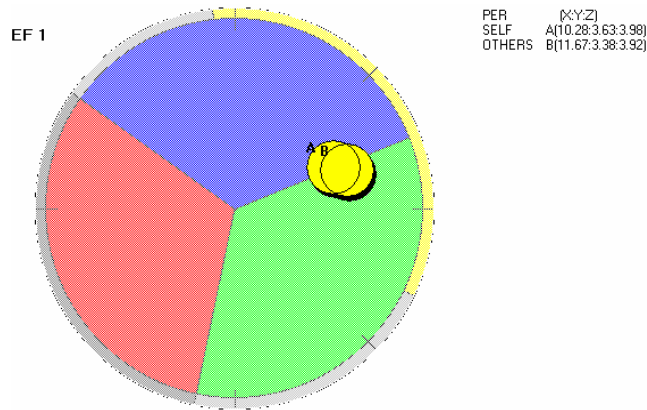
The most obvious criticism that could be raised against this study is that it might have little value outside the military community: "This just concerns war. How can these data be generalized to business?" I believe this dissertation contains valuable knowledge that could be applied to business and other fields because leadership was defined in terms of the ability to build and maintain effective teams. Defined in this way, leadership is amenable to improvement as a result of training, feedback, and other developmental experiences. This research has also contributed to answering Hogan and Kaiser's (2005) question of "Who

should rule?” I will also mention that the essentials of Boyd’s theories could be measured by the SPGR for those who wish to instil a culture that provides a competitive advantage in any highly competitive environment characterized by novelty and ambiguity. The part of this dissertation that covers the essentials insights of entropy and its function in leadership development provides a valuable insight into what is needed if the target is effective leadership development.

This study also confirms the importance of dynamic balance among the various leadership traits and functions. Hogan and Berry (2006), for example, found that successful Australian leaders had a burning desire to outperform others. They had strong interpersonal skills so they could motivate and sustain high performing teams. They created positive climates that generated energy and fostered “buy in” of the agenda. They had the maturity and emotional strength to cope with problems and setbacks and still focus positively on the big picture. They were appropriately conscientious, reliable, and structured, and they planned ahead—neither obsessed with control nor micromanagers of compulsive risk takers living on the edge. They also pushed themselves to stay up to date and enjoyed learning for continuous improvement, innovation and competitive advantage. These CEOs seemed to be able to uncover the combinations of variety, rapidity, harmony, and initiative and their interaction that permitted them to shape and adapt to ever-changing environments. There are individual differences among leaders, but we know that good leaders differ from poor leaders in consistent and measurable ways, independent of their leadership level (Hogan, 2006). Those who are “good” leaders, like these Australian CEOs or those U.S. Navy officers found in Bachman (1987), confirm the need to balance the basic SPGR functions.

Figure 14.2 illustrates the SPGR position in the field diagram of 173 Norwegian leaders. These are leaders at high levels who have performed well⁶⁶. The SPGR 12-vector profile indicates a good balance between the Control and Nurture. They are perceived to have a high role-taking ability, and their self-rating indicates a willingness to take on different roles. This is a different and strikingly more balanced leadership behaviour than what was found in this research.

⁶⁶ Sjøvold, E. (2006). Personal communication, e-mail, from Sjøvold to Nissestad, 6 November, 2006, 10:28, providing SPGR data on Norwegian leaders: self- and subordinate ratings.



The SPGR Field diagram of Norwegian leaders

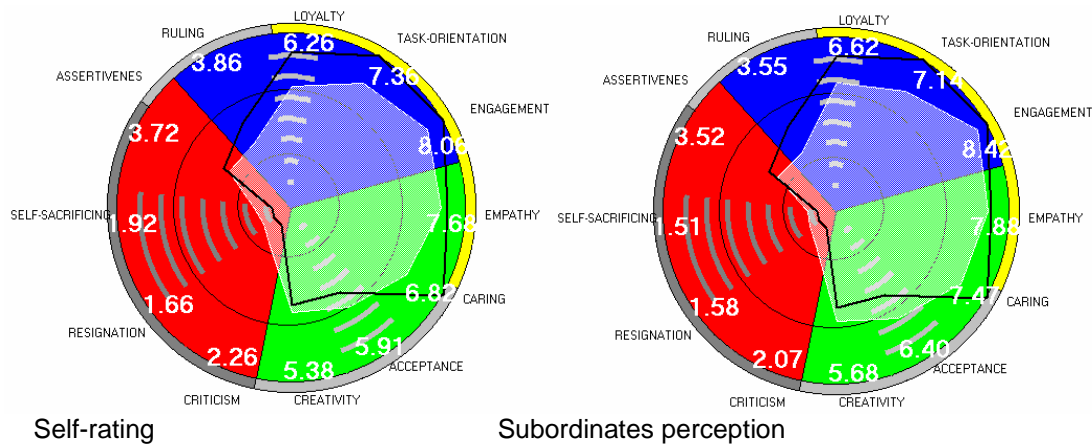


Figure 14.2 Norwegian Leaders

Figure 14.3, by comparison, illustrates what a small group of high ranking officers in the Norwegian Armed Forces considered to be a “good officer.” In contrast to the leaders shown in Figure 14.2, this is an officer who lacks balance and role taking ability and is therefore at the maturity level Team Spirit. The difference between high performing civilian leaders and the ideal military leader shows the magnitude of the challenge facing the Norwegian Armed Forces. However, it also suggests that significant improvement in military leadership is possible within the context of Norwegian culture.

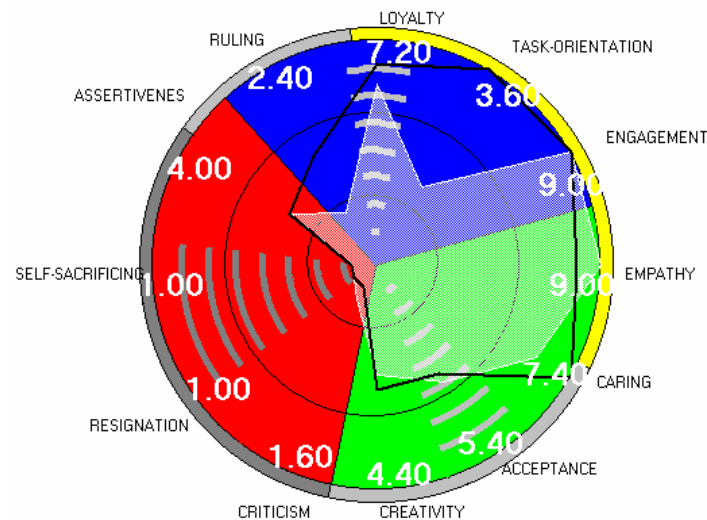


Figure 14.3 Norwegian High Ranking Officers' Perception of the "Good Officer"

Another limitation with this dissertation could be the chosen design, an experimental design as close as it could be to a classical design. It was, however, carried out in authentic work settings, such as climbing into the rigging of the bark *Statsraad Lehmkühl* during a storm in the middle of the Atlantic Ocean. Under conditions such as these, the leadership environment is quite realistic, and success depends on both good leadership and teamwork. Another consideration reinforcing the validity of the study was that it followed four cohorts instead of just one. The team interviews that were performed after the first Magellan exercise, however, confirmed that information given by the SPGR, together with the other chosen measurement instruments, captured the essentials of the social interaction to answer the main research question and gain understanding of the social interaction process that enhances leadership development.

At the start of the study it was decided to follow these four cohorts throughout their leadership training, which occurred primarily during the first year of their education at the RNoNA. It could be argued that there was a maturity effect as result of what they experienced. For those who continued for the last two years, however, the focus was on the academic subjects needed to finish their bachelor's degrees. These last two years, therefore, provided a stable and predictable environment. A few leadership development exercises did take place during this period because leadership development at the RNoNA is supposed to be a three year endeavour. These exercises, however, were not likely to make much

difference in the cadets' leadership behaviour because their stability failed to generate sufficient entropy for leadership development, see chapter 12. This conclusion is confirmed by the results shown in Table 14.1, the SPGR Humres results of the four cohorts reported after exercise "International Operation" (Int Ops), which occurred 16 months after they had finished the one year leadership development program and eight months before they were commissioned as officers.

Cohort 2004 had a moderately significant positive development. Unfortunately this resulted in an even stronger Team Spirit, and the imbalance between Control and Nurture is large, which was indicated with a Cohen's d of 1.84. This development indicates an even stronger "we against them" attitude—an inward focus—which made interaction with their environment even more difficult. It is also worth mentioning that this cohort had a very high drop-out rate during this 16 month period. Because Cohort 2002 was not able to continue their leadership development after the initial one-year program, these 16 months resulted in a regression towards the initial state. These results emphasize the importance of continued practice in newly acquired leadership skills. For the two remaining cohorts, these results indicate no development at all.

Table 14.1

Cohorts 2001, 2002, 2004, and 2004 SPGR Humres Measure - Others Rating - 16 Months After "Telemakos"

Cohort	N	SYNERGY		CONTROL		NURTURE		OPPOSITION		DEPENDENCE		WITHDRAWAL		ENERGY	
		Pre	Post	Pre	Post	Pre	Post	Pre	Post	Pre	Post	Pre	Post	Pre	Post
		M/SD	M/SD	M/SD	M/SD	M/SD	M/SD	M/SD	M/SD	M/SD	M/SD	M/SD	M/SD	M/SD	M/SD
2001	44	6.28 (1.26)	6.38 (1.27)	3.39 (1.49)	3.65 (1.64)	5.08 (1.20)	5.06 (1.05)	1.59 (.79)	1.73 (.86)	5.78 (1.06)	5.78 (.92)	1.02 (.83)	1.18 (.98)	5.26 (1.92)	5.20 (2.13)
2002	49	7.22 (.74)	6.79** ¹ (1.01)	3.97 (1.27)	3.95 (1.47)	5.60 (1.09)	5.30** ² (1.21)	2.05 (.86)	1.71 (.97)	6.07 (.97)	5.89 (1.11)	.64 (.65)	.74 (.67)	6.58 (1.20)	6.04** ³ (1.46)
2003	45	6.97 (1.06)	6.96 (1.01)	3.84 (1.63)	3.84 (1.27)	5.49 (.88)	5.22 (1.07)	2.02 (.99)	1.77 (.74)	6.84 (.92)	6.21*** ⁴ (.94)	1.16 (.65)	.73** ⁵ (.67)	5.82 (2.09)	6.23 (1.42)
2004	57	6.88 (1.04)	7.33** ⁶ (1.03)	3.47 (1.52)	3.97** ⁷ (1.38)	5.05 (1.26)	5.64*** ⁸ (1.19)	1.71 (.88)	1.63 (.81)	6.62 (.99)	6.84 (1.07)	.80 (.98)	.65 (.60)	6.09 (1.79)	6.68** ⁹ (1.37)

Note: A paired sample t -test was conducted to evaluate the impact of the education and training measured with the SPGR Humres – others rating - at the RNoNA of the 16 months period from the end of "Telemakos" exercise and until after the "Int-ops" exercise which was carried out 8 months before the cadets are commissioned.

Significant changes are indicated with: * $p < .050$ ** $p < .010$ *** $p < .001$

The ES measured with Cohen's d where; 1) $d = .48$, 2) $d = .26$, 3) $d = .36$, 4) $d = .67$, 5) $d = .38$, 6) $d = .43$, 7) $d = .34$, 8) $d = .47$, and 9) $d = .37$

There does not, therefore, appear to have been a maturity effect. These results also support the conclusion that entropy is an essential element of leadership development. It is our climate, culture, social interaction, and maturity that determine whether we are able to

dissipate the entropy created in our environment. This entropy is essential to leadership development. Without it, a group becomes stable and no development will take place.

Another potential weakness is that throughout the period covered by this study, the RNoNA has learned and, as a result, has changed parts of the exercises. The improvements to the Magellan exercises illustrate the positive effects of this learning. Because these changes affected entire cohorts and all the teams, the cohorts experienced different stimuli, and so results could be compared as was done in section 13.5. This could easily have become a challenge for this study, but instead of a potential weakness, it contributed to our knowledge of leadership development.

14.5 Future Research on Leadership and Leadership Development

Since 2001, as part of this study, systematic data has been collected on those officers who will play important roles in the Navy for the next several decades. These data provide a golden opportunity for follow-up studies to see how they perform as leaders in the Navy. As mentioned, there have been studies that have applied SPGR both in the Submarine community (Larsen & Johannessen, 2005) and in the Coast Guard (Fauskanger, 2006) that indicate that the findings reported in this dissertation appear to be valid throughout the Navy. It would be wise to investigate this topic further before final conclusions are drawn. There is also a need to do a study similar to this one at the Staff College in Oslo to measure the effect of this education because they are educating the officers for higher positions within the Norwegian armed forces.

The culture found throughout this dissertation also appears to represent a military subculture that is not representative of Norwegian society in general. This especially concerns the orientation *Relationship-among-People*, where the variation Individualism always comes out as the least preferred, which indicates a patriarchal and dysfunctional culture when it comes to interpersonal relationship. This finding was supported conceptually by both cadets' and officers' implicit understandings of their ideal officer, which revealed a strong Team Spirit focus. When compared with civilian leaders this pattern is striking and should be investigated further.

14.6 Some Words on the Future of Warfare

Is there a 5th generation of warfare? There have been several attempts to define a fifth generation. However as Lind (2004) notes, many of those who try to figure out what a 5th generation might be have not fully grasped the vast change embodied by the 4th generation. This statement seems to pin down some of the trouble with a 5th generation. Although the 4th generation has been around for a while, it is still evolving, and it still has surprises for us. Robb (2006) suggests that the forms of warfare that are emerging in Iraq could be characterized as either 4th GW “on steroids” or as the start of a 5th generation, but he claims that these semantic distinctions are not important. What Robb considers to be “on steroids” might as easily be an adversary that is becoming more decentralized and organic. What is important is that armed conflict is quickly developing in directions that are not favorable for conventional military forces. Robb sees three such ominous directions:

1. *Open source war*, which is the ability to decentralize beyond the limits of a single group (far beyond cellular structures) using new methodologies for development and coordination.
2. *System disruption*, which is a method of sabotage that goes beyond the simple destruction of physical infrastructure and is intended to adversely affect, at least for a while, the functioning of entire states. Examples could include recent attacks against vulnerable nodes in the petroleum industries in Nigeria and Iraq that greatly degrade the economies of those states.
3. *Virtual states*. Unlike the guerilla movements of the past, many 4GW forces of today have found ways of integrating their activities with global “crime.” These “black globalizations” are already vast, and they are gaining further momentum through the weakening and disruption of states.

Others, e.g. like Hammes (2004) claim that the emergence of a 5th generation is observable today and is characterized by the following aspects:

1. Technological advances represented by the Internet
2. Scalability of impact

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3. Information as an empowering and leveling force
 4. The media as an independent organ that is stronger, more pervasive, and more independent than ever before
 5. Borders that no longer impede data flow⁶⁷.

The 5th generation must not be mistaken for “information operations,” although the Internet is an extremely powerful tool in combination with scalability and the decreased effectiveness of borders. *Scalability* is of immense importance. At no other time in human history has it been possible for one person to destroy the functional productivity of a world economy with a push of button, as, for example, the “love bug” computer virus did for approximately a week in 2000, before being eradicated. *The media* has effectively become a sort of “nonstate actor” itself on the world stage, and the mere fact of publication in a particular country no longer means that that nation endorses the contents. This was vividly illustrated by the international disruptions following publication in Denmark of drawings of the Prophet Mohammed. This “weaponization of the media” is a dangerous tool and one that at least our adversaries have mastered. Government involvement with the media, however, for the express purpose of controlling the hearts of minds of people is an inherently dangerous activity if one wishes to preserve free speech as one of our fundamental values. Balancing the rights of citizens with the need to influence others will represent a huge challenge because our adversaries have no such constraints.

Technological change alone has never been sufficient to produce a major change in how man wages war. Any 5th generation, therefore, will require societal change—political, economic social and technological—to create the conditions necessary for major changes in war (Hammes, 2004). This further points to the necessity of defining the enemy correctly, which I claim is disconnectedness and those who promote and enforce it. This becomes even more important if Hammes is correct in his speculation that “5GW will be a super empowered small group that is loyal to a cause rather than a nation using bio tech to create WMD⁶⁸” (2006).

⁶⁷ This is an inevitable result of globalization.

⁶⁸ WMD is “weapons of mass destruction.”

Hammes's (2004) answer to this challenge is flexibility (see his chapter 17) while Vandergriff (2006) in his latest book focuses on adaptability. Vandergriff argues that, in the case of the U.S. Army, "... it will have to change its culture, particularly its leader development paradigm" (2006, p. 11). Both authors offer excellent arguments. As this research has shown, however, making such changes requires a major and demanding effort, and it is of the utmost importance to get it right.

The theoretical foundation presented in this dissertation, and the way the elements of it are combined, represents a "blueprint" for action leading to a future worth creating that covers considerably more than either Hammes's or Vandergriff's answer. I have deliberately written "blueprint" in quotes because, according to the results presented here, we cannot stand on the outside and control this development. If that becomes the answer, then this dissertation would represent only creative rewriting, which simplifies leadership development into processes where those who are being developed become just users of templates and not free-thinking individuals whom we can influence to become better officers.

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Appendices

Appendix A: A Leadership Development Report—an Example

This shows the average score of each team member measured with the SPGR 360. This example will follow Member B of this group, who has an average position in the field diagram of $X = 4$, $Y = 3$, and $Z = 4$ (including Member B's own scores).

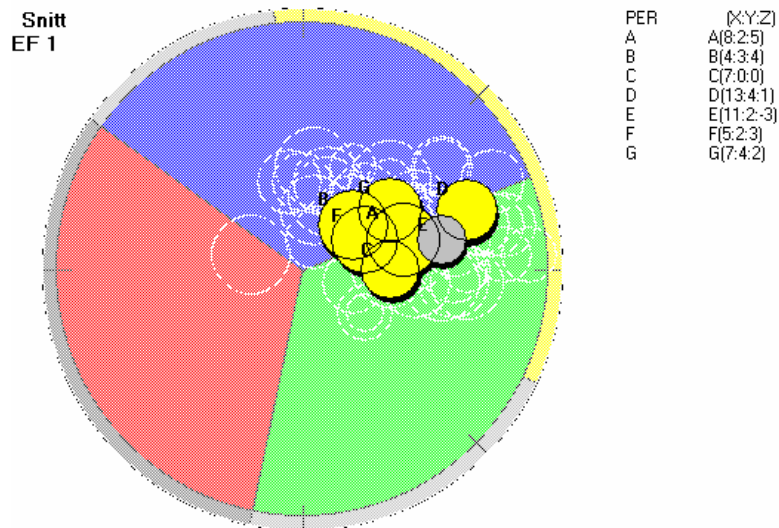


Figure A 1 The Team Average

The scatter—white circles—indicates the different perceptions of the team members. Depending on how long the team has been working together, this provides useful information about the team's cohesion. It also provides a picture of the polarization within the group. As we can see, there is only one member in a subgroup, dependence.

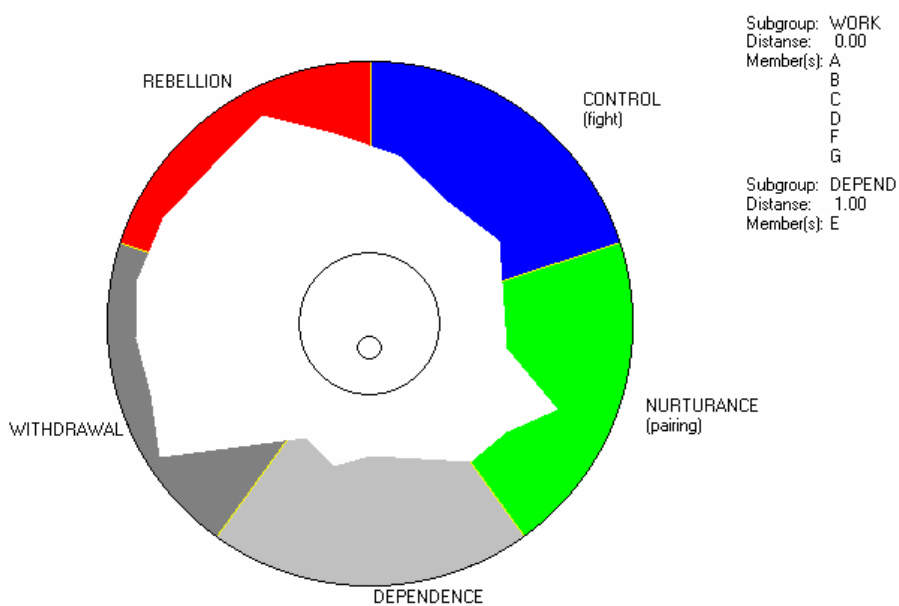


Figure A 2 The Group Average Polarization

This member is still within the large group, indicated by the small circle that is almost in the middle of the larger group circle. This indicates that this is not a major problem, but from a leadership development perspective it might become a challenge for this member's development process because Dependence suggests a low degree of initiative.

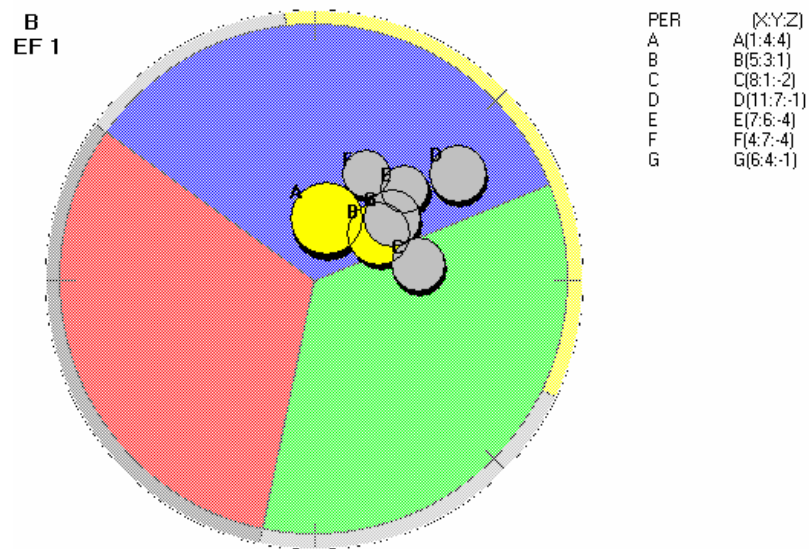


Figure A 3 Member B's Assessment of the Team

This diagram shows how Member B assesses the team members. It indicates that according to Member B, only Members A and B, represented by the large yellow circles, contribute to teamwork. The remaining members are inhibited by the Dependence function (as a result they are marked with grey color). This perception is also different from the average perception shown above, indicating a different orientation of the social interaction within the team. This might, depending how large this mismatch is, become a problem for Member B as a leader.

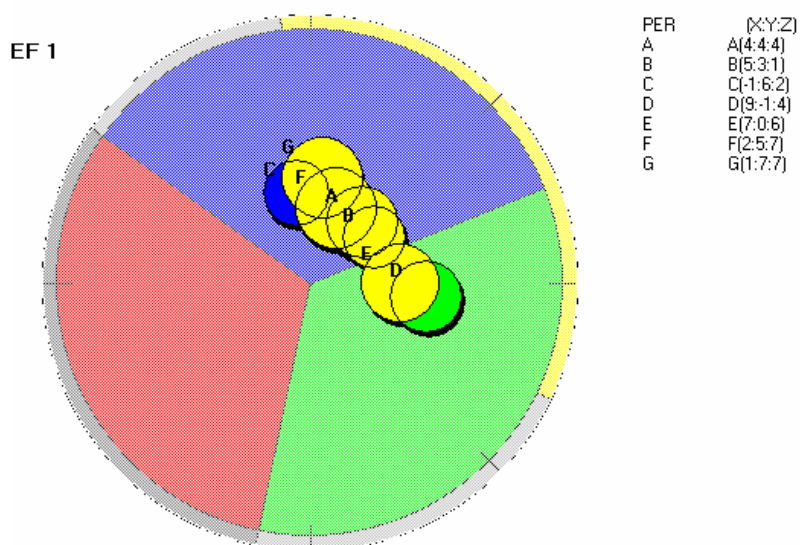


Figure A 4 The Team Members' Assessment of Member B

This diagram shows Member B as viewed by the other team members. This diagram also includes Member B's own assessment. Member C assesses B as inhibited by the Control function, blue color, while Member D assesses B on the opposite side, indicating Nurture, as shown by the green color. This indicates two quite different perceptions of Member B. As we see, the assessments by the other members are gathered somewhere in between these two. It also shows, in a good way, between the difference between this member's identity (B's theory of B, expressed in SPGR terms) and B's reputation as provided by the other team members.

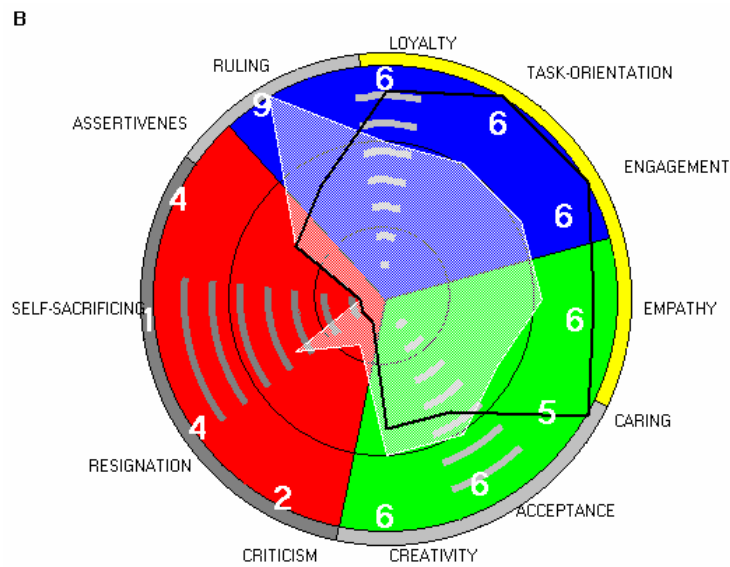


Figure A 5 Member B's Self-image 12-Vector Profile

This diagram shows the 12 vectors. The black line indicates the Naval Academy's leadership profile, while the white is Member B's self image (5-3-1). The scores range from 0 to 9. This indicates that this cadet is concerned with controlling behavior, *ruling* (9), which is the C2 vector in the SPGR space. Member B's result is much lower on *caring* (5). We also see that B's ruling behavior is at the maximum level and well above the Academy's desired state, leading to a rigid behavior and a strict focus on rules and procedures, while on caring it is lower. This profile indicates a cadet who is skewed toward the controlling part of the SPGR space, and it suggests that according to this self-assessment, Member B is more comfortable with control roles than nurture roles. This indicates a lack of balance and should as such represent an obvious target for development.

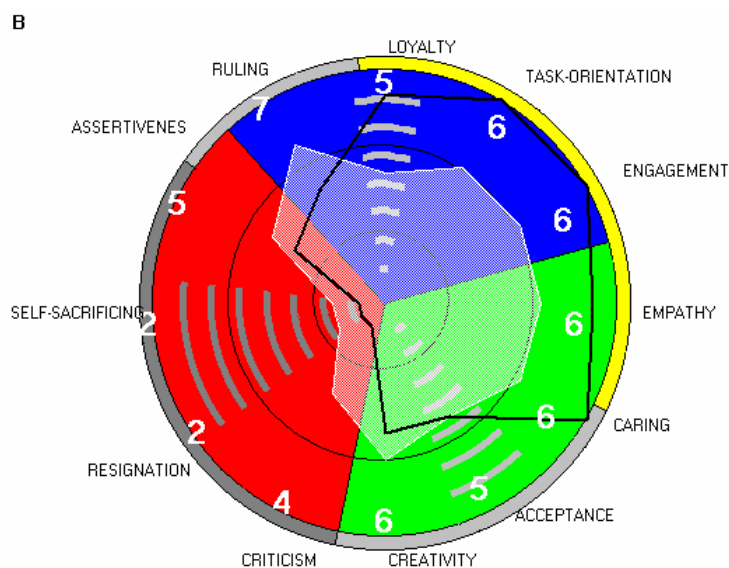


Figure A 6 Others Average Perception of Member B 12-Vector Profile

This diagram represents the average 12-vector reputation of Cadet B according to the team-members. As we can see, they have much in common, indicating that Cadet B's self-image is fairly correct, but that there is some deviation, as we saw above, that is worth serious discussion during the team's feedback sessions.

Natural development goals for this cadet would be to focus on the Synergy roles—S1, Engagement, and S2, Empathy. Overall, this profile indicates a limited role repertoire for this cadet at this stage of development.

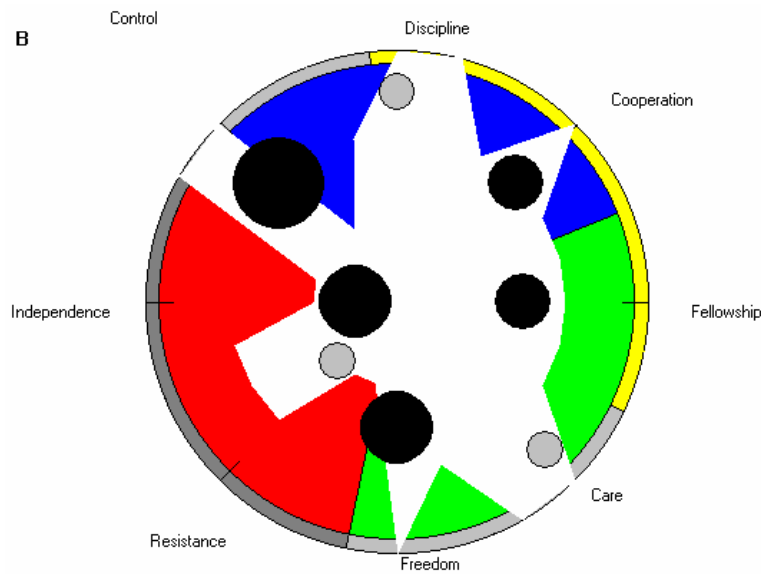


Figure A 7 Member B's Self-image 8-Vector Profile

This is a different diagram than the 12-vector profile, above. If we compare this diagram with the previous 12-vector self-image, we see that Member B's largest circle lies in the Control sector. This is also the one of the circles which is farthest away from the center, although there is a small grey circle at Care-taking that is further away from the center.

This information gives the receiver additional important feedback on that person's behavior. The size of the circle, for example, indicates influence: A large circle indicates a high influence and concern for this behavior, while a small, grey circle indicates the opposite. The distance from the center indicates the frequency of the behavior: the further away, the more common is this behavior.

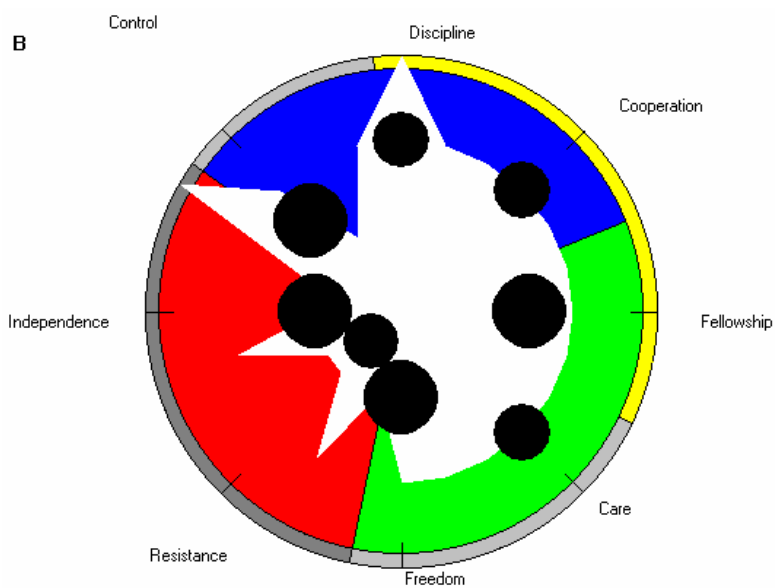


Figure A 8 Others Average Perception of Member B 8-Vector Profile

This diagram adds some important aspects. For example, Cadet B is perceived stronger on Care-taking by team members than by the cadet, although Care-taking behavior is not that common.

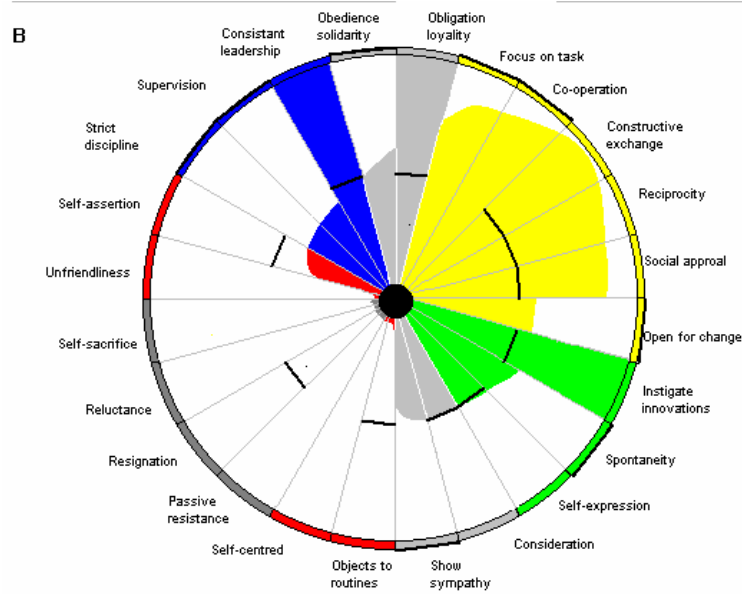


Figure A 9 Member B's Self-image Behaviors

This diagram adds to the complexity, although it also makes leadership development easier.

It provides a detailed picture of Member B's self rating on the different behaviors within the SPGR space. The different colors (that form a pattern resembling a butterfly) are the academy's chosen leadership profile. The black line indicates the score. If we look at the behavior labeled *constructive exchange*, which is a part of Synergy, we see that the black line is on the middle. This indicates that to increase the effectiveness of own leadership behavior, Member B should try to behave more constructively. This is also in agreement with the team's feedback, as shown on the next diagram.

It is important to observe how colors are used in a systematic way throughout the report. A blue color indicates behaviors that are in accordance with the Control function, green the Nurture function etc.

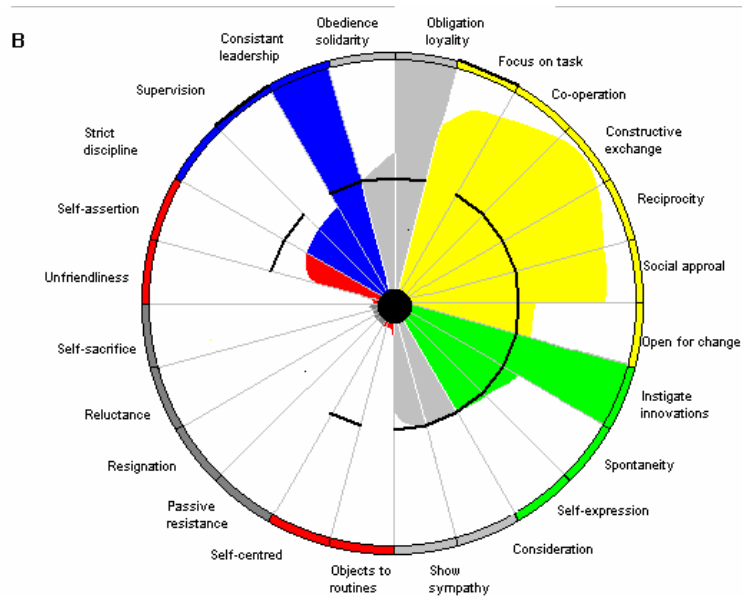


Figure A 10 Others Perception of Member B's Behavior

This diagram provides the cadet with the average ratings on behavior as assessed by the other team members. As previously seen, and which is also indicated here with the black lines, this cadet has a limited role repertoire to apply in different leadership contexts.

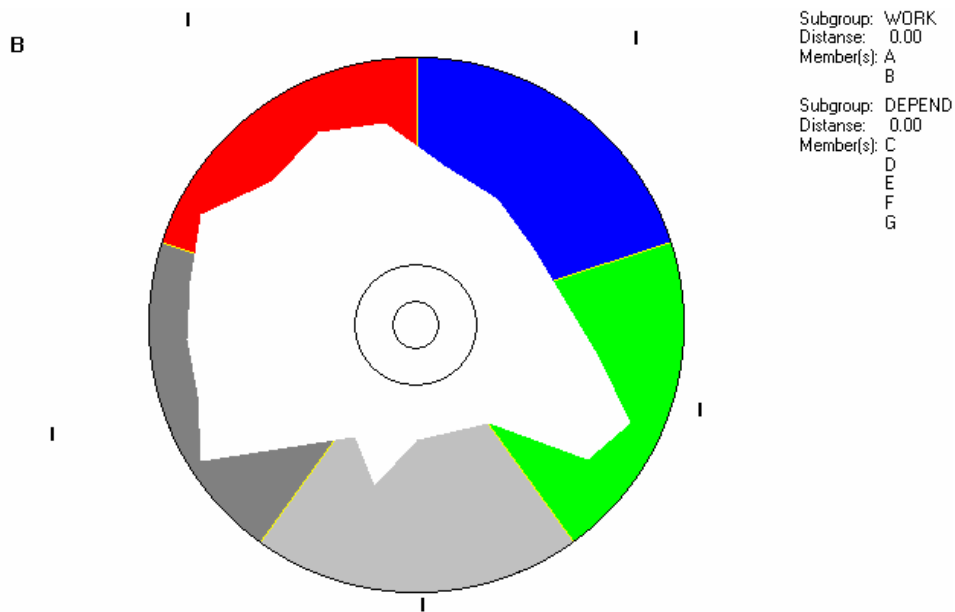


Figure A 11 Member B's Assessment of the Polarization within the Team

This is the polarization diagram of this cadet's assessment of the team, which is another picture of the assessment of the team in the SPGR space, see Figure A3. This diagram indicates that according to Member B, only Members A and B belong to the work group, while the remaining members are passive, lack initiative, and need to be told what to do.

Appendix B: The Factors of Assessment, Challenge, and Control

Assessment at the RNoNA

Assessment is an important part of the leadership development program at the RNoNA because it provides the cadets with an understanding of where they are now—their current strengths, the level of their current performance or leader effectiveness, and their primary developmental needs. The leadership development program is built on assessment, because “if you don’t know where you are going, any road will lead you there” (Hogan & Warrenfeltz, 2003). Assessment information identifies gaps in a cadet’s current performance and provides a benchmark for future development as a result of the gap between the assessment and the RNoNA’s goal. The driving idea is that these gaps identify one of the keys to why developmental experiences motivate learning, growth, and change. Assessment also enhances the power of leadership development because assessments help the cadets to understand their situations fully and become motivated to capitalize on the learning opportunities created by the RNoNA. Assessment addresses the topic of insight in the development pipeline and the two questions of “How do others view you?” and “How do you view yourself?” It is supposed to help the cadets bring their identities into alignment with their reputations by helping them develop an orientation that is continually shaped by their interactions with those they lead. This is an important alignment because poor leaders tend to overevaluate their performance (Atwater & Yammarino, 1992; Van Velsor, Taylor, & Leslie, 1992). In particular, a major goal of the leadership development program concerns bringing self-views of one’s competence as a leader into alignment with others’ views (Hogan & Warrenfeltz, 2003).

Assessment at the RNoNA is based on a 360-degree feedback from the team members after each of the five major leadership exercises. The Academy applies the SPGR (Sjøvold, 2007, 1995; Sjøvold & Nissestad, 2005) as their main tool for leadership development because SPGR contains both a model and a procedure to visualize how organizations, teams, and individual team members can contribute to the development of the organization, the team, and team member. When an exercise is finished the cadets will get individualized reports indicating (a) how mature and how well they function as a team, (b) their own opinions of

themselves, which are their identities expressed in SPGR terms, of their team members, and (c) the team members' individual opinions of each other, which are their reputations in SPGR terms. These reports are also compared with the academy's desired state of leadership behavior. An example of such a report was given in Appendix A.

Challenge at the RNoNA

The idea behind *challenge* is to move the cadets out of their comfort zones, which is what challenging experiences are suppose to do (Van Velsor & McCauley, 2004). They must create fluctuations or disequilibrium, causing the participants to question the adequacy of their skills, orientation, and approaches. Novelty is a common source of challenge, and experiences that require new skills and new ways of understanding oneself in relation to others can be most challenging. People feel challenged when they encounter variations of situations that demand skills and abilities beyond their current capabilities or when the situation is confusing and ambiguous, and current ways of making sense of the world no longer seem to work. In these circumstances, their orientations no longer match the real world. They have become disoriented.

Just to be given systematized feedback from peers, which done by the SPGR, might represent a challenge in itself and an opportunity to learn. These situations are important because they provide opportunities to learn that require the cadets to engage the challenge and to interact with the environment in ways that produce the information, observations, and reactions needed to learn. Learning, however, requires that the participants engage in the challenge and are motivated to interact with the environment in ways that produce the information, observations, and reactions needed to learn.

Simply stated, cadets will not develop their capacity for leadership without being in the throes of the challenge of leadership. People do not learn to cope with stress without feeling stress and discovering ways to cope with it. The program at the Academy puts each cadet in positions where they have to participate in leadership roles and processes that are full of novelty, difficulty, and conflict. Leadership itself, in other words, is regarded as a developmental challenge at the RNoNA.

Support at the RNoNA

The *support* elements of leadership development send the message that the participants will find support and help for their developmental process. Support helps them to handle the struggle and pain of developing (Van Velsor & McCauley, 2004). The support elements of a leadership program or an experiment are supposed to send the message that the cadets will find support and help for their developmental process. The SPGR reports, the team itself, and the facilitators/coaches are the most important support tools at the Academy, and they provide key factors in maintaining cadets' motivations to learn and grow. According to Mills (1984), this growth does not occur automatically but depends upon members who are capable of both personal growth and commitment. It helps them bear the weight of experience and maintain a positive view of themselves as capable, worthy, and valuable people who can learn and grow. Support must help engender a sense of self-efficacy about learning, a belief that one can learn, change, and develop. Support mechanisms also provide learning resources. By systematically talking about and sharing current struggles with others, openly examining mistakes, and ensuring that the environment reacts positively to the changes they make, cadets have the opportunity to confirm and clarify the lessons they are learning (Van Velsor & McCauley, 2004). Through support, they get the sense that they are on the right track, that the feedback they are receiving both through the SPGR reports and orally is legitimate, and that the new ways they are making sense of their situations are shared by others and will make them more effective as future leaders.

Appendix D - SPGR Analysis Applied in this Dissertation

The SPGR instrument consists of a set of analyses taken from the study of social fields applied to patterns of polarization and group typology. In this study we base our discussion on the Average Field analysis, Group functions, and Vector analysis.

The average field analyses

The SPGR field analyses are presented on a three-sector template. In the upper sector behaviors that support the “Control” group function(s) (blue color) are plotted, in the lower right sector behaviors that support “Nurture” (green color) and the lower left behaviors that support “Opposition” (red color) are plotted (Figure 2). In Figure 10.2 the primary focus of each sector (“System,” ”Relations” and “Myself”) is marked. For feedback purposes the results that form a group analyses can be presented by drawing the members of the group as circles of different sizes. The size of the circle indicates a person’s influence in the group and the Euclidian distance between the circles represents the relational closeness between group members.

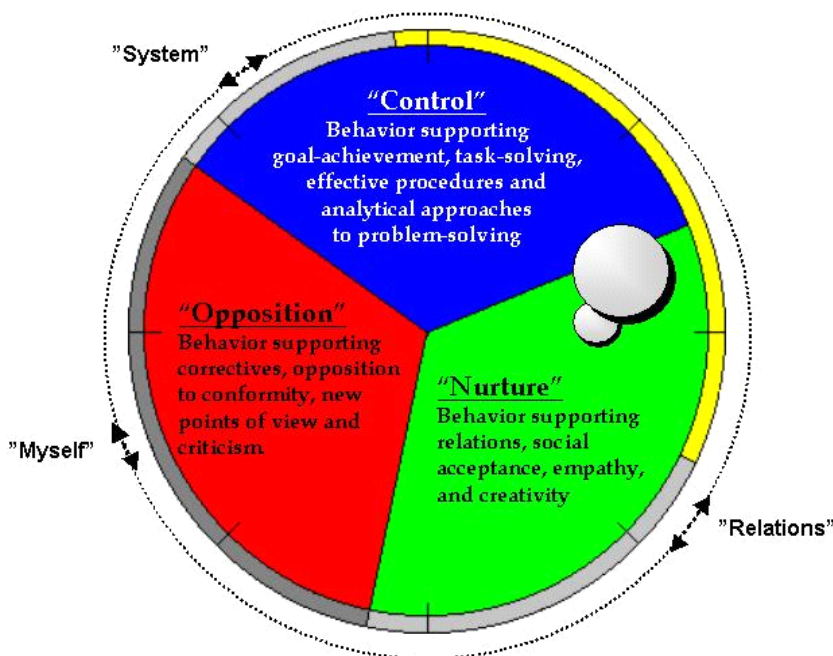


Figure D.1 The SPGR Space

As can be seen in appendix A, the location of each member is also given by coordinates, where the “X” coordinate tracks group-oriented behavior to self-oriented behavior, the “Y”

coordinate tracks behavior that is task-oriented behavior that is defined by emotional expressions and spontaneity, and the “Z” coordinate indicates a continuum from passivity, hence lack of initiative, to none too a very high level of influence (dominance). These values might range from -18 to 18 where 0 is the origin.

The aggregate results may be displayed for a team, several teams, an organization, or even a national culture if one wishes to do so. This dissertation will apply individuals, team(s) and cohort(s).

The group function analysis

To measure the maturity and the development of a team or a cohort the group functions as discussed in chapter four and described in Table 4.1 are plotted. In SPGR these are given values from 0 to 9.

The vector analysis

While each of the circles in a field analyses represents the average location in the SPGR space, vector analysis gives a more detailed picture of the behavior that one group member displays. The field analyses are efficient for feeding back results when the topic is the dynamics of the group, while the vector diagram is more efficient for feedback to individual members of the group. The SPGR space consists of the twelve different vectors described in Table 4.3 and illustrated in Figure 4.1. Here the measurement scale goes from 0 to 9.

Appendix E: CPQ 8 Sample Items

Scale	# of Items	Sample Items
Relationships		
Individualism	8	Young people should be taught to be independent People should expect to look after themselves
Collective	8	Everyone's responsibility is to do what is best for society as a whole The interests of the group take priority over the interests of any individual within the group
Hierarchy	7	People at higher levels of an organization must look after those below them Organizations work best with clear and formal hierarchies
Environment		
Subjugation	5	Organizational success is largely determined by natural or supernatural forces. The outcomes of most events are predetermined
Mastery	8	Given enough time and resources, people can do almost anything. The most successful businesses control their own environment
Harmony	7	It is critical to maintain harmony in social situations Good managers make changes only when they understand the implications for the whole organization.
Activity		
Doing	8	Hard work is rewarding in itself. People prefer jobs that are meaningful and important.
Being	8	Plans should always be changed if more interesting possibilities arise Taking the necessary time to do things is more important than meeting deadlines
Thinking	8	People always need to approach life thoughtfully. The most successful people are the ones who always carefully reflect on the meaning of their actions
Time		
Future	4	A realistic time horizon for organizational planning is five years or more. People should always look ahead rather than worry about today or yesterday.
Present	4	A realistic time horizon for organizational planning is one year or less. Today is more important than yesterday and tomorrow
Past	4	It is important to honor traditions People should always take into account the past when making decisions about the future.
Human Nature	5	People can be trusted to do the right thing People are basically good.

Appendix F: Statistical Considerations

Calculation of the Reliable Change Index

The Reliable Change Index (RCI) is calculated by following the suggestions outlined by Christensen and Mendoza (1986), Jacobsen and Traux (1991), and Olges, Lambert, and Masters (1996). The RCI is calculated as follows:

$$RC = (x_2 - x_1) / S_{diff}$$

where x_1 represents a subject's pretest score, x_2 represents that same subject's posttest score and, and S_{diff} is the standard error of difference between the two test scores. S_{diff} is computed from the standard error of measurement S_E according to:

$$S_{diff} = \sqrt{2(S_E)^2}$$

S_E is calculated according to: $S_E = s_1 \sqrt{1 - r_{xx}}$, where s_1 is the standard deviation of either control group, normal population, or pretreatment experimental group, and r_{xx} is either Cronbach's alpha (or another parameter of internal consistency) or test-retest reliability of this measure. Using Cronbach's alpha is probably the most theoretically consistent approach because the theory behind this is classical reliability theory. By contrast, a test-retest reliability measure always includes not only simple unreliability of the measure but also any real changes in whatever is being measured. This means that internal reliability is almost always higher than test-retest and generally results in more people being assessed as having changed reliably (Evans, 1998). The Cronbach's alpha was used on the NEO PI-R, while on the SPGR, because of lack of Cronbach's alpha measures on the SPGR, the correlation on each vector was summed for the five measurements and the average correlation used. This correlation was higher than the Pearson's r for the paired sample t -test, resulting in more people being seen to have changed reliably.

S_{diff} describes the spread of the distribution of change scores that would be expected if no actual change had occurred. Reliable change scores smaller than -1.96 or larger than 1.96 are unlikely to occur without true change, and are thus considered reliable. If change were

random, then we would expect the distribution of the RCI scores to be normal, with approximately 2.5% below -1.96, 2.5% above 1.96, and 95% of the cadets remaining the same. To control whether this distribution of “decreasers,” “nonchangers,” and “increasers” differs significantly from this random-change pattern, chi-squared statistics were applied.

Considerations Concerning the Use of One-Way Anova and Post Hoc Comparisons

This section covers the elements that must be considered concerning the choice of post hoc procedures. The post hoc tests consist of pair-wise comparisons that are designed to compare all different combinations of the treatment groups. There are three things that must be considered

- 1 Does the test control the type I error rate?
- 2 Does the test control the type II error rate (i.e. does the test have good statistical power)?
- 3 Is the test reliable when the test assumptions of ANOVA have been violated?

The type I error rate and the statistical power of the test are related, so there is a trade-off consideration: A conservative test, where the probability of type I error is small, is likely to lack statistical power, that is, the probability of a type II error will be high. It is important, therefore, that the multiple comparison procedures control the type I error rate without substantial loss in power. If a test is too conservative, it might miss differences between means that are, in reality, meaningful.

Most of the multiple comparison procedures perform relatively well under small deviations from normality. They perform badly however when group sizes are unequal and when populations' variances are different. There are several general guidelines to choosing which procedure to use:

1. With equal sample size and similar populations' variance, the *The Ryan, Einot, Gabriel and Welsh Q* procedure (REGWQ) could be applied because it has good power and tight control of the type I error.

2. If the sample sizes are slightly different, the *Gabriel's* procedure could be applied because it has greater power. It can, however, become too liberal when the sample sizes are different.
3. If the sample sizes are different, the *Hochberg's GT2* could be used.
4. In doubt, and if the population variances are equal, then the best thing is to use the *Games-Howell* procedure because it generally seems to offer the best performance. Field (2004) recommend running the Games-Howell procedure in addition to any of the others tests.

These guidelines were followed when these analyses were performed in this dissertation.

Calculation of Effect Size

There are a number of different ES statistics, the most common of which are *eta squared* (η^2) and *Cohen's d* (d), this section will outline these beginning with the eta squared.

The eta squared η^2 statistic provides an indication of the magnitude of the differences between groups, not just whether the difference could have occurred by chance. Values for η^2 can range from 0 to 1 and represent the proportion of variance in the dependent variable that is explained by the independent variable. The formula for calculating the η^2 for an independent sample t -test is: $\eta^2 = t^2 / [t^2 + (N_1 + N_2 - 2)]$, where t is the t -value, and N is the sample size. For paired sample t -test the formula is: $\eta^2 = t^2 / [t^2 + (N - 1)]$

The η^2 statistics can also be calculated for the measures in analysis of variance. For one-way analysis of variance the formula is:

$$\eta^2 = \text{Sum of squares between-groups} / \text{Total sum of squares, or } \eta^2 = \text{SS}_{\text{effect}} / \text{SS}_{\text{total}}.$$

The strength of η^2 values is interpreted according to the following guidelines: .01= small effects, .06= moderate effects; and .14= large effects.

According to Tabachnick and Fidell (2001), the η^2 is a rough estimate, and this measure is flawed for two reasons when there are two levels of independent variables. The first is that η^2 for a particular independent variable depends on the number and significance of the other

independent variables in the design. The η^2 for an independent variable in a one-way design is likely to be larger than η^2 for the same independent variable in a two-way design where the other independent variable and the interaction increase the size of the total variance, especially if one or both of the additional effects are large. This is because of the denominator of η^2 contains systematic variance for other effects in addition to the error variance and systematic variance for the effect of interest. This could be avoided by applying an alternative form of η^2 , called partial eta square (η_p^2), in which the denominator contains only variance attributable to the effect of interest plus error: $\eta_p^2 = S_{\text{effect}} / (S_{\text{effect}} + SS_{\text{error}})$. However, for one-way analyses of variance $\eta^2 = \eta_p^2$. With this alternative, η^2 s for all significant effects in the design do not sum to the proportion of systematic variance in the dependent variable. This sum might sometimes be greater than 1.0.

The second flaw with the η^2 is that it describes the proportion of systematic variance in a sample with no attempt to estimate proportion of systematic variance in the population. A statistic developed to estimate strength between independent variables and the dependent variable is omega squares (ω^2); $\omega^2 = SS_{\text{effect}} - (df_{\text{effect}})(SS_{\text{error}}) / SS_{\text{total}} + MS_{\text{error}}$. This is the additive form of ω^2 , where the denominator represents total variance, not just variance because of the effect plus error, and is limited to between-subjects analysis of variance design with equal sample sizes in all cells.

Cohen (1988) defined d as the difference between the means, $M_1 - M_2$, divided by the standard deviation, SD (σ), of either group; $d = M_1 - M_2 / SD$, where

$SD = \sqrt{\left[\sum (X - M)^2 / N \right]}$, where X is the raw score, M is the mean and N is the number of cases. Cohen argued that the standard deviation of either group could be used when the variance of the two groups are homogeneous. In practice, the pooled SD , SD_{pooled} , (σ_{pooled}) is commonly used (Rosnow & Rosenthal, 1996); $d = d = M_1 - M_2 / SD_{\text{pooled}}$. The pooled standard deviations are found as the root square of the two standard deviations (Cohen, 1988). That is, the pooled standard deviation is the square root of the average of the squared standard deviations; $SD_{\text{pooled}} = \sqrt{\left[(SD_1^2 + SD_2^2) / 2 \right]}$. When the two standard deviations are similar, the root mean square will not differ much from the simple average of the two variances. This gives the following formula for Cohen's d :

$$d = \frac{M_{t1} - M_{t2}}{\sqrt{(SD_{t1}^2 + SD_{t2}^2)/2}}$$

Cohen's d can also be computed from the value of the t -test of the differences between the two groups (Rosenthal and Rosnow, 1991); $d = 2t/\sqrt{(df)}$ or $d = \frac{t(n_1 + n_2)}{[\sqrt{(df)(n_1 n_2)}]}$, where df is the degrees of freedom for the t -test. The "n's" are the number of cases for each group. The formula without the n's should be used when the n's are equal, and the formula with separate n's should be used when the n's are not equal. Cohen's d can also be computed from r , the ES correlation; $d = 2r/\sqrt{(1 - r^2)}$.

There are some controversies about how to compute ES when we have repeated measures, e.g., the paired sample t -test as used in this dissertation. Dunlap, Cortina, Vaslow, and Burke (1996) argue that the original standard deviations, or the between-group t -test value, should be used to compute ES for correlated designs. They argue that if the pooled standard deviation is corrected for the amount of correlation between the measures, then the ES estimate will be an overestimate of the actual ES. The overestimate is dependent upon the magnitude of correlation between the two scores. It is only when the correlation between measures is zero that the ES is not overestimated, which makes the above η^2 calculation flawed and misleading and the result will in most cases result in reporting a too high ES. Cohen's d for the paired sample t -tests is calculated by using the formula presented by Dunlap et al. (1996):

$$d = t_c[2(1-r)/n]^{1/2}$$

Where t_c is the correlated pairs t value, r is the correlation between scores for the two groups or the retest coefficient, and n is the number of pairs.

Cohen (1988) hesitantly defined ESs as "small, $d = .2$," "medium, $d = .5$," and "large, $d = .8$," stating that "there is a certain risk inherent in offering conventional operational definitions for those terms for use in power analyses in as diverse fields of inquiry as the behavioral sciences" (p, 25). According to Cohen (1988) ES can be interpreted in terms of the percent of nonoverlap of the treated group's score compared with those of the untreated group. An ES of 0 indicates that the distribution of scores for the treated group overlaps completely with the distribution of scores for the untreated group, that there is 0% of

nonoverlap. A small ES of 0.2 indicates a nonoverlap of 14.7% in the two distributions, a medium ES of 0.5 indicates an overlap of 33.3% in the two distributions, while a large ES of 0.8 overlap of 47.4% in the two distributions.

Reporting of p Values

According to the American Psychological Association (APA) guidelines (2001), there are two methods of reporting p values. One way is to use the alpha level, which is typically .05 or .01. The exact p value may also be reported. If the exact p value is less than .001 it is conventional to state merely " $p < .001$."

In this dissertation both methods are used, depending on the type of inference being performed.

Appendix G: Correlation Between SPGR and NEO PI-R

This appendix presents the correlation results between the personality inventory NEO PI-R and both SPGR self and peer ratings.

The following abbreviations are used in the tables: **SPGR Abbreviations:** X = Group-oriented behavior to Self-oriented behavior; Y = Task-oriented behavior that is defined by emotional expressions and spontaneity; Z = A continuum from passivity and lack of initiative to a very high level of influence; Syn = Synergy; Con = Control, Nur = Nurture; Op = Opposition; De = Dependence; Wit = Withdrawal; C1 = Task orientation; C2 = Ruling; N1 = Care-taking, N2 = Creativity; D1 = Loyalty, D2 = Acceptance; O1 = Criticism; O2 = Assertiveness; W1 = Resignation; W2 = Self-sacrificing; S1 = Engagement; S2 = Empathy.

NEO PI-R Abbreviations: N = Neuroticism; E = Extraversion, O = Openness to experience, A = Agreeableness, C = Conscientiousness; N1 = Anxiety, N2 = Angry Hostility, N3 = Depression; N4 = Self-Consciousness; N5 = Impulsiveness; N6 = Vulnerability; E1 = Warmth; E2 = Gregariousness; E3 = Assertiveness; E4 = Activity; E5 = Excitement Seeking; E6 = Positive Emotions; O1 = Fantasy; O2 = Aesthetics; O3 = Feelings; O4 = Actions; O5 = Ideas; O6 = Values; A1 = Trust, A2 = Straightforwardness; A3 = Altruism; A4 = Compliance; A5 = Modesty; A6 = Tender-Mindedness; C1 = Competence; C2 = Order, C3 = Dutifulness; C4 = Achievement Striving; C5 = Self-Discipline; C6 = Deliberation.

Pearson Product-Moment Correlation Between SPGR Dimensions and Functions Self-rating and NEO PI-R

	PN	FB	UD	Syn	Con	Nur	Op	De	Wit
N	-.16**	-.13*	-.19**	-.27**	-.07	-.15**	.06	.03	.27**
E	.05	.04	.39**	.26**	.18**	.29**	.10	-.08	-.21**
O	-.02	-.02	.20**	.12*	.13*	.18**	.11	-.11	-.04
A	.26**	-.13*	-.23**	.07	-.25**	-.07	-.16**	.12*	-.02
C	.11	.32**	.07	.20**	-.19**	-.01	.09	.12*	-.16**
N1	-.10	-.05	-.20**	-.20**	-.04	-.17**	.03	.06	.24**
N2	-.30**	.06	.09	-.23**	.17**	-.11	-.20**	-.10	.09
N3	-.16**	-.10	-.20**	-.24**	-.03	-.14*	.08	.08	.24**
N4	-.05	-.12*	-.28**	-.21**	-.17**	-.15**	-.07	.02	.23**
N5	-.07	-.15*	-.02	-.05	-.06	.04	.05	.01	.14*
N6	-.05	-.21**	-.24**	-.23**	-.23**	-.13*	-.04	.04	.25**
E1	.18**	-.01	.18**	.21**	-.01	.26**	-.08	-.02	-.09
E2	.08	-.07	.21**	.16**	.01	.20**	.00	-.07	-.15*
E3	-.06	.27**	.47**	.23**	.40**	.18**	.19**	-.10	-.26**
E4	-.03	.13*	.34**	.20**	.20**	.16**	.17**	-.08	-.18**
E5	-.07	-.05	.11	.02	.08	.10	.09	-.03	-.02
E6	.12	-.09	.19**	.23**	.00	.24**	-.01	-.02	-.11*
O1	-.13	-.15**	.11	-.01	.01	.17**	.02	-.14*	-.01
O2	-.01	.03	.17**	-.09	.15**	.01	.07	-.09	-.06
O3	-.01	-.04	.09	.18**	.06	.15**	.07	.00	.01
O4	-.03	-.02	.30**	-.08	.10	.12*	.11	-.16**	-.11
O5	.02	.08	.10	.07	.13*	.13*	.10	-.03	-.03
O6	.01	.00	.04	.10	.06	.03	.07	.01	.04
A1	.19**	-.07	-.06	.21**	-.09	.17**	-.01	.10	-.04
A2	.18**	-.02	-.20**	-.04	-.21**	-.08	-.14*	.10	-.03
A3	.28**	-.17**	-.04	.20**	-.16**	.21**	-.14*	.7	.00
A4	.18**	-.12*	-.31**	-.03	-.32**	-.02	-.16**	.11	.04
A5	.12*	-.04	-.27**	-.10	-.17**	.14*	-.13*	.08	.09
A6	.08	-.11	-.02	.11	.01	.18**	.02	.06	-.03
C1	.05	.28**	.23**	.23**	.26**	.09	.11	.02	-.20**
C2	.03	.30**	-.01	.08	.17**	-.09	.04	.12*	-.07
C3	.09	.27**	.00	.14*	.20**	-.05	.10	.15**	-.14*
C4	.08	.24**	.15**	.17**	.20**	.06	.13*	.07	-.14*
C5	.02	.26**	.15*	.17**	.17**	.02	.13*	.03	-.18**
C6	.19**	.12*	-.18**	.09	-.08	-.07	-.08	.14*	-.03

Note: $N = 297$. **. Correlation is significant at the .01 level (2-tailed). *. Correlation is significant at the .05 level (2-tailed).

Table G.2

Pearson Product-Moment Correlation Between SPGR 12-Vector Self-rating and NEO PI-R.

	C1	C2	N1	N2	D1	D2	O1	O2	W1	W2	S1	S2
N	-.02	-.08	-.21**	-.09	-.03	-.02	.05	-.03	.27**	.13*	-.14*	-.15**
E	.17**	.14*	.27**	.27**	-.07	.05	.06	.20**	-.17**	-.19**	.21**	.03
O	.10	.07	.10	.12*	-.12*	-.08	.10	.09	-.01	-.11	.07	.05
A	-.27**	-.27**	.09	-.03	.13*	.23**	-.16**	-.13*	.00	-.02	-.04	.21**
C	.07	.19**	.05	-.09	.14*	.07	-.01	.13*	-.23**	-.10	.19**	.07
N1	-.03	-.07	-.17**	-.13*	.00	-.01	-.04	-.06	.24**	.11	-.10	-.05
N2	.21**	.17**	-.18**	-.05	-.07	-.15*	.21**	.12*	.12*	.06	-.05	-.28
N3	-.01	-.06	-.20**	-.07	-.01	.02	.05	-.01	.23**	.14*	-.15*	-.11
N4	-.13*	-.20**	-.21**	-.13*	.00	.01	-.06	-.14*	.20**	.09	-.12*	-.07
N5	.01	.03	-.02	.08	-.04	.00	.02	.03	.17**	.06	-.03	-.07
N6	-.14**	-.20**	-.11	-.08	.00	.04	-.07	-.10	.24**	.11	-.16**	-.08
E1	.02	-.08	.26**	.22**	-.04	.06	-.04	.07	-.09	-.09	.09	.12*
E2	-.01	-.01	.22**	.18**	-.06	-.04	.04	.09	-.12*	-.09	.07	.07
E3	.35**	.33**	.20**	.21**	-.06	-.11	.13*	.24**	-.14*	-.20	.32**	-.07
E4	.17**	.16**	.16**	.15**	-.06	-.10	.09	.21**	-.17**	-.19**	.21**	-.04
E5	.09	.08	.01	.12*	-.05	-.03	.03	.09	.01	-.08	.03	-.02
E6	.04	.01	.22**	.18**	-.01	.05	-.02	.08	-.14*	-.09	.11	.08
O1	.02	-.02	-.02	.16**	-.17	-.09	.04	.08	.05	.03	-.07	-.03
O2	.12	.12	.04	.07	-.12*	-.09	.07	.06	-.06	-.10	.07	.01
O3	.05	-.01	.15**	.06	-.02	-.05	.03	.07	.02	-.08	.09	.11
O4	.13*	.07	.20**	.13*	-.14*	-.14*	.08	.08	-.07	-.14*	.09	-.06
O5	.08	.06	.03	.08	-.01	-.05	.06	.06	-.04	.10	.06	.12*
O6	-.01	.03	.08	-.01	.00	.02	.02	.02	.05	-.06	.07	.03
A1	-.10	-.16**	.16**	.03	.12*	.17**	-.03	-.03	-.01	-.04	.02	.23**
A2	-.25**	-.16**	-.02	-.13*	.09	.11	-.16**	-.14*	-.08	-.01	-.06	.05
A3	-.16**	-.18**	.26**	.12*	.08	.17**	-.17**	-.02	.02	-.05	.02	.21**
A4	-.33**	-.32**	-.02	-.07	.10	.14*	-.17**	-.22**	.03	.06	-.07	.20**
A5	-.17**	-.17**	-.09	-.16**	.08	.16**	-.09	-.16**	.11	.07	-.04	.06
A6	.01	-.08	.11	.13*	.05	.17**	-.01	.03	-.03	-.04	-.01	.12*
C1	.14*	.21**	.10	.03	.03	.01	.08	.16**	-.25**	-.13*	.23**	.05
C2	.08	.22**	-.05	-.13*	.15*	.04	.05	.05	-.16**	.00	.09	-.02
C3	.08	.15**	-.03	-.09	.17**	.11	-.03	.12*	-.19**	-.06	.14*	.03
C4	.14*	.15**	.10	.01	.08	.04	.01	.18**	-.16**	.13*	.19**	.05
C5	.09	.19**	.06	-.04	.05	-.03	.05	.16**	-.23**	-.08	.17**	.02
C6	-.16**	-.01	.00	-.18**	.15*	.14*	-.18**	-.05	-.01	-.04	.04	.18**

Note: $N = 297$. **. Correlation is significant at the .01 level (2-tailed). *. Correlation is significant at the .05 level (2-tailed).

Table G.3

*Pearson Product-Moment Correlation Between SPGR Dimensions and Functions
Peer-ratings and NEO PI-R*

	PN	FB	UD	Syn	Con	Nur	Op	De	Wit
N	-.04	-.15**	-.14*	-.14*	-.16**	-.01	-.04	-.01	.11
E	.03	.02	.33**	.28**	.16**	.20**	.21**	-.13*	-.13*
O	.09	.01	.14*	.18**	.12*	.10	.08	-.06	-.08
A	.18**	-.20**	-.22**	.03	-.23**	.04	-.12*	.21**	.14*
C	-.02	.23**	.06	.06	.19**	-.19**	.11	.06	-.04
N1	-.02	-.15*	-.18**	-.15*	-.13*	-.01	-.04	.02	.17**
N2	-.20**	.04	.12*	-.10	.10	-.05	.16**	-.19**	.00
N3	-.02	-.10	-.15*	-.10	-.12*	.04	-.04	.07	.10
N4	-.03	-.13*	-.25**	-.20**	-.20**	-.11	-.11	.04	.16**
N5	-.03	-.11	.06	.05	-.11	.12*	-.03	-.09	-.06
N6	-.07	-.22**	-.23**	-.15**	-.28**	-.02	-.17**	.10	.10
E1	.15*	-.19*	.06	.20**	-.12*	.21**	-.01	.01	.00
E2	-.02	.09	.13*	.10	.04	.14*	.17**	-.11	.01
E3	-.09	.33**	.55**	.36**	.52**	.15*	.34**	-.24**	-.28**
E4	-.01	.13*	.34**	.23**	.21**	.09	.21**	-.13*	-.13*
E5	-.01	-.05	.06	.02	-.04	.03	.08	.01	-.06
E6	.13*	-.14*	.11	.20**	-.06	.18**	.00	-.02	-.03
O1	.03	-.09	.07	.05	-.01	.14*	.00	-.07	-.05
O2	.03	.02	.14*	.12*	.13*	.04	.09	-.08	-.08
O3	.13*	-.08	.11	.21**	.01	.14*	.04	-.02	-.03
O4	.05	.02	.18**	.18**	.11*	.14*	.10	-.11	-.08
O5	.07	.10	.05	.11	.14*	.02	.05	.03	-.05
O6	.06	.03	.01	.05	.09	-.04	.03	.00	-.01
A1	.15**	-.13*	-.08	.08	-.10	.03	-.03	.08	.02
A2	.06	-.06	-.17**	-.06	-.16**	-.07	-.09	.18**	.11
A3	.21**	-.19**	-.10	.17**	-.19**	.19**	-.11	.18**	.08
A4	.18**	-.16**	-.30**	-.02	-.22**	.04	-.18**	.27**	.15*
A5	.02	-.08	-.20**	-.07	-.11	-.02	-.03	.14*	.17**
A6	.08	-.21**	-.04	.03	-.13*	.05	.01	-.01	.08
C1	-.01	.25**	.21**	.16**	.26**	-.08	.14*	-.04	-.17**
C2	-.12	.20**	-.03	-.11*	.09	-.21**	.03	.00	.07
C3	-.04	.17**	.02	.02	.15**	-.18**	.15**	.13*	-.04
C4	.02	.12*	.13*	.13*	.19**	-.08	.17**	.04	-.04
C5	-.04	.25**	.13*	.13*	.23**	-.16**	.13*	.01	-.09
C6	.07	.06	-.15**	-.15**	-.03	-.17**	-.11	.12*	-.04

Note: $N = 297$. **. Correlation is significant at the .01 level (2-tailed). *. Correlation is significant at the .05 level (2-tailed).

Table G.4

Pearson Product-Moment Correlation Between SPGR 12-Vector Peer-rating and NEO PI-R.

	C1	C2	N1	N2	D1	D2	O1	O2	W1	W2	S1	S2
N	-.05	-.18**	-.11*	.00	-.02	-.04	.05	-.09	.09	.08	-.15**	.04
E	.15*	.17**	.26**	.23**	-.17**	-.07	.10	.28**	-.11	-.12*	.23**	-.02
O	.11	.10	.16**	.06	-.11	-.02	.04	.12*	-.07	-.10	.13*	.03
A	-.28**	-.23**	.06	-.07	.15*	.27**	-.09	-.16**	.11	.15**	-.08	.23**
C	.12*	.19**	-.04	-.20**	.10	.10	.05	.15*	-.06	-.04	.19**	-.09
N1	-.04	-.17**	-.14*	-.04	.03	.02	.07	-.12	.11	.15*	-.13*	.10
N2	.17**	.06	-.10	.06	-.16**	-.26**	.20**	.13*	.05	-.03	-.02	-.18**
N3	-.04	-.13*	-.08	.00	.07	.05	.03	-.08	.09	.12	-.11	.07
N4	-.12*	-.19**	-.18**	-.13*	.06	.00	-.03	-.17**	.10	.10	-.18**	.04
N5	-.02	.09	.09	.14*	-.13*	-.05	.01	.01	-.03	-.03	-.04	.03
N6	-.19**	-.27**	-.07	-.04	.08	.09	-.07	-.19**	.06	.07	-.21**	.14*
E1	-.12*	-.11	.22**	.17**	-.09	.10	-.01	.01	.01	.02	.06	.15**
E2	.02	.07	.11	.14*	-.14*	-.13*	.11	.13*	.02	.05	.03	.03
E3	.46**	.48**	.23**	.27**	-.21**	-.27**	.16**	.45**	-.18**	-.23**	.43**	-.24**
E4	.21**	.24**	.19**	.13*	-.08	-.13*	.10	.32**	-.14*	-.17**	.28**	-.08
E5	-.02	-.05	.04	.05	-.07	.05	.03	.11	-.07	-.05	-.02	-.05
E6	-.05	-.04	.26**	.12*	-.08	.06	-.19**	.05	-.05	-.06	.07	.15**
O1	.05	-.01	.06	.13	-.09	-.07	.02	.02	.00	-.02	.00	.05
O2	.11	.13*	.12*	.04	-.12*	-.03	.07	.12*	-.07	-.10	.09	-.04
O3	.03	.00	.23**	.07	-.09	.05	-.01	.11	-.01	-.05	.11	.09
O4	.10	.11	.23**	.09	-.14*	-.06	.04	.13*	-.03	-.10	.14*	-.01
O5	.09	.10	.06	-.01	.02	.01	.05	.06	-.09	-.09	.12*	.04
O6	.03	.06	.00	-.08	-.02	.03	-.04	.02	-.05	-.01	.09	.01
A1	-.17**	-.09	.08	-.05	.04	.14*	-.04	-.05	.03	.03	-.02	.18**
A2	-.19**	-.14*	-.05	-.11	.18**	.17**	-.04	-.09	.06	.10	-.06	.09
A3	-.25**	-.16**	.24**	.06	.08	.25**	-.11	-.11	.06	.11	-.02	.25**
A4	-.26**	-.25**	.01	-.13*	.23**	.29**	-.17**	-.25**	.10	.14*	-.11	.28**
A5	-.08	-.16**	-.04	-.09	.11	.17**	.00	-.09	.14*	.18**	-.07	.08
A6	-.11	-.11	.06	.04	-.07	.05	.03	-.03	.07	.07	-.03	.10
C1	.16**	.26**	.10	-.04	-.03	-.06	.03	.19**	.14*	-.14*	.28**	-.11
C2	.05	.13*	-.11	-.23**	.05	-.03	.05	.03	.04	.06	.02	-.13*
C3	.10	.13*	-.08	-.14*	.15**	.08	.08	.17**	-.06	-.02	.13*	-.12*
C4	.14*	.17**	.08	-.08	.05	.03	.09	.20**	-.04	.08	.20**	-.02
C5	.18**	.23**	-.04	-.14*	.06	-.05	.07	.17**	-.09	-.09	.22**	-.13*
C6	-.10	.00	-.07	-.23**	.14*	.11	-.08	-.09	.01	.06	.04	.06

Note: $N = 297$. **. Correlation is significant at the .01 level (2-tailed). *. Correlation is significant at the .05 level (2-tailed).