

# THINKING STYLES AND THE IMPACT ON MILITARY LEADERSHIP PRACTICES

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## Introduction

Leaders in both civilian and military organizations face relentless and often-conflicting demands on them as individuals. The nature of the work, role expectations, dependencies, conflicting demands, the nature of the organization, its culture, ecology, and the environment in which it is situated all contribute to the complexity and demanding nature of leadership (Van Fleet and Yukl 1986).

Leaders are expected to vary their leadership skills depending on the internal and external conditions they encounter. Committed, well-organized groups require different operational and tactical leadership compared with groups who are confused and discouraged. Organizations that are thriving in a stable environment require different strategic leadership than organizations caught in turbulent times. Shared leadership is appropriate for some groups, units and functions while more centralized leadership is appropriate in other settings. In all of these situations leaders must be able to recognize, adapt and take advantage of opportunities to help the organization thrive.

How leaders assess situations, make decisions and apply leadership strategies is influenced by thinking preferences controlled by functions located in cortical and limbic structures within the brain. The influence of the brain's thinking preferences is far reaching and can impact the quality of the problem analysis, decision-making, leadership and change strategies of leaders and of groups.

The purpose of this paper is to examine the thinking preferences of a cohort of military personnel. From these data we will consider how these preferences might affect their leadership. We will pay particular attention to their thinking preferences as individuals and as a group, and examine how these preferences might impact their problem analysis and decision-making. Further, we will examine how these preferences can impact their roles as leaders, team members, and also agents of change. Finally, we will make recommendations as to how this information can be applied both to the content of military leader training and to the structure of the curriculum.

Thinking styles are a primary factor in the achievement of personal and organizational goals. Thinking styles, or preferred modes of knowing, affect human cognition and behaviours, including information processing, judgment, problem solving, communication, and interaction with others. Understanding the thinking styles of leaders and how they relate to types of approaches to complex issues is important because leaders and their teams exert a major influence in their organizations and communities.

Differences in thinking preferences are often at the root of perceived communication difficulties. They can hamper the interaction and productivity of a group, and limit the use of its talent. On the other hand, an awareness of preferred thinking styles, and the available styles and their benefits can result in better problem analysis and better decisions. Examining the thinking, and resulting decision-making and communication styles of successful leaders can provide understanding about their interactions and offer insights into the determinants of productivity and creativity. Understanding the interplay of both the positive and negative effects of thinking style differences can us help determine the appropriate mix of thinking styles among leadership teams. This study maintains that it is essential to maintain the appropriate balance between right-brain interpersonal and left-brain managerial attitudes and predispositions across leadership practices in order to promote effective team interactions and organizational growth.

We evaluated the thinking preferences of a cohort of Canadian Forces military personnel both individually and as a group. These individuals were participants in a Master of Arts in Leadership and Training program and an Executive Leadership program at Royal Roads University in Victoria, BC.

To do this we applied Herrmann's (1988) model of brain dominance theory, which is based on the split-brain research described by Sperry (1975) and on MacLean's (1978) triune brain model. Herrmann subsequently developed a tool that used the brain dominance principle to measure sources of thinking preferences. The Herrmann Brain Dominance Instrument (HBDI) was used in this study because of its reliability, concurrent validity and extensive database of occupational thinking preference profiles. Using these data we looked at how these thinking preferences might impact their critical decision-making, and leader behaviours. In this context we also reviewed the similarities and differences between business and military leaders, and how thinking preferences might play a role in the manifestations of these differences.

To set the study in context we briefly reviewed the current empirical research on critical thinking, effective leader behaviours (in business and military organizations), and leader influence on culture and change. Then we applied the results of the HBDI to this research and considered what impacts thinking preferences could have on these skills, traits and leadership interventions. Finally we considered how this information could be used to improve the development of current and future Canadian Forces personnel.

## **Literature Review**

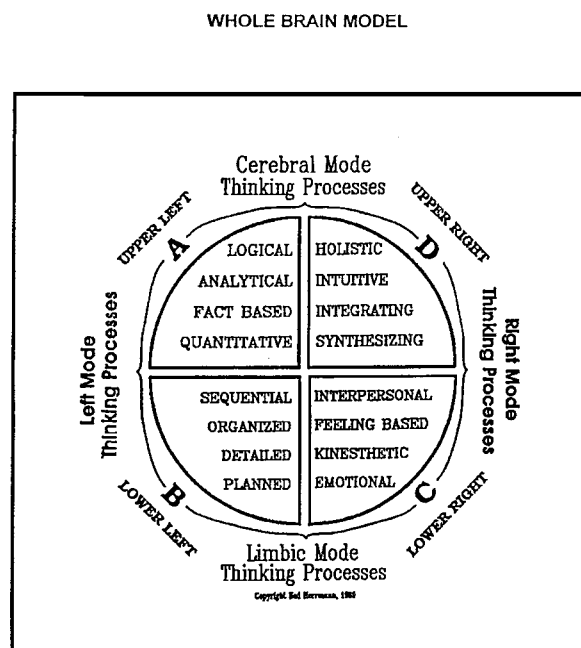
### **Brain dominance theory, and thinking preferences**

The research on consciousness helps us understand how purposeful activity is driven by emotions and also to understand how the interplay of parts of the brain create activity and emotions (Ledoux 2002). From this we are able to identify those brain areas that interpret meaning and invoke a subsequent behaviour and associated emotions.

Goleman, Boyatzis and McKee (2002) applied brain research to leader behaviour, and emotional intelligence. They emphasize how leader behaviour impacts the collective emotions of the organization. Depending on the leader effectiveness this can range from enthusiasm (through resonance) to rancour (through dissonance). Goleman describes how the interplay between the limbic system and pre-frontal cortex influence emotion and subsequently the emotional intelligence of individuals. He comments on the ultimate value of superior emotional intelligence to effective leader behaviour.

Herrmann's Brain Dominance Instrument (HBDI) produces a four-quadrant profile of preferred modes of thinking applied to a metaphorical brain dominance model (Figure 1).

Figure 1: Four-quadrant profile of preferred modes of thinking



This model of brain dominance combines Sperry's (1975) split-brain concept with MacLean's (1978) triune brain concept differentiating thinking by the right and left-brain hemispheres, as well as cerebral and limbic sections. The result is a brain dominance model, which serves as a unified metaphor of the human thinking process. It provides a means of organizing the different modes of knowing. It also clarifies our understanding of brain specialization including the right and left hemispheres, and the cerebral and limbic systems.

The four quadrants are comprised of distinct groups of thinking activities as follows:

**Quadrant A:** (Left Cerebral) - logic, analysis, mathematical, problem solving  
 Individuals with primary preferences in this quadrant enjoy analyzing situations, fact-finding, solving problems and applying logic. They tend to avoid emotion, intuition and

ambiguity. Quadrant A tendencies are usually combined with the ability to verbalize precisely and clarify things.

**Quadrant B:** (Left Limbic) - organizing, planning, control, sequential  
Individuals with primary preferences in this quadrant attend to details and procedures, focus on planning, implementation, and are usually action oriented. They are very efficient, prefer keeping things predictable by controlling their environment and themselves, and rely on the “tried and true”.

**Quadrant C:** (Right Limbic) - interpersonal, emotional, musical, spiritual  
Individuals with primary preferences in this quadrant tend to be people-oriented and enjoy expressing ideas and the interpersonal aspects of the job. These individuals are empathetic, most receptive to moods and attitudes, and tend to rely on non-verbal communication. They may avoid facts and goals.

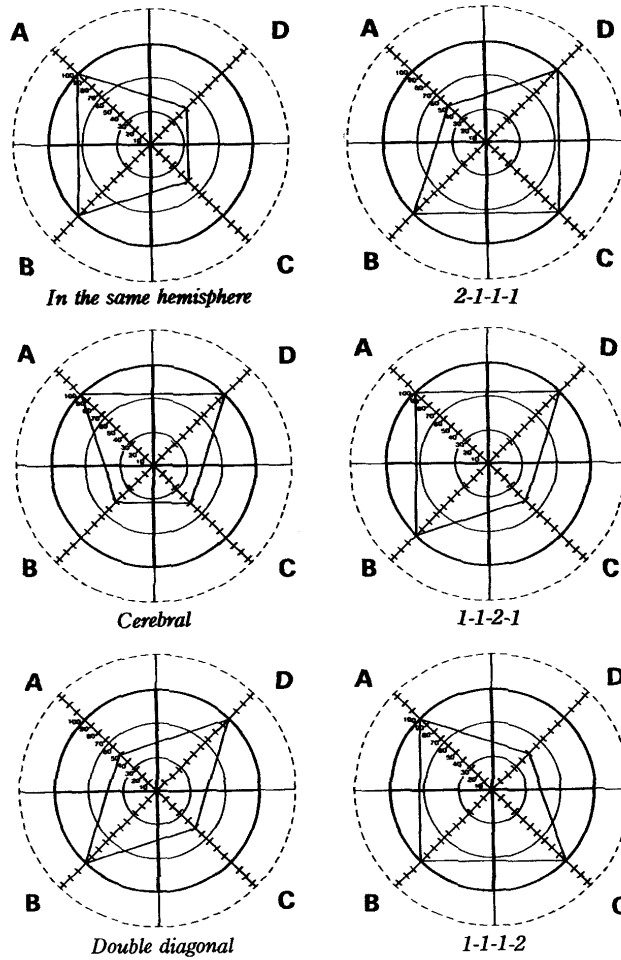
**Quadrant D:** (Right Cerebral) - imaginative, holistic, intuitive, and conceptual  
Individuals with primary preferences in this quadrant prefer being innovative and tend to be visionaries who are impersonal, but thrive on new ideas and possibilities. They avoid structure, details, and procedures and like to communicate through metaphors.

With these categories, “it is not a major leap to conceive in metaphorical terms of our left hemisphere as ‘managerial’ and our right hemisphere as ‘entrepreneurial’ (Kao, 1996). Each individual’s thinking preference or brain dominance can be seen as a combination of these four distinct categories of thinking styles. Although a person may have a preference for activities typified by those in one quadrant, he or she might also have dominant preferences in several or all the quadrants.

A primary preference for a quadrant indicates the greatest preference for its characteristic processes. A person can also have secondary preferences and even avoidance towards types of thinking represented by other quadrants. The results from the HBDI indicate the degree of preference or lack of preference by generating a score for each of the quadrants. The scoring protocol, which results in a quantified measure of an individual’s preference for each quadrant, was developed from the original validation studies and was refined by successive ones and scoring of surveys. A person’s profile scores are also expressed in a four-digit numerical code that assigns values to indicate the degree of preference for each quadrant. Quadrants with scores of 67 or higher are identified as dominant and are referred to as “primaries” indicating a generic profile code of “1”. Quadrants with scores of 34-66 are secondary preferences and referred to as “secondaries” indicating a profile code of “2”. This means that the subject is comfortable performing the typical activities in a given quadrant; however these activities are not as preferred as those in the dominant quadrants. Any score between one and 33 indicates a distinct lack of preference and even avoidance, of the characteristics of a quadrant. These quadrants are referred to as “tertiaries”, and indicate a profile code of “3”. The HBDI scores are charted on a circular grid to produce a profile graph representing the four quadrants. This provides a visual representation to aid interpretation. Each corner represents one of the quadrant scores; the

farther out on the concentric circle a score, the more dominant the score (Herrmann 1988). Figure 2 shows examples .....

Figure 2: Profiles of hemispheric brain dominance



It must be kept in mind that the profile results do not determine whether one kind of thinking style is better than another. Neither do they represent the degree of competency, nor measure aptitude and abilities in the four categories of thinking styles. However, preferences do tend to correlate with competence as people usually do higher quality work when working on tasks requiring their preferred thinking styles. Brain dominance studies have also demonstrated that people generally gravitate toward those occupations that offer the greatest opportunity to use their mental preferences. If an individual does not have competence in certain activities but has the preference for those activities, he or she can build the skills to compliment their preference.

## **Critical thinking**

Critical thinking involves the rational examination of ideas. It is the foundation of problem identification, problem analysis and decision-making. It is the process by which we analyze information and form conclusions. The process of critical thinking is a metacognitive process that directs the strategic use of knowledge, and the personal factors influencing learning and application (Maudsley and Strivens 2000). As such it is the primary process underlying most professional practices. Brookfield's (1987) components of critical thinking include: Identifying and challenging assumptions and context, imagining and exploring alternatives, and exhibiting reflective scepticism. Nisbet and Shucksmith (1984) refer to it as the 'seventh sense'. It is the executive monitoring and controlling of cognitive functions.

Critical thinking goes further than the techno-rationalist, hypothetico-deductive approach to problem solving described by Barrows & Tamblyn (1980). The refinement of this process is what Schön and others claim distinguishes novice from expert performers (Benner 1982; Dreyfus and Dreyfus 1984; Schon 1988). Critical thinking and its application to problem-solving is one of the key leader behaviours identified by Goleman (1995) and others and is influenced by emotional intelligence and by a person's values.

Influencing the fundamental orientation towards critical thinking, and the metacognitive process is the brain dominance theory. Our predominant loci for thinking (cortical or limbic) and the preferred brain dominance orientation influences fundamentally how we approach critical thinking.

For leaders to improve their critical thinking they need to consider problems from each of the four quadrants of the brain dominance model. Knowing their natural orientation will allow them to recognize blind spots in their orientation, the impact that can have on their critical thinking cycle and eventually on the quality of their decisions.

Both business and military leaders must remain aware of their individual preferences, and the collective preferences of the group so that they can seek opinions and input from others who might compliment blind spots in the individual's or group's critical thinking skills.

For example, an individual whose preference is for left-brain thinking (logical, process orientation) might not see some of the intervening variables, and broader sequelae of their problem analysis and resolution. Similarly, groups who might have a predominant right-brain orientation might lack the analytical orientation necessary to truly understand the problem, and the practical orientation necessary to implement a decision.

## **Leadership**

Just as our brain dominance characteristics influence our preferences, competencies, and "turn-on" work, they are also embedded in our leadership and management styles. As we engage in work that is consistent with our mental preferences, we will gradually develop

a personal leadership and management style of working that is visible to others. Management and leadership relationships and related tasks such as problem solving, determination of work assignments, interpersonal relationships, staff communications, and budget preparation will be viewed through the lens of our individual preferred thinking style. Other work elements will also be thought of and carried out on the basis of an individual's preferences and existing competencies. As an individual's emerging style is affirmed by positive results, the managerial behaviours associated with that preference are reinforced and can be difficult to change - especially if the style is in alignment with the surrounding management culture.

As the profile of the group in this study is left mode dominant, the management and leadership style is practical and realistic.

Yukl (2001) concludes that from the empirical studies emerge a set of attributes, skills, traits and behaviours that leaders employ to a greater or lesser extent. Both Yukl (2001) and Oncken (1984) conclude that leaders choose how and where to spend their leadership time from a multitude of possible options of supervisory, managerial and leadership activities. They evaluate the internal and external ecology and choose points of leverage to exploit both. They identify problems and categorize them into solvable and unsolvable, form mental agendas for both short and long-term resolution and decide on the timing when to tackle these problems. They manage multiple problems at the same time. However, in general they engage in three types of leader behaviours (task, relations and change) and vary the time spent applying each of these behaviours continuously.

Two forms of leadership occupy much of the scholarly literature on leadership over the past two decades. Transactional leadership is based on a 'transaction' between the leader and follower(s) where both receive benefit from the transaction. Typically, transactional leadership involves reward power. The transaction involves the use common behaviourist reward, punishment and reinforcement strategies (Daniels 1999, Second). Transactional leaders tend to have a personalized power orientation and use manipulative, impulsive and domineering behaviours to gain loyalty, and for personal aggrandizement.

Transformational leaders use different approaches to task, relations and change behaviour. They transform individual orientation from self-interest to collective achievement (Chemers 1997). It includes a commitment to vision, purpose, strategies and objectives; increased personal and collective self-efficacy of followers that strengthen the identification with the team or organization (Bennis and Nanus 1985; Kouzes and Posner 1995, Second).

Transactional leadership tends to be more effective because leaders use referent and expert power more frequently. They share information and subsequent power over decisions. As a result they get better decisions and cooperation, loyalty and change, and greater acceptance of those they influence. Transformational leaders have a socialized power orientation with a high level of cognitive moral development, and internal control orientation and seek to empower those around them.

Both transactional and transformational leaders use the ‘Big Five’ traits described by Hough (1992) and the technical, conceptual and interpersonal skills described by Bass (1990). However, more recently other leader competencies have gained notoriety. Zaccaro, Thor and Mumford (1991) described Social Intelligence as the ability or social perceptiveness to determine the requirement for leadership in a particular situation and to select the appropriate response.

Goleman’s (1995) proposition that effective leaders have superior emotional intelligence (the extent to which an individual is attuned to feelings) has also gained prominence. Finally, Argyris (1991) proposes that an individual’s ability to learn, adapt and change is a key competency of effective leaders.

### **Military leadership**

Murray (1975) found that many of the management processes between business and military organizations are similar, ergo many of the leader behaviours were transferable and interchangeable. However, there are fundamental differences in their cultural orientation. The gestalt of military leadership is one of morality – doing what is good, right or virtuous for the people they serve. In addition they must exercise this leadership in both combat and non-combat/peacetime environments (Van Fleet and Yukl 1986).

Military organizations are normative – members perform out of duty and to a lesser extent coercion – performing out of fear (Etzioni 1975). Normative organizations stress values more than their civilian counterparts. Smith (Etzioni 1975) also found that effective military leaders relied on normative power more than less-effective leaders who relied more on coercive and utilitarian power.

In contrast, the gestalt of business organizations is utilitarian – members perform for rewards. In summary, the literature is overwhelming that there is a difference between military and business leadership and the subsequent skills, traits and abilities for leadership effectiveness. Some critical leader behaviour is similar for both settings, but there are some leader behaviours that are weighted differently for military effectiveness. These include integrity, ethical leadership, and responsibility. Also, Fleishman (Van Fleet and Yukl 1986) found that compared to their civilian counterparts, military leaders believed that they had to assume more responsibility relative to their authority.

### **Culture**

*“Research makes clear that shared values make a difference to organizational and personal vitality and that values form the bedrock of an organization’s culture”* (Kouzes and Posner 1995)

In her book, *Leadership and the new science*, Margaret Wheatley (1999) describes organizational culture as “eerily similar behaviours exhibited by people in an organization” (p. 128). While countless definitions of organizational culture exist, this reference to similarity of behaviour seems common to all. Further, most authors indicate



that leadership, while not necessarily the only variable, is a critical element in determining or shifting an organization's culture. Robert Cooke and Clayton Lafferty (1995) expand on this notion explaining that leadership is our most effective lever in improving organizational culture.

William Bridges (2000) takes a somewhat different approach in describing the culture of organizations. In his book, *The character of organizations*, he stresses that individual cultures are neither good nor bad, but that success is determined by how we understand and work with the culture that exists. In discussing how organizational culture is established and how best to work with it, Bridges (1996) also focuses on leadership, stressing the importance of understanding teams and individuals. He is not advocating a focus on people simply for humanitarian purposes. Rather, he is emphasizing this perspective to encourage organizational excellence. Significantly, organizational excellence extends to virtually every aspect of the organization's business from productivity to recruitment and retention. The world of business has discovered that culture is a key factor in recruiting and retaining the best people (Luecke 2002)).

In a recent article published in the *Journal of Business Ethics*, Caldwell, Bischoff and Karri (2002) discuss preferred models of leadership for improving organizational culture. They emphasize a firmly demonstrated commitment to the best interests of the people of the organization. They support Edgar Schein's (1997, 2nd) contention that alignment between behaviours and values is critical in establishing a culture of trust. However, they go further by stressing the importance of creating a "bond of trust" (2002) as an element of healthy organizational culture.

In seeking to change organizational culture, a people-focus has been shown to be critical. However, another key consideration is establishing and maintaining a strategic vision (Yukl 2001). Significantly, both of these foci are associated with right-brain thinking functions associated with quadrants C & D. In shifting the culture in the Canadian Forces a concurrent shift towards this style of thinking would seem necessary.

Any deliberate initiative to improve organizational culture will not succeed overnight. In discussing this issue, John Kotter (1999) emphasizes the importance of "anchoring new behaviour". (p. 7) "Until new behaviours are rooted in social norms and shared values, they are subject to degradation as soon as the pressure for change is removed." (p. 90) Any organization undertaking this kind of change must be prepared to commit the necessary time. Further, in keeping with Schein's (1997, 2nd) findings it is equally necessary to commit to aligning behaviours with the organization's newly defined focus and strategy.

Culture plays a critical role in achieving organizational excellence. Current literature clearly emphasizes the importance of organizational culture, and in reforming culture, suggests an emphasis on people and strategic vision. However, it is also clear that any effort to shift organizational culture will require a commitment in terms of time and modeling behaviours consistent with the new attitude. In order to solidify efforts to change an organization's culture, Kotter emphasizes the importance of developing

tomorrow's leaders. The organization must commit to "taking sufficient time to make sure that the next generation of top management really does personify the new approach." (1998)

## **Change**

*"Change is avalanching upon our heads and most people are grotesquely unprepared to cope with it."* (Toffler 1991)

There seems little doubt that the world of work, whether in the public or private sector, is undergoing a rate of change unprecedented in history. In his groundbreaking book *The End of Work*, Jeremy Rifkin (1995) goes beyond suggesting that restructuring has had an enormous impact on the corporate community. He boldly states that a fundamental transformation in the nature of work will reshape civilization itself, and indeed this transformation has already begun. Virtually all leading authors in this area agree. William Bridges (1996) explains that while change has always been a disruptive force in human affairs, its effects today have become more widespread and all encompassing than ever.

Today's literature suggests that, while change is not a linear process, there are predictable stages and that successfully navigating these stages can and does take a long time (Kotter 1999; Bridges 1996, et al). Further, today's research on change indicates an increasingly dynamic process. Kurt Lewin's (1997) model for change, first developed in 1951, indicated the linear process of unfreezing, changing and refreezing. However, today's researchers see the process as less linear and more complex. More importantly the very nature of change is seen as more dynamic. Today, change is seen as a constant with no easily defined, steady state either before or after. While there is limited consistency among the various models of organizational change, one consideration in understanding, planning for, and implementing change is common across almost all books and articles: the people of the organization are the key factor in the success or failure of any change initiative (Bridges 1996; Conner 1998). An increasing focus on the people involved in change, while maintaining a task focus, is becoming increasingly critical in successfully navigating change (Bridges 2000). The clear implication for this study is that moving towards a more people-focused thinking style is necessary if any change initiative is to be successful. In the brain dominance map, these functions are located in the right brain, specifically the C quadrant.

The Canadian Forces has not been immune to the changes that have swept the world in recent years. Indeed in a report published on the Chief of Defence Staff web site entitled *Corporate Priorities for Defence*, "putting people first" is cited as the number one priority. The research conducted by military members and reviewed in this paper provides a clear indication of massive change in Canada's military. This research speaks of ongoing change, and supports the notion of an elusive end state. As with other sectors, within the Canadian Forces it appears that there is more work to do with fewer people to do it. And, as with other sectors, quality of life has become a concern (Bellows 2000). Sabiston (2000) emphasizes a need to embrace a technologically dynamic world while building awareness of individual style and a changing population. Forcier and Hudock

(2000), supported by Hildebrandt (2000) go further and stress the need to maintain a clear vision and focus through ongoing change. Peter Senge (1990) also notes that maintaining a clear vision through change and crisis is essential for continued success. All references indicate that a thinking style more inclusive of a people-focus is required for continued success. A shift towards right-brain thinking style is indicated.

Change is sweeping the world. The rate of change is accelerating and the Canadian Forces is no exception. Current research in the general area of corporate change, supported by very specific research conducted within the Canadian Forces by its own members, clearly indicates an increasing need to understand and plan for the human aspects of change. The process is ongoing. There is no static end state and our approach to dealing with change must reflect these realities. Ironically, working effectively with change is the only way we can hope to maintain those things that we value the most, the things we cannot allow to change. "Change is, in fact, the only way to protect whatever exists, for without continuous readjustment the present cannot continue." (Bridges 2001).

## **Methods**

### **The validity of the Herrmann Brain Dominance Instrument**

There is evidence based on accepted measurement standards that the scores produced by this instrument provide a reliable guide to a person's thinking profile. Based on the investigations and validity studies (Blunderson 1988; Blunderson and Ossen 1980; Blunderson, Ossen, and Herrmann 1982) there is evidence that:

- Four stable, discrete clusters of preference and avoidance exist measured by the HBDI
- The four clusters are comparable with the Herrmann Brain Dominance Model
- The scores derived from the instrument are reliable and valid indicators of the four clusters.
- The scores permit valid inferences about a person's preferences and avoidances for each of these clusters of mental activity
- The use of the instrument meets the professional standards as applied in learning, teaching, counselling, and self-assessment settings (Joint Standards for Educational and Psychological Testing, the American Educational Research Association, The American Psychological Association and the National Council on Measurement in Education (Joint Standards, 1985).

Appropriate uses of the HBDI include, but are not limited to the following areas:

- Better understanding of self and others
- Enhanced communication
- Enhanced productivity through teamwork
- Working climate for creativity
- Enhanced teaching and learning
- Better management

- Counselling
- Building composite learning groups

Experience exists in the use of the HBDI in all these applications. The conditions for its valid and reliable use can be maintained for each of these applications (Herrmann 1988).

## Results and Discussion

The overall distribution of the group showed a clustering towards left-brain thinking preferences (Figure 3).

Figure 3: Distribution of thinking preferences

### HERRMANN BRAIN DOMINANCE INSTRUMENT

#### DOMINANCE MAP

Military Leadership

March 03

70 Individuals

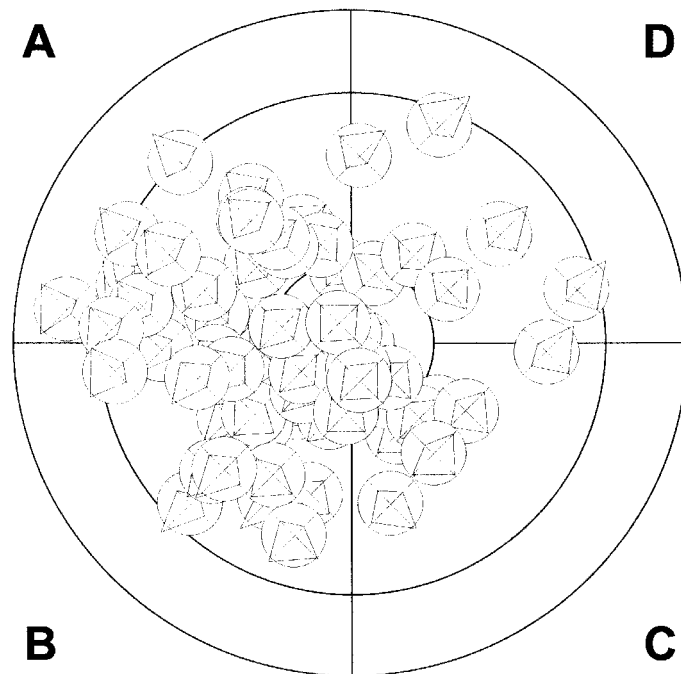
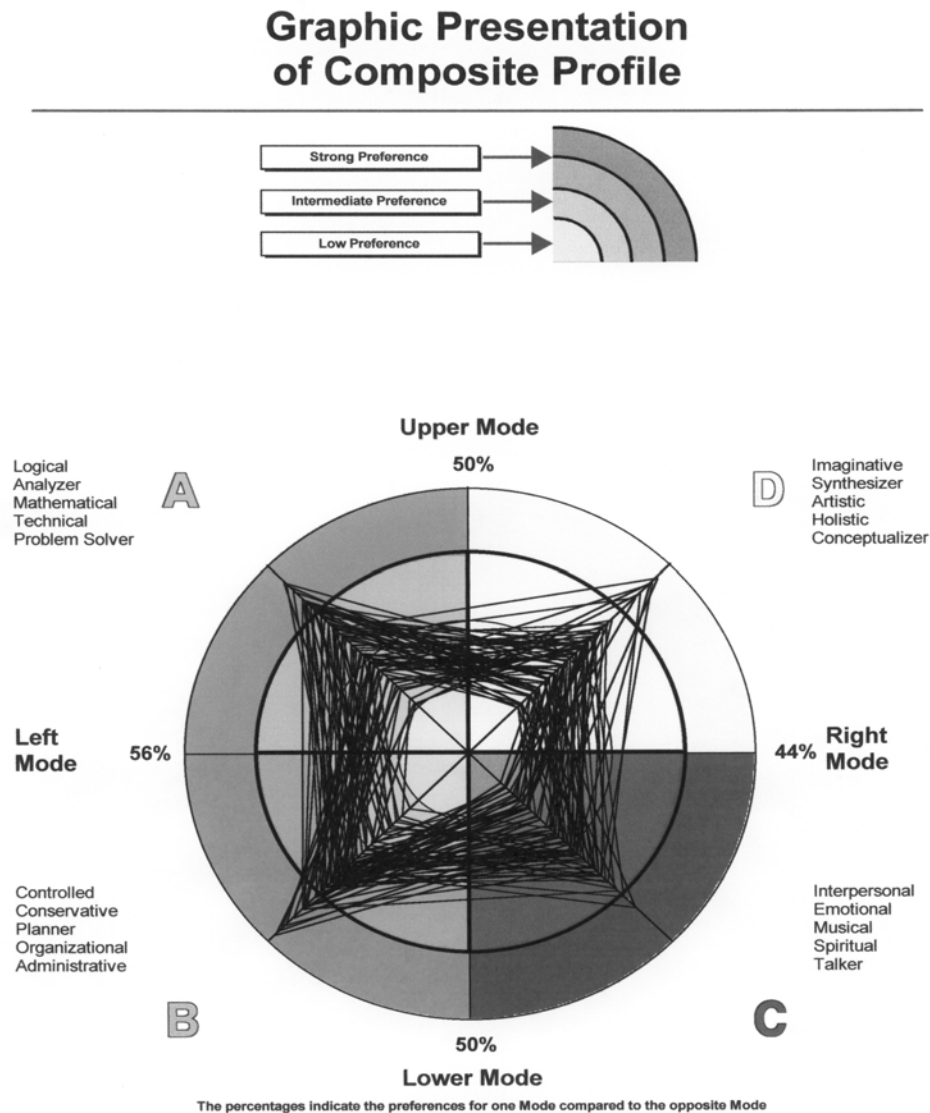


Figure 4: Graphic presentation of composite profiles



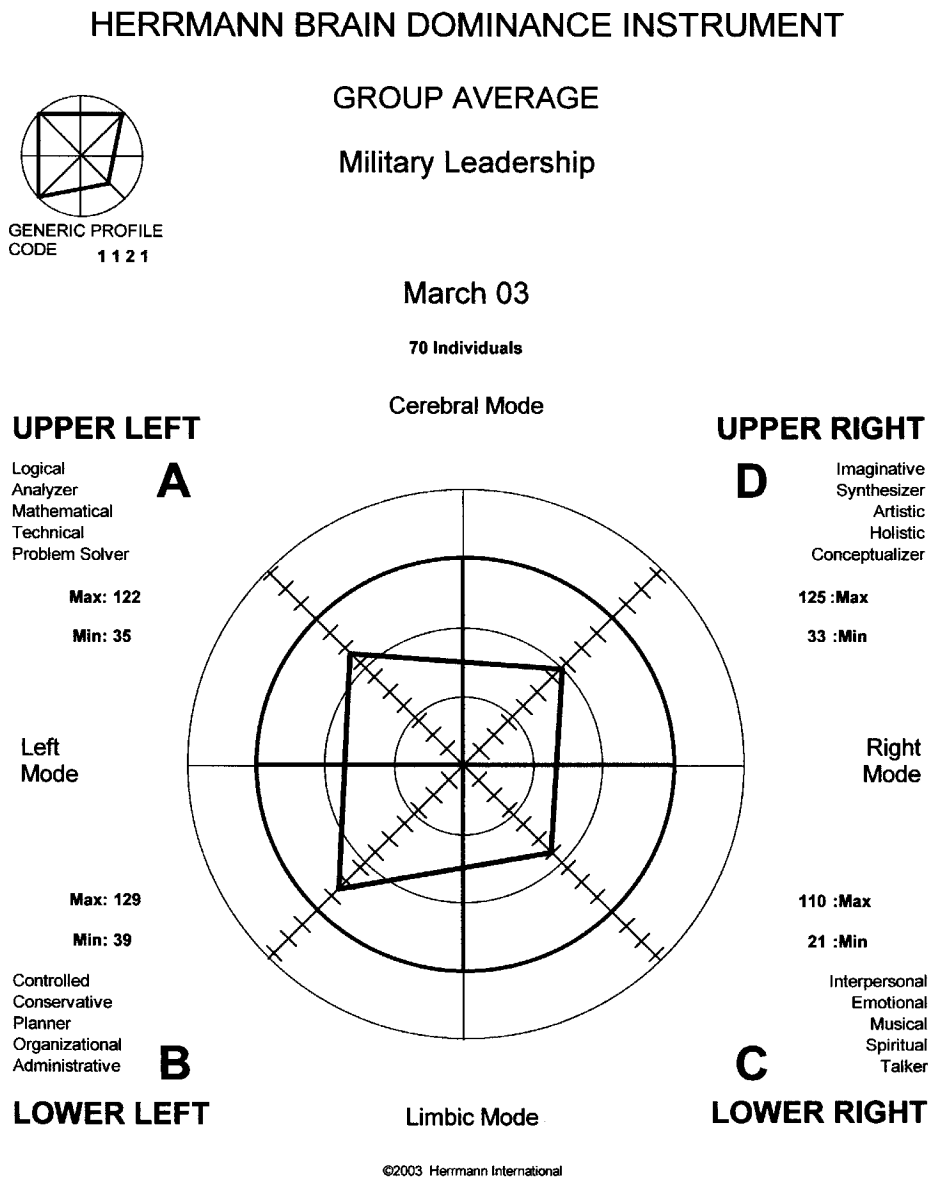
Combined results of the 70 profiles (Figure 4) showed a preference characterized by 56% preferring left-brain thinking styles within quadrants A and B, and 44% preferring right-brain thinking styles within quadrants C and D. There was a balance between the cerebral and limbic modes of thinking. In general, the composite thinking styles of this group showed a preference for logical and conservative thinking. Furthermore, eight individuals (11%) showed avoidance of quadrant C thinking. There are no individuals that avoided the A, B, & D quadrant thinking styles. 61% (43/70) showed strong preference or level “1” for A quadrant thinking. 80% (56/70) showed strong preference or level “1” for B quadrant thinking. The rank order of preferences for this group are B, A, D, C. These results tend to support the popular belief regarding bureaucratic organizations, often described as left-brain dominant, fostering reliance on specialized, rational, efficient, and impersonal roles. These organizations are hierarchical, resist change, follow abstract

rules, and leave little room for personal discretion or interdependence, potentially creating interpersonal tension and organizational stagnation. These are often contrasted with organizations characterized as ‘right-brain’ oriented which foster a service and people centred culture, and which are often idealistic.

*Table 1: Summary of most and least preferred descriptors of preferences*

<b>Key descriptors most descriptive of themselves – the way they see themselves</b>			
<b>Descriptor</b>	<b>Brain Dominance Quadrant</b>	<b>% Preference</b>	<b>Characteristics</b>
Logical	A	81%	Able to reason deductively.
Rational	A	70%	Making choices on the basis of reason as opposed to emotion.
Emotional	C	46%	Having feelings that are easily disturbed, displaying those feelings.
Intuitive	C & D	46%	Knowing something without thinking it out – having instant understanding with the need for facts or proof.
Conservative	B	44%	Tending toward maintaining traditional and proven views, conditions and institutions.
<b>The key descriptors least descriptive of themselves - the way they do not see themselves</b>			
Symbolic	C	9%	Able to use and understand objects, marks and signs as representatives of facts and ideas.
Spatial	D	11%	Able to perceive, understand and manipulate the relative position of objects in space.
Synthesizer	D	13%	One who unites separate ideas, elements and concepts into something new.
Spiritual	C	14%	Having to do with spirit or soul as apart from the body or material things.
Quantitative	A	16%	Oriented towards numerical relationships, inclined to know or seek exact measures.
<b>Strongest work elements identified by the group</b>			
Planning	B		
Problem-solving	A		
Teaching/Training	C		
Organizational	B		
<b>Least preferred work elements by the group</b>			
Financial Aspects	A		
Creative	D		
Technical	A		

Figure 5: General group profile 1121



The profile of this group is a triple dominant profile with two primaries in the left mode, both upper left A and lower left B, and the third primary in the upper D quadrant. The secondary, or less preferred mode occurs in the lower right C quadrant – the interpersonal, spiritual and emotional mode. This profile is characterized by its multi-dominance, yet in a relative sense, it lacks a level of “personal touch” that would be present if the lower right C quadrant were also a primary. Descriptions for this profile would include logical, analytical and rational in the upper left A quadrant and planning, organizing and administrative preferences in the lower B quadrant. The more conservative safekeeping preference of the lower B would be contrasted with the primary

in the upper right D quadrant, which would be characterized as conceptual, holistic, creative, and risk oriented in its mode. Occupations with this profile would be those requiring a combination of logical and analytical problem solving coupled with imaginative and innovative thinking along with administrative and managerial duties. Such occupations would include technical positions such as design engineers, researchers and those creating both conceptual and quantitative designs. Work that is considered a “turn on” would include: analyzing data, making things work, building things, establishing order, bringing about change, inventing solutions.

Table 2 shows the Communication, Problem-solving and Decision-making preferences of this type of profile, and also what people with this type of profile may overlook.

*Table 2: Behavioural implications of the 1121 HBDI Profile.*

Preferences for 1121 General Profile	1121 General Profile May Overlook
<p>Communications:</p> <ul style="list-style-type: none"> <li>▪ Brief, clear and precise information</li> <li>▪ Well articulated ideas presented in a logical format</li> <li>▪ Step by step unfolding of the topic</li> <li>▪ Providing an overview</li> <li>▪ Using visuals</li> </ul>	<ul style="list-style-type: none"> <li>▪ Eye-to-eye contact</li> <li>▪ The personal touch and informality</li> </ul>
<p>Problem Solving Strategies:</p> <ul style="list-style-type: none"> <li>▪ Re-engineering</li> <li>▪ Factual analysis</li> <li>▪ Incubation</li> <li>▪ A step-by-step process</li> <li>▪ Timelines</li> <li>▪ Modeling</li> </ul>	<ul style="list-style-type: none"> <li>▪ Team processes</li> <li>▪ Feelings</li> </ul>
<p>Decision Making Needs:</p> <ul style="list-style-type: none"> <li>▪ Do I have all the facts</li> <li>▪ What's the big picture?</li> <li>▪ Will I be in control?</li> </ul>	<ul style="list-style-type: none"> <li>▪ Asking for others opinions</li> <li>▪ Impact on others</li> </ul>

The military community in general is left brain oriented – preferring step-by-step processes to solve difficult problems. This mostly A/B thinking can be overwhelmingly powerful because the main characteristic of this profile is “hard” rather than “soft”. The most frequent occurring male profile in business occupations is double dominant left (A/B). It is focused on the task at hand, has a comfort level with concrete, administrative, organizational skills and the implementation of processes and policies to support such. Opinions are backed up with factual evidence. Groups with this preference will typically gravitate to the information and operational part of the job as opposed to the management of people end of it. It is typically a conservative and traditional profile. Often, large,



bureaucratic and technocratic organizations encourage left-brain thinking preferences. Following policies, procedures, routines, and traditional lines of authority promote and sustain such thinking. It helps individuals survive and thrive in these organizations.

## **Conclusions/Implications.**

### **Impact of left brain preferences on problem analysis and decision-making**

The HBDI profiles of 70 military personnel indicate a strong preference for left-brain thinking. The implications of this are worth considering since they can increase the effectiveness of current and future officers as leaders, followers and team players.

If military leaders have a different gestalt (morality, duty and honour) from business leaders, one that emphasizes integrity, ethics and responsibility, then leaders must be competent in interpersonal leadership. The brain dominance model suggests quadrant C in particular contributes to this competency.

Also, the potentially greater consequence of decisions by military officers has significance for the critical thinking/decision-making development of current and future officers. The cultural emphasis on integrity, ethical leadership and responsibility are right- brain, and limbic centred concepts. It will be important to consider this in the decision-making training and development of officers with identified left-brain thinking preferences.

B.Gen.G.E. Sharpe (Retired) (2002) illustrated an example of full-brain thinking in his monologue on leadership lessons learned from the Croatia Board of Inquiry (BOI), His left-sided analysis and process orientation was critical. But without his right-sided ability to look at the big picture, the modification and expansion of the BOI mandate would not have happened. As a result valuable feedback and learning from this event would not have occurred.

### **Impact of same-thinking-styles on group competitiveness**

Individuals with strikingly different thinking styles often have difficulty understanding one another. In contrast, individuals with very similar thinking styles often become competitive with each other. While the thinking styles are nominally very similar, there are some minor differences in preference that could be just enough to give a person a slightly different perception of a given situation. This somewhat different perception could lead to “ We both have pretty much the same understanding, but my way is better than your way.”

This form of thinking competition seems to favour the left mode but can also take place in the cerebral mode, both of which are preferred by the group covered in this study. The right mode and limbic mode quadrants are less susceptible to competition because people favouring these quadrants seem to compete with themselves rather than others. They are also inclined to be softer in their approach and more concerned about their relationships.

In contrast the more cognitive-oriented thinking styles are more sharp-edged and assertive and less concerned with interpersonal relationships.

Competition in thinking styles is not bad as it can lead to better decisions and better solutions however, there are consequences to grouping people with similar profiles. Most people would assume that, since their thinking styles are so similar, they will be entirely compatible in a team situation. The leadership challenge would be to have this competition be healthy and synergistic rather than hostile and combative. It is up to the leader to establish a climate that fosters interactions between members of the organization on a basis of creative added value.

### **Impact of left brain preferences on culture and organizational change**

Virtually all the research and literature indicates that in order to increase the likelihood of successful change leaders must focus on the human aspects of change initiatives. The implication of this for thinking preferences is that leaders will have to use the right side brain functions – the C and D quadrants of the HBDI.

Similarly, the literature indicates a clear and positive connection between cultural change and relationship building. Creating effective change strategies is also shown as important. Both these techniques involve applying thinking preferences from the C and D quadrants.

### **Impact of thinking preferences on the development of transformational leaders.**

Transformational leadership requires building a shared vision, empowering individuals throughout the organization, and creating an environment where followers have an internal locus of control and motivation to meet the organization's mission.

This requires that leaders have strong interpersonal skills as well as the ability to craft a collective vision using conceptual and social interpretation skills. These are functions generally found in the right brain and described in the C & D quadrants of the Herrmann brain dominance model. Development programs for current and emerging leaders should consider this in their design.

### **Impact of thinking preferences on strategic thinking and goal setting.**

Strategic thinking and the ability to 'see the big picture' are right-brain dominant activities. For leaders with a left-brain preference it is important to balance their preference to think in the present, and base their future planning on current realities. This approach may constrain the opportunities and options available to the organization in meeting its mission.

## **Impact of thinking preferences on transferability between public and private sectors.**

For many military officers their career after leaving the military is an important consideration for them. Their ability to transfer from military to civilian leadership will be influenced by their 'fit' with the expectations of their potential civilian followers. The transition can be made easier through preparation, including understanding the thinking preferences of leaders in the different industrial sectors.

The HBDI database of profiles reveals some striking difference between the thinking preferences of senior managers in different organizations. Bankers and superintendents of schools tend to be more aligned with A/B quadrants. In contrast, CEOs in the private sector tend to be right mode thinkers (C/D quadrants) – innovators, experimenters - and are often more emotional, expressive and personal. Senior managers in not-for profit health related agencies tend to be more right mode with a preference for C/D quadrant thinking – especially when presented with problems or issues. The A/B quadrant preference of military personnel at a senior level may be somewhat “trained in”. Typical officer career pathways may require, encourage and reward left-mode thinking. At the same time, in the early part of their careers less emphasis and opportunity may exist for creative thinking - unless of a technical nature. The on-the-job development experience in the military reinforces the A/B modes. Senior managers are expected to justify their decisions, and they are evaluated by their ability to plan carefully and sequentially. Further, they are expected to justify their decisions according to specific objective measures.

Officers planning a transition to leadership in civilian organizations might include a review of typical leader preferences in that sector and, if necessary, a concomitant effort to develop similar thinking preferences.

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