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Editor

Irene M. Coombes

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Front Cover

Soldiers from the 4th Battalion, Royal Australian Regiment conduct a night patrol. Using state-of-the-art night vision equipment soldiers prepare for military action.

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CHAIRMAN'S ADDRESS



I would like to take this opportunity to welcome the *Australian Defence Force Journal* to the Australian Defence College.

The *Australian Defence Force Journal* has been in production since 1976. Governed by a Board of Management and sitting under the umbrella of the Defence Public Affairs area the *Journal* has over the years contributed wholeheartedly to the Defence debate. Since its inception the *Journal* has provided an ongoing avenue for debate within the Defence community. It is a valued publication that has been well received by its readers.

As you well understand, during years of continuous production, changes are made - changes that enhance and strengthen and help a publication evolve. I believe that current circumstances present an ideal opportunity to look at the future of the *Australian Defence Force Journal*, and to make those changes. We propose to continue to provide current and future generations of the Australian Defence Force with a publication that is fitting and which will provide a vehicle for stimulating discussion and debate, and one that will encourage advancement in the profession of arms.

There are many reasons why the *Journal* moved to the Australian Defence College. I would like to think that a major reason was that my Charter as Commander of the ADC requires me to meet the Australian Defence Organisation's need for professional higher education. Only part of the process of higher education is ever satisfied by formal courses—most education is gained through reading, thinking and experience. The *Journal* has a role in this process.

My commissioning letter appoints me as “the principal adviser to CDF and Secretary on the implementation ... of high quality and innovative Professional Military Education (PME) for the future needs of ADF officers and Defence civilians”. I am directed to form “strong partnerships with other security agencies” and to perform the “training adviser’s function” that meets “Defence’s current and emerging needs...”

To meet this requirement, amongst other steps, the ADC has commenced a publishing program so that the ADC is recognised for what it is: “a provider of high quality learning”. But more importantly, the ADC and the *Journal* belong together in this process so that the professional debate within the Australian Defence Force (ADF) and the Australian Defence Organisation (ADO) is of the quality that takes us all forward.

The *Journal* fits into our current stable of publications because, as the *Journal's* banner says, it is the “Journal of the Australian Profession of Arms”. This is consistent with the core business of the ADF which is war-fighting, and the core purpose of the wider ADO, which is to facilitate, support and sustain the ADF in meeting the Australian Government's requirements for the use of military force.

The content of this edition reflects a very recent Chiefs of Service Committee decision to include Higher Command and Staff Studies (HCSS) in the Defence and Strategic Studies Course at the ADC. The aim of the HCSS is to prepare selected senior officers and officials for higher command and staff appointments engaged in the employment of military force. So it becomes even more appropriate to get a strong dose of ‘Ops’ in this edition.

This focus on operations is brought to us by two serving officers, a retired officer currently

working in the security field, and a Defence civilian. Apart from the variety in contributors, what I liked about this mix of articles is that they connect a certain amount of military conservatism, allowing us to preserve what is valuable, with a futurist, progressive view that learns from our environment, our friends and our past enemies. This is what the Australian versions of Network Centric Warfare (NCW) and Effects Based Operations (EBO) will need as they develop, and, this is what will allow us to achieve the Multidimensional Manoeuvre that we aim for in our Future Warfighting Concept.

Anton Kurucs, “The Relevance of Chaos Theory to Operations”, is an interesting contribution, even more so for his consideration and views on the A21 trials: “a classic case of linear positive reductionism” that, he claims, came close to “...generating a self-fulfilling prophecy of an Army capable only of ‘defending’ northern Australia”. Our Joint Experimentation program is assuming great importance in this time of change and we can go forward, in this case, while learning from our very recent past. The world is not linear in the twenty-first century, if it ever was at any time.

Justin Kelly paints on a broad canvas as he looks at “War as a Whole”. Again in a consistent theme of learning from the past so that we can go forward, he looks at the “core of operational art” as being Manoeuvre Theory and Operational Art. From his observation that “...you didn’t need to be a Clausewitz to realise that WWI had not gone well”, he goes on to give us, in a single article, what I consider to be the intellectual underpinnings of the Joint Military Appreciation Process (JMAP). Read and understand this article, and you will see the need for, and the power of, the JMAP in operational art, and the importance of the intellect in the employment of military force.

Having recently read a study on German high command as part of an evaluation of our own high command during the Iraq war, (Megargee’s, *Inside Hitler’s High Command*), I endorse Roger Nobel’s advocacy of ideas and concepts that were “...tested and refined through constant evaluation” producing “...an open institutional space and atmosphere for creative experimentation”. We are good at our business, but we can always learn. Noble gives us what is perhaps the ultimate example of a “learning organisation” in extreme circumstances.

Dr. Christopher Flaherty takes us into the space of testing and proving theories that are essential to future effective employment of military force, particularly the concept of Multidimensional Manoeuvre. He looks at many theorists and practitioners, from the historical “Greats”, through Richard Simpkin (1985 *Race to the Swift*) to martial arts expert Bruce Lee. He concludes that we can link effective command to multidimensional manoeuvre by replacing C2 with a concept of command and influence - CI. Flaherty makes the link between the past and the future when he observes in a footnote that the Duke of Marlborough adopted lines of advance that threatened multiple targets, thus denying his adversary the ability to decide where to defend. In this way, the Duke is said to have achieved information dominance. As many know, an imposing portrait of the Duke of Marlborough hangs in Duntroon House, imperiously looking down on every Chief of Army formal dinner. Now we know why.

I invite you to contribute thoughts and ideas you feel will enhance the *Journal* and help us meet the challenge of providing a forum for Defence personnel and others interested in defence matters.

I welcome the *Journal* to the Australian Defence College. We will strive to present to the Defence community a publication of which we can all be proud and within whose pages we will find enjoyable informative reading.

A.J. MOLAN, AO
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Chairman Australian Defence Force Journal

E-mail your ideas to adfj@ozemail.com.au or send to The Editor, ADFJ, R8-LG-001, Russell Offices Campbell ACT 2600.

The Relevance of Chaos Theory to Operations

By Anton Kuruc

War is Chaos

Clausewitz

In the tumult and uproar the battle seems chaotic, but there is no disorder; the troops appear to be milling around in circles but cannot be defeated. Apparent confusion is a product of good order.

Sun Tzu

From Sun Tzu to the Fundamentals of Land Warfare (LWD1), warfare and combat have been described as chaos. If war is chaos can we use Chaos Theory to help understand its dynamics? Over the last three decades the study of non-linear dynamics has yielded Chaos Theory as a means of describing the underlying order in seemingly disordered dynamic systems. The result of applying Chaos Theory to Systems Theory has been the emergence of Complexity Theory which describes the workings of dynamic human systems. The insights from these theories have posed challenges to the traditional linear model of Western thought.¹

Much of our doctrine uses linear logic and tends to generate static and closed conclusions about the command, leadership and management of operations.² This is despite the acceptance that chaos is one of combat and warfare's enduring features.³ Our reductionist approach drives doctrine to be internally focussed and designed to maintain control of our own internal systems.⁴ This is a generally defensive paradigm that arguably cedes the initiative because we are so focussed on ourselves. This can lead us to overlook the broader outcomes we want our operations to have on the wider system.

This article will challenge this introspective view by using Chaos Theory as a framework to understand operations in a more holistic manner. The aim of this article is to examine the relevance of Chaos Theory to operations.

The article will outline how Chaos Theory can help us understand Systems Theory and how they both combine into Complexity Theory. It will then apply this understanding to operations generally and look at command, leadership and management in three case studies in order to evaluate its utility for understanding operations.

The article argues that Chaos Theory provides an excellent framework for understanding operations and that this has serious implications on operational command, leadership and management. Accordingly, I will propose a paradigm to apply Chaos Theory to overcome the inherent limitations of following a purely linear thought process to the conduct of operations.

Choosing the Right Paradigm

The paradigm that dominates contemporary Western thought is best described as the Newtonian worldview—a view that revolves around absolute classical mechanics enabling precise measurement of specifics.^{5,6} “This strict application of the ‘scientific method’ during the enlightenment led to a belief in linear logic that resulted in absolute truths enabling rational planning.”⁷ This methodology has been criticised for constructing the conditions that produce results to prove an assumed theory.⁸ Kuhn called this a paradigm that “...is ... the lens through which we view the world and it therefore determines what we perceive”.⁹ For reasons beyond the scope of this article, the

Newtonian paradigm remains our preferred paradigm of organisational understanding in the Australian Army. Kuhn argues that paradigms never answer all the problems they define and therefore it is important to determine which problems are the most significant to solve.¹⁰ Our dominant paradigm generates a reductionist, linear and static understanding of systems and therefore solves problems the same way. The military appreciation process and force structuring against specific threats are examples of the way this paradigm has been used in Army.

Military leaders have the unique task of directing the “chaos” of operations in an effort to achieve their objectives. They consequently have a deep-seated need to order the events around them so that they can be managed.¹¹ The way that the Army traditionally prepares leaders to understand and manage operations is through practising doctrine because of the view that “Without acceptable and sound doctrine, an Army would be left with a recipe for chaos”.¹² However this article argues that as operations and human organisations are complex systems, they can be better understood in holistic, non-linear and dynamic terms if we have a sufficiently dynamic framework with which to understand them. Chaos Theory provides such a paradigm. Moreover it is a paradigm Army should be prepared to consider more closely because when paradigms of understanding are shifted significantly, different insights are gained.

Chaos Theory

Chaos Theory can be simply defined as “a new type of mathematics explaining the complex behaviour of non linear systems”.¹³ An overview of some of the more important component parts of the theory is offered below.

Unlike Newtonian physics, Chaos Theory is based on non-linear mathematics and is applied to dynamic systems. *Dynamic systems* are those that change over time, due to their feedback loops causing continuous change from one state to another. Movement is generally from one stable state to another stable state; however, its path can be either orderly or chaotic. This depends on the circular causality of the feedback loops which drive the process of change.¹⁴

Dynamic systems can be either *Linear* or *Non-linear*. When output is proportional to input, a system is considered to be linear. “The important consequence is that the solution to most linear systems is completely known.”¹⁵ Wherever synergy is possible, the system is non-linear because:

*Non linear systems ... disobey proportionality ... They may exhibit erratic behaviour through disproportionately large ... or small outputs. The heart of the matter is that the system's variables cannot be effectively isolated from each other or their context; linearization is not possible, because dynamic interaction is one of the system's defining characteristics.*¹⁶

This is a profoundly important observation because operations are manifestly non-linear and often defy the rational application of a linear paradigm, a point missed by many military theorists.¹⁷ History is rich with examples of smaller and poorly equipped armed forces defeating larger better-armed opponents. Such examples demonstrate the inherent non-linearity of operations. When linear rationality is applied to non-linear systems the results are very often counter intuitive, where outcomes defy the rational extension of a linear paradigm.¹⁸ This might be called the probable law of unintended consequences.

“In science as in life, it is well known that a chain of events can have a point of crisis that [can] magnify small changes...such points [are] everywhere. They [are] pervasive.”¹⁹ It can be argued that the purpose of military operations is to drive the system to a point of crisis through armed conflict, to prevail in the crisis and consequently determine the new stable state of the system after the crisis. Operations are a non-linear chain of events that are *sensitive to initial conditions*. Because dynamic systems always change it is almost impossible to determine their initial condition. The mathematical equation of such an effect is e to the power of kt (constant multiplied by time). If k is negative, small disturbances get smaller whereas if it is positive changes get larger.²⁰ If feedback is the constant then positive feedback creates the preconditions for “Chaos”. This process is sometimes called the *butterfly effect*. An example is the concertina

effect when route marching. In operations, feedback is perceived through a force's orientation relative to an opponent's actions in competing Boyd Cycles.²¹ Small changes in action can be amplified into greater effect through the orientation and subsequent stages of the cycle.

Negative feedback attracts a non-linear dynamic system to a state of total stability whereas positive feedback attracts it to a state of explosive instability.²² Total stability results in a system so static it cannot adapt to its environment whilst explosive instability leads to disintegration. The border between stability and instability is called the boundary between chaos and order. Operations occur along this boundary, which whilst technically a very small part of the whole system, is paradoxically a zone of almost infinite complexity and possibilities.²³ Operations can move the system from one state to another with little effort, or paradoxically the system can resist enormous pressure from operations to change.²⁴

The forces that determine an actual change from within the range of possibilities are called *attractors*. These create relative order unless the attractor is otherwise disturbed. "The most chaotic of systems never goes beyond certain boundaries; it stays contained within a shape that we can recognise as the system's strange attractor."²⁵ Whilst attractors limit systemic disorder they cannot predict the exact location of the systems trajectory at a given point in time. Leadership, training and discipline are examples of attractors that enable military organisations to withstand the intense pressures of the battlefield. Attractors can be strong or weak relative to the forces trying to shift the system.

When systems are viewed from a more, or less, detailed perspective they reveal differing degrees of order or chaos. This is called *scaling*, in the sense that one looks at a map. On a world map a city appears to be a relatively simple system, perhaps a dot. Changing scale to a street directory produces a more complex picture. At different scales, the complexity becomes more obvious than the inherent order or vice versa.

Fractals are "...sequences of branching that are increasingly ornate; based on an initial simple

format, their replication yields ever-varying but similar configurations...".²⁶ Examples are fern leaves that are made up of smaller fern leaves and so on. In a military context, a battalion will "fire and move" its subordinate companies and so on down to individual soldiers "pepper potting". The "disorder" at section level may look more orderly by scaling back to battalion level. Thus "order" at battalion level is potentially based on the disorder at lower levels. Fractals are bounded by the operation of attractors that hold the system within a set of acceptable conditions. Systems with more than one attractor have multiple basins of attraction along the unstable boundary between the two attractors. The simple fractal pattern of combat is either fire and/or manoeuvre including the potential to do either or both.

In this unstable region fractals come to "...a crossroads between death and transformation known technically as a bifurcation point."²⁷ At a bifurcation point the system is at maximum instability and consequently most sensitive to initial conditions. Out of necessity this is the point of greatest creativity and is most effectively achieved by "self organising systems". Self-organising systems, which will be discussed later, are most able to rapidly adapt to changing circumstances.

In summary, "'Chaos' results when a system is non-linear and 'sensitive to initial conditions'...Immeasurably small differences in input can produce entirely different outcomes for the system, yielding various behaviour routes to a degree of complexity that exhibits characteristics of randomness-hence the term 'chaos'."²⁸ Non-linear systems always have the potential to generate chaos along the boundary where attractors meet. The boundary is extremely unstable enabling bifurcation dependent on the application of a potentially tiny force. When considered as a clash of opposing sub systems, Chaos Theory has potentially greater utility than linear logic in understanding the dynamics of operations. Such an observation supports the value of considering operations through this alternate prism, however first the relationship of Systems Theory and the merging of the two into Complexity need further consideration.

Systems Theory

Systems Theory defines human organisations as open systems that:

*...consist of a number of component subsystems that are interrelated and interdependent on each other. They are open because they are connected by feedback loops to their environments, or suprasystems of which they are a part.*²⁹

An overview of the key elements of Systems Theory is offered below.

An organisation is an open system comprising a set of interrelated parts that operates in two dimensions,³⁰ internally amongst its sub systems, and externally with the physical environment and other systems. Sub systems include informal groups, which play an important part in most organisations.³¹

Systems function by transmitting information and energy through internal and external feedback loops.³² At every level, systems take in information and energy and transform them into outputs. Similarly, systems interpret the output of other systems as information or energy and respond to them. These iterative processes are constantly occurring at all levels, continuously creating a complex dynamic. This dynamic can potentially interrelate with all participants in the wider system.

Systems can thus be thought of as a set of interrelated feedback loops that export and import information and energy to each other. In the Boyd Cycle, action is the output that becomes an input to an opponent's Boyd Cycle where it is interpreted in the orientation stage.³³ Systems Theory demonstrates how competitive and cooperative sub systems are interrelated to each other where local action can affect other parts of the supra system. Consequently small changes have the potential to change the whole system.

The feedback upon which systems depend can be either negative or positive. Feedback is in constant operation in all organisations. However it would be wrong to think of positive feedback as universally good and negative feedback as universally bad. Unchecked, negative feedback results in organisations unable to adapt to changing circumstances. They maintain stability to the point that it can

work against systemic survival, often resulting in abrupt disintegration. French military doctrine after World War I exemplifies this process and resulted in the unintended consequence of a debilitating inability to adapt to the dynamic environment caused by the German invasion of 1940.

Vicious (or virtuous) circles are examples of unchecked positive feedback that generates unintended or counter intuitive consequences. A case of such a cycle is where management employed impersonal rules to decrease tension between workers and management. The rules caused workers to work within the tight definition of the rules leading to greater tension and consequently more rules until the rules dominated the system.³⁴ A military example is the "Overall Opinion Box" in the old PR19 EDRO that was designed to segregate Army officer performance.³⁵ The outcome was to tightly group performance into a high performance band thereby achieving the opposite to the initial intent. In response, Army introduced more performance bands that only succeeded in further entrenching the problem.

Self-fulfilling prophecies are another example of unchecked positive feedback. An example is where management decides that people are not sufficiently competent to do their jobs. Consequently management lays down increasingly more detailed guidelines and procedures to "aid" decision making. Subordinates become dependent on these rules and they become more tightly applied. Consequently staff "learn" not to make decisions when the terms of the rules can't be strictly applied and thus develop trained incapacity, or learned helplessness. Such organisations generally repel imaginative people.³⁶

A third example of unchecked positive feedback is the "Bandwagon" effect where a particular movement gathers supporters who gain organisational advantage because of their support for the bandwagon. This draws more people to the "cause" thereby entrenching its position within the system and creates a virtuous circle for its supporters but can generate dramatic unintended negative organisational outcomes.³⁷ Whenever an organisation follows "visionary" management

or “predictive futures” it runs a high risk of creating this potentially dangerous dynamic.

Tight and loose coupling describes how closely various sub systems are connected to each other and the wider system. Tightly coupled systems, where connections are very strong, are very efficient because there is little or no effort wasted as redundancy between sub systems. However tight coupling enables small changes in one sub system to be amplified through the wider organisation.³⁸ An example is the previously mentioned butterfly effect when route marching where a slight change of pace at the front is amplified into a halt or sprint at the back of a column. Tight coupling makes it difficult for an organisation to adapt effectively to change. Conversely, loose coupling (where connections are weak) builds buffers and maintains redundancy in a system that cushions external shocks and provides the excess capacity that enables the system to adapt to change. These systems are less efficient but more *effective* in dealing with an uncertain and dynamic environment.³⁹ We therefore route march in relatively small packets of troops, which is less efficient, in time past a point, but more effective in force preservation. The higher the degree of external uncertainty, the greater the need to adapt.⁴⁰ It consequently follows that in an uncertain competitive environment, organisations and plans are more adaptable and thus likely to be more effective if they are loosely coupled.

Systems Theory highlights the inherent complexity of competitive human systems and shows that they are more highly interrelated and interdependent than is often otherwise perceived. This in turn infers that they are better understood in holistic terms because they constantly feed off information crossing non-linear and dynamic systemic boundaries. Feedback effects expose the risk of applying static linear thought processes to dynamic non-linear systems. These systems therefore need to be treated holistically and dynamically in order to generate a non-linear logic capable of dealing with the complexity that competitive systems generate.

Systems thinking thus forces us to look at the wider system and how it might impact on our own sub system. We can conclude that

where the external environment is changing then our internal organisations need to retain inefficiencies to enable the organisation to adapt to the environmental change. Paradoxically, military effectiveness would appear to be dependent on retaining a degree of inefficiency; a fact commanders have intuitively understood whenever they maintained a reserve. Furthermore, the organisation needs a degree of compartmentalisation to protect it from external shock. Systems Theory would tend to suggest that military structures should be tall, compartmentalised and contain adequate reserves in order to be effective in a changing world. These insights are counter-intuitive to the contemporary managerial solutions of flat structures and efficiency. Perhaps the most important lesson of Systems Theory is that efficiency in military organisations is nearly always the wrong reason for reform. Arguably effectiveness, based on the maintenance of some inefficiency, should be the principle driver of military reform. Systems Theory also drives us to consider issues, such as command and control in relation to our competitors’ system because action in our own system is the driver of uncertainty and consequently a loss of control in our opponents system.

Complexity Theory

*Complexity Theory describes how order and structure arise through the process of adaptation set in motion by new information, which tips the balance and pushes the system into a chaotic episode. In complex adaptive systems, Complexity Theory incorporates and depends on the details of Chaos Theory.*⁴¹

Simple things are made complex by their relationships, interdependences and interactions (the friction and chaos of war to use Clausewitzian terminology). In this environment, systems either generate self-organising and creative behaviour to cope, or the system fails. When operations are considered in this light they take on a different flavour because this new paradigm poses different problems to be solved.

Complexity is a common condition prevalent throughout nature where systems interact with each other, competitors and the

environment.⁴² Thus, a complex system can be considered as one consisting of a number of independent parts that are interconnected to and interactive with a wider system and the physical environment.⁴³ To understand a system it should be considered from a relative internal and external perspective.

As an example, a colony of frogs in a pond interacts internally with the other frogs (cooperatively for mating and competitively for food), externally with competitors (such as predators and prey), and with its physical environment. A change in an external system may change the frog's internal system and vice versa. To understand the frogs we must consider the interconnections and interactions with other systems in and around the pond. We can consider the pond as a system including the frogs, or the frogs as a sub system of the wider pond system. The segregation of systems into subordinate partial systems is one cause of systemic complexity.⁴⁴

This subordination creates causal chains that can operate semi-independently of each other whilst retaining the potential to interconnect with each other. When sub systems congregate, they create the potential to break through environmental limitations and in doing so create an interconnected whole. Complexity thus "tends to increase as functions and modifications are added to a system to break through limitations, handle exceptional circumstances or adapt to a world itself more complex."⁴⁵ An example of this is how evolutions in motor vehicle development have improved performance through increasing complexity. Complexity is therefore an evolutionary adaptive condition that can deliver better performance, however if it is allowed to develop beyond its needs it can also hamper performance.⁴⁶ We can see in the latter effect when a bureaucracy becomes too complex and this hinders organisational performance.

Importantly however, human systems have fundamental differences to other systems because "the real values of humanity are not those which it shares with biological entities, the function of an organism or a community of animals, but those which stem from the individual mind".⁴⁷ This suggests that our capacity to think should logically decrease the range of options an

organisation will adopt under a given set of circumstances. However we don't always act "rationally", particularly when under stress (where behaviour becomes less predictable) and perspective can be lost.⁴⁸ Collective human behaviour tends to dramatically increase the range of possible conditions an organisation can adopt. Under stress this potential probably increases again.

Consequently there is little chance of predicting the future of complex human systems. Indeed it is hard enough isolating the system and identifying possible interconnections that might take place and be influential. Human systems tend to make obscure and unpredictable linkages that provide sufficient positive or negative feedback to throw the system into chaos as it moves to a new state. An example is how the Asian economic crisis led to the fall of Suharto that created a causal chain to Australia's military operations in East Timor. The regional politico-economic system made a bizarre set of interdependencies that nobody predicted. Likewise an unpredicted September 11 has led to a dramatic shift in the world system and seen the Australian Army involved in combat tasks well beyond our immediate area of strategic interest and without UN support. These unpredicted outcomes are often the case in disasters and accidents in complex systems.⁴⁹ These problems are compounded by the inability of humans under stress to deal with all the information presented.⁵⁰ The very process of stress more tightly couples the situation where small changes generate disproportionately greater stress and hence more potential outcomes to a given set of circumstances.⁵¹

In such an environment adaptive evolutionary systems have a distinct advantage in surviving and the truly remarkable thrive. Systems with the capacity to self organise and operate rapidly are generally creative and particularly successful. Self-organisation is the process by which "components of a system... spontaneously communicate with each other and abruptly cooperate in coordinated and concerted common behaviour".⁵² An example of existing military self-organisation is artillery observers who "spontaneously" direct the effort of a range of potentially available offensive

support systems. Another example of a loosely coupled self-organising system is Al Qaeda's global network of terrorist cells.

In the future, interconnection through information technology will make unintended connections between disparate sub systems more probable and of increasing importance. As we move into a more tightly coupled world, stress will have the capacity to tighten the coupling between the interactions of our complex environment. In this context it is critical that we note the potential for centralised command structures in complex systems to create catastrophic systemic failure because of the complexity of the potential permutations of inputs and outputs.⁵³

Thus we can see that Complexity Theory provides a framework that can help us understand how to use Chaos Theory to manage complex systems in a non-linear environment. It stresses the need for organisational adaptability based on maintaining redundancy, and on developing organisational resilience through compartmentalisation, and building buffers that limit the impact of external shocks. Management of a system in such an environment is more likely to be effective if it is based on a degree of self-organisation and decentralised control. Tightly coupled plans based on predictive assumptions are generally less effective than the use of attractors such as discipline, training and initiative focused on a clear mission. It is action in ones own system that creates uncertainty and confusion in opposing systems that are interconnected through a variety of potential points of cooperation and competition. Consequently, operations need to be considered in a holistic way that accepts the dynamic non-linearity of the competition between opposing sub systems within a wider system.

Operations: Chaos Amongst Complex Adaptive Systems

Against this theoretical background, our doctrine portrays operations as non-linear interactions between complex systems operating in a wider system where combatants are interconnected by feedback loops.⁵⁴ Each force, in turn, is made up of a complex array of units and sub units that are all potentially

interconnected in one way or another. Each force continually acts based on feedback it receives from its own system (higher/lower command etc), the opposing system, the physical environment (weather, terrain etc), and the international system (UN, Coalition, NGOs etc). This system is always in motion making it almost impossible to determine the "initial conditions" to which the system is sensitive. Moreover, once operations commence, the system is always on the precipice of chaos because operations are generally designed to radically change the wider system against opposition.

Systems are held together by the strength of their "attractors". Multiple attractors of varying strength, such as leadership and training, hold operations and units together under stress. Themselves, operations are competitions between attractors trying to push the opposing systems into chaos and dramatically reorder the wider system in a way favourable to one side at the expense of an opponent's interests.

Feedback is generated externally through the action phase of one Boyd Cycle and imported internally in the orientation phase of the competing systems' Boyd Cycle. Opponents do not respond to each other's decisions but rather, they perceive a possible decision on the basis of an interpretation of observed actions.⁵⁵ This highlights the central importance of acting rather than deciding.

Decisions are made in a condition of dynamic uncertainty that causes the "fog of war" and which is an input to "friction". Each participant makes decisions based on fragments of information.⁵⁶ Beyond a certain point, and particularly under the stress of combat, participants lose the ability to deal with the complexity of the feedback loops they are exposed to. Individuals suffer tunnel vision and groups suffer the effects of negative and positive feedback loops described earlier. These loops can undertake strange contortions because all participants are collectively suffering tunnel vision to a lesser or greater degree.⁵⁷

These factors help create the unpredictability of operations, wherein strategies and tactics become emergent,⁵⁸ and elements self-organise at the lowest level. Self-organising

permutations, such as combat teams can continuously adapt to their environment and they are generally successful because they have the ability to change form as required. For example when a commander holds a reserve, it can be adapted to the situation by adding it to other units or conducting separate tasks. More immediate self-organisation is available through feedback loop redundancy maintained by artillery observers and liaison officers. The rapid allocation of firepower through these conduits can have dramatic non-linear effects. This is self-organising in the same way that two soldiers coordinate their fire and movement in an attack.

This model highlights the interdependencies and potential connections between disparate parts of the wider system. In operations everything is judged in the light of success in achieving its desired effect on an opponent. The enemy is an integral competitive part of the system that operations are trying to influence. Because operations are a complex non-linear set of iterative interactions in a dynamic environment, they demonstrate the conditions of complexity.

A Relative Paradigm

Complexity Theory, therefore, presents a non-linear alternative to linear logic where order and disorder are evaluated in a context of multiple relativities. Operational success is understood relative to a competitor under a set of prevailing circumstances at a relative time and place in a complex and dynamic environment that is part of a wider system.

Order is achieved relatively by being less disordered than the opponent at a particular competitive point. The fog of war, friction, uncertainty and danger aren't dissipated. Rather, they are generated to a greater extent in our opponent's system. Success is achieved by generating increasing positive or negative feedback in our opponents system to the point of disintegration or competitive irrelevance. This is achieved by action that is feedback exported out of our system and imported into our opponents system in the orientation phase of the Boyd Cycle and vice versa. Calling the Boyd's Cycle a decision cycle has unfortunately

focussed effort on the observation and decision components of the cycle rather than on the action and orientation components where feedback crosses systemic boundaries. Action, and the potential for it, is the key to non-linear success.

In this paradigm, command and control is achieved (paradoxically) by using speed and effect to decrease the command and control in our opponent's system. It capitalises on the complex dynamic environment created by external and internal feedback. This complexity will increase as information technology makes the world more closely interconnected through more intrinsic and extrinsic feedback loops. Tight coupling these linkages increases the risk of greater shocks whilst concurrently decreasing the potential for accurate prediction.

Implications on Command, Leadership and Management of Operations

This section will touch on some of the implications this relative paradigm has on the command, leadership and management of operations. These will be drawn from three case studies including: the impact of information superiority on command in Kosovo, leadership in Somalia, and the Army 21 force structuring Review (A21) in the Australian Army.

Command in Kosovo

Space limitations only allow for a short assessment of Chaos Theory in relation to command in Kosovo but NATO's operation there provides an interesting case study of how information superiority may unintentionally result in action inferiority. The impact of such total situational awareness on decision times is most readily evident in a game of chess. Because both players have total situational awareness, they have far more feedback loops and information to process, making it harder to make timely and effective decisions. Being aware of small changes creates undue stress, especially because the relevant corrective information is "available".⁵⁹ Increased stress reduces perspective, exponentially decreasing information processing capacity and creating a further stress – loss of perspective vicious circle.

US Secretary of Defense, Cohen, in describing NATO operations over Kosovo said, "our vast intelligence system can create such

a haystack of data that finding one needle that will pinpoint a target in the right time frame is difficult indeed".⁶⁰ Admiral Ellis, Commander-in-Chief NATO Southern Europe, reinforced these views stating that "Information saturation is additive to the 'fog of war'...uncontrolled, it will control you...and lengthen your decision-cycle times".⁶¹ This is an example of how the probable law of unintended consequences manifested itself in Kosovo against an enemy who by and large didn't shoot back! The linear solution to increase interpretive capacity is likely to further entrench the problem.

In Kosovo, President Clinton publicly ruled out a ground campaign thereby increasing Milosevic's relative certainty. This decreased the range of options available to NATO whilst increasing those open to Serbia. It enabled the Serbs to dominate the local terrain and conduct ethnic cleansing for all but the short periods of time NATO air sorties were overhead. This relative certainty also enabled the Serbs to disperse among the population avoiding the concentrations required for conventional land combat—and for successful air targeting. NATO opted to conduct operations in the Electro Magnetic Spectrum (EMS) and the air portions of the "battlespace". This gave the Serbs freedom to manoeuvre generating more information to be collected and interpreted by NATO causing longer decision times and greater relative uncertainty for NATO. The Serbs opted to permanently dominate the "hard" part of the battlespace, the land, whereas NATO opted to periodically dominate the softer elements of the battlespace, the EMS and air.

The Serbs only periodically activated their air defence network denying NATO the ability to destroy it.⁶² This created a vicious circle forcing NATO to fly higher, consequently increasing the likelihood of missing targets. It helped the Serbs hide amongst the population making targeting more difficult. This paradoxically made ground troops best able to detect the relative "order" in Serbian ground operations.

NATO domination of the EMS did not lead to a collapse of the will to fight. Rather, Western reporting that, according to BBC correspondents, was widely watched by Serbs was dismissed as "propaganda". Destroying

infrastructure probably hardened resolve enhancing the Serbs relative advantage.⁶³

Recently a strong "information superiority backed by long range precision munitions" bandwagon has been in operation, particularly in the USA. It has created an expectation of bloodless victory and 100 *per cent* accuracy that can't be matched in practice. Even if NATO achieved 99.9 *per cent* success, the political damage from the occasional wayward round can be catastrophic. In this case, NATO hit the Chinese Embassy, refugees they were trying to protect and "neutral" Bulgaria.⁶⁴ This undermined confidence in NATO, forced it to apologise to the world and must have added significant stress to the Alliance. The relative benefactor was Serbia who didn't apologise for anything.

When the local population sides with our opponent then the wider system creates a very powerful attractor that strengthens the opposing system. The USA felt this in Somalia and Vietnam, however the opposite was true for NATO in Kosovo and Australia in East Timor. In Kosovo it constituted a powerful relative advantage that NATO didn't leverage because it ruled out land operations.

The information technology bandwagon convinced NATO it could win a prolonged ground war by temporarily dominating the EMS and air battlespaces. Selecting the wrong part of the battlespace to dominate gave enormous relative advantage to the Serbs who were able to effectively adapt to NATO's operations.⁶⁵ The most sophisticated sensors in the world could not compensate for this error. The unintended consequence of the bandwagon has been to generate expectation of "bloodless" technological victory that has undermined the West's will to conduct sustained land operations. Paradoxically it increases the pressure and expectation to act in the first place creating a vicious circle.

Despite Toffler's assertion that "the way we make war is the way we make wealth",⁶⁶ Kosovo serves to remind us that different cultures fight in different ways. Successfully adapting operations to the circumstances is more important than information dominance. Information technology can either enable or

disable adaptation, and leadership is a critical factor in making information technology an enabler or disabler of successful adaptation.

Leadership in Somalia

Under stress, the temptation to micro-manage a situation becomes difficult to resist. The US experience in Somalia highlighted these problems when a remote headquarters took command of a complex situation on the ground with disastrous consequences.⁶⁷

Information technology enables linkages to be made where they were not intended.⁶⁸ The stress of a situation tightens coupling to the point where catastrophic systemic failure is highly likely.⁶⁹ In Somalia, synchronisation drove Task Force Ranger towards maximum efficiency through tight coupling. It also created extreme vulnerability to small changes in its internal system. The redundancy provided by nearby US/UN troops adaptable to the situation saved this operation from total catastrophic failure.

Army's doctrine of Mission Command uses "commander's intent" as the "attractor" that focuses effort and empowers subordinate freedom. This maximises speed and effect amplifying action into positive feedback in opposing systems. Somali militia who rapidly responded and communicated amongst each other by burning tyres confounded Task Force Ranger's ability to centrally respond during US operations in Mogadishu.⁷⁰ In a relative sense, the militia acted while the US made decisions.

Leaders loosely couple their operations by establishing buffers through Mission Command, leadership and maintaining an effective adaptable reserve. These buffers protect the wider system from "knock on" effects generated by failure in one sub system. Redundancy of firepower, manoeuvre assets and logistics enable commanders to adapt to evolving complexity. Simplicity is an important intellectual redundancy because human capacity to maintain a wide perspective diminishes under stress.⁷¹

Leaders should reflect on the possibility that being pro-active is often just being reactive with micro management.⁷² Information technology will increase the potential to get "pro-active" and consequently unnecessarily tighten the coupling

in an already stressful situation. Loosely coupled leadership and plans are made more adaptable by loosely coupling organisational structures.

Management - Force Structure

The 1994 Defence White Paper required the Army to maintain prepared, adaptable and versatile force structures.⁷³ Army had to prepare for the ambiguity of adapting a force structured to defend northern Australia against small enemy incursions to more probable off shore deployments.⁷⁴ It managed this, at the time, through the *Army in the 21st Century Review (A21)*.

A21 used "assumption based planning" to manage uncertainty.⁷⁵ It developed a notional adversary spectrum based on an exceptionally unlikely scenario as the primary driver of force structure. It tightly coupled structure to defensive tasks based on the operational dimensions of "detect, protect and respond".⁷⁶ Only the small "respond" force was designed to "defeat the enemy" whilst protect elements were logistically tied to protected assets, further tightening the coupling. Furthermore "protect" forces could not gain synergy by combining externally with other arms, such as artillery, and consequently had these "embedded" into the infantry battalion structure.⁷⁷ This restricted the ability to manoeuvre and concentrate key firepower effects such as artillery, resulting in a negative synergistic effect on the two tangible components of combat power.

The resulting Restructure of The Army trial (RTA) used 6 RAR as the test bed unit. The complicated force structure, at unit level, was extremely tightly coupled. Externally it was coupled to an enemy that didn't exist to fight a battle that presented the least likely scenario of employment. Internally it could not concentrate combat power that was penny-packaged throughout the task force. It had no ability to conduct tasks over a reasonable duration due to lack of redundancy needed to rotate troops over time. It created unnecessary logistic support, staffing and technical training difficulties due to the wide variety of complex key equipment within the unit. Immediately 6 RAR reverted to a standard infantry battalion for low intensity operations in East Timor. Despite being

designed for a specific low level threat, *A21* failed to produce a battalion structure capable of adapting to a generic low intensity operation that actually occurred.

A21 took a reductionist approach to a problem and then designed a trial to prove the theory in a classic case of linear positive reductionism. It attempted to plan for a specific scenario and adapt that plan to different relativities. When the relativities do not exist it is not particularly useful to create artificial ones that unintentionally limit adaptability, versatility and flexibility. The *A21* process came close to generating a self-fulfilling prophecy of an Army capable only of “defending” northern Australia.

This example suggests that rather than planning for a specific contingency, force structuring should set parameters. In Australia’s case an example of parameter planning would be to set an upper capability limit on the spectrum of conflict, say mid intensity conventional operations. Budget then becomes the de facto force “size” driver. This would enable force structuring to focus on building complete brigades with some additional capabilities such as special forces, aviation and logistics. This plans for the general and adapts to the specific, which become more obvious over shorter timeframes. In order to adapt to uncertainty, operational units generally require simple, tall, compartmentalised, hierarchical structures with redundancy. This is essentially what the current White Paper calls for.

Relevance to the ADF

The examples above highlight the dangers of applying linear thought processes to non-linear problems. Perhaps the ADF’s most pressing internal task is therefore to be able to identify non-linear systems and generate appropriate solutions. The most important external task is to convince other stakeholders in the ADF, such as politicians, of the efficacy of this approach. The latter is a difficult problem because non-linear solutions tend to derive effectiveness at the expense of short-term efficiency. Chaos Theory provides a scientifically valid justification for the intuitive scepticism many ADF members hold towards efficiency driven “reforms” in operational units. However this

is not an argument against seeking efficiency in linear systems where efficiency also equals effectiveness.

Internally the ADF must find effectiveness driven solutions to non-linear problems and use efficiency as the focus when dealing with linear problems. Operations predominantly fall within the former category and this article has already hinted at some potential non-linear command, leadership and management solutions.

Anecdotal experience suggests that many ADF members intuitively think about operations in a non-linear way but lack the language and conceptual framework to justify their understanding. Chaos Theory, along with Complexity and Systems Theory can help to close this gap, but they can’t replace experience-based intuition. True professional mastery will always rely on a mix of experience and theory.

Further effort needs to be put into developing a more widespread understanding of operations in holistic, non-linear and dynamic terms. Much of our doctrine contains the seeds of non-linear processes that could be further developed by a greater appreciation of Chaos Theory. Many ADF members who read this article may indeed identify the relevance of Chaos Theory to their own areas of expertise. It is hoped that this article will help find non-linear solutions to non-linear problems by providing a basic theoretical framework and a language to debate these issues.

Conclusion

This article has combined Chaos, Systems and Complexity Theories to describe operations in a holistic, dynamic and non-linear manner. It has demonstrated that the closed, static and linear logic of the Newtonian paradigm is less appropriate for understanding operations. It proposed a relative paradigm to explain how systems interact in a competitive, non-linear and dynamic environment and applied that paradigm to three case studies to demonstrate various non-linear phenomena. Additionally it introduced the concept of parameter planning as a tool to overcome a lack of apparent relativity when conducting planning under great uncertainty.

The ADF is currently facing a plethora of non-linear problems that it is trying to manage

using linear tools. This highlights an urgent requirement to gain a greater understanding of non-linear and dynamic systems in order to develop holistic solutions. Chaos Theory and the associated disciplines of Systems and Complexity Theory provide a robust theoretical framework for understanding operations. They provide a persuasive case to shift the strategic debate away from efficiency and towards effectiveness. Chaos Theory provides a sound intellectual foundation to argue the case for many things that ADF members have only previously understood as intuition. Intuition is probably little more than the instinctive way our brain processes our experiences into cognitive non-linear patterns that are often indecipherable to linear reasoning.

In order to understand non-linear problems, such as operations, we must learn to think about them in a holistic manner. Chaos Theory provides an alternate theoretical framework through which we can gain such an understanding.

NOTES

1. M. Wheatley, 1992, Berrett Koehler, *Leadership and the New Science*, San Francisco, pp. 25-32. R.D. Stacey, 1996, *Strategic Management and Organisational Dynamics*, 2ed, Pitman, London p. 53 and J.F. Schmitt, 1997, "Command and (out of) Control: The Military Implications of Complexity Theory", *Complexity, Global Politics and National Security*. National Defense University, Washington, pp. 220-222.
2. Schmitt, *ibid.*, p. 220.
3. Commonwealth of Australia, 1998, *The Fundamentals of Land Warfare (LWD1)*, CATDC, Puckapunyal, Vic, pp. 2-5.
4. Reductionism is the process of breaking a problem down into its component parts and analysing the parts in order to extrapolate an understanding of the whole.
5. S.R. Mann, 1992, "Chaos Theory and Strategic Thought" in *Parameters*, Autumn ed., p. 55.
6. R.D. Stacey, 1996, *Strategic Management and Organisational Dynamics*, Pitman, London p. 55.
7. W.T. Anderson, 1995, *The Fontana Post-modernism Reader*, Fontana, London, p. 4.
8. J. Cottingham (ed), 1996, *Western Philosophy – An Anthology*, Part VI "Science and Method" includes David Hume's essay "Enquiry Concerning Human Understanding", extracts of Karl Popper's "Conjectures and Refutations" and extracts of Thomas Kuhn's "The Structure of Scientific Revolutions" which all offer strong criticism of the scientific method. Kuhn's work is regarded by many as the most important in changing the way that the scientific method is viewed—it introduced "paradigm" and "paradigm shifts" into the lexicon of epistemology.
9. Stacey *op. cit.*, p. 62.
10. T. Kuhn, 1962, "The Nature and Necessity of Scientific Revolutions" in *From Modernism to Post Modernism, An Anthology* ed., by L Cahoone, Blackwell, Malden Mass. 1996, p. 323.
11. D. Grossman, 1993 "Defeating the Enemy's Will to Fight" in *Maneuver Warfare – An Anthology* ed by Hooker R.D., 1993, Presidio Novato Cal., p. 178-181 discusses this impulse as does Beaumont R., *op. cit.*, *War, History and Chaos* Ch 6.
12. Sir T. Daly, LTGEN. Quoted in Commonwealth of Australia *op. cit.*, *LWD1*, P.1-1.
13. T.I. Sanders, 1998, *Strategic Thinking and the New Science*, the Free Press, New York, p. 60.
14. Stacey *op. cit.*, p. 249.
15. G.E. James, 1996, *Chaos Theory – The Essentials for Military Application*, Newport Paper no10., Centre for Naval Warfare Studies, Newport, Rhode Island p. 29.
16. A.D. Beyerchen, 1992, "Clausewitz, Nonlinearity and the Unpredictability of War" in *International Security*, Winter ed., pp. 57-58.
17. Handel describes the "rational calculus of war" in linear terms, whereas Dupuy dedicates his whole book to building a case for a predictive linear mathematical equation of combat. The Military Appreciation Process uses these Combat Effectiveness Values in its wargaming component of the Course of Action Analysis phase. Handel M.I., 1992, *Masters of War: Sun Tzu, Clausewitz and Jomini*, Frank Cass, London Ch7. T.N. Dupuy, 1987, *Understanding War: History and Theory of Combat*, Paragon, New York.
18. Stacey *op. cit.*, p. 275.
19. J. Gleick, 1988, *Chaos: The Making of a New Science*, Minerva, London p. 23.
20. James *op. cit.*, p. 30-31.
21. J. Shay, 1998, *Trust the Lubricant For "Friction" in Military Operations*, on www.belisarius.com The Boyd Cycle is the Observe, Orientate, Decide and Act feedback loop that competitive systems go through during competition. However it is in the orientation phase that a force makes sense of an observed action. This "sense" informs the decision and consequent action. Our orientation becomes the paradigm through which we decide and consequently act.
22. Stacey *op. cit.*, pp. 311-312.
23. A cursory look at world history will show that even during World Wars the majority of the

- world system was not directly involved in the conduct of operations even though it may have been affected by war. The zone of operations is limited to a range of possibilities where the contact between opposing operations is relatively small but extremely complicated. Whilst the Allies fought the Axis in WWII only a number of operational theatres were open at any time. Major efforts had to be mounted in order to conduct operations that directly clashed with each other. Such operations were focussed in a specific area at a particular time. The actual clash of operations was manifested in combat (an extremely creative and infinitely complex activity) which demonstrates the small part the clash of operations plays relative to the whole system but the complex and creative form it takes in that small area.
24. Stacey op. cit., pp. 312-321. For example peace efforts in the Middle East or Northern Ireland demonstrate enormous resistance to move the system to Peace whereas the assassination of Archduke Ferdinand demonstrates the potentially small impetus required to push a system towards war, the opposite may also hold true.
 25. Wheatley op. cit., p. 21.
 26. R.A. Beaumont, 1994, *War, Chaos and History*, Praeger, Westport p.xiv.
 27. Wheatley op. cit., p. 96.
 28. Beyerchen op. cit., p. 58.
 29. Stacey quoting von Bertalanffy op. cit. pp. 276 -277.
 30. P.M. Senge, 1990, *The Fifth Discipline The Art and Practice of The Learning Organisation*, Random House, New York. p. 7.
 31. Stacey op.cit., Ch 12.
 32. Stacey op.cit., p. 258.
 33. Orientation is relatively more important than observation in the process. Orientation creates meaning for the observed action and internalises feedback into our system. It has a direct bearing on the consequent decision and subsequent action that recommences the loop. It drives decisions even when it is inconsistent with the observation. An example is Percival's refusal to orientate to Japanese preparations for a landing on north-west Singapore. Orientation and action are more tightly linked than observation and decision. A Japanese diversionary raid on an island to Singapore's immediate north-east, "confirmed" Percival's orientation to defend the north-east. For a more detailed treatment of the relationships between elements of the OODA loop see L.P. Beckerman, 1999, *The Non Linear Dynamic of War* on www.belisarius.com
 34. Stacey op.cit., pp. 282-283.
 35. Australian Army Evaluation and Development Report - Officer (PR19) Part 3 Overall Assessments, Page 10, The Overall Opinion table banded officer performance into seven descriptive boxes which an assessing officer had to tick when rating a subordinate. All but two of the boxes were categories of "high" ratings. Feedback from various personnel agency authorities indicate that scores were tightly clustered around ever decreasing degrees of excellence thereby mitigating against the desired outcome of greater performance segregation. The simple (but non-linear) approach would have been to remove the section and the score attached to it.
 36. Stacey op.cit., p. 283.
 37. *ibid.*, pp. 283-284.
 38. C. Perrow, 1984. *Normal Accidents*, Basic Books, New York Ch 3 deals with this subject in detail.
 39. Stacey op.cit., p. 283.
 40. *ibid.*
 41. Sanders op.cit., pp. 69-70.
 42. R. Ruthen, 1993, "Adapting To Complexity" in *Scientific American* January ed.
 43. J.F. Schmitt, 1997, "Command and (out of) Control: The Military Implications of Complexity Theory" in *Complexity, Global politics and National Security*, National Defense University, Washington DC. p. 224.
 44. L. Von Bertalanffy, 1971, *General Systems Theory*, Braziller, New York. p. 69.
 45. W.B. Arthurs, 1993, "Why Do Things Become More Complex?" in *Scientific American* May ed., p. 92.
 46. *ibid.*
 47. von Bertalanffy op.cit., p. 52.
 48. K.E. Weick, 1990, "The Vulnerable System: An Analysis of the Tenerife Air Disaster" in *Journal of Management*, Vol. 16 No. 3, pp. 588-591.
 49. Perrow op.cit., pp. 3-12 describes these effects in great detail giving case studies such as three mile island nuclear accident and others. For more information read Weick K.E., 1977, "Organization Design: Organisations as Self-Designing Systems" in *Organizational Dynamics*, Autumn ed., pp. 31-46.
 50. Weick, *ibid.*, pp. 41-42.
 51. Weick "The Vulnerable System" op.cit., pp. 588-91.
 52. Stacey op.cit., p. 330.
 53. Perrow op.cit., gives a detailed insight into the possibilities in a number of real life case studies of catastrophes.
 54. Commonwealth of Australia, 1998, *Australian Defence Force Publication No. 6 Operations*, Director of Publications, Canberra. Ch 1 makes numerous references to the number of complex and dynamic and non-linear relationships that manifest themselves in operations. Ch 3 hints

- at the requirement to consider all elements of the operational art in the conduct of operations.
55. Beckerman op.cit., para 4.4.
 56. R.A. Beaumont, 1979, "Command Method: A Gap in Military Historiography" in *Naval War College Review*, Winter ed., pp. 61-65 discusses the fragmentary nature of incomplete information that results in delegation and reporting after the fact.
 57. D.A. Grossman, 2000 Presentation to Australian Command and Staff College, discussed the "tunnel vision effect" believed to be caused by the activation of the mid brain under the stress of combat. Weick "The Vulnerable System" op.cit., makes the same observation of pilots and aircrew teams under conditions of great stress not necessarily related to immediate personal danger but related to other issues such as expectation etc.
 58. H. Mintzberg and J.B. Quinn, 1996, *The Strategy Process*, Prentice Hall, New Jersey p. 12.
 59. Weick "The Vulnerable System" op.cit., pp. 577-578 discusses the role of stress in "cognitive narrowing" during a state of arousal, which reduces the number of cues available when a small stressful event interrupts an event resulting in "increased cognitive inefficiency".
 60. W. Cohen, cited in T.L. Thomas, 2000, "Kosovo and the Current Myth of Information Superiority" in *Parameters*, Spring ed., p. 22.
 61. *ibid.*, p. 23.
 62. *ibid.*
 63. Grossman op.cit., *On Killing* Sect III Ch 2 draws a direct correlation between breaking the will to fight and the distance from which force is delivered. The closer the more effective, whereas distant death tends to increase defiance and harden the resolve to fight.
 64. *ibid.*, p. 23
 65. R.H. Scales, 1999, "Adaptive Enemies: Achieving Victory by Avoiding Defeat" in *Joint Forces Quarterly* Iss No.3, Fall ed., pp. 9-10.
 66. A. Toffler and H. Toffler, 1993, *War and Anti War: Survival at the Dawn of the Twenty First Century*, Little, Brown and Company, Boston.
 67. M. Bowden, 1999, *Black Hawk Down*, Bantam Press, London, Cites a failure to appoint a ground commander and maintaining the overall mission commander in the air whilst superior headquarters in the rear watched on in real time. Pages 112-113 highlights how the mission and superior commanders saw "order" on their video feeds which was totally inconsistent with the "chaos" on the ground. This gave a false impression of the battlefield. Pages 157-160 and 227-228 also highlights that when the true picture was understood, in graphic detail at the superior headquarters, there was panic at the headquarters undermining the confidence of combatants returning to that location.
 68. G.R. Sullivan, Gen, cited in R. Pascale, M. Millemann, and L. Gioja, 1997, "Changing the Way We Change" in *Harvard Business Review*, Nov-Dec ed., p. 134. General Sullivan argues that the paradox of war in the Information Age is to enable lower level commanders to take command of the local situation rather than to try to over control the information and the situation.
 69. K.E. Weick, "The Vulnerable System" op.cit., p. 587.
 70. Bowden, op.cit., p. xx.
 71. E. DeBono, 1998, *Simplicity*, Viking, London. Whilst De Bono dedicates the whole book to the virtues of simplicity as the appropriate tool for dealing with complexity p. 242-243 stress the point that "...it is simpler to pay attention to one thing at a time when complexity is a problem".
 72. Senge op.cit., p. 9.
 73. Commonwealth of Australia, 1994, *Defending Australia: Defence White Paper 1994*, Australian Government Publishing Service, Canberra. Ch4.
 74. *ibid.*, pp. 48-52.
 75. Commonwealth of Australia, Army 21 Working Group, 1996, *Army in the 21st Century: A Force Structure for the Army of the Future, (final Draft Copy)* Department of Defence, Canberra p. 23.
 76. *ibid.*, p. 29.
 77. For example 6 RAR had an assortment of towed medium artillery, towed field artillery, mortars and four LAV-25s embedded into its trial structure mitigating against concentration of firepower at above section level effect.

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War as a Whole: Operational Shock and Operational Art

By Colonel J. D. Kelly

Manoeuvre Theory seeks ways to defeat the will of an enemy without having to destroy all its forces. Operational shock applies this thinking to the operational system of the enemy. A military operational system comprises its mission, its forces and the geographic space it influences. Operational shock aims to deprive this system of the ability to achieve its purpose and therefore enables us to move away from the need to destroy all of the enemy's fielded forces. It is therefore the core of operational art, which arose from the difficulty attendant on defeat of the nation-in-arms. The creation of operational shock is the organising idea behind operational design and the conceptual link between tactical action and strategic results.

The article discusses some aspects of operational design that may enhance the prospects of inflicting operational shock.

Operational Art

The new US JP 5 - 00.1 *Doctrine for Joint Operations* (Joint Chief of Staff, Washington, DC) notes that “theater-level campaign planning is mostly art”, that it is “inextricably linked with operational art” and is “primarily an intellectual exercise based on experience and judgment.”¹ Although JP 5-00 goes on to describe the processes that should be followed to facilitate the production of a coherent campaign plan nothing more is said about the “art”.

The nature of operational art, its elements and how experience and judgment can be developed to apply it are important questions that remain un-answered in the new doctrine. The purpose of this article is to discuss some of the ideas surrounding operational art in order—as far as possible—to clarify them.

This article is premised on the proposition that there is no operational level of war. Operational art is merely a function that needs to be performed. This function is concerned with the conversation between strategy and tactics, or ends and means. The difficulty inherent in killing all of the fielded forces of a nation-state has led to the need to sequence battles in such a way as to defeat the enemy by convincing them they are beaten rather than by killing each soldier. Operational art therefore involves the application of tactical forces to achieve a

moral outcome—the submission of the enemy. The concept of operational shock describes the moral disintegration being sought and is the core of operational art.

Sources of Operational Art

The German school of military theorists that emerged around the beginning of the 18th century saw war as a “giant demonic force, a huge spiritual entity, surcharged with brutal energy.”² Working from this premise, they came to the realisation that, to be understood and properly directed, war needed to be seen in the round. As Scharnhorst said; “one must habitually consider the whole of war before its components”.³ From this foundation, Clausewitz posited the theory that war was made coherent only by its political aim and that all effort in war should therefore be directed towards the attainment of that aim.

To have a war there must be a countervailing political aim; an enemy. These two aims in competition make war a clash of wills. All actions in war, all plans and all effort must be directed against the opposing will. Every tactical action should therefore contribute directly to strategic ends. The way forces are organised to achieve this, into theatres, fronts or joint task forces for example, is irrelevant. Analysis of the problem and approaches to its solution need to view war as a single entity—this is unity of

command writ large and suggests that analysis of war by levels is both wrong and, potentially, dangerous.

A discrete operational level of war cannot exist in theory. This contention accords with Clausewitz' understanding and is supported by the impossibility of the operational level having an independent existence—it needs both tactics and strategy. Strategies can be created without tactics and tactics need not be guided by strategy but operational art must have both to have meaning. Because it can have no independent existence it is necessarily reduced to a connecting function. Because it is only a function, operational art is not constrained to any particular level of command or size of force—every action, everywhere should be directed at strategic objectives.

Although it is possible to conduct discrete analyses of strategy and tactics to do so is dangerous. This is because “strategy only proposes while tactics disposes”. Returning to Clausewitz for a moment, he notes that: “...it is useful to emphasize that all strategic planning rests on tactical success alone and that – whether the solution is arrived at in battle or not – this is in all cases the actual basis for decision.”⁴ Therefore, although tactics should clearly serve strategy, strategic ambitions are necessarily subject to tactical possibilities, that is, the interplay of ends and means is a two-way conversation. Failure to reconcile strategic ambitions with tactical realities is a recipe for failure.⁵ War does not lend itself to analysis by levels.

It was easy for Scharnhorst to caution us that we needed to view war as a whole. In his day armies in the field seldom exceeded 150,000 men and generally fought under the eye of their commander—who was quite often the National Command Authority. In this context the interplay of tactics and strategy, or means and ends, was immediately visible and broadly comprehensible. From his time though, the impact of the French Revolution and the *levee en masse* led to a rapid increase in the size of armies. Napoleon invaded Russia in 1812 with 600,000 men; the Prussians invaded France in 1870 with 1,200,000 and again in 1914 with 3,400,000. As a result of this increase, the size of

the battlefield grew from a few miles wide under Scharnhorst to 500 miles during WWI. This meant that the means available grew faster than the ability of commanders to comprehend or control them. As a result, by WWI, the ends and means had become indistinguishable (provision of the means had become the ends of strategy) and war served itself instead of policy.⁶

The Schlieffen Plan of August and September 1914 provides a good illustration of the problem presented by wars between nations-in-arms. Essentially, the plan presented 51 German divisions marching into France in line abreast. It was an up-scale version of the linear battles of the Frederickan or Napoleonic eras (possibly leaning a little towards the former's oblique order). The key to victory was intended to be the ability of the Germans to continue to pour men and materiel into the resultant tactical battles at a rate that could not be matched by French mobilisation. As it eventuated, the physical limitations of marching infantrymen, logistics, machine guns and artillery were, in combination, sufficient to cause the Germans to culminate before French resistance collapsed.⁷ Even a mobilised nation-in-arms could not produce sufficient mass to rapidly overwhelm another nation-in-arms.

Whichever side you fought on, you didn't need to be a Clausewitz to realise that WWI had not gone well. It had led directly to revolution in Russia and Germany, and very nearly in France. It had changed the social and demographic structures of Europe and it had irrecoverably drained the power of the British to sustain their empire. Despite the sacrifice of several million men, it was sufficiently indecisive to require completion in 1939–45.

As a result thoughtful soldiers everywhere set about the task of identifying why things had gone the way they had. Basically, it was realised that modern nations could not be disarmed and defeated in a single climactic battle such as Austerlitz, or Jena. Wars had evolved to “a grander scale [taking] the form of a series of consecutive and mutually related battles conducted over a protracted period of time”.⁸ Operational art was an attempt to answer the question of how to defeat the modern nation-in-arms: of how battles might be combined to

achieve the submission of the enemy.

The German and Soviet Armies made a systematic study of the new conditions of war and some enthusiasts in the British Army, operating without official encouragement, made important contributions. Famously, the Germans produced what became known as *blitzkrieg* which was a tactical response to the technical conditions of WWI and which enabled the combination of tactical actions to enable large-scale rapid manoeuvre. There was no attempt by the German Army to doctrinally link *blitzkrieg* to the attainment of strategic objectives but the tactical excellence of the German Army, combined with careful and thorough education of its leaders, enabled the Germans consistently to demonstrate excellence in operational art.⁹

In parallel with the Germans the Soviet Army was dealing with similar issues but emerging with subtly different results. The Russians, with commendable thoroughness, attempted to establish direct doctrinal linkages between tactics and the attainment of strategic objectives. This had two results; for involving themselves in strategic issues the Russian theorists were purged by Stalin and executed but, of more lasting importance (at least to us) they produced the first, and still the most complete, conception of operational theory—which we know as deep operations theory. Reflecting the nature of the Soviet State and the impossibility of accepting substantial risk in pursuing its goals, the Soviet theorists attempted to codify the implementation of operational art. This necessarily constrained the creativity that commanders could apply to any particular problem and led to a heavy reliance on mass and attrition.

Despite these limitations, the completeness of Soviet deep operations theory means that it presents enough conceptual elements to provide the basis for an understanding of operational art and it has come to be accepted as the benchmark. However, the Soviet view of operational art reflects the strategic circumstances of the Soviet State and the limitations and strengths of the tactical capabilities provided by the state to the Army—efforts to transplant it in foreign soil need to be scrutinised carefully.

Although the Soviets made explicit each part of their conception and the linkages between,

while the Germans relied to a much greater degree on the implicit knowledge of their officer corps—the two theories are closely connected.¹⁰ The purpose of both approaches was to translate abstract strategic ends into concrete tactical actions. Operational art is the art of applying mechanical tactical means to achieving abstract strategic ends.¹¹

A digression into metaphor may help. In the case of a sculptor, the artist starts with an abstract idea: a conception of beauty or an emotion or a message. The artist then uses a hammer, chisel and a block of marble to give the abstraction a concrete form. So it is with operational art: the operational artist uses tactical actions and logistics to give concrete form to abstract strategic ambitions. The question the operational artist is required to answer takes the form, for example, of; “What sequence of tactical actions will cause X regime to collapse?” The study of history showed Clausewitz, and continues to show us, that war is able to assume radically different forms and that the way war manifests itself is determined by the interaction of the elements of the remarkable trinity, which he defined as:

- Primordial violence, hatred and enmity, that is, irrational forces;
- The play of chance and probability, that is, non-rational forces ; and
- Subordination to policy – that is, rational forces.¹²

Therefore, war is actually shaped by a mix of irrationality, non-rationality and rationality. It is therefore chaotic and is not amenable to scientific analysis—it requires constant adaptation to balance ends with means and possible costs with potential benefits. Given its underlying chaos it is therefore reasonable to treat operational art as “a system of expedients”: a series of opportunistic responses by educated leaders to the objective situations that they encounter. In this model the preparation of the leaders is intended to enable them to make the appropriate adjustments while keeping the strategic aim firmly in mind.

However, the stakes are high, the costs of misadventure may be unrecoverable and the process is even more complex than it first appears. Because war involves interaction between two

or more, essentially independent, Trinitarian entities and interaction with the enemy happens at three levels; strategic, operational and tactical, the task of comprehending the whole abstract reality is enormously difficult and the expression of appropriate concrete tactical responses only a little less so.¹³ As a result, some descriptive theory that helps prepare leaders for their role is desirable. The theory of operational art should not provide detailed guidance on what to do, but rather a number of tools to aid analysis of a situation with the response necessarily being left to the artist.

The role of the artist must be allowed to dominate. Naveh argues that “the prime requirement of operational command is creativity [which] implies the cognitive powers to deal with the complexities of abstract strategic aims and the ability to assemble a series of tactical actions into an abstract outcome” – which in nearly all situations will be the submission of the enemy.¹⁴

As a result of the above discussion it is possible to establish some criteria for “good” operational art. Good operational art would use innovation and creativity to apply force to:

- contribute directly to the attainment of strategic objectives or, at a lower level of accomplishment, set the conditions where their attainment is much more likely;
- maximise the strategic returns available from a given amount of tactical effort or, conversely, minimise the amount of tactical effort needed to attain a given strategic objective; and
- ensure that the natural tendency of tactical elements to focus on the fight does not draw them away from direct contribution to the attainment of strategic ends.

The next part of this article will introduce some of the concepts that might underlie the creation of an operation that meets these aesthetic criteria.

Limitations of Operational Art

Clausewitz wrote that “war is a free creative act resting on a clash of wills”. The principal limitation of operational art is that it attempts to resolve this clash by disarming the opposing will, that is, its objective is the destruction of the

ability of the enemy to fight. This can be achieved either by actually destroying the enemy’s military capability or by persuading the enemy to submit because such a result seems inevitable. Therefore, operational art is necessarily force oriented – it deals with the destruction, or threatened destruction, of military capabilities.¹⁵ The links between those capabilities and the will of the enemy may or may not be strong. “Foreseeing the consequences prior to the act’s materialisation requires creative faculties.”¹⁶ These creative faculties find expression in the selection of the aim of the operation, which is where the connection between the will of the enemy and our own tactical forces is articulated. However, in approaching operational art it has to be remembered that it is conjectural: the object of an operation does not necessarily flow from the attainment of its objective.¹⁷

Operational Shock

Manoeuvre Theory seeks ways to defeat an enemy without having to destroy all their forces. At the heart of Manoeuvre Theory is the desire to create a situation in which further combat by the enemy is so unlikely to yield victory that submission appears the only sensible option. Operational shock is a Soviet term for this state of disintegration of resolve. It is the concept of operational shock that connects the thinking of a large group of theorists including Sun-Tsu, Clausewitz, Liddell-Hart, Fuller and the Germans and Soviets of the inter-war years. Operational shock is a synonym for the effects that they all described as being the object of manoeuvre.

Understanding operational shock may be aided by a short excursion into Systems Theory.¹⁸ Briefly a system is a group of interacting parts functioning as a whole and having recognisable boundaries. Systems having a lot of parts are called complex systems. Complex systems in which the interaction of the parts is inconsistent—that is, in which the cause and effect of interaction is not entirely predictable—are said to have dynamic complexity. Armies are highly dynamically complex systems. Clausewitz perhaps made this point more simply when he described the affect on military operations of the interplay of chance, uncertainty and friction.

A military operational system comprises its

mission, its forces and the geographic space it influences.¹⁹ An operation can be characterised as a duel between two dynamically complex systems in which, generally, sense data is transmitted upwards and purpose and control are transmitted downward.²⁰ If the rival system can be sufficiently disrupted to prevent these flows it will be rendered incapable of functioning as a system. This condition may be called operational shock.

Operational shock results from depriving operational commanders of the ability to sense some or all of their environment or to exercise control over their tactical elements or both. The result is the inability of the enemy system to achieve its own objectives or to mount an effective response to our actions. This sets the conditions for the piecemeal destruction, or surrender, of enemy tactical elements acting without central coordination or convinces the enemy that further resistance is pointless. Either way, it disarms the will of the enemy.

The operational system can now be understood as a framework that connects an abstract purpose with mechanical tactical elements. Operational shock aims to deprive this system of the ability to achieve its purpose. Operational shock enables us to move away from the need to attempt to destroy all of the enemy's fielded forces and is therefore the core of operational art. It answers the question of how the nation-in-arms might be militarily defeated and is therefore the very essence of operational art.

Because it describes how a nation-in-arms may be defeated, the creation of operational shock is the organising idea behind operational design. From this basis it becomes easier to understand the relevance and interconnections of some of the other elements of operational design. The most important of these are discussed below.

Centres of Gravity

Doctrinally, the enemy's centre of gravity is the source from which a military force derives its freedom of action, physical strength, or will to fight.²¹ This is not very helpful and tends to generate tortuous discussion rather than add clarity. A simpler approach is to link the idea

of a centre of gravity with the operational purpose of the enemy. That is, the centre of gravity is that component of the operational structure of the enemy that enables the enemy plan to work.²² This means that the centre of gravity may change as the enemy responds to our own actions and to the development of the operational situation. The idea of a constantly evolving centre of gravity is harder to plan for but more completely expresses the dialectic of combat. It also explains the importance of a number of corollary concepts: including simultaneity, operational tempo and operational activity.²³

Simultaneity

If the enemy centre of gravity is going to change, probably unpredictably, in response to our own actions, we are left with the challenge of identifying an appropriate focus for the application of our own capabilities. The prospect of substantive changes in the enemy centre of gravity can be minimised if operational shock is imposed early. The simultaneous engagement of the entire operational depth and breadth of the enemy system may achieve this by committing each of its military components to individual combat—thereby over-stressing its ability to comprehend or respond and laying it open to defeat in detail. Simultaneity requires joint strikes to separate selected layers of the enemy hierarchy and to laterally fragment the enemy front thereby denying the opportunity for effective responses.²⁴

Tempo and Momentum

Tempo is the time taken to move from a start point to an objective. All military effects are transient. Moving quickly to exploit effects while they remain in place is fundamental to our understanding of the interaction of fire and manoeuvre. As the scale of manoeuvre increases, the number of interactions between operational systems also increases. As a result the concept of velocity is supplanted by that of momentum. Momentum refers to the mix of mass and velocity. High-velocity, low-mass forces (e.g. airborne forces) are generally unable to sustain tempo because of the effects of friction and vulnerability to enemy action. High-mass, low-velocity forces (e.g. WWI

infantry armies) are generally unable to sustain tempo because although they are more able to overcome enemy resistance, they give the enemy time to muster additional resistance. Momentum implies the mixing of forces, and the provision of successive echelons, to maintain tempo sufficient to invalidate enemy responses. Momentum enables the maintenance of tempo in order to exploit the effects of simultaneity. At the core of the maintenance of momentum are:

- **Interchangeability.** Napoleon frequently demonstrated that there was a degree of “interchangeability between shell and bayonet” or between fire and manoeuvre. That is, a deficiency in the size of a manoeuvre force may be partially offset by an increase in the effectiveness of the fires with which it is supported. The recent foray into Afghanistan provides a good example of the action of this mechanism. Application of the concept of interchangeability can enable the maintenance of momentum by imposing surprise or by removing critical logistic constraints as well as by killing a lot of the enemy. Interchangeability is only feasible within a set of parameters. All fire - no manoeuvre creates a WWII bomber offensive or a LINEBACKER approach that is costly in resources and time and may ultimately be pointless while all manoeuvre – no fire simply accepts the certainty of heavy casualties. The actual parameters that will impose themselves on interchangeability are determined by the nature of the opposing operational systems (mission, forces and battlespace).
- **Combined Arms.** Closely related to the concept of inter-changeability is that of combined arms. Combined arms thinking attempts to combine firepower, survivability and mobility in order to:
 - Create vulnerabilities in an enemy that can be exploited; and
 - Cover the vulnerabilities of certain components of the force with the strengths of another.

Operational art attempts to take the combination of arms up to the next level in which characteristics like effects, range and

duration of action are applied appropriately throughout geographic space and time in order to impose operational shock.

Operational Activity

The enemy operational system will attempt to respond to our own actions to both protect itself and attempt to seize the initiative. If operational shock has been imposed, respite granted to the enemy enables a measure of recovery. For these reasons the notion of an “operational pause” is absurd. The maxim “if you are not going forward you are going backwards” is apt. A good example of the impact of an operational pause is that flowing from the poor operational design of the allied advance across France in 1944. The logistic inability to support the over-emphasis on mass of the broad front advance with the consequent failure to maintain operational activity led directly to the Battle of the Bulge, Aachen and the Huertgen Forest. Over two-thirds of Allied casualties in the NW Europe campaign were incurred after the operational pause in September of 1944.²⁵ This failure can be contrasted with the Japanese success in Malaya in 1940. They used a combined arms approach and interchangeability to balance the size of the manoeuvre force with logistic capacity. As a result they were, narrowly, able to maintain operational activity for the duration of the campaign thereby denying the British any chance to recover to apply their superior numbers or logistic situation in order to regain the initiative.²⁶

Depth

Even in the era of non-linear tactics armies will still have rears so depth will remain important. Ultimately, resources and control flow forward from the rear and armies face their fronts. Attacks at the depth of the enemy’s operational layout have a paralysing affect and are profoundly threatening in themselves. The effect of this threat increases exponentially with the size of the force and the velocity with which it moves. It is unlikely that any army is able to turn to its rear and fight to re-establish its lines of communication. Deep operations represent a direct attack on the equanimity of the enemy and will therefore be at the core of any good operational manoeuvre. Attacks into depth need

not be aimed at encirclement but, in the absence of more psychologically compelling objectives, they may need to be. The latter had been used by the Germans in the constricted Western Theatre in 1940 while the former option was chosen by them in Russia in 1941 and 1942.

Operational Design

The preceding discussion of operational art can be summarised and further enlarged by outlining a sequence for operational design based on the following steps:²⁷

- Identify the Aim
- Create an Operational Vulnerability
- Hide the Vulnerability from the Enemy; and then
- Ram manoeuvre forces into the vulnerability.

Identify the Aim

The identification of the aim has already been discussed in some detail and is extensively covered in extant doctrine. The key points, worthy of reiteration, are that the challenges are:

- to identify what tactical actions will achieve the desired strategic outcomes; and
- the absolute need to achieve operational shock.

Failure to correctly identify the consequences of each facet of the operation at the strategic levels in both our own and the enemy capitals risks invalidating all actions taken subsequently. Failure to achieve operational shock accepts the likelihood of achieving a decision only through mutual attrition which will itself directly influence the strategic calculus. The operational commander expresses the aim of the operation as a series of theatre strategic objectives together with a concept that connects them.²⁸ Selecting the aim is a process that is best described with words like “creative”, “intuitive”, “artistic” and “genius”. It is therefore in territory that most soldiers regard as foreign—this presents the last and greatest challenge to selecting the aim for an operation.

Create an Operational Vulnerability.

A perceived enemy weakness is only useful if we can exploit it. This means creating an operational vulnerability has two aspects:

- The identification of a possible relative enemy weakness; and

- The development of our own ability to exploit it.

It would be unusual to encounter an enemy with an absolute weakness—a completely undefended part of the front or a key capability that is entirely exposed. In most cases weakness is relative, a portion of the front is less well defended than some other portion or some key capability is exposed to some forms of attack. It is the sum of these relative tactical weaknesses and strengths that will shape the subsequent scheme of manoeuvre.

Operationally our strength is measured by our ability to impose operational shock—and then exploit that shock to impose our will on the enemy. This demands a balance between tactics and logistics in order to achieve simultaneity, maintain momentum and maintain operational activity and will influence the selection of those weaknesses we will exploit as vulnerabilities.

Our actions will be directed at the enemy centre of gravity because defeat of that will defeat the enemy’s plan and thereby impose the systemic shock we are seeking.²⁹ If the enemy centre of gravity is weak with respect to our means of attack, for example the Iraqi Republican Guard in 1991, it can be attacked directly and disrupted (noting that the direction of our own main effort at an enemy centre of gravity that is similar in conformation is an acceptance of an attrition-based defeat mechanism). Alternatively, if the enemy centre of gravity is strong with respect to our means of attack it may need to be attacked indirectly to dislocate it. Dislocation can be achieved:

- geographically – by an operational turning manoeuvre forcing the enemy to fight reversed for example;
- functionally – by conducting a manoeuvre to which the enemy strength is poorly functionally adapted, such as some North Vietnamese operations south of the Demilitarised Zone 1964-75;
- temporally – by pre-emption (e.g. Pearl Harbor 1941, 1967 Arab-Israeli War) or attacks on the enemy’s decision making to deny the opportunity to employ the centre of gravity in a timely way; or
- morally – by precluding the enemy from applying its centre of gravity because

of the perceived impact of domestic or international reaction—this restraint may be imposed by inaction as much as by action.

Lines of Operation.

As the scale and ambitions of manoeuvre increase it becomes important to think in terms of lines rather than points. Operations may be geographically expansive and success at any point may not, of itself, be of much importance. Rather it is a succession of successes along a chosen line or lines that creates the fragmentation and collapse being sought. Guderian's advance from Sedan to Dunkirk in 1940 illustrates this point. Success at Sedan was not decisive, nor was defeat at Arras, rather it was the sum of wins and losses along the chosen line that created military strategic success: the separation of the British and French Armies together with the operational turning of the British and their subsequent retreat.³⁰ It should be noted that this plan called for the striking of a tactical strength (Sedan) to gain access to an operational vulnerability (the seam between the stationary and moving parts of the Anglo-French operational system) which enabled the imposition of operational shock on the enemy. It should also be noted that this was not a battle of encirclement (the *kesselschlacht* that emerged in response to the vastness of Russia) but rather one of raw penetration. Penetration into the operational depth of the enemy is the most complete expression of the clash of wills that underlies combat in that it threatens attrition rather than does attrition. In this context defeat becomes the state of mind that we are calling operational shock.³¹ The selection of those relative enemy weaknesses that will be developed into vulnerabilities should itself be based on the selection of a line of operation that seems most likely to meet the aim of the operation. They will therefore reflect not just enemy vulnerabilities but enemy perceptions of danger.

Hide the Vulnerability from the Enemy

The competition between the two contending operational systems will lead to constant mutual adjustments to cover weakness or exploit strength. Clearly planning and

preparation can be invalidated if weaknesses disappear before they can be exploited. As well as being a strong argument for high rates of operational activity, this creates the demand to hide vulnerabilities from the enemy.³²

At Kursk in 1943, the Soviets were aware of the impending German *Zitadelle* offensive and created a vulnerability firstly by establishing a deeply echeloned defence with massive artillery support and a Front earmarked for a counter offensive. These preparations were hidden from the Germans by concealment and deception (*maskirovka*). As a result the Germans expended their strength attempting to penetrate the impenetrable and then were subjected to a counter-offensive by an army group of which they were unaware. Failure to hide Soviet preparations from the Germans would probably have led to the cancellation of *Zitadelle* thereby significantly lengthened the war on the Eastern Front.

Another good example of this mechanism is Operation *Fortitude*; the deception measures taken to protect the amphibious landings at Normandy in 1944 (Operation *Neptune*). Having assessed that the balance of German strength and Allied capabilities made the Normandy beaches a German vulnerability, Operation *Fortitude* was mounted to hide the vulnerability from the Germans by convincing them that their real vulnerability lay elsewhere. This involved both concealment of preparations for Normandy and deception measures to strengthen existing German convictions. The result was that the landings exploited a vulnerability that remained un-addressed for the critical phases of the operation. Effective German responses to *Neptune* would probably not have altered the eventual outcome of *Overlord* but would likely have increased the time and casualties needed to achieve its objectives.

Maintaining a plan that Napoleon might describe as having many branches further supports the concealment of enemy vulnerabilities. For example, returning to 1944, the Allies' ability to lodge anywhere along the European coast prevented the Germans from concentrating their resources in one or two areas. Once the lodgement in Normandy had taken place, the German response was still constrained by

perceived threats to other areas. This idea of at least appearing to have a range of options is important in maintaining the initiative and relative freedom of action.

Ram Manoeuvre Forces into the Vulnerability

It is interesting that Naveh uses the non-doctrinal word “ram” to describe the operations of manoeuvre forces exploiting the vulnerability that has earlier been created and protected.³³ This is possibly because it more clearly expresses the intent and actuality than some alternatives like “launch” or “insert”. It is in this stage that tactical organisations will be committed to combat across the front and through the depth of the enemy’s operational layout. Not all of these actions will meet with success and to some extent, the hard work remains to be done. “Ram” is a pretty good description.

A range of strikes will be employed to support the achievement of operational shock. These include:

- Fragmenting strikes that aim to destroy the mechanisms providing cohesion, particularly between the layers in the enemy hierarchy. Possible targets include command and control nodes or mobile forces and reserves,
- Fixing Strikes that prevent forces from across the enemy front from cooperating to redress vulnerabilities. Actions such as demonstrations and holding attacks or attacks with limited objectives can be used to fix important elements of the enemy frontal forces; and
- Dividing Strikes that seek to isolate selected enemy organisations to enable their defeat in detail.

It is easy to say that operational shock will result from the simultaneous engagement of the enemy’s entire operational depth and breadth by a combined arms group incorporating operational fires (including cyber-strikes), vertical envelopment and ground manoeuvre to disrupt the flow of information and control through the hierarchy, destroy critical capabilities and deny effective enemy responses—but clearly there are a lot of things to fight and we are unlikely to have sufficient resources to do everything we might wish. There will therefore

be a need to build a main effort.

If the main effort is to maintain momentum and operational activity along the chosen line of operation into the enemy’s operational depth, it must be appropriately weighted and therefore it must have first call on all the resources of the operational commander. Acceptance of substantial weakness elsewhere is sensible if the main effort has sufficient weight to seize and retain the initiative. Even modest relative weakness elsewhere, however, may be fatal if the main effort is unable to retain the initiative and an enemy response eventuates. The Battle of the Bulge (1944/45) being an example of the results of the failure to create a viable main effort. Providing sufficient weight to the main effort is an imperative that cannot be sufficiently emphasised.

Conclusion

The idea of operational art was a response to the increasing scale and complexity of war. It is an historically based set of assumptions and presumptions that seem to make sense today: just as the cult of the offensive seemed to make sense to the French Army of 1900 and the Schlieffen Plan seemed to make sense to Germans of the same era. Like all military theory we should treat it with respectful caution approaching each situation with perfect objectivity and openness of mind. There is no role for zealots in the planning of wars.

The principal role of operational art is to reinforce the unity of the war by establishing the strongest possible connection between strategic ends and tactical actions. Good operational art therefore rests on understanding war as a whole and not as a hierarchy of headquarters with cascading responsibilities. War needs to be seen and fought in the round. This is the only way that war can truly become an extension of politics and not take on a life of its own.

Operational art attempts to use physical means (combat) to achieve psychological ends—the submission of the enemy. It is therefore mostly subjective and there are—beyond the laws of physics, no absolutes. It is almost entirely a realm for the interplay of intellectual, moral and cultural factors. There are more imponderables than facts and, despite the presumptions of the Russians that

there is only a very minor role for prescriptive theory. Operational art is truly an art.

The basis of operational art is tactical excellence. Even the most elegant design only has meaning if it can be properly executed. In the chaos resulting from the chance, uncertainty and friction of war, tactical excellence provides the bedrock from which ambitions may be projected into the future. The weakness of the Soviet Theory is that, in the absence of tactical excellence it replaced uncertainty with ersatz-predictability by accepting the certainty of massive casualties. The Soviet Theory displays operational cognition but leaves little room for art. The WWII German absence of theory displays great art resting on a foundation of tactical excellence.

Operational art was founded on the realisation that modern states could not be defeated by attrition. Operational shock is a term that best encompasses the alternative and, although it is taken from the Russian *udar*, equally reflects the writings of theorists from Vegetius to Liddell-Hart. In designing campaigns, how operational shock may be imposed, sustained and exploited provides an important cognitive tool for connecting abstract strategies with concrete combats.

As long as war involves a competition between humans it will primarily employ moral levers and therefore operational art seems likely to retain its relevance. Technology has an effect only at the tactical level and therefore cannot affect operational art whose only function is to connect technological combat with abstract desires. Whatever tactical assets there are to employ still need to be given meaning by the artist. The study of operational art therefore seems likely to remain at the core of the education of military leaders into the future.

NOTES

1. JP 5-00.1 *Doctrine for Joint Operations*, Joint Chiefs of Staff, Washington DC, 2002, p. ii-1.
2. Herbert Rosinski, "Scharnhorst to Schlieffen: The Rise and Decline of German Military Thought" *Naval War College Review*, US Naval War College, Newport RI, Summer 1976, p. 85.
3. *ibid.*, p. 103.

4. Carl von Clausewitz, *On War*, Ed and Trans by Howard. M. and Paret. P., Princeton University Press, Princeton NJ, 1976, p. 386.
5. The British plans for the defence of Singapore in 1941, for example, was based on a scheme of manoeuvre that called for actions by air, naval and ground forces that were simply inadequate for the task. Similarly, the Polish defence against German invasion in 1939 tried to hold all of western Poland with forces that were clearly inadequate. In both these cases all of the strategic ends could not be met by the means allocated. Failure to identify this deficiency was a failure of operational art.
6. This point is explored in depth in Chapter 11 of Wallach, Jehuda, *The Dogma of the Battle of Annihilation*, Greenwood Press, Westport Co, 1986.
7. It is interesting that the allied broad front advance across France in 1944 relied on the same concept of overwhelming the enemy with mass rather than with manoeuvre. As for the Germans 20 years earlier, the over-reliance on mass led to allied culmination in September.
8. Richard Simpkin, *Deep Battle, The Brainchild of Marshall M. N. Tukhachevskii*, Brassey's, London, 1987, p. 18.
9. Rosinski, *op. cit.*, p. 95 notes that the German Army's "broad approach to warfare [amounting to] a preoccupation with strategy, amounting at times almost to an obsession, ... has been its characteristic feature" since Clausewitz. For a description of how German officers were prepared and educated see J.S Corum, *The Roots of Blitzkrieg*, Kansas University Press, Lawrence, Ka, 1992. For an excellent description of the reasoning behind the development of *blitzkrieg* see T.T. Lupfer, *The Dynamics of Doctrine: The Changes in German Tactical Doctrine During the First World War*, Leavenworth Papers No.4., Combat Studies Institute, CGSC, Fort Leavenworth Ka., 1981.
10. This connection is acknowledged, with some reservations, in Savkin. V. E. *The Basic Principles of Operational Art and Tactics*, Moscow 1972. Trans and published by USAF. p. 50.
11. This statement stands without qualification. For reasons of convenience it may be decided to group tactical actions into major operations, campaigns or groups of campaigns within a theatre. However it may be decided to bundle tactical actions for management, there are grave dangers in allowing discrete analysis. The ends-ways-means connection needs to be seen as a single, indivisible, entity.
12. Clausewitz *op. cit.* p. 89 and E.J. Villacres,

- and C. Bassford, “Reclaiming the Remarkable Trinity”, *Parameters*, US Army War College, Carlisle, Pa., Autumn 1995, p. 3.
13. Because of the action of the remarkable trinity, Clausewitz saw that war would naturally tend to escape rational control. Operational art needs to take cognisance of the trinities of both combatants in order to ensure the continued connection between rational ends and the application of means.
 14. Naveh, Shimon. In *Pursuit of Military Excellence: The Evolution of Operational Theory*, Frank Cass, Portland, Or., 1997, p. 186.
 15. This invalidates the idea that operational art is strongly affected by whether a strategy of annihilation or erosion is being pursued. The role of operational art in both cases is to inflict costs on the enemy in a way, and with means that are consonant with the strategy.
 16. Naveh. op.cit., p. 19.
 17. In broad, the desire is to impose costs on the enemy that outweigh the potential gains to be had by a continuation of the present course of action. Clearly this calculus is based on a complex set of cultural and moral issues which may not be fully accessible to the operational commander. It also engages the enemy’s remarkable trinity which will further obfuscate the connection between action and outcome.
 18. The following discussion of Systems Theory is taken from: T.K. Adams, “The Real Military Revolution”, *Parameters*. US Army War College, Carlisle, Pa., Autumn 2000, p. 3.
 19. Soviet doctrine laid down three elements of the military operational system: mission, geographic space and “warfare” with the last including both military technical and military strategic components. This expresses more completely the complex interaction between the remarkable trinities of the combatants. To avoid excessively clumsy expression I have settled on “Forces” but it should be noted that this is intended to have a much broader meaning.
 20. A more highly evolved system is an adaptive system which: spontaneously self organises, learns and anticipates and displays the ability to exist at the balance point between rigidity and chaos. Interestingly, this describes a military organisation in which the full benefits of mission command are realised.
 21. The concept of a centre of gravity is taken from Chapter 4 of Book 8 of *On War*. In his discussion, Clausewitz refers only to strategic centres of gravity. It is possible that in applying the concept to the operational and tactical levels we are stretching the original conception beyond a reasonable limit.
 22. On this basis, the centre of gravity could be a specific military capability, a terrain feature or the ability to control the system—or, at different times, any or all of these.
 23. According to Naveh, centres of gravity do not appear explicitly in Soviet operational theory. (Naveh, op. cit., p. 19) Soviet theory does however place a great emphasis on depth with a view to placing large manoeuvre forces behind the enemy’s operational layout – that is – behind the enemy’s centre of mass in order to cause the enemy to fight reversed. Equating the centre of gravity with the centre of mass and then dislocating the centre of mass by deep penetrations is a viable approach if the attacking force has sufficient mass and can maintain adequate operational momentum. The lack of a Soviet conception of centre of gravity reduces the options for finesse and calls for a more massive and tactically attritional approach – but at the same time it reduces the operational and strategic risks attendant on being wrong.
 24. *ibid.*, p. 17.
 25. H. Essame, *Patton the Commander*, Batsford, London, 1974, Chapter 13 pp. 189-202 contains a succinct discussion of the broad-narrow front debate.
 26. Admittedly, this was a close run thing. Japanese culmination occurred simultaneously with British submission.
 27. S. Naveh, op.cit., p. 214 lists these steps.
 28. *ibid.*, p. 14.
 29. It should be noted that “defeat” is different from “destroy”. Denying the enemy the opportunity to use their centre of gravity – that is, to apply their strength – may represent the “acme of skill”.
 30. That the halt order before Dunkirk prevented the manoeuvre force from destroying the British Army reflects the impact on operational art of strategic control. It does not invalidate the artistry demonstrated by the *Wermacht* during this campaign.
 31. In 1944, Brussels was liberated from more numerous and less functionally dislocated German troops by a single tank battalion of the Irish Guards that marched in column to the city square. Defeat and victory were, in this case, purely states of mind.
 32. The Napoleonic idea of manoeuvring behind an “operational curtain”, as exemplified by Lee’s advance to Gettysburg shielded by the South Mountains, is an early articulation of this concept.
 33. Naveh, op.cit., p. 214.

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The Role of Command and Influence in Australian *Multidimensional Manoeuvre* Theory

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Multidimensional Manoeuvre is a complex concept to understand and apply. In this article I will critically examine the Multidimensional Manoeuvre approach seeking to explain the meaning behind the concept, and its broader relationship to historical Manoeuvre Theory.

“Influence”, is fundamental to effective Command where forces apply Multidimensional Manoeuvre. Thus, recognition of “Influence” is an important element in any future warfighting concept. As an alternative to relying on Command and Control (C2) based effective Command there should be utilisation of Command and “Influence” (CI) based effective Command.

ADDP-D.3 the Australian Defence Force’s Future Warfighting Concept affirms *Multidimensional Manoeuvre* as one of Australia’s key future warfighting concepts. The effective Command paradigm underpinning the application of *Multidimensional Manoeuvre* is C2 based:

Command and control capabilities will provide effective decision-making at all levels to synchronise assigned forces in a multidimensional campaign. This will involve balancing hierarchical command responsibilities with decentralised and concurrent actions in joint, combined and coalition situations.¹

Using examples drawn from the Australian Army *LWD-1 The Fundamentals of Land Warfare*, I will argue that in addition to C2 elements of effective Command, the notion of “Influence” can also be identified as an enabler of *Multidimensional Manoeuvre*. “Influence” is definable as “the effect of one person or thing on another”. “Influence” has both a controlling and forcible aspect, as well as a guiding or persuasive element.

Multidimensional Manoeuvre typically involves forces moving at speed. These forces may fall out of effective communications and control of superior commanders. Superior commanders can utilise “Influence” as a means to maintain force cohesion and command direction. Circumstances where this may occur

theoretically, are: Information Operations (IO) have reached technical limits, normal C2 arrangements have been compromised; the need to conceal a manoeuvre force; or normal C2 arrangements can not give the decision agility needed to enable manoeuvre. Explaining this argument I will relate *Multidimensional Manoeuvre* to the work of Richard E. Simpkins,² and unconventionally, the fighting philosophy of the Hong Kong martial artist, Bruce Lee.

Multidimensional Manoeuvre and Simultaneous Action

The Australian Defence Force’s *Future Warfighting Concept* describes *Multidimensional Manoeuvre* as:

Based on the Manoeuvrist Approach, which is already present in our current warfighting doctrine. This approach seeks to apply strength against weakness. It values surprise and deception. It requires an ability to act fast, to reach out to the critical place at the right time, and create simultaneous problems that an adversary cannot resolve.³

In essence, the *Multidimensional Manoeuvre* approach seeks to apply maximum combat power, and national power – against critical C2 nodes in an adversary’s organisation. Liddell-Hart’s thesis on operational art had strong references to what we now call *Multidimensional Manoeuvre*. Liddell-Hart conceived of military forces operating like nets that rely on movement and interdiction to engage adversary forces. Such action achieved domination of the battlespace, information wise and denied adversary forces

the ability to decide—and act on his or her own. Echevarria argues that contemporary military theory accommodates with the aid of Information Age technologies, “nearly simultaneous and continuous action”.⁴

Key to achieving *Multidimensional Manoeuvre* is utilisation of combined combat and other non-combat assets in Simultaneous Action designed to overwhelm an adversary. Classically, this idea is one of the oldest. For example, application of Simultaneous Action bears a strong relationship with older concepts such as – lines of march. Commanders adopted approaches that threatened multiple targets making it impossible for opposing commanders to concentrate their forces or attention.⁵

Multidimensional Manoeuvre like Network Centric Warfare (NCW) theory similarly presents a new paradigm that “assumes continuous change and dynamic interactions, rather than equilibrium as the norm”.⁶ Echevarria, notes this approach “more accurately reflects the dynamic and inter-dimensional nature of conflict in opposition to the Classical Paradigm’s linear analytical systems nature of military thinking”.⁷

The *Multidimensional Manoeuvre* concept is a composite notion, incorporating Simultaneous Action and manoeuvre. Simultaneous Action involves multiple actions initiated by a manoeuvre force all occurring within the same timeframe. Simpkins, in his book *The Race to the Swift*, made a convincing argument critical of Simultaneous Action. Simpkins did not deny the possibility of Simultaneous Action. He argued nevertheless, for success there had to be some type of electronic connectivity enabling C2 to overcome the human (Clausewitzian) factors of – fog and friction. If these were not overcome, Simpkins concluded a force attempting Simultaneous Action could be self-defeated.

Betts notes, in the Classical Paradigm “political decisions and military implementations should be discrete functions, sequential and independent”.⁸ The main impact of the Information Age has been systems integration, combining various communications into a single and seamless environment. The ability to collect, analyse, disseminate and act upon battlefield information becomes an enabler

of Simultaneous Action. Systems integration Frater and Ryan observe:

*Is the latest revolution—an information revolution centered on the concept that the dominant factor in war is the ability to collect, analyse, disseminate and act upon battlefield information.*⁹

Professional Mastery

Applying *Multidimensional Manoeuvre* requires a high degree of professional mastery. This objective fosters effective Command. For instance,

*The manoeuvrist approach relies on effective Command at all levels and through preparation for operations. Effective Command relies on career-long education and professional development, while through preparation for operations relies on realistic training.*¹⁰

Ironically, but aptly the fighting philosophy of the Hong Kong martial artist, Bruce Lee is relevant. Referring to Bruce Lee completes the transformation of 20th–21st century Western military thinking. At the heart of Boyd, and the US Manoeuvrist approach has been the military thinking of Sun Tzu and closely parallel ideas of Liddell-Hart notably his strategy of the indirect approach. These concepts at an operational level complement Bruce Lee’s approach to the martial arts, at an individual level.

Jeet Kune Do, literally meaning the “way of the intercepting fist” adopts the same philosophy as the *Multidimensional Manoeuvre* approach. Bruce Lee’s most famous rule was to “absorb what is useful, reject what is useless, and add what is specifically your own”. Closely parallel with the *Multidimensional Manoeuvre* approach, the followers of Bruce Lee’s fighting philosophy consider Jeet Kune Do to be a point of view, rather than a school or style of martial art. The key tenants of which—“no forms are taught, nor are set techniques designed to counter other techniques”. Bruce Lee’s adaptation of the Wing Chun principles – “essentials are to preserve the centre line” – was developed into the proposition, “by maintaining a constant rhythm and to begin by sparring immediately”. Similarly, the Australian Army Fundamentals manual states in regard to *Multidimensional Manoeuvre* that:

*The manoeuvrist approach seeks to shatter the enemy's cohesion through a series of actions orchestrated to single purpose, creating a turbulent and rapidly deteriorating situation with which the enemy cannot cope.*¹¹

An important similarity between Jeet Kune Do and the *Multidimensional Manoeuvre* approach is acceptance of, “no set rules or codified techniques exist for this art”.

The basis of Bruce Lee's famous “way–no way” was to use methods and techniques from all styles. The *Multidimensional Manoeuvre* approach, adopts exactly the same thinking, namely a no–systems approach. For example, the Australian Army Fundamentals manual states:

*The manoeuvrist approach is based on Manoeuvre Theory, which is a way of thinking about warfare rather than a particular set of tactics or techniques.*¹²

The Australian Army Fundamentals manual acceptance of the no–systems approach to *Multidimensional Manoeuvre* thinking, and reliance on professional mastery in part intends to overcome some of the fog and friction factors experienced in conflict.

This introduction leads to a key observation I want to make about the *Multidimensional Manoeuvre* concept. Namely, it applies at the individual level, as well as at the operational level. More specifically, an analogy with Bruce Lee's fighting philosophy of “way –no way” is a personalised expression of the *Multidimensional Manoeuvre* concept.

Current Doctrine Application of “Influence”

Using “Influence” approaches to achieve operational or tactical objects is established in Australian Defence thinking. Malone observes that IO is predicated on “Influence” strategies: *A further key factor noted was the rise of the so-called “CNN effect”, the pervasiveness of global electronic media and the influence that it exerts on public opinion, thereby shaping political and (therefore) military decision making.*¹³

Justifying, the utility of IO Malone notes that “Influence” enables a wide range of operational activities throughout the spectrum of conflict:

Experience and observation of peace

*operations demonstrated the utility of influencing the information environment at all levels of conflict, not just the middle to high end of the conflict spectrum. In particular, it was noted that a technologically inferior adversary might still have the ability to influence the information environment in their own favor, by exploiting the vulnerabilities and weaknesses of high technology systems.*¹⁴

The authors of the Australian Army Fundamentals manual observe that, “perception management contributes to defeating the enemy's will by purposefully manipulating human perceptions to obscure the real situation”.¹⁵ One of the methods recognised to achieve this:

*At the tactical level, killing or threatening to kill parts of the enemy's force will be a direct way of influencing the enemy's perception.*¹⁶

This example demonstrates “Influence” approaches in circumstances where there is no relationship between forces. The authors of the Australian Army Fundamentals manual use the notion of “Influence”, as demarcating the difference between direct control (as in C2 effective Command) of one's own forces, and affecting an adversary's behaviour. In relation to the history of the operation of the US National Command Authority Bash mentions “Influence” in relation to decision-making. However, he sees it as a “negative” in terms of Service bias permeating joint force planing.¹⁷

The notion of *Command Influence* is found in US military justice in relation to the administration of judicial processes. Defining the concept of *Unlawful Command Influence*, this arises where there is “direct contact” or guidance across separate command hierarchies (unit or military justice).¹⁸ Similarity, in the Australian context, the phrase “influence” is also used in relation to the operation of the *Defence Force Disciplinary Act 1982*.¹⁹ Like the US counterpart, identifies influence from “higher authorities” as improper affect on decision-making in respect to administration of judicial processes.

The notion of “Influence” clearly underpins Cohen's model for *supreme command*, except he uses the phrase “unequal dialogue”.²⁰

The concept of unequal dialogue entails that while there is a clear command and subordinate relationship, there is nevertheless, “privately blunt disagreement” and “tension” between superior and subordinates during decision-making. This Cohen justifies as the only reasonable mechanism to arrive at good decisions. The requirement for this argues Cohen is threefold: superior’s greater qualifications and responsibility; a means to overcome dissenting views or uncertainties from subordinates; and subordinates lack of ability to make good decisions.

The authors of the Australian Army Fundamentals manual give clear examples of “Influence” relationships at work between superior and subordinate command levels. For instance, *Mission Command* is understood as a “decentralised philosophy”.²¹ This approach gives a commander the flexibility “to apply centralised control when appropriate”.²² In other circumstances, once the commander’s intent is understood “subordinate commanders are given the freedom of action to achieve that intent with the resources allocated”.²³

Effective Command

The Australian Army Fundamentals manual identifies – “Command is the authority, responsibility and accountability vested in an individual for the direction, coordination, control and administration of military forces”.²⁴ Traditionally, the notion of Command is treated as inseparable from “Control”.²⁵ Sproles argues that the terms – Command and Control – have, “metamorphosed historically from being a phrase to being a compound word”.²⁶ Sproles point is that, C2 has evolved historically into a combined phrase, which carries all the various elements of effective Command. Sproles concludes, there is no point in trying to find meaning in either of the individual elements. The Australian Defence Force definition of C2 carries this same import,

*Command is the authority vested in an individual to control military forces, control is the process whereby commanders exercise this authority.*²⁷

The phrase–C2– also incorporates the notion of “communications”, which facilitates C2 by

allowing the ability to transmit orders. Sproles agrees with this connection, observing some of the core elements of the C2 concept incorporate Command arrangements, Command itself, or Command Support Systems.

The C2 concept essentially, has as its basis a hierarchical notion of information flow and decision-making. By way of comparison, network based organisation are identified as employing non-hierarchical based decision structures. Arquilla and Ronfeldt examining the operation of network based forces, developed the *Netwar* concept observing, “An archetypal *Netwar* actor consists of a web (or network) of disperse, interconnected ‘nodes’ (or activity centers)”.²⁸ Arquilla and Ronfeldt’s model of a network based organisation is described as structurally flat, meaning there is no single central leader or commander, with little or no hierarchy.²⁹ Arquilla and Ronfeldt note “decision-making and operations are decentralised and depend on consultative consensus-building that allow for local initiative and autonomy”.³⁰ Arquilla and Ronfeldt’s model develops the idea that, a mobilising factor for decision-making, “depends on a powerful doctrine or ideology”.³¹ The doctrine for such argues Arquilla and Ronfeldt:

*Can enable them [Netwar actors] to be “all of one mind” even if they are dispersed and devoted to different tasks. It can provide an ideational, strategic, and operational centrality that allows for tactical decentralisation. It can set boundaries and provide guidelines for decisions and actions so that they do not have to resort to a hierarchy – “they know what they have to do”.*³²

Arquilla and Ronfeldt argue that massive information flow gives individual elements embedded within network based organisations sufficient ability to act – without reference to each other, or some leadership. As well, a key element that also enables the operation of network based organisations, is the application of “Influence” based effective Command.

Opinion Leaders and Intermediaries

In 1953, Hovland et al. put forth the idea that factors such as expertise and trustworthiness were the main reasons convincing an audience

of veracity.³³ Influence Theorists established “that people base decisions on the information received from others whom are referred to as “opinion leaders”.”³⁴ It has been theorised, that the “opinion leaders”, influence audiences’ minds because of characteristics such as higher social status, special competences (such as greater experience in the matter at hand), dominant social position and special accessibility to other group leaders. Ironically, the status of opinion leaders may not directly correspond to effective chains of command. It may well be, that certain individuals are recognised as “opinion leaders”, even though they share the same rank position as everyone else.

Influence Theory identification of opinion leaders demonstrates the importance of selected people whose role it is to move and translate information around an organisation. For instance, Katz and Lazarsfeld argue that opinion leaders tend to be limited to “being leaders with a proficiency in specific issues”. In media studies the notional link between mass media communications and opinion leaders is the former are perceived as a source of message reinforcement, not a convincer. This is because people are understood as paying attention to that which they are already interested in, and have made a decision about, which opinion leaders reinforce.

The CI Approach

It is foreseeable that effective Command can rely on “Influence” as a means to organise force. Implicitly, the “Influence” approach underlying assumptions are that a force is well trained, highly professional and capable of self-organisation. This would also require a number of people spread throughout the force structure capable of leading or reinforcing other acting elements. The Australian Army Fundamentals manual gives the example, once the commander’s intent of how an “Influence” directed force typically operate: “Commanders are therefore required to train their subordinates in an environment that fosters initiative and mission command”.³⁵ The advice given in the Australian Army Fundamentals manual to commanders is encouragement to maintain personal contact with subordinate commanders during all stages of an operation.

However, this is not intended to be indicative of centralised control. In the sense that:

*Commanders and their subordinates must understand that command presence and personal contact are not meant to undermine trust and initiative.*³⁶

In particular, commanders “have to manage the temptation to interfere in their subordinates’ actions”³⁷.

Fundamentally, CI based effective Command relies on cultivation of trust-based relationships between commanders and subordinates. Called in military leadership – *referent power* – this is the power that subordinates give their leader because of a superiors’ competence, or because subordinates are attracted to the superior, admire them, and want to associate with them. In organisations that rely on CI based effective Command, referent power has an important role to play as a cohesive factor.

The qualitative difference between utilising CI based effective Command, and C2 based effective Command is that it advocates commanders release control to the point, that subordinate actions are independent – and actions are coordinated collaboratively and consultatively. Thus, “Influence” in CI based effective Command not only works downwardly hierarchically, but also upwardly and horizontally. This factor marks CI based effective Command fundamentally different from C2 effective Command.

The key features of CI based effective Command are that “Influence” would operate as the attractor and motivator for human-to-human organisation. The key functional question is *how far can the “Influence” model be taken?* Classically, the Napoleonic precept – *marching to the sound of the guns*, has clear CI underpinnings; largely to overcome information deprivation experienced in early 19th century armies. In more contemporary circumstances terrorist cells separated by ethnic, religious and national differences nevertheless operate as transnational confederacies without (or do not appear to have) any supra-command links. In which case, typical of network based organisations, these tend to rely on broad ideologies to motivate and direct, which operate as unifying and directing precepts, and which

have the effect of command links (even though there is no formal commanders in place). Importantly, these types of organisations tend to rely on opinion leaders or intermediaries, who play the role of organising coordination and direction of resources and objectives.

Utilising CI based effective Command changes the emphasis and function of doctrine. Conventionally, doctrine is the body of thought outlining the nature, role and conduct of armed conflict and providing didactically the essential foundations to train and educate. However, doctrine underpinning CI based effective Command plays a different function. It becomes a methodology for analysis. In this sense, it bears a closer relationship to the Jeet Kune Do approach, and as well places a high reliance on professional mastery.

IO Aspects of CI

The IO aspects of CI play an important role in thinking about the role of “Influence” in effective Command. Malone observes that the 1998 Headquarters Australian Theatre document *Decisive Manoeuvre*,³⁸ articulated the capstone concept of Decisive Manoeuvre. This notion was underpinned by the concept of Decision Superiority.³⁹ This was defined as the ability to make and implement more informed and accurate decisions at a rate much faster than an adversary can.

The IO aspects are important to consider. “Pushing” information about a force is an important issue for understanding the way effective Command operates within a force applying *Multidimensional Manoeuvre*. One of the key questions, for effective Command, is how important is direct communications between superior and subordinate forces. Alternatively, if we accept that effective Command does not always require direct control of forces, the question becomes – when do superior commanders see strategic or tactical advantages in allowing his/her forces independent action?

The flow of information within a system, organisation or space (the battlespace for instance) occurs in circumstances of a wide range of dynamic interactions between influencers and influencees. Simpkins’ analysis of WWII

German Staff Command observed that there was a highly complex relationship in existence between staff officers, where each consulted extensively with the other at the operational level as well as during battle planing. The point made by Simpkins is that, German staff officers displayed a symbiotic relationship with each other. In short, irrespective of position in the chain of command, each relied on the other in terms of information flow, interpretation and decision-making. Thus, Simpkins concludes that “Influence” flowed both ways in the staff command system.

Simpkins’ model of German staff workings presents an alternative to more classical notions of effective Command, as being a one-way downward flow of decisions. The Simpkins’ model has human-to-human interactions as manipulative, where staff officers discuss information, and consultatively make decisions. The end point made by Simpkins is that, these German staff officers made consistent decisions, because of a high level of social cohesion. Other key factors, highlighted by Simpkins were a high level of professional mastery, and the tendency to display a high level of decision consistency, largely because the staff officers tended to think along similar terms. The end affect, according to Simpkins was a highly flexible and organic decision-making process, which to the outside observer had all the appearances of effective Command.

CI Enabling Asymmetric Forces

The current Policy Guidance and Analysis Division draft – *Enabling Multidimensional Manoeuvre: The ADF Network-centric Warfare Concept*, announces that the crux point of it is producing the “effect” of disorienting and offsetting the adversary’s decision-action-cycle.

*It values surprise and deception. It requires an ability to act fast, to reach out to the critical place at the right time, and create simultaneous problems that an adversary cannot resolve.*⁴⁰

The Australian Army Fundamentals manual identifies:

*the chaotic nature of war results partially from actions by two forces that are constantly trying to dislocate or disrupt each other. This constant search for asymmetry leads to a dynamic and chaotic battlespace.*⁴¹

In the current Policy Guidance and Analysis Division draft – *Enabling Multidimensional Manoeuvre: The ADF Network-centric Warfare Concept* the object of fighting asymmetrically is advocated:

*Fighting asymmetrically can help to expose weaknesses in the adversary's strategy. This could involve playing by very different rules, or simply applying conventional military capability in a way that cannot be countered. Information can help us to achieve asymmetry by allowing a focused use of force.*⁴²

Exploitation of irrational logic gains asymmetric strategic advantages. The identification of non-linearity – logic (which is a requirement for chaotic behaviour), relates very much to Clausewitz' concept of "friction in war".⁴³ To explain the concept of asymmetric advantage, picture an asymmetric triangle, cut in two. The median line represents the point of contact between two adversaries. The deeper side represents the force which has achieved greater asymmetric advantage; in terms of a wider range of force and non-force options, that become more unconventional as we move away from the medial point along the line to the diminishing end-point. In part, theoretically achieving asymmetric advantages comes from "doing the unexpected" to adopting organisation or force types, which are unknown to the adversary. Arquilla and Ronfeldt's model of a network-based organisation is aimed at this type of approach as well, noting:

*Network formations can reinforce the original assault, swelling it; or they can launch swarm attacks upon other targets, presenting the defence with dilemmas about how best to deploy their own available forces.*⁴⁴

The Netwar concept demonstrates forces that operate collaboratively. This requires the ability to work relationally without the need for hierarchy, across organisational boundaries and regardless of location, thus giving potential

operational advantages.

A key advantage offered by the CI approach is that it enables fighting asymmetrically. Adopting a non-C2 based effective Command form, such as one based on CI could represent an asymmetric response to a C2 based effective Command. The logic being, if the object was to attack an opponent's C2 arrangements in order to break his/ her will to continue fighting, a CI based effective Command would not have a structure to attack, let alone designated commanders. Thus, it is worthy of consideration, in future simulations, what contribution CI makes to an asymmetric force?

Conclusion

I argue that to fully align the definition of effective Command with the *Multidimensional Manoeuvre* approach, would be to include the word – "Influence". Sufficient evidence exists to support the conclusion that as a future warfighting concept, it is relevant to examine the contribution CI makes to the effective operation of an asymmetric force. Thus, in forthcoming simulations there is a requirement to test this proposition. In addition to which, other questions which should be tested: what is the qualitative difference between CI based effective Command and C2 based effective Command? And, when can the CI approach be utilised and adopted?

NOTES

1. Department of Defence: Policy Guidance and Analysis Division (December 2002) *ADDP-D.3 Future Warfighting Concept*, National Capital Printing, p. 18.
2. R.E. Simpkins (1985) *The Race to the Swift: Thoughts on Twenty-First Century Warfare*, London: Brassey's.
3. Department of Defence, op. cit., p. 2.
4. A.J. Echevarria, (Spring 1997) "Dynamic Inter-Dimensionality: A Revolution in Military Theory", in *Joint Force Quarterly* (No. 15), Institute for National Strategic Studies: National Defence University, p. 33.
5. In the classical age of the campaigns of English Duke of Marlborough his ability to defeat his adversary rested in his adopting lines of advance that threatened multiple targets thus denying his advisory the ability to decide where to defend. Thus, Marlborough was able to achieve

- Information Dominance over his adversary through manoeuvre.
6. Echevarria, op. cit., p. 34.
 7. Echevarria, op. cit., pp. 33-34.
 8. R.K. Betts, (Autumn/Winter 2001/2002) "The Trouble with Strategy: Bridging Policy and Operations", in *Joint Force Quarterly* (No. 29), Institute for National Strategic Studies: National Defence University, p. 24.
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The German Army 1914-45: The Imperfect Military Learning Organisation

By Lieutenant Colonel Roger Noble

I am convinced – and will seek to show – that the Germans, uniquely, discovered the secret of institutionalising military excellence. And if I seem in any respect to be right, I hope that my fellow historians may probe deeper and find the detailed answers...Above all, if there are military security implications – as I so firmly believe – in such areas as management, training and decision making, then let us explore those with particular vigor and intensity.

Colonel T.N. Dupuy, *A Genius for War*

Robert Citino has rightly observed that “the military history of the past fifty years from Case Yellow to the almost bloodless Coalition triumph in operation Desert Storm, bears the deep mark of the German doctrinal revolution between 1920 and 1939”.¹ German military thought and doctrine pervades the thinking of most Western nations and tremendous resources and effort have been expended in trying to understand the German system. This article will bring together many strands in an attempt to reveal the key strength of the German military system – its ability to continuously, if imperfectly, adapt, evolve and innovate in peace and in war. For many theorists and thinkers, this will remain the pre-eminent collective skill of high performing organisations of the future.

The thesis presented in this article argues that it was the complete organisational system of the German Army that enabled it to turn experience and thought into qualitatively superior combat performance. The German Army of the first half of the 20th century provides a concrete, practical example of a military learning organisation in action. Initially, the article will discuss the scale and extent of German innovation by contrasting the environmental constraints placed on the German Army with its resulting organisational output – combat performance. The main effort of the article will then be focused on the operating system of the German Army and how it was able to tie together the various elements of vision, people, structures and culture to create an organisation that could teach itself. The case is developed using a broad combination of studies including the data of military historians, the work of organisational theorists and the observations of the emerging science of complex systems. Together these disciplines can be employed to explain the operation of a complex military organisation. The article will conclude by drawing enduring lessons concerning innovation from the German

experience, concentrating primarily on issues relevant to modern military organisations faced with the uncertainty of the 21st century.

Measuring German Innovation

To understand and assess German Army innovation it is necessary to gain an understanding of the complexity of the organisation’s operating environment. Contrasting the challenges of the operating environment with an assessment of organisational output over time strongly indicates the ability of an organisation to innovate and adapt. By defining innovation we can also technically identify the nature and extent of change that took place within the organisation. To complete an assessment of the power of German innovation it is important to examine overall organisational performance and ask to what extent the German military was able to achieve its organisational goals.

The Operating Environment

The first step in assessing the extent of German innovation is to gain an understanding of the conditions in which the German Army was operating during the period 1914-45. This timeframe spans two world wars and

two decades of relative peace. Analysis of this period indicates in both peace and war the German Army operated under strict constraints and continuous ongoing pressure from a variety of external sources. During both major conflicts the German Army was faced with quantitatively superior enemies whose combined national power greatly exceeded that of the Germans. As a matter of course, the Army operated outnumbered in men and resources and in constant contact with multiple enemy forces. During the interwar years the German Army faced a fluid, uncertain environment. The lessons of the First World War were unclear and the nature of future war was uncertain.² The 1920s were a time of rapid technological change that posed serious questions for post-war military organisations. Germany remained surrounded by recent enemies and political turmoil was the norm within its borders. The net result saw the German Army operating in an environment of uncertainty, change and relentless pressure to perform or be ready to perform. Adaptation and innovation were unavoidable if any organisation was to sustain superior quality performance in this environment. This situation has many similarities with the conditions faced by modern military and business organisations today.

Organisational Output: Combat Excellence

In terms of organisational output during the period 1914 to 1945 the German Army demonstrated a consistent qualitative superiority. This is a recurring conclusion of many studies of the German Army; including even such critical works as Mathew Cooper's *The German Army*.³ The analysis of Colonel T. N. Dupuy has attempted to measure the relative combat performance of various combatants involved and led to the following conclusion:

The record shows that the Germans consistently outfought the far more numerous Allied armies that eventually defeated them...On a man for man basis the German ground soldiers consistently inflicted casualties at about a 50 per cent higher rate than they incurred from the opposing British and American troops under all circumstances. This was true when they were attacking and when they were

*defending, when they had local numerical superiority and when, as was usually the case, they were outnumbered, when they had air superiority and when they did not, when they won and when they lost.*⁴

Colonel Dupuy found a similar superiority when he applied his technique to the First World War. These observations have been strongly supported by Martin Van Creveld's study *Fighting Power* where he compared the German and United States military systems of the Second World War.⁵ Historians who have focused on particular segments of the time period have supported these observations. One example is Lupfer's study on doctrinal development and performance in the Great War where he noted "the Germans generally displayed superior ability".⁶ Studies of comparative effectiveness of combatants have also noted the German superiority during the preparatory period of the interwar years.⁷ The superior combat performance is perhaps best illustrated by the years of tenacious defence and delay from 1942 to 1945 which have been called "an unrivalled achievement for any army".⁸ The general vision of sustained qualitative superiority in combat excellence is a strongly developed and widely held view and reflects an inherent capacity to adapt to a changing environment.

Innovation and Change

The superior relative combat output reflects the greater relative organisational success in adapting to the fluid, complexity of the operating environment. A RAND Corporation study of innovation uses the Germans as a benchmark stating, "military effectiveness rather than victory, is a more useful measure of innovative success".⁹ The general dictionary definition of innovation is "to bring in something new, make changes in anything established".¹⁰ Under this definition the German Army consistently demonstrated a continuous, progressive ability to adapt and change. Some notable examples are the elastic defence system of 1917, the infiltration or storm troop tactics of 1918, and the development of combined arms and close air support concepts in the 1920s and 1930s. These changes and innovations do not hang in space as isolated incidents but rather form a

continuous evolutionary chain. As Corum has observed they are “less a quantum leap than a natural evolution”.¹¹ This evolutionary change and ability to effectively interpret and apply experience and knowledge provided the core of the organisation’s consistently high combat standards.

Stephen Rosen in his study of military innovation *Winning the Next War* presents a demanding definition of innovation:

*A major innovation is defined as a change in one of the primary combat arms of a service in the way it fights or alternatively, as the creation of a new combat arm.*¹²

Under this definition fewer of the German changes and adaptations would qualify as innovations. The evolution of the combined arms tactics and the creation of the *Panzer* arm, however, remain a clear example of major innovation. Under this definition the early changes, such as infiltration tactics, form part of the chain leading to this major innovation. Under either definition the German Army can be credited with major innovative improvements to its method of warfighting that have been subsequently emulated by other military forces.

Organisational Performance: Achievement of Organisational Goals.

The German State was defeated in both the First and Second World Wars. The German Army’s role in national defeat has been the focus of much attention. The principal organisational errors in both conflicts centre on the German Army’s failure to develop achievable military strategic concepts and integrate this effectively with civil-political goals and leadership. As Lewis has said of the Second World War, “to combat 70 per cent of the world’s human beings and natural resources Germany required more than the Army General Staff”.¹³ The German Army demonstrated the ability to be decisively successful at the tactical and operational level with a series of dramatic successes such as the March offensives of 1918, the invasion of France and Poland, and operational successes in 1941. The German Army concept of *Kesselschlacht*, and the idea of decisive operational victory leading inevitably to strategic success proved to be inadequate in both 1918 and from 1941

onwards.¹⁴ Organisational performance at the military-strategic level proved ultimately limited in both world wars and contributed directly to the larger national defeat. The German State displayed a repeated inability to obtain a “strategic fit” between strategic ends and means. This indicates a failure to learn and adapt from experience. This reveals an imperfection in the German learning system that left the organisation unable to effectively deal with the complexity of the strategic level of war.

The German Army maintained a high standard of organisational output over the period 1914 to 1945. It demonstrated a consistent ability to innovate and adapt its thinking and practices to maintain a qualitative edge in combat performance. It failed to achieve its goals of victory at the military strategic level. Its concepts of victory and its ability to integrate with broader civil-political intentions proved limited in two world wars separated by 21 years. The German Army qualifies as an innovative, if imperfect, organisation. The German capacity to innovate is magnified when the demanding nature of the operating environment is considered.

The German Army Learning Organisation

The ability to achieve continuous adaptation, change and innovation lay in the complete or “whole” organisational system. Peter Senge in his work *The Fifth Discipline* has described the concept of the learning organisation. This perspective links effective change and innovation to a systematic process of organisational learning. In theory, the learning organisation operates in an evolutionary fashion continuously testing, changing and evaluating itself. It develops and sustains a process and culture of generative learning and self-assessment. This thinking led Senge to define the learning organisation as an entity that is “continually expanding its capacity to create its future”.¹⁵ This view of organisational action is invaluable in understanding and explaining innovation within the German Army. The organisational system developed people, prized knowledge and encouraged and facilitated the emergence of new concepts and ideas. This was transferred into concrete organisational output and corporate

learning through systematic self-assessment and a culture of continuous improvement. The end result was an organisation consistently able to adapt to uncertainty and maintain sustained high quality organisational performance.

Shared Vision.

At the core of all German Army organisational action was its vision, which has been described as “nothing less than a comprehensive approach to warfighting”.¹⁶ The vision is not articulated in any one source or document, although its essence pervades the capstone doctrine of the *Leadership and Combined Arms Battle, 1921*¹⁷ and *Troop Leadership, 1933*.¹⁸ The German vision was a comprehensive framework of ideas rather than the neat and familiar contemporary corporate style visions of the late 20th century.¹⁹ It can be explained through three, connected concepts graphically represented in Figure 1 – Organisational Vision. The German vision of the nature of war was the bedrock of the Army’s belief system and from it stemmed the German philosophy of command and leadership. Clausewitz comprehensively described the German vision of war and his influence proved profound and lasting both for German Army organisational development and Western military thinking.²⁰ Guderian explained that Clausewitz’s role was “to create a philosophy of war” that “played a great part in forming the attitude of mind of several generations of German General Staff Corps officers”.²¹ Essentially, the Germans

implicitly believed in the chaos and humanity of war. The characteristics of chance, friction, uncertainty, violence and danger defined the nature of war. From this picture of war the German Army derived three key ideas. Every situation in war was unique. Every situation in war was inherently unpredictable. The fog of war would also obscure the situation and information would always be incomplete. These three ideas embraced the inherent complexity and chaos of war.

This particular chaotic and human vision of war led logically to the German philosophy of command. Acting amidst chaos the commander needed to be “a man of action” who achieved organisational aims through the provision of three key elements; will, clarity of intent and the allocation of means.²² Will or “the faculty of conscious and deliberate action” combined with a clear and simple expression of intent provided organisational direction amidst chaos. This enabled subordinates to function and act decisively in rapidly changing circumstances. Finally, the commander exercised control through the allocation of means and the designation of a main effort. From this belief system logically falls the decentralised concept of *Auftragstaktik* or Mission-orientated orders.²³ This decentralised, human philosophy of command flows directly from and logically complements the German vision of the nature of war. It reinforced the central importance of the individual and through decentralisation,

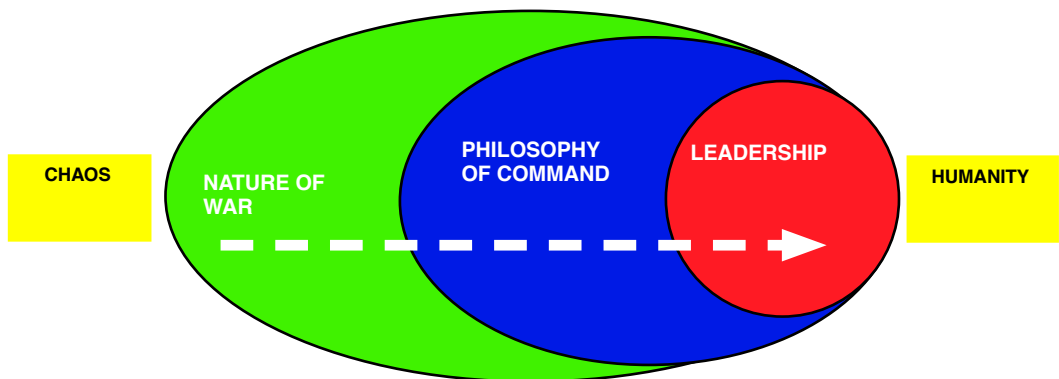


Figure 1 Organisational Vision

Serial	German Army Doctrinal Leadership Traits and Values	
	Leadership and Combined Arms Battle, 1921	Troop Leadership, 1933
(a)	(b)	(c)
1	Concern for subordinates first	Trust and respect of the troops
2	Be militarily knowledgeable	Knowledge
3	Be decisive	Ability
4	Firm Character	Strong will and forceful character
5	Take joy in responsibility	Joy of taking responsibility
6	Physical Fitness	

Table 1 *German Army Doctrinal Leadership Traits and Values*

empowered and challenged commanders from the highest to lowest level. Great organisational responsibility was necessarily devolved in order to achieve desired outcomes.

The final step in the vision was the binding concept of leadership. The decentralised philosophy of command relied on uniformity of thinking, reliability of action and confidence and trust between subordinates and superiors. The leadership method and ethos of the German Army formed the organisational “glue” that coherently bound organisational and individual action. The organisational system had to teach, grow and develop the traits and values necessary to prepare leaders to execute the decentralised philosophy of command. This is reflected in the doctrinal definition of German leadership which is focused on decision-making and is clearly a reflection of their belief in decentralised action:

*The true art of leadership is the ability to recognise when a new decision is required by the developments or changes in the situation.*²⁴

German leadership was built on the concept of character. The values and traits of “strong character” reflected the need to develop leaders capable of effectively operating in human chaos and exercising considerable organisational responsibility. The leadership traits listed in Table 1 – German Army Doctrinal Leadership Traits and Values, reflect this approach to leadership and the individual.²⁵ They emphasise the wide range of intellectual, moral, spiritual and physical aspects that were considered essential for success in the chaos of decentralised battle.

The German Army’s vision of chaos and decentralised action built on superior, quality

individuals formed the core of organisational thinking. An organisation built and focused on this key philosophical base could theoretically apply its qualitative edge to decisively shatter the will of individuals who were less prepared and focused. This vision drew the Germans on a logical path towards their conception of how to achieve victory. Success would be achieved through the destruction of enemy forces in the field. This vision of decisive operational action has been encapsulated in the tradition of *Kesselschlacht*, the battle of annihilation and encirclement, which gripped the German Army for 150 years. The vital role of vision was to provide a picture of war, how to operate within it and how to achieve success. The remaining elements of the organisation revolved ceaselessly around this primary vision to realise this shared image of the future

Personal Mastery: Preparing the Individual

The knowledge of the trade was essential, but it is work of an apprentice. The task of the journeyman is to utilise what he has learned. But the master alone knows how to handle all things in every case.

General Hans von Seeckt

Organisational success, according to the vision of the German Army, rested on the quality of its individuals. The organisation of the German Army was committed to forging and fashioning its members into masters of the art of war. The process of selection, training, education and development was primarily aimed at producing the individuals capable of realising the chaotic, decentralised organisational vision. The German Army required “personal masters”

who were able to attain “a special level of proficiency in every aspect of life – personal and professional”.²⁶ Personal mastery within the members of the organisation developed and refined the ability to think, design and conceive of ideas and concepts in the face of uncertainty in peace and war. The combination of selection, training, education and experience was the process through which personal mastery was achieved.

Exacting standards built on a combination of educational and personal qualities consistently drove selection processes, particularly for officers. Karl Demeter in his study of the German Officer Corps tracks the rising educational requirements for entry into officer training that were a consistent feature of the late 19th and early to mid 20th century.²⁷ The *Reichswehr* of the early 1920s saw officer entry standards at the highest level in the history of the German Army.²⁸ Selection for entry into the elite General Staff Corps training was based on detailed testing and external examinations.²⁹ The existence of selection standards throughout the organisation and a drive to maintain them, even under intense pressure, characterised the German Army’s approach to selection. Rigorous selection was the first step in gaining the individuals required and was followed by comprehensive, continuous training and education based on competition and standards.

The training and education systems utilised by the German Army were designed to build individual mastery and share corporate knowledge. The idea of knowledge and skill were critical concepts in German Army thinking. “The transition from knowledge to action”, said General Beck in 1935, “implies as its foremost presupposition the schooling and training of the spirit in the military disciplines”.³⁰ Field Marshal von Manstein saw the “great tradition” of training and leadership in the German Army as vital to its performance.³¹ He remarked that the training system was founded on severe selection standards, hard training, a tactical and technical focus and a wholly unbureaucratic spirit and procedure. All levels of training and education were grounded in realism, a tactical focus and a practical approach to teaching and learning. The values, knowledge and skills

required for decentralised operation in chaos were emphasised throughout the organisation. This is clearly evident through such diverse sources as various observations of Army commanders during peace, the reports of foreign observers and the syllabuses of numerous schools.³² Training with soldiers in practical, realistic situations was the central element of the German training system. Officer and NCO training also involved examinations, courses at branch schools and technical training at various national institutions. Training was also a continuous priority during war with the storm troop training program of the First World War and the post-invasion of Poland training effort providing two clear examples. The end result of this comprehensive, ongoing military training system was the development of a cohesive, educated officer corps and a skilled, capable NCO base.

The German General Staff were the elite element within the officer corps and were the most thoroughly developed personal masters. Through “similarity of thought process” amongst the General Staff, explained Guderian, the influence of the Army Commander could “pervade all formations down to divisions”.³³ In effect, they were masters of the art of war who were trained and expected to have unimpeachable behaviour, a talent for organisation, integrity of character, determination and military competence.³⁴ Distributed throughout the Army, they performed the role of passing information and sharing experience through channels other than the formal chain of command. The evolution of infiltration tactics during the First World War demonstrates this coordinating and facilitating role. Writing of Ludendorff’s role in the development of infiltration tactics, Lupfer claimed that his contribution was “his ability to harness the talents of so many to achieve such unity of effort”.³⁵ The General Staff system was a fundamental element in linking the Army and achieving this organisational unity. Dupuy has described the General Staff as “a collection of the best and most experienced minds of the entire Army, so organised and dedicated that they could collectively function as a single coordinated brain”.³⁶ Organisationally they fostered and represented the vision, they were custodians of

corporate knowledge and they bound and linked the Army through its width and depth.

Self-organisation

Self-organisation has been described as “the emergence of new entities or stable aggregate patterns of organisation and behaviour arising from the interactions of agents”.³⁷ Studies of military and corporate innovation have observed that decentralised, “bottom up” self-organising behaviour is a powerful stimulant for the emergence of new ideas. The interaction between people through informal teams operating across formal functional boundaries has resulted in new patterns of behaviour or concepts. Organisational rigidity, driven by fixed formal structures, rules and policies, has also been acknowledged as a potential impediment to innovation. The German Army enshrined the concept of self-organisation and avoided rigid structures through the concept of *kampfgruppen* or battlegrouping.

The German Army vision that every situation in war was unique led to the idea that each situation required its own specific solution. The German concept of battlegrouping was designed to provide ad hoc, task orientated, combined arms teams designed for each specific combat situation. The US Army described the German battlegroup as; “a unit of all arms and services under one commander for the accomplishment of a single specified mission”.³⁸ This flexible approach facilitated the emergence and evaluation of new or different ideas and enshrined decentralised, freedom of action for commanders at every level. The battlegrouping concept was applied doctrinally down to squad level.³⁹ Structural adaptation and improvisation became a basic characteristic of German Army operations. A US Army study of German Army action on the Eastern Front made the conclusion that; “the entire conduct of the war was one great improvisation”.⁴⁰ The self-organising combined arms approach is reflected in the balanced all arms structure of the German Army *Panzer* division. DiNardo has noted that even the formal structure of the German *Panzer* division rarely remained constant.⁴¹ The organisational impact of this doctrinal approach was to provide a mechanism for the

emergence, evaluation and refinement of new concepts. This organisational system mirrors the model developed by Sherman and Shultz, who claim that this level of flexibility “prepares the ground for both sustainable and inconceivable development...that can transcend the cycling relationship of rules and behaviours”.⁴²

Continuous Improvement and Self-Assessment

The addition of a systematic culture of continuous improvement and rigorous self-assessment applied over self-organisation and personal mastery developed an evolving process of generative learning. A variety of organisational tools were employed to test, evaluate and refine ideas thrown up by self-organisation and talented individuals. These tools included wargaming, a field manoeuvre system and a vigorous climate of intellectual debate conducted through military journals. The results of this learning were disseminated through feedback and distribution loops based on the General Staff and officer corps. The continuous process of testing, modelling and re-testing is diagrammatically represented in Figure 2 - Test-Model-Test (page 46). An example of the generative learning process in action is the evolution of storm troop tactics in the Great War. However, this process was imperfectly applied and the failure to scrutinise *Kesselschlacht* and other basic strategic beliefs provides an example of the organisational dangers of failing to continuously assess ideas and thinking.

The storm troop tactics employed in March 1918 were the result of a three-year learning process.⁴³ The German tactics combined intelligence and lessons learned from French defensive tactics, the writings and debate of line officers and formation headquarters, and the experimentation, training and combat experiences of flamethrower teams, assault detachments and special units. Lessons learned were collated and distributed through the chain of command and the General Staff. General staff officers published *The Attack in Position Warfare* on 1 January 1918 and instigated storm troop training across the Army. Lupfer concludes that the end result of this process was a standard of excellence in infantry tactics that few units in

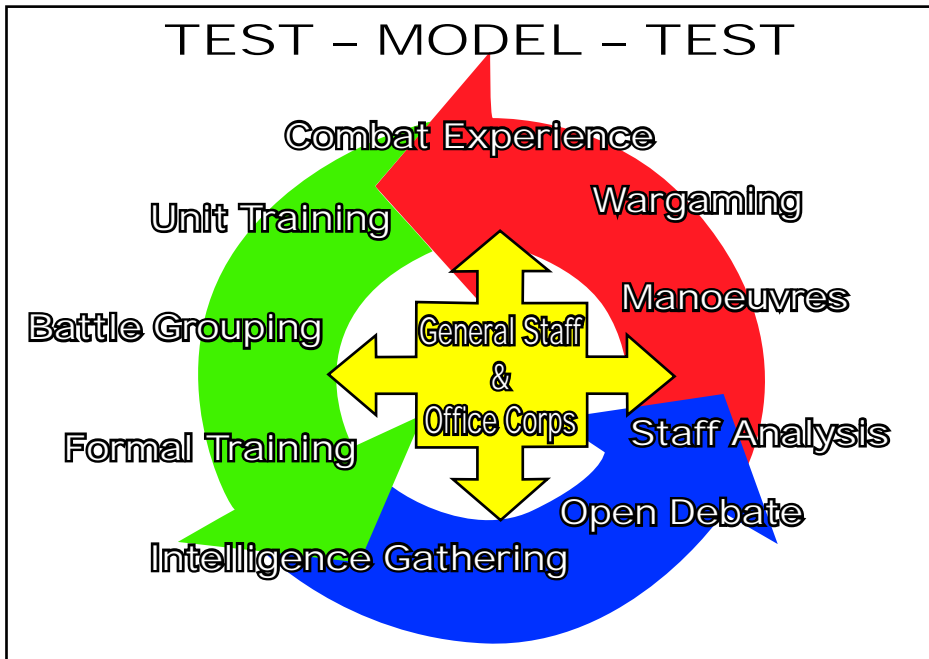


Figure 2 *Test-Model-Test*

the English-speaking world attained in the last century. He also describes the decentralised, collective learning process employed by the German Army:

*Individual talents and personalities were essential, but the doctrine emerged in an atmosphere where ideas were discovered and shared, not invented and arbitrarily imposed.*⁴⁴

The evolution of storm troop tactics did not end with the First World War. It informed, shaped and influenced the development of *Blitzkrieg* concepts eventually employed in the Polish and French campaigns of 1939-40. By September 1939 Gundmundson observed, “the fundamentals of *blitzkrieg* at both the tactical and operational level had been present in the German Army for almost a quarter of a century”.⁴⁵ Over this period the tactical ideas behind storm troop tactics, such as infiltration and penetration, were constantly spinning through the organisational system of analysis, debate and evaluation linking with the capabilities of emerging technologies. The evaluation process continued unabated even after dramatic success. “Before the dust settled across Poland”, wrote Lewis, “the German

High Command set to work evaluating combat experiences”.⁴⁶

This example demonstrates the manner in which the German Army combined tools of analysis and assessment with dynamic feedback and distribution loops to teach and learn. Wargaming, two-sided free play manoeuvres, staff analysis, intelligence gathering, combat experience and training all combined to ensure a continuous process of Test-Model-Test. The personal mastery of the organisation’s members and the self-organising ethos combined with this process of continuous improvement formed the heart of the learning organisation.

This rigorous approach was imperfectly applied to the entrenched belief of *Kesselschlacht* and the central importance of decisive operations against an enemy army in the field. Study of the strategic level and the broader aspects of national power were minor topics in the syllabuses of officer training establishments. Only a small number of strategic wargames were conducted during the interwar period. The German Army displayed a continuing reluctance to closely address the issue of civil-military relations and strategic planning.⁴⁷ Studies of the relationship

between the Army and Hitler generally detail the steady decline in the power of the Army's influence and the disintegration of its role in strategic decision making.⁴⁸ While tactics and operations were constantly under close scrutiny, strategic planning and the voracity of *Kesselschlacht* was largely isolated from the Test-Model-Test process. Despite the dramatic operational success of Ludendorff's 1918 offensives they proved a strategic defeat. This problem was to resurface in a devastating fashion with the culmination of German offensive action in 1941 despite a series of stunning operational successes. This failure to challenge a sacred part of the organisational vision constitutes a significant organisational weakness and supports those who claim that the German Army was too narrow, technical and imperfect in its approach to war.⁴⁹

Enduring Lessons for Military Innovation

The German Army experience from 1914 to 1945 serves to reinforce many of the observations of those who have studied military and corporate organisational innovation. The complexity and uncertainty of organisational innovation is reflected in the German Army's systemic, holistic approach to organisational action. The observation that innovation is often evolutionary, multilevel and long term in nature is supported by the German experience. The German Army has reinforced the central importance of a strong organisational culture, built on vision and anchored in values. It was able to "create a culture of innovation".⁵⁰ The importance of facilitating the emergence and trial of new concepts was vital to the German Army. This supports the general view that organisational rigidity and fixed mental and physical infrastructure can impede innovation while experimentation, risk taking and flexibility can stimulate new thinking. The German Army provides a practical example of the high performance, military learning organisation discussed in much modern theory. For all modern military organisations it demonstrates the essential link between creativity, innovation and the ability to sustain high quality military effectiveness.

A vital enduring lesson of the German Army experience is the power of taking a systemic approach to organisational design. It was the comprehensive organisational package acting with tireless chaotic vigour and bound by vision, people and values that explains the German Army's capacity to learn. The dominant organisational metaphor of the "organic whole", backed by the deep-rooted conviction that the "whole" determines the part, lay behind organisational action.⁵¹ Organisational planning was based on "the organisation of processes of continuous experimentation, exploration and rapid adaptation".⁵² The unremitting attention to the core business of generating combat excellence focused organisational action. A shared vision, backed by customised values, guided the development of people and individual and corporate knowledge. Combined this created an environment in which creativity was able to emerge and flourish. Flexible structure and the tools of evaluation, such as wargaming and exercises, were constantly employed to test and refine ideas thrown up by the organisation's people. While the German Army remained a traditional military institution it saw itself as a complex adaptive system evolving in a turbulent fashion towards a common goal rather than smoothly proceeding in an ordered, rational and highly centralised manner.

The power and cohesion of the organisation began with its approach to people and knowledge. Drucker echoes the thoughts of most organisational theorists when he says; "people determine the performance capacity of an organisation...no organisation can do better than the people it has".⁵³ For military observers the German Army demonstrates the fundamental role played by an officer corps within a modern military organisation. The German Army used the quality individual and collective knowledge of its officer corps as organisational leverage for change, adaptation and innovation. As Toffler has noted; "the highest quality power, however, comes from the application of knowledge".⁵⁴ The talent and abilities of the members of the German Army, stimulated, protected and fostered by decentralisation and freedom of action, were transformed into organisational output and performance under a collective,

shared process of continuous improvement. The power to be gained from giving organisational priority to people and knowledge is clearly evident from the German Army system.

Conclusion

Performance has been called “the ultimate test of any institution”.⁵⁵ The German Army demonstrated quality output and effective innovation through consistently high combat performance for almost 50 years. The “whole” organisational package encouraged the emergence of ideas and concepts that could be continually tested and refined through constant evaluation. This system generated an “open institutional space and atmosphere for creative experimentation”.⁵⁶ The German Army was able to systematically turn intellectual talent, knowledge and experience into high performance. The German Army example also shows the danger of failing to evaluate and question entrenched organisational beliefs. The inability of the German Army to adapt the doctrine of *Kesselschlacht* and to establish effective processes for civil-military cooperation at the strategic level proved to be a recurring failing. Acknowledging this weakness, the German Army of 1914-45 provides an enduring, if imperfect, benchmark for a comprehensive military organisational approach to coping with complexity and change.

The enduring lesson for modern military organisations is the innovative power of a cohesive officer corps focused on knowledge and performance. Knowledge and people were the dynamic element of the 1914-45 German Army. This approach generated a remarkably adaptive and creative system. The German Army maintained a strong collective culture in which the individual remained a dynamic, decisive force. Through this focus on quality people, knowledge and output the organisation was able to deal with uncertainty by building an environment in which effective innovations could emerge and continuously evolve. This organisational skill in learning and adapting enabled the German Army to deal with complexity and chaos in peace and war. Finally, it demonstrates that it is indeed possible for a formal, traditional hierarchical organisation

to achieve continuous learning and change in the face of the daunting complexity and uncertainty.

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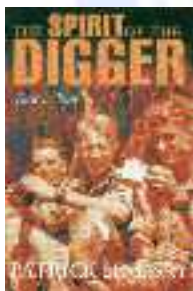


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Reviews

THE SPIRIT OF THE DIGGER – THEN & NOW by Patrick Lindsay, Macmillan Paperback, 314 pages, RRP \$30.00 (inc. GST)

Reviewed by Lieutenant Colonel Chris Field



WWI historian Charles Bean reported that the word “Digger” for an Aussie soldier was common amongst the ANZAC troops in France in 1917, and suggested it originated with New Zealand gum-diggers. With that said, ADF members, and the wider Australian community,

should not be concerned that this book is in any way Army-centric. Patrick Lindsay, from his opening chapter on the localised Australian civilian responses to the 12 October 2002 Bali Bombing, goes to great lengths to explain that the term “Digger” is synonymous with being Australian:

All Australians have the spirit of the Digger within them. In times of crisis – terrorism, bushfires, floods, accidents, disasters, conflicts – the spirit shines through. It’s a spirit we must cherish.

This is a book written from the heart, and Lindsay brings emotion of Australian achievements through with every chapter, supported by useful maps, spanning pre-Federation; Gallipoli and the Western Front in WWI; North Africa, New Guinea, and POWs in WWII; Korea; Vietnam; East Timor; and Iraq in 2003. This emotion is supported by insights from, among others, General Cosgrove, Major General Lewis (Commander Australian Special Operations Command), and WO1 Wally Thompson (former RSM of the Army).

Apart from historical interest, Lindsay helps put into perspective the qualities that we Australians value from our Diggers and, on reflection, from ourselves: “mateship, courage, compassion, endurance, selflessness, loyalty,

resourcefulness, devotion, independence, ingenuity, audacity, coolness, larrikinism, and humour.” In this complex post-September 11 world, it is important that the ADF seek its origins in order to more clearly understand our future. Indeed, reading the magnificent feats of our forebears reminds us that, usually young, Australians have always achieved much, without the benefit of abundant resources or luxurious environments.

It is common for people to compare today’s generation of Australians with generations previous. Lindsay is able to draw this thread into a conclusion that today’s Australian remains a formidable person. That said, WO1 Wally Thompson sees the ADF playing a significant role in defining Australia and Australians:

Larrikinism is a bit of spirit. In many ways our country is drifting away from that. We’re getting a bit more selfish in our ways and I think the military pulls people back into reality and says mate you’re not as good as you think you are – it’s a great leveller.

Lindsay makes a powerful observation when he speaks of our Diggers as contradictions:

...he doesn’t crave war yet he will fight with unequalled ferocity; he hates spit and polish but will hold his discipline under the most trying conditions; he is tough yet compassionate; he hates his enemy until he surrenders, then he is generous in victory; he despises histrionics but will cry unashamedly at the loss of a mate; he believes he’s invincible but he’s not afraid of death; he will refuse promotion but unhesitatingly take command in a crisis; he will poke fun at his leaders but defend them with his life; he represents an arm of the nation’s authority, yet he hates authority.

Lindsay develops some good advice for all leaders within the ADF. He reminds us that “there is a sense of instinctive leadership in the Digger: a strange dichotomy in which many Diggers are content to allow someone they respect to lead them while, at the same time, maintaining a sort of ‘watching brief’

on them". Useful comparisons are also made between Australia and other nations, including Britain, Turkey, Germany, and the United States, regarding their approaches to leadership and warfighting.

The only real criticism of Lindsay's work could be that it is a little too effusive and jingoist. There is little criticism of our Diggers. After all, we Australians know we are not perfect and we, as military professionals, need to remain pre-eminent warriors in order to succeed in increasingly complex environments. Lindsay could have extended his great base of compliments into some powerful constructive criticism of the modern ADF, and the Digger as a warfighter.

Finally, the words of Charles Bean perhaps help the ADF put into perspective the real success of the Australian Digger that continues to the present day:

Actually it was discipline – firmly based on the national habit of facing facts and going straight for the objective – that was responsible for the astonishing success which first gave other nations confidence in Australia, and to the Australian nation confidence in itself.

SIMPLY HELL LET LOOSE by Department of Veterans' Affairs, ABC Books, RRP: \$29.95

Reviewed by Air Commodore Mark Lax



"We advanced and the Boers let some of our men get up within 200 yards before a shot was fired then it was awful, the bullets hissed and pinged everywhere and the large shells screaming overhead. It was simply hell let loose..."

So the title of this book springs from Mr Charles Haslett, a civilian dispatch rider and news agent who served in the Boer War. It is taken from one of his letter home to his father.

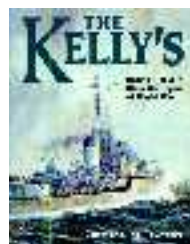
Thousands of books about every facet of war have been published over the years and many offer personal insights into conflict, or

recollections of what it was like to be "there". As part of Australia's Centenary of Federation, the Department of Veteran's Affairs and the ABC combined resources to capture the memories of many Australians who had served as part of our growing interest in our history and tradition. In fact, it was the 2001 ABC series *Australians at War* that was the genesis of this book. Of the 1,800 responses to appeals for assistance, 43 vignettes were selected by DVA staff and are now provided in this 235-page collection.

Apart from the stories, the card-covered volume only contains a foreword by the Minister, the Hon. Danna Vale, MP and a two-page introduction and contents list. There are a number of scattered black and white illustrations, mainly of those whose stories are presented, but no appendices or index. This does not detract from its value. Each chapter is a short, very personal account, presented in chronological order from the Boer War and ending with Sergeant David Hartshorn peacekeeping in the Sinai in 1994. Some are simple, anecdotal tales provided by relatives and friends. Each is unique with a fair spread of coverage – six wars and later peacekeeping, Service and civilian, male and female. There is even one unusual inclusion from the Crown Solicitor's Office about how the term ANZAC was protected after 1915. Such is the essence of this book. A light but enjoyable read, and recommended for those interested in Australia's collective wartime experience.

THE KELLY'S: BRITISH J, K AND N CLASS DESTROYERS OF WORLD WAR II by Christopher Langtree, Chatham Publishing, London, 2002, 224 pages. Illustrated with photographs and drawings, Index

Reviewed by Commodore James Goldrick



The Kelly's is a substantial work and something of a labour of love by Christopher Langtree. The author has sought to present the design and operational history of three classes of destroyers, the J, K and N class which

served not only in the Royal Navy, but the RAN, the Polish Navy, the Royal Netherlands Navy and even the Navy of the new Indonesian Republic. Their front line service in World War II was second to none and they suffered accompanying losses. The book is named after the best known (or perhaps most notorious) of the class, the flotilla leader *Kelly* which was commanded by Lord Louis Mountbatten. Brought safe into harbour with heavy damage following an epic of seamanship, the *Kelly* was repaired only to be sunk in the Mediterranean during the evacuation of Crete in 1941. By 1945 only two of eight J class and two of eight K class were still afloat. The N class, later to commission, but nevertheless still heavily engaged in the war at sea, were more fortunate, with only one – HMAS *Nestor* – being destroyed.

The K class design was arguably the most handsome destroyer produced by the British. In 1939, it certainly represented a balance of qualities that compared more than favourably with other navies in all but a few respects. The K class were heavily armed for surface warfare, fast and weatherly and very manoeuvrable with a low silhouette and a remarkable ability to absorb damage. They suffered from a main armament with a restricted elevation, which limited its AA capabilities, an equally inadequate AA fire control system (a deficiency suffered by all British ships), and, for the first part of their lives, insufficient light anti-aircraft weaponry. Equally to the point for the Atlantic and the Pacific – and very much a concern for the RAN – they possessed inadequate endurance. Both HMAS *Nestor* and her Polish sister, *Piorun* were forced to withdraw from the *Bismark* operation through a lack of fuel, although the latter did take part in the destroyer attack on the German battleship. It was the lack of fuel capacity which caused the RAN to exchange its remaining N class for three Q class in late 1945 – the smaller gun armament of the latter had allowed additional fuel tanks to be installed.

Langtree's text is solid and stronger in its narrative than its analysis. Most of the very comprehensive history of the activities of the 24 ships of the study is based upon reports of proceedings and there have not been many efforts to analyse individual actions. Nevertheless,

especially for those who have an interest in those who served in particular ships, the book does give a very clear picture of just what it was that each unit was doing. The photography is excellent, with a large number of photographs which I have not seen before, and it is accompanied by equally high quality drawings by John Lambert and colour profiles – to show the various paint and camouflage schemes – by John Roberts. These combine to make the book equally useful for modelers and students of ship design.

The research has been thorough and well judged. This reviewer's only correction of fact would be to Langtree's declaration, based on Dutch sources, that the N class destroyer transferred to Indonesia in 1951 as the *Gadjah Mada* "shortly afterwards ...struck a reef and was declared a total loss". Although Langtree is accurate to suggest that the ship was scrapped circa 1961, she was active in operations against rebels as late as 1958 and was only paid off when the Indonesian Navy received its first influx of Soviet built destroyers.

In all, *The Kelly's* is a handsome book that will give much pleasure to those who served in the three classes of the group and to their relatives and descendants. From the Australian perspective, the book has much of value for those interested in the RAN's five N class. It is also a useful contribution to naval history in a more general sense through the sheer amount of information that it contains and its first class use of illustrations.

FROM ENEMY TO FRIEND: A North Vietnamese Perspective on the War, by Bui Tin, Naval Institute Press, Annapolis, MD, 2002, 240 pages, 22 photos. Available online at www.NavalInstitute.org. US\$24.95.

Reviewed by Wing Commander John Steinbach



Bui Tin was a colonel in the North Vietnamese Army (NVA), having joined Ho Chi Minh's revolutionary forces fighting the French in 1945, going on to participate in the decisive battle at Dien Bien Phu. He also served as a frontline commander and

war correspondent against American forces and Pol Pot's Khmer Rouge. Those experiences provide the material for the reflections offered on the long, long years of war endured by the Vietnamese people. In style, the book is written as responses to some hundred questions starting with "Can you describe the evolution of U.S. – Vietnamese relations between the end of the Second World War and the present?" to a request for some general conclusions regarding the major issues from the North Vietnamese point of view, because Tin, now living in France, is in a position to express his opinions freely. In between we are given insights into how the NVA viewed the build-up of US troops, the NVA's reaction to the first major engagement with US forces in 1965, how the NVA adapted its tactics to counter the overwhelming firepower, technological superiority and the reasons for the eventual American defeat. On this point, and this has been the focus of many studies, including those conducted by the US military itself, they are nevertheless worth repeating as the major lessons drawn from the war. Firstly, because Vietnam was always a non-vital strategic interest to the United States, it was not possible to convince a majority of people to support a distant, protracted, difficult war, costly in terms of American lives and expenditure. (With high levels of public support seemingly essential, it is no great mystery why the White House and Pentagon now go to great lengths, to put the right spin on their war intentions.) Secondly, because it was an undeclared war, tour and mission limits were applied: one year for conscript soldiers and 100 sorties for pilots. By the time any experience was gained, it was time for them to think of keeping safe and leaving Vietnam in good shape. Thirdly, the United States did not enjoy the support of many important allies, the prime ones being Britain and the recidivist French, de Gaulle asserting that in the end, it would fail. Fourthly, the common people of Vietnam were fighting for their independence while Southerners were

always viewed as collaborationists working with a foreign power impeding that. Finally, Tin argues that the leadership of South Vietnam had no real talent, the one exception being Ngo Dinh Diem, who President Kennedy ironically, ordered to be "removed". Thus began a period of political instability that lasted until the collapse of the south in 1975.

Bui Tin sees his role as one of sincere reconciliation. Many of the photographs show him in the company of former American combatants, from General Westmoreland and Senator John McCain (a USN pilot who was captured and spent a number of years as a POW), to presidents and former US POWs. He has participated in many conferences on the war, and has a long association with the Vietnam Center at Texas Tech University in Lubbock.

The Foreword to the book is written by James Webb, a past Secretary of the Navy and marine who served in the war, who does not necessarily agree with the author, particularly on the subject of the quality of American soldiers, concedes that the use of overwhelming air power in the North, particularly the "shock and awe" Linebacker II campaigns, had the opposite effect of what the Americans intended to achieve. Webb says he would have liked to have heard from Tin more about communist atrocities in the North and South and goes on to reinforce Tin's own disappointment that reunification did not lead to the population being given greater freedom, and that the harshness dealt out to many Southerners in the "re-education" camps was unnecessary. These and other factors led to Tin's self-exile in France. Highlighting such negative issues only underscores the continuing American resentment of the Vietnamese even though, as a Chronology after the last chapter shows, relations between the US and Vietnam were normalised in 1995. This may also explain why the Naval Institute Press published the book.

