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The Domain in which we Dwell: The Foundations, Form and Future of Land Warfare

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Abstract

Warfare began on land. Across the march of time victory in war, in almost any conceivable scenario, depended and still depends on victory on the land. The sea and air affect, but seldom decide, the final outcome. It is the deployment of land forces that often marks the transition from coercion to conflict, from threats to action. It is those same forces that are able to pressure an enemy by capturing and holding territory. Although modern land warfare does not occur in isolation, especially given the wholesale contemporary emphasis in many modern armies on joint operations and the littoral environment, it nonetheless possesses a kind of centrality and decisiveness that is beyond the preserve of conflict in any other dimension. After all, people live on land and any type of power projection cannot disrupt state action and intent indefinitely. In the final analysis, only ground troops provide the 'military force necessary to influence human activity in the domain where human beings dwell, where their business is conducted, and where their values are maintained—the land'.***** From the battles of pre-history, land-based combat has evolved in many ways. For everything that has changed, however, so much has stayed the same. While land warfare has changed in appearance, it has not evolved in logic. War on land still implies the deliberate application of lethal force and remains the interaction of physical, moral and mental factors. The purpose of this paper is to explore the central themes and key contemporary aspects of 'conventional' land warfare. Such issues include its timeless characteristics, basic principles, taxonomy and conduct. Within an exploration of the 'conduct' of land warfare, concepts of 'manoeuvre theory', the types of land-based operations, combined arms/joint effects, modern influences, the 'battlespace' of the 21st century and future directions are investigated.

***** G.K. Cunningham, 'Chapter 12—Landpower in Traditional Theory and Contemporary Application', J. Boone Bartholomees, Jr. (ed.), *US Army War College Guide to National Security Policy and Strategy*, US Army War College, Carlisle Barracks, Pennsylvania, 2004, p. 171.

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> Our best insurance therefore lies in the excellence of our army … the army is the prince of all the institutions of the country; it alone makes the existence of all other institutions possible, all political and civic freedom, all creations of culture, finances, the state itself rise and fall with the army.[1]
>
> *Helmuth von Moltke, Chief of the Prussian General Staff 1857–88*

Introduction

Warfare began on land. From the battles of pre-history, land-based combat has evolved in many ways. With continual developments in strategy, tactics and military technology, terrestrial battles of the 21st century seem to hold little in common with those of the ancient world—or even to those of the last century for that matter. It is important to note, however, that for everything that has changed so much has stayed the same. While land warfare has changed in appearance, it has not evolved in logic. New methods, weapons and technological advances describe developments in appearance, not in essence. Many essential characteristics and fundamental elements of purpose remain unchanged by the march of time. War on land still implies the deliberate application of lethal force and remains the interaction of physical, moral and mental factors. Those involved continue to endure the fear of constant threats while attempting to amplify that fear in the minds of their adversaries. The land battle is, and always will be, Carl von Clausewitz's *zweikampf* (two-struggle) between 'hostile, independent, and irreconcilable wills, each trying to impose itself on the other'.[2]

The purpose of this paper is to explore this struggle. It aims to investigate the central themes and key contemporary aspects of land warfare. Importantly, while acknowledging the wide variety and styles of conflict that constitutes the broad spectrum of war on land, this paper limits itself to 'conventional' contexts. It does not attempt, for example, to explicitly investigate the nature of land-based insurgency warfare or 'wars among the people'.[3] While it is true that within the contemporary strategic environment distinctions between what is 'conventional' and what is 'unconventional' are often blurred, a true exploration of the latter is beyond the scope of this paper.

The conventional land war is best understood as a clash of similarly styled forces, with both pursuing similar objectives through similar methods. It is 'force-on-force' warfare. It involves 'traditional challenges through established and well-known forms of military competition and

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conflict'.[4] Despite the rise of alternative challenges in the 21st century strategic environment, most Western armies remain positioned and structured for conventional conflict. Those who support this orientation contend that the recent lack of utility displayed by conventional forces in unconventional contests may not be a consistent trend. Warfare, the argument goes, is 'not always a judicious decision made by rational actors ... that Saddam Hussein was wrong [for example] may not preclude others from making the same mistake'.[5] The British Army, as an instance of a large, modern and capable force, considers the maintenance of conventional capability as crucial in that it 'must be capable of responding, after due warning, to the demands that a General War will make upon it'.[6] Its US counterpart believes that 'failure to maintain a qualitative edge over these traditional threats would promote instability and create vulnerabilities that adversaries might attempt to exploit'.[7] Circumstances involving a serious degree of asymmetry between combatants, or inherently mismatched adversaries such as those marked by terrorist and guerrilla techniques are beyond the scope of this paper. This is not to suggest that asymmetry as a concept is excluded from the study of conventional war. The placement of strength against weakness within a conventional conflict is simply good strategy and a basic tenet of the manoeuvrist approaches discussed in detail within this paper. Plans involving dissimilarity, overmatch, Special Forces or information attack are clear manifestations of asymmetry in a conventional context.

Although modern land warfare does not occur in isolation, especially given the wholesale contemporary emphasis in many modern armies on joint operations and the littoral environment, it nonetheless possesses a kind of centrality and decisiveness that is beyond the preserve of conflict in any other dimension. After all, people live on land and any type of power projection cannot disrupt state action and intent indefinitely. According to T.R. Fehrenbach:

> You may fly over land forever; you may bomb it, atomise it, pulverise it, and wipe it clean of life—but if you desire to defend it, protect it, and keep it for civilisation, you must do this on the ground, the way the Roman legions did, by putting your young men into the mud.[8]

Victory in war, in almost any conceivable scenario, depends on victory on the land. The sea and air affect, but seldom decide, war. It is the deployment of land forces that often marks the transition from coercion to conflict, from threats to action. It is those same forces that are able to pressure an enemy by capturing and holding territory. For these reasons, 'land power remains a foremost strategic consideration unlikely to be supplanted by control of the seas, supremacy in the air, or control of space and cyberspace.'[9] As the contemporary British strategist Colin Gray contends, 'even if a war is dominated by the ebb and flow of combat at sea and in the air, still the whole object of the exercise is to influence the behaviour of an enemy who needs to be controlled where he lives'.[10] In the final analysis, only ground troops provide the 'military force necessary to influence human activity in the domain where human beings dwell, where their business is conducted, and where their values are maintained—the land'.[11]

Timeless Characteristics

There are certain aspects of land warfare that transcend time and space. The first concerns the fact that it is invariably fought on three planes: the physical, mental and moral:

1. The physical domain is the *means* to fight and includes 'the total … destructive and/or disruptive force which a military unit/formation can apply against an opponent at a

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given time'.[12] It is made up of manpower, equipment, training and readiness and includes, amongst others, weapons, technology, force ratios, ground captured or lost, and logistic factors.[13] It also includes the environment (physical and enemy-induced), the population of an area in which an operation is conducted and its potential positive/negative impact on operations, the air and sea situations, the electro-magnetic spectrum, the nuclear/chemical/biological environment, the climate, weather and terrain.[14]

2. The mental sphere refers to the *thought process* behind the ability to fight. It includes military doctrine and development, data collection, analysis, dissemination, decisions, knowledge management and communications infrastructure.[15] It contains thinking, analytical and creative skills, innovation and adaptability.

3. The moral realm concerns the reason *why* soldiers commit themselves to combat. The ability to get people to fight and their willingness to endure danger and hardship are essentially moral aspects of war. Such factors should never be underestimated. At a fundamental level, war is always fought for ideas.[16] Of paramount importance to the moral dimension is the concept of 'morale' for (as Napoleon Bonaparte is reputed to have contended) morale is to the material as three is to one. The term is closely related to ideas of purpose which, through feelings of legitimacy, justice, legality, combined with knowledge of war aims, act as a binding agent for combat forces. More specifically, high morale sustains will in the face of adversity. It 'reflects and expresses the degree of confidence with which individuals and teams approach the task at hand'.[17] Overall, the moral dimension acknowledges land war as a clash of human wills—making it inherently psychological. Factors such as confidence in equipment, organisation and command, political cohesion, leadership, beliefs, patriotism, legitimacy, discipline, motivation, comradeship, pride, situational knowledge, esprit de corps, and perseverance are central in this regard.[18]

The overlap of the triple physical, mental and moral dimensions gives rise to two important concepts:

1. The first is the idea of 'land power'.[19] Land power should be considered as 'the ability to exert immediate and sustained influence on or from the land in conditions of peace, crisis and war' or 'the ability—by threat, force or occupation—to promptly gain, sustain and exploit control over land, resources and people'.[20] It is, therefore, the measure of military effectiveness of those forces designated to fight on land.[21] It is no more or less than the combined effect of the three planes of combat discussed. It is these three components of land power which defines the ability to fight. According to the US Marine Corps, their combination equates to the 'total destructive force we can bring to bear on our enemy at a given time'.[22]

2. The second idea, derived from the triple planes of warfare, is the concept of land-based combat as something between science and artistry. The former, with an emphasis on the physical and mental, concerns 'systematised knowledge derived from observation, study and experimentation carried out to determine the nature, principles, means, methods and conditions that affect the preparation for, or conduct of, war'.[23] The latter, involving mental and moral aspects, 'concentrates on the human dimension of warfare—in particular the application of judgement—in order to overcome the unpredictable and chaotic nature of battle'.[24] Perhaps, as Basil Liddell Hart suggested, land warfare is a 'science which depends on art for its application'.[25]

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> In some ways, the requirement for balance between the two is represented by the timeless dictum that 'no amount of operational brilliance (art) will make up for strategic or tactical incompetence (science)'.[26]

While operating across these three planes, land forces are beholden to fulfil certain key roles regardless of the circumstances of any particular conflict. They must be able to shape the battlefield (conduct actions that enhance friendly position, delay enemy actions or lead the enemy into mistakes to be exploited); to strike (apply effects and lethal destruction at right time/place for a specific outcome); to shield (protect friendly forces and infrastructure); to adapt (respond to change of situation/task); and to sustain (provide adequate and timely support to themselves and other forces).[27] In carrying out these tasks, land forces will always face certain externally-imposed limitations, including:

- their war *aims*, in that assigned objectives must be appropriate to means available or acceptable to domestic or international opinion;
- the *means* available to them, including constraints imposed on weapons like, for example, chemical and nuclear arms;
- *spatial* limitations, such that physical boundaries may be imposed on a battlefield to avoid widening a conflict;
- *time* limitations, the availability of which is often dictated to belligerents by outside agencies;
- *political* limitations in that all land operations, if they are to form part of a worthwhile overall strategy, must conform to wider political considerations and rules; and finally
- the limitations of the *physical environment* in which land combatants operate. Weather, terrain, and topography have always had an enormous impact on the nature of war and operational options. Land war in the desert is a fundamentally different proposition that in the jungle. Such considerations also affect choice and effectiveness of weapon systems, sensors, mobility and even morale. Just as the vast grasslands of the steppes facilitated Genghis Khan's cavalry operations in the 12th and 13th century, the desert terrain of Iraq and Kuwait enabled the mobility and rapidity of Coalition operations in the 1991 Persian Gulf War.

Regardless of such constraints, land war will always be characterised by violence, destruction and close combat. Any level or phase of conflict will invoke a combination of manoeuvre and firepower, as the essence of the land battle is to destroy the enemy's ability to resist—psychologically and/or physically. This necessarily implies the fear, chaos, uncertainty and boredom always experienced by soldiers on a personal level. The squalor, pain, confusion, noise and smell of war are felt nowhere more acutely than in the land battle. As Clausewitz noted in the early 19th century, due primarily to such human factors, land warfare is characterised by friction, fog, fluidity, disorder, complexity and chance. The concept of friction suggests that if something can go wrong during the land battle, then it invariably will. Land warfare is the sum of individual battles, with each participant a friction-producing cog in a larger machine. The combined effect of such friction is to transform, under combat conditions, even the easiest of tasks into something difficult to achieve. Complementing the inevitability friction is the inherent uncertainty of land-based combat. The

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'fog of war' means that no commander will ever possess the level of information required or desired—even in an age of real-time sensors and exponential data flow. No event ever exists in isolation and the inherent fluidity of land warfare ensures the perpetuation of both friction and fog as 'each episode merges with those that precede and follow it—shaped by the former and shaping the conditions of the latter'.[28] In such an environment, the conduct of land warfare inevitably gravitates towards disorder. Like something akin to the scientific concept of entropy, land-based combat tends to progress from the orderly to the confused. As Helmuth von Moltke observed, paper-based strategies will always fail to predict the actual conduct of land battles which inevitably take on aspects unforseen by planning staffs.[29]

At this stage, it is worth dwelling on the impact of human factors in the conduct of land warfare. Conflict is always at least three sided (the role of civilians cannot be ignored) and most adversaries are not incompetent. Instead, they tend to be creative and determined. In the contest of battle, marked by forces of free will and choice, there are always a minimum of two competing strategies (one of which must fail), often as a consequence of the combined effect of a range of human issues such as creativity, pressure, culture, training, experience, willingness to use violence, political conviction, motivation and intuition. Many modern armies, recognising the importance of the human dimension, have attempted to capitalise on them, or at least militate against their potential for harm. The 'warrior ethic' of the US Army, for example, is one such attempt in its encouragement to soldiers to 'refuse to accept failure and instead overcome all obstacles with honour … to fight through all conditions to victory, no matter how long it takes and how much effort is required'.[30] Additional human factors influencing the conduct and outcome of this contest come form civilian participants, who may be either neutral or partisan. Such participants are within a battle zone to alleviate suffering (in the case of non-government organisations), or to support one side, or because they have simply been unwilling/unable to flee. In all cases, however, their actions and effect will be unpredictable.

Overlaying the range of timeless characteristics described are two additional features that define the essential nature of land warfare:

1. The first is the role of chance. The history of warfare has consistently proven the random, unpredictable and sometimes decisive effects of luck. The death of Gustavus Adolphus, King of Sweden, at the Battle of Lutzen (1632) during the European Thirty Years War is a case in point. This formidable general, later idolised by both Clausewitz and Napoleon, was killed at a critical moment in the battle when a musketball pierced his hide armour. He was not wearing the customary metal cuirass, which would likely have saved him, because a bullet from a past battle was lodged in his neck and irritated the metal armour, causing extreme pain. Had Gustavus not been carrying such a wound, had he been wearing a cuirass, had he not been shot in a vulnerable spot, had he not been in the wrong place at the wrong time, then a marginal Protestant victory may well have been decisive.

2. Much of this type of 'luck' is derived from what scientists now call the 'complexity' of war when considered as a system of systems. Armies are not singular entities guided by a single will. Land war manifests as collective behaviour, which 'necessarily involves near-countless independent but inter-related decisions and actions'.[31] Random chances in war arise out of the chaotic consequences from a multitude of simultaneous and independence decisions. At the same time, it is poignant to note, however, that this type of luck 'tends to favour those who have prepared both mentally and physically for what they have to do'.[32]

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The Principles of War

Over time, the enduring aspects of land warfare discussed have allowed for the evolution of what have come to be known as the Principles of War. These principles represent the most critical of the non-physical elements influencing war. Although applicable to some extent to conflict in all dimensions, they were initially conceived, and remain most relevant, to the course and conduct of ground-based combat. The principles are, at their heart, a collection of broad precepts which, at high levels, function as 'criteria against which courses of action can be tested'.[33] At the lowest levels, they form a 'guide for the planning and conduct of activity on the battlefield'.[34] The Principles of War are neither proscriptive rules or inflexible laws; nor a recipe or checklist for victory. At the same time, however, their application with judgement and commonsense facilitates success, while blatant disregard will invariably bring an increased risk of failure. As described by the British Army Field Service Regulations of 1909, 'the fundamental principles of war are neither very numerous nor in themselves very abstruse, but the application of them is difficult, and cannot be made subject to rules'.[35] The principles, therefore, are a philosophical basis of more specialised doctrine. They are broad concepts that explain and influence the conduct of land operations and are valuable because they give names to complex concepts. In doing so, they open such concepts for study and advance planning. The Principles of War are not a substitute for thinking. They 'are not dogma, nor are they intended as constraints on freedom of action'.[36] Rather, they are 'meant to educate the mind of a commander, or, more accurately, to guide him in his self-education; not accompany him to the battlefield'.[37] The principles should, therefore, always be considered as a 'point of departure for discussions between military professionals'.[38]

The idea of there being certain principles of land war has a distinguished pedigree. Napoleon believed such principles to be 'those which have guided the great leaders whose achievements have been handed down to us by history'.[39] Clausewitz described them as 'dominant features', and 'the crutch of established routine'.[40] Alternatively, Ferdinand Foch, Supreme Allied Commander in the First World War, suggested that

> the art of war, like any other art, has its theory, its principles, or it would not be an art. But the teaching of war's principles does not aim at creating mere platonic knowledge. To understand the principles without learning to apply them would be useless, but understanding brings assurance, wise decisions, the power of action.[41]

The articulation of exactly what this list of principles ought to contain can also be found in the history of warfare. The famous British Army author and medical reformer, Robert Jackson, who served with Charles Cornwallis through the American War of Independence, believed them to include a 'precise knowledge of what is to be done'; 'a rapid and skilful occupation of such points, or positions, as give us the best chance of commanding the objects'; the 'employment of mechanical powers … with just direction, united force, and persevering effect'; and 'a retreat from the contest, when the end is unattainable, in a deliberate and correct manner'.[42] Antoine Henri Jomini postulated in the wake of the Napoleonic Wars that the employment of land forces

> should be regulated by two fundamental principles: the first being, *to obtain by free and rapid movements the advantage of bringing the mass of the troops against fractions of the enemy; the second, to strike in the most decisive direction*,—that is to say, in that direction where the consequences of his defeat may be most disastrous to the enemy, while at the same time his success would yield him no great advantages.[43]

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Clausewitz built on similar ideas to construct a set of principles that emphasised *superiority in numbers* as 'the first principle of strategy', in that 'as many troops as possible should be brought into an engagement at the decisive point'.[44] He also advocated *surprise* as 'another desire, which is consequently no less universal'.[45] Complementing surprise was *boldness*, or the 'noble capacity to rise above the most menacing dangers … it is the very metal that gives edge and lustre to the sword'.[46] The Prussian theorist's next principles were *perseverance* for 'only great strength of will can lead to the objective', and *cunning* which 'implies secret purpose ... a form of deceit', and which 'appears so suited to the task of directing and inspiring strategy'.[47] Next was *concentration,* the need to 'be very strong; first in general, and then at the decisive point.'[48] An associated Clausewitzian principle was *unification of forces in time* in that 'all forces intended and available for a strategic purpose should be applied simultaneously'.[49] His final two principles were the maintenance of a *strategic reserve* with forces 'held in reserve according to the degree of strategic uncertainty', and the *economy of force* whereby 'no part of the whole force is idle' for if inactive they are 'being managed uneconomically ... they are being wasted'.[50]

Building on these pre-21st century foundations, modern ideas concerning the Principles of War developed at a rapid rate during and following the First World War, with many Western militaries identifying definitive lists of principles for the conduct of land warfare. Foch wrote of *economy of power*, *freedom of action*, *free disposal of power*, and *protection* as key principles, while in the interwar period J.F.C. Fuller identified a 'threefold order' which included principles of control (*direction, determination and mobility*), pressure (*concentration, surprise and offensive action*) and resistance (*distribution, endurance and security*).[51] Fuller's nine considerations were configured, with minor amendments, into the eight principles of the British Field Service Regulations (1924) which listed m*aintenance of the objective*, *offensive action*, *surprise*, *concentration*, *economy of force*, *security*, *mobility*, and *cooperation*.[52]

Five years later, such ideas were elaborated upon by Liddell Hart in his first depiction of the famous 'indirect approach'. Liddell Hart's eight principles implored commanders to 'adjust your end to your means'; 'keep your object always in mind'; 'choose the line of least expectation'; 'exploit the line of least resistance'; take a line of operation which offers alternative objectives'; 'ensure that both plan and disposition are flexible—adapt to circumstances'; 'do not throw your weight into a stroke when your opponent is on guard'; and 'do not renew an attack along the same line (or in the same form) after it has once failed.'[53]

Although dropped briefly from US and British doctrine in the early 1930s, the Principles of War re-emerged after the Second World War and have continued to evolve and also be adopted by many other nations (refer Table 1 below).[54] Most modern day lists of principles are based on the following fundamental principles:

- *Objective/Selection and maintenance of aim*: Often called the master or most important principle, with the idea being to direct all effort towards a clearly defined, decisive and attainable objective. All actions should be measured against their contribution to the attainment of this overall goal. This principle leads strategy, operational planning and all levels of tactical battlefield execution.

- *Offensive/Offensive action*: Land forces must seize, retain and exploit the initiative. Offensive action is needed for decisive results. Even defence should be active rather than passive.

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- *Surprise*: Forces should strike at a time and/or place where the enemy is not prepared and/or does not expect to be attacked. The most skilful commanders will exploit the potency of surprise as a psychological weapon.

- *Mass*/*Concentration of force*: This principle concerns the concentration of combat power at the right place and time to achieve local superiority. Success usually follows the concentration of superior force at decisive point in time/space.

- *Economy of force/Economy of effort*: As it is impossible to be strong in all aspects of land warfare, this principle encourages commanders to attribute the minimum possible effort to actions other than the main effort. This permits the retention of mass and preserves the force for decisive operations.

- *Security*: This includes security of both a physical and informational nature. The idea is to deny the enemy the advantage of achieving surprise, the ability to harass, conduct sabotage or gain information based on espionage or observation.

- *Flexibility*: Forces must be able to modify plans as they unfold so as to exploit unforseen opportunities. Such flexibility involves agility of mind and the maintenance of a reserve.

- *Unity of command*: For every action and objective land forces should ensure unity of effort under one responsible commander at the top of one clear and coherent command chain.

- *Cooperation*: This principle involves the coordination of all arms/service/allies, which is achieved through team spirit and training.

- *Manoeuvre*: Successful manoeuvre places the enemy at a relative disadvantage in terms of time and space. Forces should move, concentrate and disperse in a manner that negates enemy strength and exploits weakness. Through manoeuvre, results may be obtained that are well out of proportion to the effort expended.

- *Simplicity*: Commanders should prepare clear, uncomplicated plans that are likely to survive inevitable battlefield fog and friction. Simplicity and clarity aid in a thorough understanding of the mission at hand at all levels.

- *Administration/Sustainability*: As all plans need administrative support, commanders should ensure that logistical considerations remain central. This principle involves the best use of supporting resources.

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Table 1: British and US Principles of War 1920–96

British (1920)	US (1921)	British (1948)	US (1949)	British (1996)	US 1993
Maintenance of the Objective	Objective	Selection and Maintenance of the Aim	Objective	Selection and Maintenance of the Aim	Objective
Offensive Action	Offensive	Offensive action	The Offensive	Offensive Action	Offensive
Surprise	Surprise	Surprise	Surprise	Surprise	Surprise
Concentration	Mass	Concentration of Force	Mass	Concentration of Force	Mass
Economy of Force	Economy of Force	Economy of Effort	Economy of Force	Economy of Effort	Economy of Force
Security	Security	Security	Security	Security	Security
Cooperation	Cooperation	Cooperation	Unity of Command	Cooperation	Unity of Command
Mobility	Movement	Flexibility	Manoeuvre	Flexibility	Manoeuvre
—	Simplicity	—	Simplicity	—	Simplicity
—	—	Maintenance of Morale	—	Maintenance of Morale	—
—	—	Administration	—	Administration	—

Source:

John I. Alger, *Definitions and Doctrine of the Military Art*, Avery Publishing Group, New Jersey, 1985, p. 9.
US Army Field Manual 100-5, Operations, Headquarters Department of the Army, Washington, DC, 14 June 1993, p. 2-4.
Design for Military Operations—The British Military Doctrine, H.M.S.O., London, 1996, Annex A.

Taxonomy of Land Warfare

Having investigated the nature of land warfare and the principles derived from its enduring characteristics, it is necessary, before examining various issues surrounding the actual conduct of land warfare, to pause briefly and consider its taxonomy. An understanding of the classification and division of various aspects of land-based conflict is an essential departure point in this regard. While in itself adding little to an understanding of land-based combat, it does, for example, indicate both the type of forces that might be required and their possible tasks. Modern land warfare is generally divided up into three distinct phases: pre-conflict, conflict and post-conflict. Importantly, the path to and through them is at times both unpredictable and non-linear. Some conflicts progress from one stage to the next, while some stop short of progression. On other occasions a lack of resolution in one or more means that progression through the phases becomes cyclic. In any case, the pre-conflict stage is generally taken to involve military posturing, coercion, negotiation, mobilisation, threats, possibly with overt or behind the scenes United Nations involvement. The conflict phase involves two or more adversaries attempting to impose their will on each other through the use of land power while the post-conflict stage begins when military force ceases to be used as a tool. It is a truism that ‘when the warship’s missiles and the warplanes bombs no longer descend, the land warrior’s work still remains’.[55] Operations during this third phase

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tend to transition into stabilisation tasks and 'nation-building'. Of crucial importance at this stage is that a failure to reconcile the adversarial parties and agendas, and to solve the underlying causes for conflict, is likely to lead to a reversion to the conflict phase. The point of the exercise is to create an atmosphere of change. Contemporary examples of problems in this regard are manifold. The post-conflict phase—from Iraq to Lebanon—is, for a host of reasons, proving increasingly difficult for modern Western armies to complete.

The taxonomy of land war also uses three key descriptors of *scale*, *intensity* and *duration* to differentiate conditions within the same conflict or between one conflict and the next:

1. Put simply, scale represents 'the degree of the threat to national security, the size and nature of the forces committed, and the geographic size of the area of military operations'.[56]

2. Intensity is a little more complex in that it describes the pace and tempo of operations and the 'degree and frequency of violence encountered'.[57] Intensity is high when violence occurs frequently or when encounters are particularly violent (or both). Intensity also alludes to the level of technology employed and rate of resources consumed. The Battle of the Somme on the Western Front in the First World War, for example, was a high intensity operation for the Allies. The campaign saw waves of attacks within a short period of time and was waged with extreme violence. The highest level of military technology was used, and resources (particularly artillery shells and infantrymen) were devoured at an alarming rate. By contrast, the Phoney War period of the Second World War for the French Army, for example, was characterised by low intensity operations. Apart from a few minor incursions into German territory, large-scale combat was all but absent and the mean level of violence commensurately low. Of course, levels of intensity can vary dramatically within a conflict—as the French soon learned with the German invasion of 10 May 1940. It is also important to note that levels of intensity vary up and down within a conflict depending on perspective. While a conflict at any moment in time might be described as being of low intensity, for example, for an individual caught in a small and fleeting contact with the enemy the intensity felt during the engagement might be quite high. As a consequence of such variation, it is dangerous to describe a conflict by intensity alone for there is no 'direct relationship between intensity and the nature and scale of the forces involved'.[58]

3. Like scale, duration is a straightforward concept which simply describes the length of time spent in or moving through the three phases of conflict previously discussed.

Measures of scale and intensity are often used to construct what is commonly referred to as the 'spectrum of land warfare'. At one end of the spectrum, where these measures are 'low', lie peace operations and 'military operations other than war'. At the other extreme, where scale and intensity are 'high', is general war with, for example, large-scale, sustained combat operations between major powers. As one moves from the low to high end of the spectrum, the likelihood of events decreases while their consequence increases. As neither peace nor war ever exist in their purest, ultimate or extreme forms, real-world conflict always lies somewhere between. Clearly, the type of land warfare discussed in this paper falls towards the higher end of the spectrum.

The final set of categories, used to clarify and classify the conduct of land warfare, comprises four 'levels' which provide 'a framework for command and analysis': *national strategic*, *military strategic*, *operational* and *tactical*.

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1. The national strategic level refers to the international and domestic political dimension of conflict. It involves government and the highest tier of military command. It is focused upon political objectives. Planning staff at this level coordinate all elements of national power including the mobilisation of both military and non-military resources, domestic support, and the enunciation of desired political end states.

2. The military strategic level is concerned with the military aspects of planning, the direction of conflict, the derivation of military end states and the formulation of broad military approaches. Commanders and staff at this level provide advice to governments on the use of force and impose restrictions to operational level commanders.

3. The operational level of war is concerned with planning and conducting operations to attain military strategic objectives. Campaigns and major military activities are planned and commanded, and commanders set and sequence tactical events to attain strategic ends.

4. The lowest (or tactical) level concerns the actual execution of battle. Such battles are planned and conducted within a sequence of major operations to achieve operational objectives. The tactical level of land warfare involves defeating enemy formations at a particular time and place. Most military units fight at this level.

During the conduct of real war (as opposed to paper-based planning), the levels almost always overlap, with events on one level directly affecting the others. The levels are to some extent, therefore, 'only a matter of scope and scale'.[59] Under the conditions of war, such overlap usually places considerable strain on command and control relationships throughout a force. One noteworthy and increasingly relevant example of this phenomenon is the 'strategic corporal' concept.

The idea of a 'strategic corporal' has nothing to do with non-commissioned rank. Rather, it refers to situations in war where the actions of individuals, at relatively junior ranks, usually with limited responsibilities and executive decision-making power, take actions whose consequences reverberate across all four levels of command. Accordingly, New Zealand military doctrine, for example, suggests that 'in some operations action taken at the lowest tactical level may need to be especially responsive to strategic decision-making, with the tactical outcome having immediate strategic significance'.[60] The potential for 'strategic corporals' to manifest is magnified to a significant extent on the modern battlefield by the volume of information flow and the constant presence of the media. One contemporary example of the strategic corporal concept in action were the activities of a small group of US servicemen involved in the Abu Ghraib prisoner abuse scandal in Iraq. In this case, the mistakes of a few at the tactical level had implications at the operational, military strategic and national strategic levels.

The Conduct of Land Warfare

Having already noted the enduring characteristics, principles and taxonomy of land warfare, we now examine its actual conduct.

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Manoeuvre Theory

Philosophies informing the conduct of land warfare vary from country to country and are invariably a product of culture, demography, history, geography. Many modern and particularly Western armies, largely as a consequence of technological advances and shrinking manpower, have opted for 'manoeuvrist' approaches which (built on the foundations of theorists like Sun Tzu, Liddell Hart and John Boyd) seek to 'shatter the enemy's cohesion through a series of actions orchestrated to a single purpose, creating a turbulent and rapidly deteriorating situation with which the enemy cannot cope'.[61] The following sections are devoted to understanding the characteristics and implications of this key warfighting model. In this way, the 'operational concepts' of various armies, like that of the United States, for example (which calls for 'seizing, retaining and exploiting the initiative with speed, shock, surprise, depth, simultaneity, and endurance'), become more than collections of fashionable words and phrases.[62]

A useful first step in building a working knowledge of the manoeuvrist approach is to examine its antithesis. When the pure essence of land warfare is distilled there are only two basic philosophies, with all real-world styles of fighting situated somewhere between the two. These approaches are *attrition* and *manoeuvre*:

1. Attrition 'pursues victory through the cumulative destruction of the enemy's material assets by superior firepower'.[63] It is a direct approach that envisages land warfare as a test of brute strength decided by mass, force ratios and sustainability. This is also the most attractive method as the adversary is a set of targets to be destroyed quickly and systematically by a concentration of military force. Under this paradigm, the enemy will surrender in time due to the rising cost of resistance. Attrition is a procedural approach where the destructive potential of weapons and military technology has primacy of place. Success is measured quantitatively—in terms of enemy body counts and terrain occupied—with results generally in proportion to effort. The more ordnance expended, the greater the tally of both. Under attrition-based strategies, there is a need for a large and sustained volume of fire which, in turn, encourages centralised control. Combatants applying attritional policies must be able to inflict and accept damage. Numerical and material superiority are clear and important advantages. In many ways, attritional warfare is an industrial question.[64] Clear examples of predominantly attritional strategies include the Western Front of the First World War (1915), the more ponderous elements of the Allied push from Normandy north toward Germany during the Second World War (1944–45), and the static phase of the Korean War (mid-1951–53).

2. Manoeuvrist approaches are the opposite of attrition-based strategies in almost every way. Under philosophies of manoeuvre, combatants attempt to engage in battle from positions of advantage rather than meeting an enemy head-on. Manoeuvre-based operations tend to attack the enemy 'system' without pursing the cumulative destruction of their combat potential. Manoeuvre is the avoidance of concentrations and the application of strength against weakness. It relies on speed, surprise and tempo, with success being potentially disproportionate to effort. Modern examples of manoeuvre include the German Blitzkrieg operations during the early stages of the Second World War, the 1944 Allied Anzio landings into Italy (in intent if not execution), and the September 1950 Inchon amphibious operation in Korea.[65]

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Before exploring the intricacies of manoeuvre theory in greater detail, it is worth noting that the idea has not emerged spontaneously. Rather, it is the product of a long strategic tradition first collated and expressed in the modern era by Liddell Hart as the 'indirect approach'. Writing in the aftermath, and in many ways in response to the attrition-based tragedy of the First World War, Liddell Hart contended that 'the true aim is not so much to seek battle as to seek a strategic situation so advantageous that if it in itself does not produce a decision, its continuation by battle is sure to achieve this'.[66] He believed that in order for offensive land operations to succeed, the enemy needed to be dislocated (before an attack) and exploited (after an attack). He wrote that 'you cannot hit the enemy unless you have first created the opportunity; you cannot make that effect decisive unless you exploit the second opportunity that comes before he can recover'.[67] Liddell Hart also implored commanders to avoid concentrating on tactical techniques, as these obscured the psychological elements of war. Rather, they should always strive for surprise so as to maximise the enemy's physical, mental and temporal dislocation. He stressed that although 'the unexpected cannot guarantee success … it guarantees the best chance of success'.[68] The foundations of the modern manoeuvrist approach (the avoidance of enemy strength, dislocation, exploitation, speed, surprise, and the psychological component of land warfare) have therefore existed for more than 80 years.

The Modern Manoeuvrist Approach

The modern manoeuvrist approach is a complex set of ideas, precepts and details. Although it often implies movement to gain an advantage, manoeuvre is much more than this. It is, in fact, a multidimensional attempt aimed at 'taking action to generate and exploit some kind of advantage over the enemy'.[69] This may be spatial, psychological, or temporal. It is best considered 'the employment of forces on the battlefield through movement in combination with fire, or fire potential, to achieve a position of advantage in respect to the enemy in order to accomplish the mission'.[70] Rather than wear an enemy down, manoeuvre attempts to breech the enemy system and tear it apart from the inside. When applied correctly, it destroys an adversary's ability to fight effectively as a force without the requirement to destroy the totality of enemy war-making potential. It is therefore a way of thinking about war that considers it a competition in time and mind as well as of physical power. It is based on using an indirect approach to defeat the enemy's will; seeking to negate enemy strength through creative and innovative targeting of vulnerabilities. The essential characteristics of the manoeuvrist approach are that it:

- applies strength against weakness;
- focuses on defeating/disrupting an enemy that is *not* holding ground;
- relies on concentrating force against key vulnerabilities;
- aims to destroy enemy will by maintaining the initiative and applying constant unpredictable pressure;
- invariably includes movement, firepower and positional defence (so long as the latter is not considered an end in itself);
- features momentum/tempo leading to shock/surprise; and

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- requires combined arms and joint operations.[71]

Sun Tzu considered 'the highest realisation of warfare is to attack the enemy's plans; next is to attack their alliances; next to attack their army; and the lowest to attack their fortified cities'.[72] In truth, the manoeuvrist approach is a manifestation and extension of this basic idea. In particular, although it seeks to conserve friendly assets by avoiding attacking enemy strengths and to 'defeat enemy intentions by the disposition of forces with only the minimum of essential tactical fighting', it is important to note that firepower and close combat are central to the concept.[73] Manoeuvrists must still actually hurt the enemy (or convince them pain is imminent) or all the mobility and deception in the world is for naught. As the late 16th and early 17th century Japanese samurai and strategist Miyamoto Mushashi wrote, 'if you only think of hitting, springing, striking of touching your enemy, you will not be able to actually cut him. More than anything else you must be thinking of carrying your movement through to cutting him'.[74] It is not that the manoeuvrist does not wish to destroy enemy assets, but rather that such destruction is not an end in itself—'overcoming the enemy's will is the objective of combat operations; physical destruction of the enemy's forces, when necessary, is only a means to this end'.[75] Destruction is wrought at decisive points to fit a larger purpose.

In its emphasis on the non-physical aspects of conflict, the manoeuvrist approach is recognition that 'conflict on the moral plane exerts the greater and often decisive influence on the conduct and outcome of conflict'.[76] Manoeuvre-based land warfare is, therefore, inherently psychological in nature. As its primary objective aims to defeat enemy will, to fight it involves both non-physical and physical means. Physical destruction is but one path to attack an enemy; it is not the only path. As such, manoeuvrist operations include those designed to impact enemy decision-making, increase stress levels, sap intellectual and moral energy, distort perception management, and obscure reality. The combined effects of such activities are to induce a sense of shock in an opponent. At a tactical level this may mean the threat of force along with its use. At the operational and strategic levels, information operations and strikes on command, control and communications assets may have such an effect. Manoeuvrist commanders always 'apply available means to produce effects that in turn create and expectation of defeat in an enemy's mind'.[77]

Manoeuvrist approaches are applicable at all levels of land warfare. Strategic manoeuvre 'positions a nation's fighting forces for operational and tactical success and creates the strategic conditions for that success'.[78] Within a theatre of conflict, operational-level manoeuvre places combat forces in a 'favourable position relative to their enemy'.[79] Tactical or battlefield manoeuvre uses speed, shock, close combat, relative strength and decisive force to destroy enemy cohesion.[80] Across all levels, like the basic principles of land warfare, manoeuvre is not a simple recipe of techniques. It is an attempt to defeat enemy plans by exploiting the chaos and characteristics of land-based combat detailed at the beginning of this paper. In short, the modern manoeuvrist approach is a 'philosophy for generating the greatest decisive effect against the enemy at the leat possible cost to ourselves—a philosophy for "fighting smart"'.[81] A number of manoeuvre-related concepts are examined below.

Manoeuvre Concepts

The battlefield execution of modern manoeuvre theory requires the understanding and application of a number of enabling concepts as follows:

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Centre of gravity

The Clausewitzian concept of a 'centre of gravity' suggests that, in order to properly execute a manoeuvre-based strategy, it is not enough to generate combat power—such power must be applied at the right spot (or spots). That spot should be a centre of gravity; correctly identified as the source(s) from which an enemy gains their primary strength and/or the factor(s), the destruction of which, would cause an enemy the most serious damage. Such centres may be *physical* (such as capabilities like armour or aviation assets, or key pieces of terrain). Alternatively, they may be *intangibles* (like resolve or morale, or even relationships like those which exist within an alliance). As centres of gravity are often enemy strengths, it is frequently better to attack them indirectly through targeting associated vulnerabilities. Such methods bring about what are commonly labelled 'decisive points'—best considered as preconditions for defeating centres of gravity.[82]

Operational tempo

The manoeuvrist approach is founded upon the ability to control the tempo of a conflict, defined as the 'measure of the extent to which the potential speed of a formation or unit is exploited relative to the enemy'.[83] Controlling the rate of action relative to an enemy conserves friendly forces and exhausts the adversary: the higher the tempo, the greater the chance of out-manoeuvring and defeating an opponent. In this regard, quick forceful actions by small forces are often preferable to slow movements by larger forces. Exploitation of operational tempo requires input from a range of other manoeuvre warfare-associated concepts such as intelligence, decentralised command, mobility, rapid response and speed of decision-making.[84]

Speed of decision-making

The essence of achieving superior speed of decision-making in the land battle is to select 'promising courses of action with acceptable degrees of risk and do it more quickly than the foe'.[85] A good plan now will always be better than a perfect plan derived too late. John Boyd's concept of the Observe, Orient, Decide and Act (OODA) Loop is of fundamental importance in this regard. Manoeuvre theory is predicated on the idea of decision superiority—of getting inside the enemy OODA Loop. On the battlefield, this involves forcing adversaries to make decisions at a faster rate than they are effectively capable of (linking the idea to tempo) so that they take inappropriate actions or none at all. This form of temporal dislocation is complemented by effects and operations designed to erode enemy command and control systems.

Dislocation

The concept of dislocation, a cental objective of manoeuvrist planning, renders enemy strength meaningless by not allowing it to be employed. This may be a physical dislocation which, for example, focuses enemy strength in the wrong place. It may be functional, making enemy strengths inappropriate or irrelevant by shaping or exploiting elements of the battlespace such as, for example, terrain. It may be temporal in that the enemy is prevented from acting to a timetable of his choosing, or it may even be moral such that legitimacy is undermined or internal relationships fractured.[86] A concept closely allied closely to dislocation is disruption, commonly resulting from a 'direct attack that neutralises or selectively destroys key elements of the enemy's capability'.[87] If disrupted an enemy force cannot then act as a

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coordinated whole. Internal cohesion and will suffer accordingly and dislocation becomes an increasingly likely outcome.

Surfaces and gaps

The idea of 'surfaces and gaps' is a way of visualising the essential elements of manoeuvre theory. 'Surfaces' refer to enemy strengths (not only physical), while 'gaps' refer to weaknesses. Manoeuvrist approaches exhort commanders to cross surfaces and seek out gaps. Existing gaps should always be exploited and new ones created. These gaps may be a weakness in time, space or capability. Indeed, what is a surface in one particular battle of campaign may be a gap in another. As these gaps are rarely permanent, tempo and speed of decision-making are paramount. It is within the surfaces and gaps model that concepts like 'effects-based operations' and 'reconnaissance pull' (where the identification of a gap encourages and shapes subsequent actions to exploit it) become relevant. The surfaces and gaps approach to the conduct of operations requires planners to think in terms of generating effects to achieve desired end states—to move over surfaces while opening and exploiting gaps. Operational planning, therefore, should begin with the objective in mind and ought to be outcome rather than process driven.

Culture of innovation

Perhaps the most important enabler to manoeuvrist approaches in general, and to some of its associated concepts in particular, is a culture of innovation and originality in the land forces attempting to implement them. Imaginative and inventive thinking underscores the initiative required to implement manoeuvre theory at any level. Consequently, most modern militaries attempt to promote a sense of inherent flexibility and pragmatism in their leadership cadres. All levels of military instruction, therefore, must be aimed at teaching soldiers and officers to be comfortable with stress and uncertainty. It must encourage flexibility of mind and *educate* as well as train. It must also encourage judicious risk-taking and forgive constructive mistake-making.

Mission command

True manoeuvrist approaches cannot be implemented without an appropriate supporting command and control model. The idea of mission command describes such a model. Like the philosophical basis of manoeuvre theory, the idea of mission command (sometimes called mission tactics) is not new. Indeed, in an attempt to deal with the complexity of mass, technology and scale of post-Napoleonic warfare, the general staff and training reorganisations of the Prussian army under Helmuth von Moltke in the mid-19th century laid many of its foundations. However, while the intricacies of 19th century land war might have encouraged the philosophy of mission command, the speed, dispersion, tempo and simultaneity of 21st century manoeuvrist warfare demand its application. In essence, mission command compels higher headquarters to provide a mission, objectives, intent and perhaps concept of operations to subordinates, along with the resources to achieve them, while deliberately not issuing overly detailed or proscriptive orders. It provides direction on the *what*, not the *how*. With an understanding of the wider purpose of their actions, mission command therefore frees the judgement and initiative of subordinate commanders to depart from the plan if required and if consistent with higher aims. Such a philosophy empowers junior leaders to make decisions and find their own way of dealing with details. Working in a mission command environment, subordinates need to identify and react to unplanned circumstances; be they opportunities or threats. It is therefore a means to retain operational

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initiative and, if applied properly, leads to agility, flexibility and adaptability throughout a force. As a control model, mission command 'promotes decentralisation, freedom and speed of action', while maintaining responsibility to superior direction'.[88] To operate effectively, there must be mutual understanding and trust and between higher and lower levels of command—the former must have faith in the abilities of their subordinates and the latter that the objectives set for them are achievable and appropriate. In many ways mission command represents an attempt to overcome the inevitable fog and friction of war. According to the US Marine Corps, in order 'to best cope with uncertainty, disorder and fluidity in combat, command and control must be decentralised'. Land forces 'must not strive for certainty before [they] act ... must not maintain excessive control over subordinates … must not attempt to impose precise order … must be prepared to adapt'.[89] Many military historians have concluded that it was the mission command tradition that allowed the German army to successfully implement its Blitzkrieg strategies of the Second World War—a strategy which, in close parallel to modern manoeuvre theory, sought to exploit enemy weakness and to avoid strengths using shock, speed and movement.

Types of Operations

Having discussed the philosophical basis of the manoeuvrist approach to land warfare and the associated concepts that enable it, it is now time to focus on the *types* of land combat operations conducted under this paradigm. All actions in land-based combat are based on taking the initiative or responding to it. Possessing the initiative is to force an enemy to react on terms not of their choosing, and therefore the maintenance of such initiative, is key to shaping battles and an enemy's will. The response is best considered a negative action in that its purpose is to negate the enemy's initiative—usually to bring about a situation where it can be regained. War is then a constant exchange between the two actions, with all activities revolving around the imperative to hold the initiative. These concepts are at the heart of *offence* and *defence* in the land battle. Offence is usually a manifestation of initiative (if a force can strike first and keep striking, then initiative is generally maintained), while defence (including what are commonly referred to as retrograde operations) aims to preserve and protect until an offensive action can be launched.[90] Defence and offence are not mutually exclusive and cannot really exist in separation. As Napoleon contended, 'the whole art of war consists in a well-reasoned and extremely circumspect defensive, followed by rapid and audacious attack'.[91] Defence cannot be purely passive or initiative will always rest with the enemy. It must assume an offensive character and position a force for offensive action. Similarly, defence is always a part of offence, often manifesting as operational pauses or periods of regrouping.[92] Under the simultaneous and fluid conditions of manoeuvre-based warfare, there can be no clear delineation between the two. It is also important to note that offensive/defensive postures may vary across the levels of war. A force may be conducting a strategic defence, for example, while simultaneously executing a tactical offence.[93]

Offence

Offensive operations involve advancing on, preparing to attack and attacking the enemy to the destroy means and will to fight on, secure key physical objectives such as terrain or resources, or to gain information. To take on an offensive posture is to 'carry the fight to the enemy to impose your will. For this reason, the offence will always be the decisive type of military operation'.[94] Importantly, offensive action within the manoeuvrist paradigm seeks to inflict losses indirectly. Fuller explains that 'the enemy's teeth are in his head and not his tail … if he can stamp on his tail, he will force him to turn his head round, thus he will accomplish

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his objective more economically by a rear attack than a frontal one'.[95] If an attacking force can threaten an enemy's flanks or rear, then the enemy will be forced to turn and protect their base lines of communication. The hostile rear, therefore, is often the manoeuvrist's offensive objective. At the same time, when attacking the rear, it is often necessary to halt the enemy's movements. If this can be accomplished with part of a friendly force, then the enemy can be 'fixed' with one hand and struck with the other. In such circumstances frontal attacks, designed to hold an enemy force, can feature as part of a manoeuvre-based plan.[96]

In general terms, the desire to strike the enemy at points of weakness and avoid areas of strength informs all manoeuvrist offensive techniques, the most common of which include:

- *Envelopment*. This is essentially an offensive manoeuvre 'in which the main attacking force passes around or over the enemy's principle defensive position to secure objectives in the enemy's rear'.[97]

- *Turning movements*. These are largely variations on envelopment, in which an attacking force moves deep into enemy's rear areas to force the abandonment of a position or the diversion of forces to meet the threat.[98]

- *Double envelopment*. Best conceptualised as a form of envelopment using two axis or wings to encircle an enemy and force the abandonment of a defensive position, this type of offensive action has historically been called a 'pincer movement'.

- *Encirclement.* This is where the pincers of a double envelopment meet and surround an enemy. This technique minimises the need to engage in frontal assault and was employed on a staggering scale, and to significant effect, by the Nazis in the opening phases of Operation *Barbarossa* on the Eastern Front in the Second World War.[99]

- *Vertical Envelopment.* This is a modern technique using airborne or airmobile pincer(s).

- *Exploitation/Pursuit*. This is an attempt to capitalise on the success of an attack with the purpose of striking deep enemy objectives and rear areas. Routed or retreating enemy forces are often destroyed by simultaneously maintaining the pressure of constant contact while blocking or cut-off forces are deployed along the path of retreat.

- *Expanding Torrent*. The overarching goal of the techniques listed above is often what is known as an 'expanding torrent'. The idea is to conduct a deep battle by sending a heavy concentration of troops through 'breakthrough' points in order to create a penetrating and expanding torrent of force. A classic example of this concept on a huge was the Red Army's Vistula-Oder Offensive in 1945, where 20 Soviet armies (more than 2.2 million troops) advanced more than 350 miles from the Vistula River in Poland to the Oder River deep in Germany, about 70 kilometres from Berlin.[100]

The typically large-scale manoeuvre-based offensive methods listed above are often complemented by a number of low-level techniques, including raids, diversions, feints, and reconnaissance-in-force. It is important to note that all offensive operations remain subject to Clausewitz's law of the 'culminating point'. Essentially, no offence, no matter how manoeuvrist, well-planned or executed, can be sustained indefinitely. Rather, all tend to get weaker as they progress—with the inevitable extension of lines of supply, mounting casualties, and physical exhaustion. Eventually a culminating point will invariably be reached

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after which the attack will reach a point of diminishing return and upon which an offensive force must revert to the defence.

Defence

As indicated, defensive operations are a fundamental component of manoeuvrist approaches to land warfare. One of the earliest exponents of defensive manoeuvre, J.F.C. Fuller, recommended a set of manoeuvrist principles based on the assumption that a strong defence is the basis for offensive action. According to Fuller, 'the offence is the soul of the defence' and defensive operations should transition to offence whenever and wherever possible.[101] Defensive techniques should, therefore, be organised to support a quick transition to an attacking posture. Aligned with this thinking, defensive efforts should, in general terms, use a minimum amount of force to enable maintenance of large reserves. Equally, defensive operations should not try to hold the enemy everywhere and/or be equally strong at every point, for this infringes upon the basic principle of concentration. Fuller cautioned commanders never to deplete a reserve for purely defensive tactics such as the passive holding of ground and never to hold territory for its own sake—this is never the object of battle.[102] In general terms, according to Fuller,

> shielding does not consist solely in preserving our own existence, but in preserving it in order that we may more economically destroy the enemy; consequently, defensive battle should be based on an offensive plan, which through force of circumstances cannot at once be put into operation.[103]

Modern interpretations of the role of defence within manoeuvrist warfighting philosophies echo many of Fuller's original ideas. It is commonly accepted that defensive operations are best seen as a way to preserve forces for future offensive action, to gain time to refit or reinforce, to mass troops, or to shape enemy in a particular way. Defensive operations are, therefore, a temporary counter to enemy offensive action. They are valuable because the defence is usually the more 'efficient', in terms of necessary combat power and potential casualty rates, form of manoeuvre. They need not, however, be undertaken out of weakness. Techniques such as ambushing, counter-attacks, or defensive manoeuvres designed to compel an enemy to attack a position of friendly strength, can be used to regain the initiative—without which, as previously discussed, no land force can emerge victorious in the longer term. It is possible to identify a set of basic defensive operational methods which, depending on circumstances, may form appropriate manoeuvrist techniques. They are as follows: *area defence*, *mobile defence*, and *retrograde operations*.

- *Area defence* is not usually associated with manoeuvre, but is a method that, provided it is part of a larger purpose that is neither attritional nor focused on holding territory for its own sake, can be a useful manoeuvrist technique. Area defence is a static method of occupying and holding ground. Units usually engage in area defence as part of a larger formation holding a particular front or area. The priority is to place combat forces towards the outer edge of an identifiable front. Area defence utilises a screen to warn of enemy approach and holds a main defensive area (with a reserve). Such positions are usually hardened and prepared in advance of an engagement. They often involve defence in depth and mutual support (where fire can be applied from a series of positions in support of one another). Perimeter defence is a form of area defence where there are no adjacent units.

- *Mobile defence* is perhaps the antithesis of area defence in its pure form. It usually consists of series of defensive positions at which delaying battles are fought before

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withdrawing to next *without* decisive engagement. The focus of combat power is the reserve which is much larger when deployed and redeployed than in area defence type operations. Mobile defence can best be conceived as a series of ambushes with the aim to delay rather than destroy. This technique can be used effectively to offset numerical disadvantage.

- *Retrograde operations* are not strictly an attempt at defence, but share many of its defensive characteristics, particularly in terms of purpose and end state. They describe actions whereby land forces actively disengage from an enemy, avoid combat and physically move away. Retrograde operations are usually conducted when a force finds itself with insufficient troops either to attack or defend and therefore attempts to remove its units to a more advantageous location. Such operations include the *retreat* (a movement away from an enemy, generally forced, with some disorder and in contact); *withdrawal* (where a force chooses to disengage from an enemy while in contact); and *retirement* (conducted out of contact where a friendly force chooses to move away from enemy in an orderly and planned fashion). Withdrawals and retirements are planned in advance and are reliant on precise timing to avoid decisive engagement. Covering forces are commonly deployed as screens.

Combined Arms and Joint Effects

Combined arms and *joint operations* are two universal characteristics of modern manoeuvrist approaches to land warfare that are applicable to all offensive and defensive techniques. The philosophy of combined arms involves the integration of the various corps and branches within a land force such that, for an enemy to counter one area of strength, they must become vulnerable to another. A combined arms approach is applicable to all levels of war. At the lowest level, for example, it might involve the

> complementary use of automatic weapon and grenade launcher … pin the enemy down with the high volume, direct fire of the automatic weapon, making him a vulnerable target for the grenade launcher. If he moves to escape the impact of the grenades, we engage him with the automatic weapon.[104]

The same principle is equally relevant at a formation level where infantry, artillery, armour, aviation, engineering and a range of other combat and combat-support functions are integrated into tactical organisations whose combined combat potential is greater than the sum of its parts. Combined arms teams can be tailored for mission-specific tasks and, if properly integrated, can 'dominate close combat'.[105]

The joint approach to land warfare extends the philosophy of combined arms to include air force and naval assets. Contemporary manoeuvre doctrine considers the joint battle as indivisible along service lines. The goal, therefore, is 'integrated joint operations with synchronised joint effects'.[106] A joint approach replaces single service orientations with a holistic focus. However, operations are not joint simply because a range of service elements are involved. Rather, they become so if they achieve a 'joint effect'. This end state requires the interdependence, understanding and harmonisation between all forces at the operational and tactical level. According to US Army doctrine, such effects are achieved through the 'purposeful combination of service capabilities to maximise their total complementary and reinforcing effects while minimising their relative vulnerabilities'.[107] Most land forces recognise the need to play a role in the generation of joint effects. Such roles as might impact upon an air component, for example, include attacking enemy airfields, air defence

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capabilities and air command/control systems. Ground forces consequently benefit from friendly air reconnaissance, air transport capabilities, airborne/airmobile operations and air-specific electronic warfare effects. Alternatively, the mobility aspects of manoeuvre for land forces may in some cases be restricted by terrain (especially in environments like the air/sea/land littoral). Joint operations can overcome this problem by capitalising on the speed, lift, mobility and sustainment potential of sea power. Indeed, amphibious lodgements are in many ways the epitome of joint operations and often come with the potential to inflict the ultimate joint effects. In such cases, land forces are obviously reliant on naval assets for transportation and air assets for protection. Successful amphibious operations can achieve the surprise, shock and dislocation required by true manoeuvrist approaches. One useful example is the Inchon landings of 15 September 1950, during the Korean War. This ambitious and well-executed amphibious lodgment ended a string of victories by the invading North Korean People's Army and began a counterattack by UN forces that led to the recapture of Seoul.

Modern Influences

This paper has thus far dealt primarily with a number of enduring aspects relating to land warfare. In truth, although such characteristics form the timeless foundation of ground-based combat, there are also a number of modern-day phenomena that act to shape its outward appearance. These represent a series of contemporary challenges that, to paraphrase Clausewitz, determine the grammar of land warfare without changing its logic. The two most important of these trends are *globalisation* and *technology*.

Globalisation

Globalisation refers to the modern-day compression of time and distance that once separated connections between world cultural, economic and security concerns. It impacts upon the planning and execution of military strategy in a variety of ways. In terms of global security, for example, in theory at least it has the potential to reduce the focus on individual states and place greater emphasis on ideas like collective security. For the conduct of land warfare, globalisation has a number of direct implications. In some instances, by undermining the principle of the state and thereby the sanctity of its sovereignty, there is a growing imperative for affirmative and cooperative military action. Such actions, not always with UN sanction or the moral authority of international opinion or law, may result from humanitarian concerns, weapons proliferation or a range of other strategic imperatives. The question of the appropriateness of such actions is beyond the scope of this paper. The reality of the trend, however, is not. Under this paradigm, issues of military 'coalitions of the willing' and allied interoperability have come to complicate the modern battlefield. The role and universal presence of the modern media, an implicit product globalisation, has also come to influence contemporary land operations. Information availability, largely through the Internet, has drastically increased military accountability before, during and after combat operations. Such factors now must be worked into land warfare strategies. This is not to suggest that the products of globalisation, like information flow and media involvement, ought to be seen purely as obstacles to land operations. They should not. Rather, they are now permanent features of the battlefield and must be exploited in the same way that terrain, space and time may be transformed into advantages or disadvantages, opportunities or problems—in accordance with the skill of the practitioner.

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Technology

Military technology is the use of knowledge to create or improve the practical objects or methods of war. In many ways it is the application of science to war. There is no doubt that 'technology has an undeniable influence on strategy, tactics, logistics, military theory, and doctrine, and generalship'.[108] At the same time, however, like the effect of globalisation, it alters the outward appearance of land warfare much more than its fundamental nature. While technology is not 'new', some military-related fields have undergone significant transformations in recent times, particularly with regards to information technology, telecommunications, digitisation and miniaturisation. Such advances have had an undeniable impact on a range of combat functions, including command situational awareness and the integration of sensor and weapon system, and will continue to do so in the future. Consequently, modern land warfare has experienced a rapid increase in tempo and periodic intensity. Some particularly important areas of development in military technology for modern land battle include:

- *Information*. Many contemporary commanders now have access to real-time date and imagery designed to improve decision-making potential. Such battlefield transparency, however, does not in itself remove the timeless fog of war. Data is not intelligence and volume does not compensate for timeliness or quality. Indeed, many commanders may find that such technology leads them dangerously close to the temptation of micro-management—the antithesis of mission command. So too, it may come with a fog of its own, as headquarters become swamped and paralysed by endless streams of data. Nonetheless, most modern militaries view the 'knowledge edge' and the exploitation of information technology as essential force multipliers in current and future land warfare. The associated 'networking' of weapons, sensors and soldiers is considered as the way to harness advances in information availability and flow. The US Army, for example, contends that 'future combat systems are not platforms; they are a family of networked land and air-based manoeuvre and supporting systems built around soldiers'.[109] With networking comes more condensed decision-action cycles and, according to Boyd's theories at least, a greater chance of success.

- *Weapon systems*. Modern technology has certainly increased the precision, mobility, stealth and lethality of land-based weaponry. Yet, despite their increased range, such breakthroughs (while especially suited to open terrain) remain of limited utility in a range of alternate environments—especially in urban areas. Recently, advances in robotics and protection have the potential to transform the tactics and style of land-based combat across all environments. Equally, the technological potential for mechanisation and motorisation to encourage dispersed operations will have an increasing impact; especially when inevitable power-related advances increase the range of vehicles (which are currently restricted by the amount of fuel that they can carry). There is also no doubt that the spectre of weapons of mass destruction at one extreme, and the emergence of non-lethal battlefield weapons at the other, are warping conceptions of collateral damage and ideas on graduated response. It is also worth noting that technological development always comes at a price. Every new capability comes with an associated vulnerability and technological monopolies seldom last for long. Indeed, technological advantages inevitably inspire copy and counter. In a conventional sense, the history of armoured/anti-armoured weapons is a manifestation of this phenomenon. The same is true of tactics and techniques. The modern challenge of asymmetric warfare is, to an extent, the natural and intelligent response to an

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unbridgeable difference in levels of technologies between many contemporary combatants.

- *Cognitive science*. Interestingly, one field of emerging military 'technology' pertains specifically to the mental aspect of war—so long the under-recognised shadow of material-based conceptions. Modern armies are becoming increasingly aware of the psychological and counter-psychological aspects and implications of land-based combat. Preventative mental medicine and casualty treatment, along with the impact of psychological states on the individual and group performance of soldiers, will be key areas of continuing development.

The Battlespace of the 21st Century

By acknowledging the transformational effects of issues like globalisation and military technology, at least in terms of the 'grammar' of land warfare, it is possible to construct a picture of the battlespace of the 21st century. The term 'battlespace' is deliberately used in place of battlefield, as it describes the area of 'interest' as well as the area of 'influence' during combat. Inevitably, in contemporary conflict this includes the land, air, sea, littoral (where the three converge), space, the electro-magnetic spectrum and even the social and political context in which conflict is situated.[110] While all past realities of war remain—the contest of life and death, uncertainty, friction, fog and danger—a number of modern features have emerged. There are six aspects of this battlespace which define it as something beyond traditional conceptions: *non-linearity*, *integration*, *connectivity*, *continuity*, *synchronisation* and *perception*.[111]

- *Non-linearity* refers to 'operations distributed throughout the battlespace. It differs to the historical linear approach where the opposing forces fronts and flanks delineated the traditional battlefield'.[112] Although historically the preserve of unconventional warfare, non-linearity is now also an unavoidable reality for conventional operations. Increased mobility, dispersion, and weapon ranges mean that there are no longer any safe rear areas. Support echelons are as much of a target as combat units.

- The modern battlespace requires complete *integration* within the land force. It also requires integration between land assets and the joint and/or coalition forces they support. In addition to the combined arms and joint approaches already discussed, some additional implications of true integration include the need for interoperability, doctrinal/technological compatibility, and cross-cultural understanding between current and future coalition partners. Integration also increasingly implies civil-military cooperation at unprecedented levels. Non-military personnel such as contractors for service support, police, governmental and non-governmental agencies have an unquestionable impact on the modern-day battlespace—an impact that will only increase with time.

- A third aspect is *continuity.* As previously indicated, emerging military technology, (especially night-vision devices) makes 24-hour operations both possible and desirable—particularly if an adversary does not have a similar capacity. Technology also facilitates battlespace continuity by moderating the adverse effects of weather and terrain. Commanders ought not to forget that such continuity places great demands on soldiers and their support systems. Not only will future land battles continue without

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respite until one side is defeated, but the tempo or pace of battle will reach unprecedented levels.

- Battlespace *connectivity*, as described in the previous section, involves the use of networked communications to access and control the flow information within, and external to, the battlespace. Increased connectivity underpins 'sensor-actor architecture'—the linking of sensors to weapons systems to deliver timely effects. Future land warfare will invariably feature an 'information battle', where adversaries compete to protect their own flow of information while disrupting that of their enemy.

- Largely as a function of the four characteristics already described, the modern battlespace demands *synchronisation*—the coordination of activity in space and time to achieve the most potent effect. This effect is particularly important due to advances in military technology and their propensity to increase dispersal while decreasing the size of forces involved in the land battle. Breakthroughs in precision and lethality entail smaller, more potent forces in a less dense battlespace. The multidimensional nature of modern land warfare in that it is fought 'in the deep, close and rear battles … simultaneously and at all levels of intensity, in all dimensions', also demand a high level of synchronisation'.[113] As British Army doctrine asserts, 'the synergistic effect of taking action simultaneously in serval different places is far greater than the sum of the individual actions'.[114]

- The *perception* battle is more important to the success or failure of the modern-day land campaign than at any other time in history. The effect of the media and an increasingly unregulated flow of information to and from the battlespace bring the 'home front' and international audiences closer than ever before to the face of battle. Such characteristics make public perceptions a potentially decisive element. No longer can military commanders isolate themselves or their actions from public scrutiny. The legitimacy of the use of force, the conduct of military formations, and their adherence to international laws of war, for example, are now primary tactical and strategic considerations and are destined to remain so in the future.

Future Directions

Following from this discussion about the battlespace of the 21st century, it is appropriate to conclude this paper's examination of land warfare with a discussion of two important additional concepts with key implications for the future: *the transformational force* and the *adaptive systems model*.

The transformational force

Transformation is a 'buzz word' in many modern militaries. In one sense the concept of a transformational force is banal—armed forces are always trying to 'transform' themselves into what they believe the future will require. At another level, however, the modern philosophy of transformational land forces is powerful and all too relevant for the future. The transformational force is, at its heart, a response to the range of challenges described in previous sections of this paper. It has a number of important characteristics, including *versatility*, the emergence of the *knowledge edge*, and an increase in *joint operations*:

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- Transformational forces must be inherently *versatile*. They cannot be 'trained for a single event like a track athlete, but talented across a broad spectrum like a decathlete'.[115] In many modern armies this will necessitate a rebalancing of force structures in order to move the emphasis from combat functions to combat support functions like intelligence and civil affairs. In any case, an adaptive capacity will be essential. Because the forces involved in future land combat will be smaller than those of the past, they will be required to achieve objectives across the spectrum of conflict. Force elements, packages, structures, methods and leadership options must be configured and reconfigured to serve a variety of missions. The US conception of its future transformational force predicts that

  > it will become strategically responsive and joint interdependent. It will be capable of precision manoeuvre and be able to dominate adversaries and situations across the range of military operations envisioned in the future security environment. The future force will be lighter, more lethal and agile, and optimised for versatility.[116]

- The construction of the transformational force is predicated on the *knowledge edge*—the exploitation of human capital in terms of experience, skill, innovation, culture and values. Such forces will attempt to harness the 'knowledge wave' sweeping society as a whole. Again, this concept supports the trend towards smaller land forces in that it encourages flexibility of organisations and structures. Equipped with this knowledge edge, teams of experts will be able to combine for specific tasks and then reconfigure for the next. A comprehensive and robust professional military education scheme is fundamental to achieving this outcome.

- The importance of *joint operations* in the battlespace of the 21st century has already been discussed. Suffice to add that future transformational forces will continue the trend towards jointness such that future defence forces, while not necessarily one unified organisation, will be overwhelmingly joint in organisation, work practice, staffing, and management, with forces shaped to suit each circumstance across a wide spectrum of operations.

Adaptive systems model

The complex adaptive systems model is a second important future direction for land-based forces. The model envisages land combat as an increasingly nonlinear and dynamic system of systems consisting of a range of interacting semi-autonomous actors continuously adapting to a changing environment. Land warfare in the 21st century, therefore, should be understood as groups of interacting agents which, while organised according to an overall command system, often appear disorderly at a local (tactical battles) level. At the same time, local disorder can and will produce long-term or larger-scale order (campaign outcome). In a similar manner, land combat (again following the complex systems model) will continue to gravitate away from centralised control. Indeed, under the philosophical tenants of mission command, future land forces will move even further in deliberately avoiding command chains attempting to direct low-level action. In the not too distant future, the complex adaptive systems model of land combat may even see the well-known Clausewitzian concepts of 'fog', 'centres of gravity' and 'friction' replaced by such systems metaphors as 'nonlinear,' 'co-evolutionary' and 'emergent'.[117]

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The important point concerning the complex adaptive systems approach to land warfare is that, if it proves an effective model, it will enable the development of *fundamentally* new conceptualisations of combat. Genetic algorithms, for example, might be used to 'evolve' sets of rules that effectively describe high-level combat—a sort of ultimate principles of war. Alternatively, systems models might be used to develop ways of exploiting the chaos of combat to 'selectively "drive" combat to move towards more favorable regions'.[118] Another key aspect of the systems approach is that land warfare planners will need to recast their understanding of the battlespace as a true system of systems. Within this environment, networks of 'nodes' describe each system (like, for example, enemy, friendly, neutrals or even psychological nodes), while the relationships between them are best considered as links. To influence these systems in physical, psychological or functional ways, future commanders will need to focus their efforts on key nodes while exploiting their understanding of links. At the same time, planners must remember that most systems are adaptive and should act to resist change or make adjustments so as to minimise any adverse effects.

Conclusion

The purpose of this paper was to explore the nature of land warfare. It has examined many enduring themes, along with a number of contemporary characteristics and challenges. Land-based combat is the oldest form of warfare which, despite the march of time, technology and circumstance, has lost none of its centrality. Practitioners and scholars of the military art are well advised to take to heart the counsel of the US Army War College that

> seapower, airpower, spacepower and even cyberspace power have enabling roles to play and may actually prove decisive in the outcome of a war, but they will only rarely prove definitive in determining a conclusive and persistent change for the course of the future. The final outcomes will always be relative to landpower.[119]

Notes

1 Helmuth von Moltke, 'Doctrines or War', in Lawrence Freedman (ed.), *War*, Oxford University Press, Oxford, 1994, p. 218.
2 *Warfighting*, MCDP 1, Department of the Navy, Headquarters United States Marine Corps, Washington, DC, 20 June 1997, p. 3.
3 For a full explanation of this term, see R. Smith, *The Utility of Force: the Art of War in the Modern World*, Allen Lane, London, 2005.
4 *US Army Field Manual No. 1*, Headquarters Department of the Army, Washington, DC, 14 June 2005, p. 2-3.
5 G.K. Cunningham, 'Chapter 12—Landpower in Traditional Theory and Contemporary Application', J. Boone Bartholomees, Jr. (ed.), *US Army War College Guide to National Security Policy and Strategy*, US Army War College, Carlisle Barracks, Pennsylvania, 2004, p. 164.
6 *Design for Military Operations—The British Military Doctrine*, H.M.S.O., London, 1996, p. 2-2.
7 *US Army Field Manual No. 1*, pp. 4-1–4-3.
8 T.R. Fehrenbach, *This Kind of War*, Brassey's, Washington, 1994, quoted in Cunningham, 'Chapter 7—A Survey of Strategic Thought', J. Boone Bartholomees, Jr. (ed.), *US Army War College Guide to National Security Policy and Strategy*, US Army War College, Carlisle Barracks, Pennsylvania, 2004, p. 155.
9 Cunningham, 'Chapter 12—Landpower in Traditional Theory and Contemporary Application', p. 156.
10 Colin S. Gray, *Modern Strategy*, Oxford University Press, Oxford, 1999, p. 207.
11 Cunningham, 'Chapter 12—Landpower in Traditional Theory and Contemporary Application', p. 171.
12 *Design for Military Operations*, p. 4-6.
13 *Design for Military Operations*, pp. 4-6–4-7; and *Foundations of New Zealand Military Doctrine (NZDDP-D)*, NZDF, Wellington, 2004, p. 5-2.
14 *Design for Military Operations*, pp. 4-14–4-16.

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15 *Design for Military Operations*, p. 4-4; and *The Fundamentals of Land Warfare 1*, Doctrine Wing, Land Warfare and Development Centre, Tobruk Barracks, Puckapunyal, 2002, p. 73.
16 *US Army Field Manual No. 1*, p. 1-3.
17 *The Fundamentals of Land Warfare 1*, p. 82.
18 *Foundations of New Zealand Military Doctrine*, p. 5-2; and *Design for Military Operations*, pp. 4-5–4-6.
19 'Land power' is sometimes referred to as 'fighting power' or 'combat power'.
20 *US Army Field Manual No. 1*, p. 1-1.
21 *The Fundamentals of Land Warfare 1*, p. 26.
22 *Warfighting*, p. 39.
23 *The Fundamentals of Land Warfare 1*, p. 22.
24 *The Fundamentals of Land Warfare 1*, p. 22.
25 Basil Liddell Hart, *Thoughts on War*, Faber and Faber, London, 1944, p. 123.
26 *Design for Military Operations*, pp. 4–12.
27 *The Fundamentals of Land Warfare 1*, p. 72.
28 *Warfighting*, p. 9.
29 von Moltke, 'Doctrines or War', in Freedman (ed.), *War*, p. 220.
30 *US Army Field Manual No. 1*, p. 1-18.
31 *Warfighting*, pp. 12–13.
32 *Design for Military Operations*, p. 3-3.
33 *Design for Military Operations*, p. 4-4.
34 *Design for Military Operations*, p. 4-4.
35 British Field Service Regulations (1909), Part One, pp. 1–2, quoted in J.F.C. Fuller, *The Foundations of the Science of War*, U.S Army Command and General Staff College Press, Fort Leavenworth, Kansas, 1993, p. 13.
36 *The Fundamentals of Land Warfare 1*, p. 23.
37 Carl von Clausewitz, *On War*, edited and translated by Michael Howard and Peter Paret, Princeton University Press, Princeton, New Jersey, 1989, p. 141.
38 John I. Alger, *Definitions and Doctrine of the Military Art*, Avery Publishing Group, New Jersey, 1985, p. 9.
39 Napoleon I, Emperor of the French, quoted in Ferdinand Foch, *The Principles of War*, translated by J. deMorinni, The H.K. Fly Company, New York, 1918, p. 13.
40 Clausewitz, *On War*, p. 213.
41 Foch, *The Principles of War*, p. 14.
42 Robert Jackson, *A Systematic View of the Formation, Discipline and Economy of Armies*, Parker, Furnivall and Parker, London, 1845, pp. 23–24.
43 Antoine Henri Jomini , *The Art of War*, translated by G.H. Mendell and W.P. Craighill, Greenwood Press Westport, Connecticut, 1971, p. 328.
44 Clausewitz, *On War*, p. 195.
45 Clausewitz, *On War*, p. 198.
46 Clausewitz, *On War*, p. 190.
47 Clausewitz, *On War*, pp. 193 and 202.
48 Clausewitz, *On War*, p. 204.
49 Clausewitz, *On War*, p. 209.
50 Clausewitz, *On War*, pp. 210 and 213.
51 Foch, *The Principles of War*, p. 13; and Fuller, *The Foundations of the Science of War*, p. 225.
52 Fuller, *The Foundations of the Science of War*, p. 16.
53 Basil Liddell Hart, *Strategy: The Indirect Approach*, Faber and Faber, London, 1967, pp. 348–49.
54 Alger, *Definitions and Doctrine of the Military Art*, p. 8.
55 Cunningham, 'Chapter 12—Landpower in Traditional Theory and Contemporary Application', p. 171.
56 *The Fundamentals of Land Warfare 1*, p. 34.
57 *Design for Military Operations*, p. 2-4.
58 *The Fundamentals of Land Warfare 1*, p. 34.
59 *Warfighting*, p. 31.
60 *Foundations of New Zealand Military Doctrine*, p. 3-4.
61 *The Fundamentals of Land Warfare 1*, p. 63; and *Warfighting*, p. 73.
62 *US Army Field Manual No. 1*, p. 3-3.
63 *Warfighting*, p. 36.
64 *Warfighting*, pp. 36–37.
65 *Warfighting*, pp. 37–39.
66 Liddell Hart, *Strategy: The Indirect Approach*, p. 365.
67 Liddell Hart, *Strategy: The Indirect Approach*, p. 349.
68 Liddell Hart, *Strategy: The Indirect Approach*, p. 350.

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69 *Warfighting*, p. 72.
70 *Design for Military Operations*, pp. 4–22.
71 *Design for Military Operations*, pp. 4-22–4-23.
72 Sun Tzu, *The Art of War*, translated by Ralph D. Sawyer, Westview, Boulder, 1994, p. 183.
73 *Design for Military Operations*, Annex C, p. 1; and *The Fundamentals of Land Warfare 1*, p. 64.
74 Miyamoto Mushashi, *The Book of Five Rings*, translated by Victor Harris, Overlook Press, New York, 1974, p. 59, quoted in Cunningham, 'Chapter 12—Landpower in Traditional Theory and Contemporary Application', p. 160.
75 *US Army Field Manual No. 1*, p. 3-8.
76 *Foundations of New Zealand Military Doctrine*, p. 5-1.
77 *The Fundamentals of Land Warfare 1*, p. 66.
78 *The Fundamentals of Land Warfare 1*, pp. 64–65.
79 *The Fundamentals of Land Warfare 1*, pp. 64–65.
80 *The Fundamentals of Land Warfare 1*, pp. 64–65.
81 *Warfighting*, p. 96.
82 *The Fundamentals of Land Warfare 1*, p. 67.
83 *Design for Military Operations*, pp. 4–24.
84 *Design for Military Operations*, pp. 4-23–4-25.
85 *Warfighting*, p. 86.
86 *The Fundamentals of Land Warfare 1*, p. 67.
87 *The Fundamentals of Land Warfare 1*, p. 69.
88 *Foundations of New Zealand Military Doctrine*, p. 6-1.
89 *Warfighting*, pp. 77 and 80.
90 *Warfighting*, pp. 32–34.
91 Quoted in Fuller, *The Foundations of the Science of War*, p. 319.
92 Quoted in Fuller, *The Foundations of the Science of War*, p. 319.
93 There is a third type of operation not mentioned in this section. It is that involving stability and/or reconstruction tasks designed to sustain and exploit control over areas and populations. Such operations may occur before, during and after the other two and are coercive and cooperative in action. With an objective to set conditions for peace, such operations will be covered in depth in chapter 8.
94 *US Army Field Manual No. 1*, p. 3-7.
95 J.F.C. Fuller, *On Future War*, Sifton Praed & Co., London, 1928, p. 320.
96 Fuller, *On Future War*, pp. 320–22.
97 *Design for Military Operations*, Annex C, p. 2.
98 *Design for Military Operations*, Annex C, p. 3.
99 *Design for Military Operations*, Annex C, pp. 4–22.
100 *Design for Military Operations*, Annex C, pp. 2 and 6.
101 Fuller, *On Future War*, p. 2.
102 Fuller, *On Future War*, p. 2.
103 Fuller, *On Future War*, p. 2.
104 *Warfighting*, p. 94.
105 *US Army Field Manual No. 1*, p. 3-5.
106 *Foundations of New Zealand Military Doctrine*, p. 4-1.
107 *US Army Field Manual No. 1*, p. 3-1.
108 Alger, *Definitions and Doctrine of the Military Art*, p. 8.
109 *US Army Field Manual No. 1*, p. 4-8.
110 *The Fundamentals of Land Warfare 1*, p. 42.
111 *The Fundamentals of Land Warfare 1*, p. 42.
112 *The Fundamentals of Land Warfare 1*, p. 43.
113 *Design for Military Operations*, p. 2-7.
114 *Design for Military Operations*, pp. 4–34.
115 General P.J. Schoomaker, (US Army), quoted in *US Army Field Manual No. 1*, p. 4-6.
116 Schoomaker, (US Army), quoted in *US Army Field Manual No. 1*, p. 4-3.
117 Schoomaker, (US Army), quoted in *US Army Field Manual No. 1*, p. 4.
118 Schoomaker, (US Army), quoted in *US Army Field Manual No. 1*, p. 8.
119 Cunningham, 'Chapter 12—Landpower in Traditional Theory and Contemporary Application', p. 171.

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Bibliography

Alger, John I., *Definitions and Doctrine of the Military Art*, Avery Publishing Group, New Jersey, 1985.

Bartholomees, Jr., J. Boone (ed.), *US Army War College Guide to National Security Policy and Strategy*, US Army War College, Carlisle Barracks, Pennsylvania, 2004.

Clausewitz, Carl von, *On War*, edited and translated by Michael Howard and Peter Paret, Princeton University Press, Princeton, New Jersey, 1989.

Design for Military Operations—The British Military Doctrine, H.M.S.O., London, 1996.

Foch, Ferdinand, *The Principles of War*, translated by J. deMorinni, The H.K. Fly Company, New York, 1918.

Foundations of New Zealand Military Doctrine (NZDDP-D), NZDF, Wellington, 2004.

Freedman, Lawrence (ed.), *War*, Oxford University Press, Oxford, 1994.

Fuller, J.F.C., *On Future War*, Sifton Praed & Co., London, 1928.

Fuller, J.F.C., *The Foundations of the Science of War*, US Army Command and General Staff College Press, Fort Leavenworth, Kansas, 1993.

Gray, Colin S., *Modern Strategy*, Oxford University Press, Oxford, 1999.

Ilachinski, Andrew, *Land Warfare and Complexity, Part II: An Assessment of the Applicability of Nonlinear Dynamics and Complex Systems Theory to the Study of Land Warfare*, Center for Naval Analyses, Virginia, July 1996.

Jackson, Robert, *A Systematic View of the Formation, Discipline and Economy of Armies*, Parker, Furnivall and Parker, London, 1845.

Jomini, Antoine Henri, *The Art of War*, translated by G.H. Mendell and W.P. Craighill, Greenwood Press, Westport, Connecticut, 1971.

Liddell Hart, Basil, *Strategy: The Indirect Approach*, Faber and Faber, London, 1967.

Liddell Hart, Basil, *Thoughts on War*, Faber and Faber, London, 1944.

The Fundamentals of Land Warfare 1, Doctrine Wing, Land Warfare and Development Centre, Tobruk Barracks, Puckapunyal, 2002.

US Army Field Manual No. 1, Headquarters Department of the Army, Washington, DC, 14 June 2005.

US Army Field Manual 100-5, Operations, Headquarters Department of the Army, Washington, DC, 14 June 1993.

Warfighting, MCDP 1, Department of the Navy, Headquarters United States Marine Corps, Washington, DC, 20 June 1997.

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