

AIR POWER STUDIES CENTRE

PAPER 22

April 1994

**THE ART OF TARGETING –
ATTACKING THE CENTRES OF GRAVITY**

By

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About the Author

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INTRODUCTION

In the ten months between August 1951 and May 1952, US air power prosecuted an air interdiction campaign against the North Korean Peoples Army (NKPA) rail supply effort. The objective was to so isolate and weaken the NKPA front line forces that they would either be forced to withdraw or risk being routed in an Eighth Army ground offensive. The rail interdiction campaign, which later came to be known as Operation STRANGLE II, was fatally flawed and doomed to failure from the outset.¹

There were several problems plaguing Operation STRANGLE II but two key flaws were that, given the prevailing situation, the wrong centre of gravity was selected for attack and the weapons used were inadequate for the desired purpose. Successful campaigning is vitally linked to these two functions of the operational art. This paper will address the first of these functions, target selection.

There have been numerous examples in past campaigns where targeting has been instrumental in deciding the outcome of the campaign and determining the duration of hostilities. Operation STRANGLE II is but one such example, but it will serve to illustrate some of the key issues associated with targeting.

By late 1951 ground activity in the Korean theatre had significantly decreased and the NKPA had assumed a static defence posture. Consequently the NKPA supply requirements had decreased to a mere fraction of what they had been. As the USAF official history notes, this was not the ideal circumstance for prosecuting an interdiction campaign.

‘As was the case in World War II, the best time for an interdiction campaign was when the ground situation was fluid, the fighting intense, and the enemy’s logistical needs were greatest.’²

World War II experience had also shown that cutting railway lines was extremely difficult without the guided bombs that were to be a later development.³ It was, therefore, questionable whether an air interdiction campaign against the North Korean rail system would so affect enemy sustainment operations as to achieve the desired aim of forcing a retreat.

Operation STRANGLE II *did* reduce enemy rail transport to between 4 and 5 percent of its pre-war levels, but the supplies that go through via rail and other means were sufficient to supply the NKPA’s needs, and indeed, some stockpiling was possible.⁴ Moreover, the NKPA were particularly inventive in negating the effects of damage to the rail system. They used their not inconsiderable manpower resources not only to

¹ Operation STRANGLE was the codename of the road interdiction campaign which preceded the rail interdiction campaign discussed here. A separate codename was not assigned to the latter campaign and Operation STRANGLE II appears to have been adopted by writers in an effort to distinguish between the two interdiction campaigns.

² Futrell R.F., *The United States Air Force in Korea*, revised edition, Washington DC Office of Air Force History, 1983, p 704.

³ Statistical analysis showed that only 12.9 percent of ordnance dropped during Operation STRANGLE II had any effect on the rail system.

⁴ Futrell, *The United States Air Force in Korea*, p 436.

transport supplies but also to preposition teams at vital points that could either repair damaged rail lines or construct bypass bridges. Most importantly, though, the NKPA moved anti-aircraft assets to defend the rail network. During the operation anti-aircraft fire accounted for 243 aircraft lost and 290 severely damaged.⁵

There are several other important examples where inappropriate targeting had outcomes similar to those in Operation STRANGLE II: failure to achieve the objective; unnecessarily prolonged period of hostilities; and, high attrition of own forces. Determination of the guiding principles supporting the art of targeting is therefore important.

This paper will discuss the principles underlying the art of targeting and will examine how these principles apply in the Australian context. Note that while this paper is set within the context of the operational level of war there is no underlying assumption made as to the level of hostilities. The contention is that the principles discussed here apply equally irrespective if hostilities are classed as low level, high intensity or anywhere in between. The reason is that irrespective of the level of conflict, the fundamental characteristics of warfare remain unchanged. That is, there will always be the need to satisfy a military objective against an enemy, while using only allocated combat resources and operating within constraints imposed by the civilian and military leaderships.

Moreover, while the following discussion is focused on the application of air power in war, the principles of the centre of gravity analysis and the target selection process which are outlined could be applied with little adjustment to the employment of other forms of combat power.

BACK TO FIRST PRINCIPLES – THE CLASSICAL THEORISTS

Perhaps it is right that the first word should belong to Sun Tzu. The suggestion has been made that when Sun Tzu addressed target selection his perspective was the grand strategic and strategic levels of war at a point before actual hostilities commence and where diplomacy and not military force is the mode of conflict.⁶ That may be the case but Sun Tzu's advice *does* have some bearing on the operational level of war and, specifically, on targeting.

Sun Tzu explains that the 'supreme importance in war is to attack the enemy's strategy ... The supreme excellence in war is to attack the enemy's plans'.⁷ We can see the wisdom of these aphorisms by another look at Operation STRANGLE II.

Operation STRANGLE II began in August 1951 just as armistice negotiations got under way so the operation was designed to comply with the Joint Chiefs of Staff

⁵ Kirtland, M. A., 'Planning Air Operations: Lessons from Operation Strangle in the Korean War', *Air Power Journal*, Summer 1992, pp 37-46.

⁶ Handel, M. I., *Masters of War: Sun Tzu, Clausewitz and Jomini*, Frank Cass & Co Ltd., 1992, pp 42-43.

⁷ Sun Tzu, *The Art of War*, trans. S. B. Griffith, Oxford University Press, 1971, pp 77-78.

requirements not to put these negotiations at risk.⁸ However, the ineffectual outcomes of Operation STRANGLE II allowed the Communist negotiators to ‘stall for time hoping that the UN bargaining position would weaken under the strain of mounting casualties and losses’.⁹ Although there were other factors at play, the subsequent redirection of the air interdiction campaign from targeting the rail network to targeting the North Korean dams was a major influence which drove the Communists to being negotiations in earnest. The reason was that attack of the dams caused flooding of the country’s rice crop (and incidentally the railway system!) posing a threat to mass starvation which the NKPA could not defend against.¹⁰ For as long as the UN persisted with Operation STRANGLE II, they danced to the enemy’s tune and fought in accordance with his plan rather than working to defeat it.

After emphasising the importance of attacking the enemy’s plans, Sun Tzu advises that the next best thing is to ‘disrupt his [the enemy’s] alliances’.¹¹ An example of this strategy was Saddam Hussein’s Scud attacks on Israel during the Gulf War. There was grave concern among coalition leaders that these attacks would provoke an Israeli retaliation (as Saddam hoped) and thereby shatter the fragile coalition of Arab nations supporting the UN’s cause. Saddam’s strategy was defeated by the redeployment from Europe of Patriot missile defence systems to defend Israel against Scud attacks.

Sun Tzu’s third priority in targeting is attacking the enemy’s fielded forces. By contrast, both Clausewitz and Jomini identify the enemy’s army as the *first* targeting priority, indicating that their starting point is post-diplomacy when hostilities have either started or are imminent. Therefore, Clausewitz and Jomini are essentially not in conflict with Sun Tzu; all three of the theorists perceive attack of the enemy army to be the first priority *once hostilities commence*.

In identifying the enemy’s army as the target of first priority, Sun Tzu, Clausewitz and Jomini merely reflect the times in which they were writing. Clausewitz and Jomini, in particular, formulated their theories during the days of massed armies meeting on the battlefield when the only way to reach the enemy’s industrial base, centre of communications, populace or military and political leadership was to first defeat his army. Sun Tzu, writing in the sixth century BC, operated under the same handicap.

Clausewitz and Jomini’s theories of war are coloured by the physical limitations in the speed of manoeuvre and reach which applied in those days of massed surface forces where the possibility did not exist of easily by-passing or circumventing (or indeed over-flying) the enemy’s fielded forces to attack his other and more important centres of gravity.

⁸ Message, 98713, Joint Chief of Staff to CINCFE, 11 August 1951 stated in part, ‘If Armistice discussions fail, it is of greatest importance that clear responsibility for failure rest upon the Communists’. Quoted in Kirtland, M. A., ‘Planning Air Operations: Lessons from Operation Strangle in the Korean War’, p 39.

⁹ Clodfelter, M., *The Limits of Airpower – The American Bombing of North Vietnam*, The Free Press (New York), 1989, p 22.

¹⁰ *ibid*, pp 22-23.

¹¹ Sun Tzu, *The Art of War*, p 78.

Yet at the conceptual level Clausewitz and Jomini make an important contribution through their development of the idea of centres of gravity. The term centre of gravity was borrowed by Clausewitz from Newtonian physics in an effort to emphasise the criticality of target selection to the success of campaigns. Clausewitz defines the centre of gravity to be ‘... the hub of all power and movement, on which everything depends ... the point against which all our energies should be directed’ and adds the rider that ‘if the enemy is thrown off balance, he must not be given the time to recover’.¹²

While Clausewitz here conjures up an image of a single all important centre of gravity, Jomini acknowledges the existence of more than one such centre by referring to the attack of ‘decisive strategic points’ or ‘decisive objectives’. According to Jomini a fundamental principle regulating the employment of forces is ‘to strike in the most decisive direction’, that is, in the direction ‘leading straight to the decisive points’.¹³

As previously stated, both Clausewitz and Jomini reflecting the state of warfare of their time, identify the enemy’s army as constituting the single most important centre of gravity. However, their selection of the second priority for attack is of more interest here. Clausewitz and Jomini again agree in selecting the enemy’s capital as the second most important target for attack. In explaining the rationale behind this choice Clausewitz and Jomini echo one another’s words:

Jomini: ‘All capitals are strategic points, for the double reason that they are not only centres of communications, but also the seats of power and government’.¹⁴

Clausewitz: advocated ‘seizure of his [the enemy’s] capital if it is not only the centre of administration but also that of social, professional, and political activity’.¹⁵

These two statements are quite telling. The importance of capitals as centres of gravity does not reside in their status as national capitals but in their being seats of power and government, and centres of communications and administration etc. These are the true centres of gravity that both theorists recommend for attack. It just so happened that in Clausewitz and Jomini’s times, the seat of government, and the centres of communications and administration were all concentrated in national capitals.

Interestingly, Sun Tzu warned against attacking cities but characteristically did not explain his reasoning for doing so. Perhaps an explanation for the apparent conflict on this point between Sun Tzu on the one hand, and Clausewitz and Jomini on the other, may be found in the fact that European cities of the late eighteenth and early nineteenth centuries were totally different in nature to those found in Sun Tzu’s China. In the Europe familiar to Clausewitz and Jomini cities had become centres of

¹² Clausewitz, C. von, *On War*, ed. and trans. Howard, M. and Paret, P., Princeton University Press, 1984, pp 595-596.

¹³ Jomini, A., Baron de, *The Art of War*, trans. Mendell G. H. and Craighill, W. P., Greenwood Press, 1977, pp 328 and 331.

¹⁴ *ibid*, p 87.

¹⁵ Clausewitz, *On War*, p 596.

government, industry, and communications to an extent beyond Sun Tzu's capacity to foresee from his vantage point in the China of the sixth century BC.

THE AIR POWER THEORISTS

Douhet opens the first chapter of his text 'The Command of the Air' with the words 'Aeronautics opened up ... a new field of action, the field of the air. In so doing it of necessity created a new battlefield'.¹⁶ This new battlefield is characterised by three dimensional manoeuvre and a quantum lead in the flexibility, the speed of application and the reach of military power.

The new capability to bypass massed surface forces and '*strike direct and immediately at the seat of the opposing will and policy*' opened up new vistas for military theorists; among them Douhet, and Liddell Hart.¹⁷ As the potential for exploiting the third dimension became better understood, doctrine was developed to reflect the contribution that the air component could make to campaigning in the form of air bombardment, control of the air and the tactical application of air power in support of the surface battle. The targets against which air power is directed continue to be the same centres of gravity identified by the classical theorists, including the enemy's armed forces, leadership, war fighting infrastructure and population. The difference is that the priorities are now able to be altered in that the defeat of the enemy forces does not necessarily have to precede attacking the other centres of gravity.

A LOGICAL FOUNDATION FOR THE ART OF TARGETING

The objective of using military force is to coerce the enemy to accede to the demands made of him. So long as the enemy has the ability to resist militarily, he cannot be forced to comply with any such demands. Therefore, the purpose of striking at the enemy's centres of gravity is to convince the enemy to cease hostilities by degrading his ability to resist militarily. This ability is supported by two factors: the enemy's capacity to wage war and his will to continue doing so. The targets selected for attack must be ones which have a bearing on one or both of these elements of the enemy's ability to continue to fight.

In selecting targets for attack, the starting point for all considerations must be the grand strategic and strategic objectives. At the grand strategic/strategic level the Rules of Engagement (ROE) are set and the impact of the Law of Armed Conflict (LOAC) on the conduct of operations is determined. Hence, not only the strategic objectives but also ROE and LOAC considerations will impose constraints on the application of combat power and both the objectives and the nature of the constraints can vary as the war progresses. For example, during the Korean War the US grand strategy vacillated as the political leadership changed. In June 1950 President Truman's avowed

¹⁶ Douhet, G., *The Command of the Air*, trans. By Ferrari, D., Office of Air Force History, Washington DC, 1983, p 3.

¹⁷ Liddell Hart, B. H. (Sir), *Paris or the Future of War*, Kegan Paul, Trench, Trubner & Co Ltd., London, 1925, p 43. Emphasis in the original.

objective was 'to restore an independent, non-Communist South Korea to its pre-invasion territorial status'.¹⁸ Yet to avoid the risk of a world war, Truman limited the employment of American combat power to the Korean Peninsula. When Eisenhower came to power he was willing to remove the restraints imposed by Truman and even contemplated the use of atomic weapons against the Chinese in Manchuria.¹⁹ Hence not only the selection of targets but also the selection of modes of attack and the weapons to be used may be regulated by grand strategic and strategic guidance.

The Enemy's Capacity to Wage War. An important determinant of the enemy's capacity to wage war is the combat effectiveness of his armed forces which depends on the military leadership and the quality and number of the fielded forces, including the effectiveness of their sustainment. Taking each of these attributes in turn, ways of degrading the enemy's military capability may be derived.

- a. ***Military Leadership.*** In a highly centralised command system, the leadership is an important centre of gravity. In such a situation, the effectiveness of the leadership may be simply degraded by eliminating the leader. Saddam Hussein operated a highly centralised system of leadership in the 1991 Gulf War and despite repeated assertions by the US that Saddam was not a target, General Schwarzkopf has since admitted that 'at the very top of our [the Coalition's] target list were the bunkers where we knew he and his senior commanders were likely to be working'.²⁰ As it turned out these attacks failed so that a backup plan was needed. Where direct attack on the enemy leadership fails or has little chance of success, an alternative course is to attack the leader's capacity to command and control his forces effectively. For effective command and control the leader needs information (intelligence) on which to base decisions, facilities to process this information into a useful form for the purpose of decision making, and the means to communicate his decisions to his forces. By degrading any one of these functions of leadership, information gathering and processing, decision making and communication, the enemy leadership can be made ineffective. The simplest and most direct action can be to silence the leader and remove his ability to command forces by destroying the communications system. In the Gulf War Saddam's communications system was a primary target.²¹
- b. ***Enemy Armed Forces.*** The enemy armed forces are, naturally, a centre of gravity. However, a direct engagement with these forces when they are operating at peak effectiveness carries a significant risk. There would be a higher chance of success and a reduced risk to friendly forces if significant engagement with the enemy is deferred until after the effectiveness of the enemy's forces has been degraded.²² Several means are available for reducing enemy combat effectiveness. These means include degrading the enemy's air defences, logistics support, and ability to manoeuvre.

¹⁸ Clodfelter, M., *The Limits of Airpower – The American Bombing of North Vietnam*, p 13.

¹⁹ *ibid*, p 14.

²⁰ Schwarzkopf, H. N., with Petre, P., *It Doesn't Take a Hero*, Linda Grey Bantam Books, 1992, p 319.

²¹ *ibid.*, p 319.

²² In the 1991 Gulf War General Schwarzkopf required the air campaign to achieve a 50 percent attrition of enemy forces before the ground offensive would start.

- i. ***Air Defences.*** Destruction of the enemy's air defences (including aircraft, counter-air facilities, and reconnaissance and surveillance facilities) creates an air environment in which friendly land, sea and air forces can operate without prohibitive interference by the enemy. In other words, friendly forces have an enhanced ability to manoeuvre because they are not threatened by enemy aircraft or counter-air forces. In such an environment friendly forces are free to attack the enemy's centres of gravity with relative impunity. The devastating effect on the enemy of inadequate air defences is evident in several of the Arab-Israeli encounters, particularly in the Yom Kippur War, the latter stages of the October 1973 War and in the Beka'a Valley air battle of 1982. The 1991 Gulf War is a more recent example.
- ii. ***Logistics Support.*** The function of logistics is to provide the wherewithal for the forces to sustain operations at a necessary level and for the required duration. In doing so the logistics system operates maintenance facilities and facilities for the storage and movement of ordnance, fuel, spare parts, food, and other supplies. Each of these facilities including buildings, vehicles, sea-going vessels and aircraft, and the personnel manning them are enemy centres of gravity.
- iii. ***Ability to Manoeuvre.*** The ability to manoeuvre is an important determinant of combat effectiveness. This ability relies in part on the availability of transportation means and the capacity to manoeuvre without risk. Land transport systems may be interdicted as can airfields and seaports, or alternatively in the case of seaports, blockade may be appropriate. Interdiction operations can also limit the enemy's ability to manoeuvre by making the risk to his forces too high or the cost of protecting them prohibitive.
- c. ***Sustainment.*** In addition to sustainment operations carried out by the military, discussed earlier under the heading of logistics, civilian industry is an important contributor to force sustainment. Frequently, indigenous civilian industry is the source of ordnance and other essential war fighting materials. Important also are the key production facilities which provide the fuel and energy required by the enemy forces. Each of these are important centres of gravity which can affect the enemy's combat effectiveness.

The Enemy's Will to Wage War. Factors contributing to the enemy's will to wage war include:

- a. ***National Leadership.*** The enemy's will to wage war also depends on the national leadership (as opposed to the military leadership). Where the national leadership is not cohesive and does not have the overwhelming support of the populace, bringing the war to the people by attacking targets within the enemy's cities can work in either toppling the hostile leadership or convincing that leadership to order a cessation of hostilities. Targets would need to be ones which carry some national importance or significance. Striking targets which provide essential services to the population, for instance the power supply, could serve this purpose.

- b. **Popular Support.** The level of popular support that the enemy has for maintaining hostilities can be an important determinant of the level of military commitment he is willing to make and of the duration of hostilities. President Nixon's decision to withdraw American forces from Vietnam was greatly influenced by the opposition of the American public to the war. The mass media, and in particular the electronic media, bears a strong influence on public opinion. Where the media is a strong propaganda instrument working for the enemy in melding popular support for his actions, silencing the electronic media is one course open. Alternatively, where the media is able to disseminate news of the enemy's losses or foster a perception that the enemy's cause is not just, then it can work to lower the enemy public's morale and hence erode the public's support for the war.
- c. **National Economy.** An extension of striking targets within the enemy's national boundaries could be the attack against key national industries which do not necessarily sustain the war effort but are important to the enemy's national economy. The threat against the national economy would be an important impetus for the enemy to cease hostilities.
- d. **International Support/Alliances.** Another factor affecting the enemy's will to wage war is international support or that of his allies. Following Sun Tzu's advice, disruption of the enemy's alliances and support base would be influential in changing the enemy's mind. Alliances are important not only because they can provide moral support but also because their support can take a more material form which can help the enemy sustain the war effort, for example weapons and ordnance. Saddam recognised the importance of the Arab support for the US during the 1991 Gulf War and attempted to disrupt the alliance by enticing Israel to take the offensive. Militarily, alliances could be disrupted through direct attack, as tried by Saddam, or the threat of attack including a possible show of intent.
- e. **Operational Failures.** Finally, there will be nothing more convincing to force the enemy to abandon hostilities than the imposition of operational failures and the significant degradation of his war fighting effort. The targets for this effect are predominantly military ones including the enemy's armed forces and their logistical support base.

THE WARDEN MODEL

One model proposed to aid target selection is that put forward by Colonel John Warden, USAF.²³ Warden proposes a model, illustrated in Figure 1, comprising five concentric rings representing the enemy's centres of gravity, with the inner ring representing the most important centre of gravity. According to this model, when attack of the enemy command is not feasible, 'it is possible to render the enemy

²³ Warden, J. A., 'Employing Air Power in the Twenty-first Century', in Shultz, R. H. and Pfaltzgraff, R. L., *The Future of Air Power in the Aftermath of the Gulf War*, Air University Press, July 1992, pp 64-65.

impotent by destroying one or more of the outer strategic rings or centres of gravity'.²⁴ Importantly, Warden stresses that:

‘all actions are aimed at the mind of the enemy command. Thus, one does not conduct an attack against industry or infrastructure because of the effect it might or might not have on fielded forces. Rather, one undertakes such an attack for its effect on national leaders and commanders who must assess the cost of rebuilding, the effect on the state’s economic position in the post-war period, the internal political effect on their own survival, and on the cost versus the potential gain from continuing the war’.²⁵

The Warden model is a clear statement of enemy centres of gravity and provides a logical foundation on which to base the planning of offensive operations by all combat arms – in a traditional war such as that between developed nation states. A problem arises, however, when for whatever reason the war does not fit the traditional mould. For example, Warden’s model would have had limited application in the Korean and Vietnam Wars where the enemy leadership was not centralised and where the enemy homeland did not have a developed industrial base on which depended the sustainment of the war effort. The bungled Operation STRANGLE II has also shown that attacking the transportation network can be ineffective when the enemy is not reliant on established transportation systems.

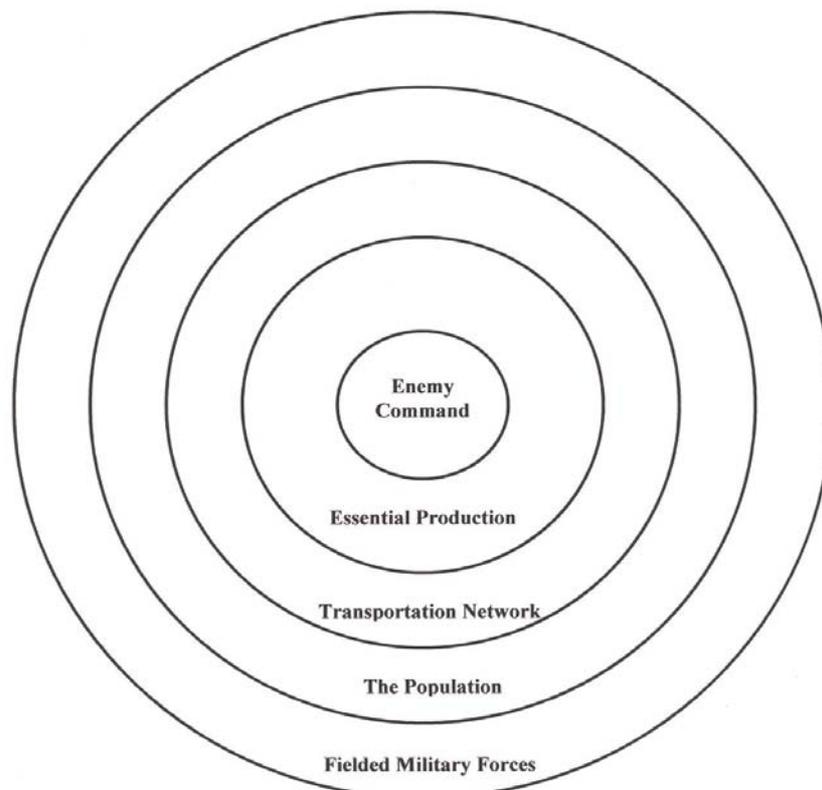


Figure 1 – Warden’s Centres of Gravity Model

²⁴ *Ibid*, p 65.

²⁵ *Ibid*, p 68.

APPLICATION OF WARDEN'S MODEL

Hence, while Warden's model provides a valuable starting point, there is more to the art of targeting than attacking the five key centres of gravity identified in the model. This is particularly true in situations where particular centres of gravity are not open to attack. Such situations include the following:

- a. **Limited Combat Forces.** When the combat forces available for the task are limited in size and capability the capacity to achieve the requisite critical mass in attacking the centres of gravity may become a serious constraint. In such a circumstance the prioritising and phasing of operations and the need to ensure economy of effort become primary concerns.
- b. **Absent Centres of Gravity.** Warden's model has little utility in situations where the several centres of gravity identified in the model are either not present or in fact are not genuine centres of gravity in the sense of contributing to the enemy's will and capacity to wage war. Such a situation arose in the Korean and Vietnam Wars where there was no significant enemy industrial base and the transportation systems such as the rail systems were not essential to the enemy's war effort. Moreover, the enemy leadership was not centralised and readily open to attack.
- c. **Limited War.** Warden's model has little application in situations where political constraints make certain of the centres of gravity not open to attack and where there is a desire to avoid escalation of hostilities. In such circumstances attacking the enemy's leadership, industrial and transportation infrastructure or the enemy's population would be inappropriate.

NEED FOR CAUTION IN THE USE OF AIR POWER²⁶

The reach, rapid concentration of force, and the potential for air power to strike deep into the enemy's homeland, either with surgical precision or to bring indiscriminate destruction, highlights a fundamental difference between air strikes and surface strikes (excluding those by surface to surface missiles). This attribute, while making the air strike a potent application of combat power, makes it also one liable to misuse and/or misdirection.

A study of Bomber Command strikes against Germany in World War II suggests that the control of air strike operations should be subjected to very high level military supervision, possibly the highest.²⁷ The purpose of such supervision would be not only to ensure the efficient and effective use of air power, but also to assure that the targets attacked fall within strategic guidelines. During World War II the strategic objective given to allied bomber commanders, Air Marshal Harris and General Eaker, was to achieve the 'progressive destruction and dislocation of the German military, industrial and economic system, and the undermining of the morale of the German

²⁶ The author acknowledges the significant contribution of Drs Alan Stephens and John Mordike to this discussion.

²⁷ Unpublished correspondence from Dr Alan Stephens held by the author.

people to a point where their capacity for armed resistance ... [was] ... fatally weakened'.²⁸

Air Marshal Harris was able to interpret that directive to suit his own theories, which meant he continued to target German cities and civilians. However, at the Casablanca Conference of January 1943 the enemy centres of gravity were identified by the Combined Chiefs of Staff as (in priority order): the submarine bases and yards, the German Air Force and its factories and depots, ball bearings, oil, synthetic rubber tyres and military transport.

Therefore it would seem to be necessary for the targeting process to be controlled at the highest levels to ensure that the operational focus is not shifted from that required by strategic guidance. Arguably, this applies more so to the application of air power than to other forms of combat power. The reason for saying so is that, with the exception of surface launched missiles and special forces, air power is the only combat force that has the reach to strike enemy strategic targets which comprise the four inner rings of the Warden centre of gravity model.²⁹

The question arises at how high a level should control of the targeting process be fixed. During Operation ROLLING THUNDER of the Vietnam War, the targeting process was controlled by the United States National Security Authority comprising the President, the Secretary of Defence who met with their advisers at President Johnson's now notorious Tuesday luncheons.³⁰ Significantly, the group of presidential advisers excluded the Chairman of the Joint Chiefs of Staff so that there was no direct military input into the target selection process.

The targeting process was unsatisfactory because of the absence of military input and the interruptions caused as a result of the President's preoccupation with other matters such as the attempted coup in the Dominican Republic at the end of April 1965 and the Arab-Israeli War in June 1967. The President's absences for health reasons also interfered with the targeting process. Moreover the quality of the targeting directives was also suspect, often leaving the military confused and uncertain as to what was intended.

The general failure of the targeting process employed by the United States for ROLLING THUNDER would seem to argue that responsibility for the targeting process should be vested in the highest *military* leadership who would select targets in accordance with politically endorsed strategic guidance. Military leaders' attention is less likely to be distracted by external matters and their knowledge of operations would ensure clearly understood guidance is provided to the combat forces.

²⁸ Hastings, M., *Bomber Command*, London, 1987, p 185.

²⁹ The author thanks Dr John Mordike for drawing attention to the capacity of special forces to attack the strategic targets identified by the Warden model.

³⁰ For a detailed account of the targeting process employed by President Johnson see Clodfelter, M., *The Limits of Airpower – The American Bombing of North Vietnam*, pp 120-122.

THE ART IN TARGETING – AN AUSTRALIAN PERSPECTIVE

Although the target selection process stems from a centre of gravity analysis, potential targets must be put through several filters before they are selected for attack. These filters will test each potential target to determine whether it is viable in terms of constraints imposed by strategic guidance, the Law of Armed Conflict, force capability and force employment principles.

During the 1991 Gulf War the coalition forces, through sheer weight of available resources and because of the nature of weapons and ordnance in their inventories, were able to attack continually and concurrently most of Iraq's centres of gravity. The one exception was that the population was not directly targeted. However, the ADF being a much smaller force with a much more limited range of weapons and ordnance would be forced to set priorities for the allocation of effort more carefully.

Several considerations would have a bearing on which target and which force elements to task. Indeed, the possibility of tasking alternative elements of combat power must also be considered. The substitution of one form of combat power for another has long been the subject of debate (both on the basis of logical argument and self-interest) by services the world over. While discussion of this issue is beyond the scope of the present paper, it would be remiss to ignore the need for such a consideration to be made in the interest of maximising the effectiveness and efficiency of national combat forces.

Each target and force element option must then be tested against each of the following factors.

- a. **Strategic Guidance.** The starting point is the grand strategic and strategic objectives. These will define the bounds of authorised actions and the limitations placed on the nature of targets authorised for attack. The grand strategic and strategic objectives will also define the required time within which the objectives must be achieved, the desired end-state after the war and, hence, the effect that needs to be created on the enemy. Strategic guidance will also include requirements with respect to LOAC and ROE compliance. Given the strategic guidance the operational commander and his battle staff can then identify the target options available for attack and those not available for attack and he can also identify any force elements debarred by strategic guidance from taking part in the operation.
- b. **Target Set Selection.** Once the centres of gravity available for attack have been established, the selection of the ones to be targeted is based on the following considerations:
 - i. **Support of Strategic Objectives.** The first point that must be considered is the degree to which attacking the potential target supports the strategic objective. If attacking the proposed target is only going to have a marginal effect on the overall outcome of the campaign then consideration must be given to identifying higher priority targets.

- ii. ***Effect on the Enemy.*** There must be a valid analysis of the effect that attacking the proposed target will have on the enemy; that is both the direct impact of the attack and how this will influence the enemy's will and capacity to wage war including the time over which these effects are expected to be felt by the enemy. In addition, the analysis must also include assessment of the enemy's capacity to mitigate the effects of the attack and hence defeat the purpose of attacking the proposed target. Such an analysis would have shown that the Operation STRANGLE II rail interdiction campaign was an ineffectual operation.
- iii. ***LOAC and ROE Considerations.*** Australia has ratified international obligations to comply with the Law of Armed Conflict (LOAC). Consequently, targets must be assessed to determine if there will be any LOAC violation. Similarly, potential targets must not contravene the Rules of Engagement (ROE) approved by the government. Although, if deemed necessary, ROE changes may be requested.
- iv. ***Achievability.*** Naturally the intent of attack is to achieve some effect at the target. The probability that the desired effect will be generated must be assessed before a potential target is approved. Factors determining the achievability of the desired effect at the targets include:
 - (a) ***Suitable Weapon/Ordnance Available.*** The inventory must be examined to determine whether or not suitable delivery platforms and appropriate ordnance exists to give a high degree of assurance of achieving the desired effect at the target, given the constraints imposed by strategic guidance. In considering the suitability of available weapons and ordnance, planners need to be satisfied that the weapons-ordnance combination proposed for use provides a cost-effective means of attacking the proposed target. For instance the number of sorties required to ensure an acceptable level of success and the risk to the tasked force element need to be balanced against the importance of attacking the target.
 - (b) ***Availability of Trained Aircrew.*** Depending on the proposed mission profile, a determination needs to be made that adequately prepared aircrew are available or that there is adequate time for preparatory training and rehearsal.
 - (c) ***Target Accessibility.*** The accessibility for attack of the potential target needs to be established. For example, it would be pointless to identify a target beyond the reach of available forces. The suitability of the prevailing weather and the level of protection afforded to the target will also be considerations here. For example highly fortified targets may not be susceptible to attack with available weapons and ordnance.
 - (d) ***Currency/Accuracy of Intelligence.*** The adequacy of available intelligence on the potential target needs to be established. For instance the currency and accuracy of intelligence will be prime considerations where mobile targets are contemplated for attack.

- (e) **Measure of Success.** An important element of the achievability of a target is to have a statement of what constitutes success. This is to enable an assessment to be made of the success of the mission and to determine subsequently if the outcome of the attack did indeed have the expected effect on the enemy. Without such a yardstick or the means to make an assessment of the impact of the attack, attacking the target could be a futile exercise.
- v. **Weight of Effort Required.** Depending on the other commitments of forces and the need for an appropriate balance between prosecuting offensive and defensive operations, the relative priority of each potential target needs to be assessed based on a determination of the weight of effort required to be launched against it and the expected end effect. For well-fortified targets repeated attacks may be necessary to ensure success. Alternatively, the attacking force may need to be accompanied by other elements to suppress enemy air defences, provide air-to-air refuelling, early warning and jamming of enemy target acquisition and tracking systems. Hence, depending on the target, the force package required to defeat it could comprise a significant part of available resources. Therefore, the relative priority of each target versus the weight of effort required needs to be carefully considered.
- vi. **Risk to Own Forces.** Another consideration that needs to be made is to determine the level of risk to which the tasked forces will be subjected. There is a need to ensure that the potential cost is adequately compensated by the expected benefit of conducting the attack.
- vii. **Enemy's Response.** The final step is to assess the enemy's reaction to the attack. The courses of action open to the enemy must be evaluated and his most likely course should be determined, whether this be a retaliatory action or a change of strategy. This will assist in further validating the targets selected and in retaining the initiative of manoeuvre.

Once the above steps have been completed for each of the potential targets, the selection of targets for attack, the prioritisation of these targets and the phasing of operations should be made on the basis of selecting those which will make the greatest contribution towards achieving the strategic objectives with the most effective use of forces and the lowest risk of failure and loss.

CONCLUSION

The target selection process is a key determinant of success in war. Poor target selection can lead to a failure to achieve the strategic aim, dissipation of war fighting resources or at the very least protraction of the war. While the logic behind the centre of gravity approach to target selection is sound, difficulties can arise in warfare where the enemy is not a developed nation having the centres of gravity such as key production facilities and communications and transportation systems that are essential to its war fighting effort.

Equally, difficulties arise when the enemy's centres of gravity as discussed by the military theorists and depicted by the Warden model, are excluded from attack by strategic guidance and authorised ROE. Moreover, where the available war making resources are limited in either number or capacity, knowing the centres of gravity does not necessarily make them open to attack.

Hence, there is a need for a process of assessing and comparing the relative merits of targets which are open to attack. This paper has proposed such a process which can be used to provide a basis for target selection and prioritisation.