

The Psychological Use of Air Power: A Growth Area for The Future

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The ability of air power to produce psychological effect has long been proven yet it remains underrated in British air power thinking. In the current strategic environment where collateral and proportionality concerns constrain kinetic air operations, air power's psychological effect can be as important, if not more so, than its physical effect. Using information presented in academic and government literature, internet articles and current British and American doctrine, this paper analyses coercion, the asymmetric advantages of air power, including PSYOPS and the idea of combining physical and psychological air strategies, and finally strategic paralysis in order to show where British air power doctrine could be updated. The paper demonstrates that influence dominates current operations and the psychological use of air power needs greater profile in future British air power doctrine.

Introduction

For every physical action that is seen or perceived, there is an inevitable psychological reaction.¹ All military force can therefore induce a psychological reaction in an opponent, but air power's key attributes of height, speed, reach and ubiquity,² mean that it has the unique ability to target far beyond the front-line enemy troops to also target the leadership and enemy population. The Royal Air Force's first Chief of the Air Staff, Air Chief Marshal Sir Hugh Trenchard, alluded to this when in 1919 he boasted that: 'the psychological effects of bombing outweighed the material at a ratio of twenty to one'.³ This assertion was made at a time when physical destruction of an opponent was not possible due to the capability of air power that existed and therefore perhaps overrates air power's psychological effect. After the Second World War, the psychological effect of air power was largely discounted and underrated until the end of the Cold War, so it is not surprising that current British air power doctrine mainly concentrates on the physical effects of air power at the expense of its psychological aspects. Perhaps it is because it is difficult to induce a predictable psychological reaction in an opponent which has led to its lack of consideration, but lessons identified throughout the Twentieth Century indicate that air power's psychological impact should not be ignored.

This paper will show that air power consistently has been used to produce psychological effect throughout its history, but the psychological use of air power is underrated in current

British air power doctrine. In the current strategic environment, air power's psychological effect can be as important, if not more so than its physical effect, therefore it should now be given greater profile in doctrinal thinking. The paper will cover three key areas in order to show where current British air power doctrine could be updated: coercion, the psychological use of air power in operations other than war and the combination of physical and psychological air strategies in order to achieve synergy.

Coercion

The preferred method of using air power to achieve psychological effect is through coercion. Military coercion seeks to influence an opponent to alter their behaviour,⁴ and is distinct from the use of brute force. Whereas brute force is used to purely destroy, coercive force refers to the use or threat of the use of violence to persuade the opponent to change its behaviour.⁵ In this sense the essence of military coercion is, therefore, psychological in nature.⁶ The idea of coercion as a technique to persuade the opponent to alter their behaviour is apt but it is, like beauty, in the eye of the beholder.⁷ In other words it is not the intent of the coercer that is important but the perception of the coerced.⁸ This makes the outcome of a coercion strategy difficult to predict, but because results can be achieved without using force, coercion is an attractive option for military commanders.

Historically, coercion has been targeted at one or more of the following three groups: the leadership, the population, or the armed forces of an opponent.⁹ But

because these groups are different, several strategies have been used to varying degrees of success to target each of the three groups. The social scientist Robert Pape lists the four major coercive air strategies as punishment, risk, decapitation and denial,¹⁰ and each shall be analysed in turn.

The idea of punishment as a theory of coercive air power to target the population of an opponent existed from the early days of air power thought. In 1915 Germany used Zeppelins and large aircraft to drop bombs on targets in Britain with relative impunity. The psychological effect of this bombing far outweighed its physical damage and the fear mixed with anger that the bombing caused endured in the British mind for decades.¹¹ Was the fear of the bomber made worse because these attacks marked the first time in years that our traditionally secure island nation had felt so vulnerable? If so, it could be argued that it was partially in response to this sense of fear that led to the creation of the Royal Air Force as an independent force in 1918.

Immediately after the First World War, Trenchard became an advocate of strategic bombing and in particular its effect on the enemy's morale. Was this because his bomber force was too small to inflict large-scale physical damage so it had to concentrate on targeting the enemy's morale? This is undoubtedly a major factor because until the Second World War it was simply not possible to deliver sufficient ordnance by air to cause a great deal of physical destruction. It therefore fitted Trenchard's assumptions to emphasise and overrate the psychological effect of air

power at the time.

The use of British air power in the inter-war years in the colonial policing role seemed to further support the psychological effect of air power. Rebel tribes in areas such as Mesopotamia and Somalia were offered ultimatums and then bombed if they failed to comply, which was the case on the majority of occasions. The degree of success of the use of punishment as part of a coercive strategy was certainly heralded by the infant Royal Air Force, which at the time was in need of a mission to ensure its continued independence. The desire for independence saw the lessons learnt from colonial policing transported to Europe and incorporated into the Royal Air Force's doctrine. AP 1300, the Royal Air Force War Manual first published in 1928, contained inputs from lessons learnt from colonial policing as well as theories on strategic bombing: 'many of the arguments were the same: war was largely a psychological effort [and] air power was an inherently offensive weapon'.¹²

In the Second World War, strategic bombing for psychological effect had mixed results for the both the Allies and the Axis forces. In Britain, the official Government message was that the German strategic bombing campaign on British cities stiffened rather than adversely affected British civilian morale. However observations of those towns that had been bombed showed the opposite effect with fear, resentment and low morale.¹³ So it is worth noting that the German campaign was having the effect that the Luftwaffe desired, but perhaps the bombing was not sufficiently intense.

This possibility was acknowledged by Winston Churchill after the war: 'if the allied bombs of 1943 had been applied to London of 1940 ... no one has the right to say that London, which was certainly unconquered, was also unconquerable'.¹⁴

Therefore despite official reports, the Allies had evidence to demonstrate that a strategic bombing campaign of sufficient magnitude against a civilian population could have the desired effect.

After the Second World War, Thomas Schelling developed the concept of coercion through risk. Schelling was referring to both nuclear and conventional coercion through risk when he said: 'the heart of this strategy is to raise the risk of civilian damage slowly, compelling the opponent to concede to avoid suffering future costs'.¹⁵ In the ideal application of the risk strategy, only minimal force would be required in order to succeed thus minimising collateral damage and civilian casualties.¹⁶ Conversely, however, if risk fails to coerce then it would be necessary to follow through with the bombing of civilian targets in a manner similar to a punishment strategy. Where Schelling's theory appears to have its limitations is in its focus on civilian targets rather than military ones, thus missing an opportunity to attack the enemy's military capability.¹⁷

The ROLLING THUNDER bombing campaigns against North Vietnam between 1965 and 1968 were seen as the greatest test of the risk theory as a coercive strategy. The campaigns have been deemed failures, but was it a failure because of the concept of risk strategy or a misapplication

of the theory? Experts disagree but the main lesson seems to be that although air power has a debilitating psychological effect on the population, it is not enough to prove the validity of risk theory. Therefore this further underlines the impression that targeting the population is not the most efficient method of using air power to achieve a coercive effect. The main effort should perhaps, therefore, be directed towards the leadership.¹⁸

The most direct way to target the leadership of an opponent is through a decapitation campaign. The concept of decapitation as a coercive strategy is most associated with the air power theorist and architect of the DESERT STORM air campaign, John Warden. The theory advocates paralyzing the opponent by one of three methods: killing the leader, creating conditions for a change in leadership or by isolating the leader from his levers of power.¹⁹ In this way, the opponent would be successfully coerced with minimum commitment of resources and minimum collateral damage. Opponents of this theory argue that it is immoral, incompatible with the political restraint faced by the West and importantly has yet to succeed.²⁰

In comparison to the decapitation strategy, the use of denial as a coercive strategy has achieved tangible results. A denial campaign can be described as: 'air operations against enemy deployed forces, the demoralisation of which might cause the enemy cohesion to disintegrate and battlefield resistance to collapse'.²¹ The use of tactical air power against fielded forces has had proven success in achieving psychological effect. These effects

may be purely tactical in nature against enemy troop morale or may also contribute to a campaign's strategic aims by disrupting the enemy so much that it changes its war aims or brings about a negotiated settlement.²²

The trend of mass desertion following air attack has been regularly seen thus demonstrating the greater psychological effect that air power can offer rather than pure physical destruction.²³ The likelihood of the mass desertion or surrender of troops cannot be accurately predicted but can instead be an unplanned dividend for the campaign planners. For example in the 1991 Gulf War although the destruction of the Iraqi military units in the Kuwaiti Theatre of Operations (KTO) was the main reason for the coalition to use of B-52s to attack Iraqi positions, the round-the-clock bombing undoubtedly had an adverse psychological effect on the Iraqi troops. It is estimated that out of 400,000 Iraqi troops in the KTO, 160,000 troops deserted, 87,000 were captured yet only 10,000 were killed.²⁴ Having analysed the four coercive strategies, the initial conclusion is that the denial strategy has not only produced consistent tangible results, but appears to have remained morally acceptable in a manner that punishment bombing of civilians or the direct targeting of an opponent's leadership have not. But what are the current political, economic, social and technological limitations of using air power to achieve psychological effects?

Air power theorists of the inter-war years such as Mitchell and Douhet assumed that a punishment-based

coercive strategy against the enemy's civilian population would occur during a total war and would not have a great deal of political restraint.²⁵ The reality is that bombing civilian targets or assassinating enemy leaders in any conflict other than total war is politically and morally unacceptable to the West and, more importantly, does not work. Does this mean that punishment, risk and decapitation coercive strategies are not acceptable in the current strategic environment? Undoubtedly if kinetic air power is used incorrectly or causes unintended or disproportionate civilian casualties then the consequences for the political and public support can be critical. Therefore it can be concluded that a coercive denial strategy, which by definition targets the enemy's military capability, should be more compatible with today's political constraints. Indeed successful denial coercive campaigns such as Operation ALLIED FORCE in Kosovo in 1999 have underlined air power's ability to offer strategic effect at a relatively cheap price.

In addition to the political constraints, the ability to attack an enemy's economy in order to coerce the leadership is also limited in anything other than total war. Any attack on economic targets are likely to have unplanned civilian casualties, such as during the 1991 Gulf War when attacks on electrical power grids led to the contamination of water supplies which caused the outbreak of cholera and an estimated 111,000 Iraqi civilian deaths.²⁶ The negative strategic psychological effects of such 'collateral damage' obviously undermine the positive tactical success of the attack. That

said, military necessity may dictate that certain economic targets are hit but they often attract criticism that the attacks disproportionate and indiscriminate.²⁷ In summary, the economic constraints placed on an air campaign are inherently at odds with a punishment coercive strategy.

The social limitations on the use of a coercive campaign are imposed not only by one's own norms and values, but also by the opponent's and indeed those of the entire world. Colin Gray argues that war has become a 'spectator sport [where] there is a dialogue among what technology permits, what politics requires, and what society allows'.²⁸ For example the decapitation coercive strategy employed by the Israeli Air Force against Hamas leadership in Gaza in January 2009,²⁹ was widely reported which galvanised wider global condemnation of the Israeli strategy.³⁰

The examples used thus far have concentrated on major combat operations against what is often called a symmetrical opponent, but it is arguable that the Royal Air Force will predominantly be used to support operations other than war (OOTW), such as counter-insurgency (COIN) and peace support operations (PSO), in the near-to-medium term rather than be engaged in major combat operations.³¹ So how has air power's unique attributes and asymmetric advantages been used to achieve strategic psychological effect in such operations?

The Psychological Use of Air Power in Operations Other Than War

First, COIN case studies have shown: 'the use of destructive force has often been ... counter-productive to

the political end state, while being very beneficial to the aims of the insurgent'.³² This was demonstrated by the comments made by President Karzai of Afghanistan in 2008 following a series of U.S. air strikes which had caused many civilian casualties: 'I wish I could intercept the planes that are going to bomb Afghan villages ... we have no power to stop the planes, if we could... we would stop them and bring them down'.³³ This is, unfortunately, not a new lesson for air power practitioners and theorists to learn. In 1924, Sir Henry Dobbs, the High Commissioner in Iraq, noted that: 'a situation may frequently arise in which the capture or killing of a specified offender or offenders would have good effect, while the indiscriminate bombing of non-combatants associated with such offender or offenders would have a bad effect'.³⁴

The solution used in 1920s Iraq in order to minimize these negative strategic effects of the tactical use of kinetic air power was the same as that used in Afghanistan today: a non-kinetic demonstration of air presence. By 'buzzing' the targets, airmen found that they could have an effect on the insurgents and civilian population which could then be escalated into a kinetic strike if necessary. A similar approach is credited with achieving the surrender of German forces on Rhodes in 1944. A Royal Air Force squadron flew in close formation at low level over the German positions in an aggressive demonstration of air presence. The German forces surrendered without further resistance thus achieving the aim without the kinetic use of air power and the associated collateral damage that would have occurred.³⁵ Today,

such non-kinetic demonstrations are called 'Shows of Presence' or 'Shows of Force'³⁶ and are part of a graduated response to deter or coerce the insurgent without, ideally, the need to employ kinetic destructive force.³⁷ Experience has shown that, as in any coercion strategy, the threat must be credible and where necessary the kinetic threat needs to be used. That said, experience from Iraq and Afghanistan has confirmed the validity of the tactic.

Second, the ability to provide rapid and timely mobility has long been recognized as an important, yet often overlooked, aspect of air power in COIN operations.³⁸ Air mobility gives a freedom of manoeuvre which is not normally enjoyed by the insurgent and therefore can have significant strategic effect in COIN, PSO and stability operations. Tactical mobility and resupply through either fixed-wing aircraft or helicopters has greatly enhanced the ability of ground forces to increase their presence in a theatre and therefore deter the insurgents from undertaking operations. However, the most important area that air mobility can provide strategic psychological effect is through humanitarian relief efforts. The Berlin Airlift between 1948 and 1949 is an example of air power delivering not only physical effect to those on the ground, but also having an important strategic psychological effect. The Airlift was a strategic psychological victory for the Allies against the Soviet Union, but additionally over the population of West Berlin who came to trust their former enemies.³⁹

Third, air power's ability to provide strategic situational awareness

has links to the use of air power to project the image of omnipresence. While not a new concept, the ability to *rapidly* find, track, identify and prosecute a target has become almost a prerequisite for contemporary air operations. This ability to deliver coordinated effect seemingly at will across a theatre can have significant psychological effect as described by a Serbian soldier during Operation ALLIED FORCE in 1999:

*They knew everything about us. There wasn't anything they didn't know. If we lit a cigarette, they could see it. ... We didn't expect that intensity. We couldn't fight planes with mortars. And our anti-aircraft guys couldn't do anything. ... We spread out ... but they just picked us off. Bosnia was a spa compared to Kosovo. ... I'm going to the woods, where everything is calm. I'm going to spend 10 days there, thinking of nothing, alone. I want to be alone.*⁴⁰

Air power's unique ability to give the operational commander a theatre-level perspective from a space-based asset, or give a tactical commander detailed local information from a mini-unmanned air vehicle represents a true asymmetric advantage.

A PSYOPS campaign can also contribute to the success of operations such as COIN and PSO. The United States Air Force *Irregular Warfare* doctrine manual defines PSYOPS as operations to: 'induce, influence, or reinforce the perceptions, attitudes, reasoning, and behavior (sic) of foreign leaders, groups, and organizations in a manner favorable (sic) to friendly national and military objectives'.⁴¹ In comparison, Royal Air Force air power doctrine does not mention PSYOPS at all, yet air power

has an important contribution to make.⁴² Aircraft are used to deliver leaflets to the target audience and as platforms to broadcast loudspeaker, radio or television messages. Leaflet drops have proven to be extremely effective ever since they were first used in the nineteenth century sieges of Milan and Paris.⁴³ Not all leaders have been convinced of the success of leaflet drops. Air Chief Marshall Arthur "Bomber" Harris famously quipped that: 'the only thing achieved was largely to supply the continent's requirements of toilet paper for the five long years of the war'.⁴⁴ More recently, air-delivered leaflets have been used to varying degrees of success in all U.S. operations since the Second World War, but the message needs to correlate with the physical military activity in order to be effective.⁴⁵

While successful PSYOPS campaigns may seemingly offer tactical advantage by encouraging mass desertion or discouraging the enemy to fight, success is difficult to measure. This is because it is almost impossible to know whether it was the PSYOPS message or indeed something unrelated that caused the effect. For example in NATO's Operation FALCON SUMMIT in Afghanistan in December 2006, at least 88,000 leaflets were dropped before Canadian forces entered the Taliban-held village of Howz-e Madad 'without firing a shot'.⁴⁶ But why did the Canadians face no resistance? Was it the PSYOPS campaign that caused the Taliban to flee or had the Taliban already executed a pre-planned withdrawal to Pakistan?⁴⁷ Arguably it does not matter whether the PSYOPS campaign succeeded or not because the mission was a success. Air power

therefore has a useful role to play in COIN, PSO and stability operations in order to provide psychological effect. Importantly, since these operations concern the wider civilian society affected by the conflict and not just the combatants, then perhaps applying psychology theory to the use of air power offers a way forwards.

In order to win the hearts and minds of the population whilst also eliminating the enemy, the indirect use of air power might be a more effective measure than a direct kinetic approach. One novel method of applying the indirect use of air power to achieve psychological effect is to use it to target Abraham Maslow's four levels of deficiency needs: physiological, safety, social and self-esteem.⁴⁸ If it is true that in COIN, PSO or stability operations that: 'systemic political and economic reforms are likely to have as much or much more value in gaining victory ... as success on the battlefield',⁴⁹ then perhaps by employing psychology, military power and air power in particular can offer an alternative approach. Maslow's needs are often depicted as a hierarchy with each one needing to be fulfilled in turn, but how can air power be used to address these needs?

The first level consists of the physiological needs of food, air and water.⁵⁰ Air power can be used to fulfil these needs through the role of humanitarian airlift. The ability to address the physiological requirements of the local population may have the desired strategic effect of gaining support for those giving the aid and assistance. Air power would not likely be the only method of fulfilling these needs, but

its inherent speed and reach mean that it can be effective in getting the support quickly to the problem thus preventing a potential worsening of the situation.

In attempting to address the second need of safety, air power can be used in a constabulary role against potential threats. ISTAR can be used to target criminals, insurgents and terrorists and then direct ground forces to apprehend them, much in the same way that police helicopters are used in the UK to direct police officers to arrest criminals.⁵¹ Alternatively targets can be directly targeted by kinetic air power but it is worth noting the possible negative unexpected consequences of such attack as discussed earlier in the paper.

The third need, social, is concerned with the desire to have a sense of belonging and community.⁵² The fulfilment of this need is most likely to be achieved through stabilisation operations delivered through the employment of a comprehensive approach by land forces and other agencies in order to help rebuild communities. Air power does not have an obvious role in this task *per se*, but it can be used indirectly to assist civil projects, such as providing airlift or increased mobility to those in the community.

The final deficiency need, self-esteem is the desire for achievement, strength and confidence.⁵³ The presence of air power over polling stations in Iraq and Afghanistan gave the population a sense of reassurance and confidence so that they could go out and vote. In the longer term, by helping to teach the local population how to use air power thus leading

them to developing an indigenous air capability, air power can play a significant role in achieving this need. This would be a long term effort, but as in the case of Iraq, the long term consequences of redeveloping an air power capability have proven to be an important factor in the nation's self esteem. This was reflected in the recent media coverage of the graduation of the first Iraqi Air Force pilot trained in the UK thus demonstrating the rebuilding of Iraqi air capability.⁵⁴ Therefore it is arguable that a strategy should be in place to train local air forces as part of an overall COIN doctrine.⁵⁵

When looking at the contribution of airpower to COIN, PSO and stability operations as a whole, all of the tasks identified above: the non-kinetic use of air power for strategic effect, rapid mobility, ISTAR, PSYOPS and the employment of psychology for strategic effect are valid, but is the Royal Air Force configured and able to undertake them? In 2005 the then Chief of the Air Staff, Sir Jock Stirrup commented that: 'we are in a period when the challenges we face, and the means of meeting them, are changing so fast and so dramatically that nothing short of transformation will allow us to keep pace'.⁵⁶ But arguably this transformation has not taken place. The focus of the Royal Air Force towards delivering kinetic air power over the past twenty five years has shaped today's force structure and COIN operations in Iraq and Afghanistan have highlighted deficiencies in the UK's air mobility, battlefield helicopter and ISTAR capabilities in particular.

Air mobility, both strategic and tactical is required in line with the

UK's National Security Strategy to: 'tackle threats to our national security at source'.⁵⁷ The UK's high level of operational tempo since 2001 means that the Royal Air Force's Air Transport fleet have been used at a rate far higher than originally conceived. A National Audit Office report in June 2008 commented that: 'Most nations do not have sufficient airlift assets to meet all their requirements and the United Kingdom is no exception'.⁵⁸ Importantly though: 'while the [MOD] is meeting current operational requirements there are significant risks to the availability of the tactical fixed wing airlift capability in the future'.⁵⁹ The situation of UK's helicopter fleet has not escaped the National Audit Office's gaze either. Its 2004 report into battlefield helicopters noted: 'that [Joint Helicopter Command] is some 38 per cent short of its required battlefield helicopter fleet, a shortage not expected to be overcome until 2017'.⁶⁰

The UK's ISTAR capability gap has been mitigated by a mixture of new capabilities and by using aircraft and other equipment for roles other than they were intended. New capabilities have been provided by the introduction of the advanced stand-off radar (ASTOR) system and by short-term off the shelf solutions procured under Urgent Operational Requirements such as the REAPER UAV. The use of Nimrod maritime patrol aircraft as overland communications relay platforms, and the use of fast jet aircraft targeting pods to provide reconnaissance (non-traditional ISR) are examples of equipment pressed into ISTAR roles to fill capability gaps, but both are only stop-gap solutions

to a wider problem.

Taken separately these shortfalls and lack of capabilities may be manageable, but they are symptomatic of the Royal Air Force's focus towards having capabilities to fight major combat operations rather than having a balanced force structure to face a variety of operational scenarios. Is it because the Royal Air Force believes, as a senior unnamed U.S. Air Force General did in the 1990s, that it does not need to think about: 'those kinds of wars since we can always muddle through'?⁶¹ If that was the case before recent operations in Iraq and Afghanistan then it is likely that current operational context has changed those views. The Royal Air Force's current doctrine manual, AP 3000 Fourth Edition, has only recently been updated to include thinking concerning COIN and PSO but the Royal Air Force requires a reappraisal of priorities and perhaps a return to its roots of being able to conduct: 'operations against wild men in wild places'.⁶² At the heart of these operations is the need to gain the trust and support of the population; this can be thought of as a psychological task which is supported by physical action. Air power can be instrumental in achieving this hitherto underrated aspect of operations but this task is currently of secondary importance when compared to using air power to support kinetic operations.

One of the key problems of pursuing any form of psychological campaign is how to measure its success. The enemy's will to fight or the amount of support of the local population cannot be assessed by traditional battle damage assessment (BDA), perhaps that is

the reason why the psychological effects have been overlooked and underused. Traditional measures of effectiveness of an information or PSYOPS campaign include polling of the population and interviewing prisoners of war to obtain results, but these are long, slow processes when commanders today expect almost immediate BDA.⁶³ The lack of response to a psychological air campaign, such as the early stages of Operation ALLIED FORCE in Kosovo in 1999 can lead to suggestions that the campaign is not working and that another approach is required.⁶⁴ Conversely, in the current operating environment with campaigns being judged in years rather than days or weeks, the need for immediate feedback is less than during high-intensity operations and the traditional methods obtaining BDA which can give the long-term psychological response remain valid. Therefore despite the difficulty in measuring the effectiveness of any psychological effects of the use of air power in a campaign, it should not be discounted in doctrine.

The Combination of Physical and Psychological Air Strategies

Since air power's physical and psychological effects are linked, how should they best be combined? One option is through the concept of strategic paralysis. Basil Liddell-Hart stated that: 'paralysis, rather than destruction, is the true aim in war, and the most far-reaching in its effects'.⁶⁵ This theory accorded with his friend J.F.C. Fuller who suggested that like a body, 'the physical strength of an army lies in its organisation, controlled by its brain. Paralysethis brain and the body ceases to

operate'.⁶⁶ Two relatively modern-day theorists from the USA, John Boyd and John Warden, have advocated the concept of strategic paralysis but they differ as to whether the best way of using air power to achieve paralysis is through its physical or psychological application.⁶⁷

John Boyd's theory includes the assertion that all human and organisational behaviour can be described as continually cycling through an 'Observe, Orientate, Decide, Act' (OODA) loop.⁶⁸ If the speed of one's own actions disorients the enemy's decision-making process then the result is *psychological* paralysis of the enemy. This theory advocates a fast-moving form of warfare that denies the opponent time to mentally cope with the situations that he faces. The 'Shock and Awe' opening to the 2003 Iraq War demonstrated that by manoeuvring quickly (or moving quicker around their OODA loop) the US-led coalition was able to paralyse the Iraqi leadership which led to a swift military defeat.

In an extended COIN operation where success is measure in years rather than days, such as faced in Afghanistan today, how applicable is Boyd's approach? It can be argued that the theory may be useful in delivering tactical success but it is less applicable at the strategic level where there is less need for rapid decision making and action. An alternative view is that rather than being less valid in today's complex operations Boyd's ideas are in fact more valid.⁶⁹ This deduction is based on the assumption that in such a complex operating environment, the side who eventually wins is that

which observes the enemy, learns and adapts its tactics accordingly before the opponent can react.⁷⁰ So although Boyd's theory therefore has its limitations, the concept of psychological paralysis of an opponent remains valid. In terms of attempting to achieve the strategic paralysis of an opponent, Boyd's psychological approach can be contrasted to Warden's more direct physical approach.

In 1988, John Warden described his five-ring targeting model. This model is based on the analysis of the opponent (or any organisation) as a system which can be broken down into five component parts: the leadership, processes, infrastructure, population and fielded forces.⁷¹ Warden's assumption is that all organisations are constructed in the same way: the leadership gives the organisation direction and causes it to respond to external and internal changes. It is therefore the leadership which is the most important of these component parts.⁷² In order to demonstrate the relationship between the five component parts, they can be depicted as a set of concentric rings with the most important, leadership, at the centre and the remainder extending outwards in descending importance.⁷³ The idea is that each of the rings should be simultaneously physically targeted in what Warden calls parallel attack.⁷⁴ The main effort of this attack should be towards the leadership at the centre in order cause *physical* paralysis of the system. The theory goes on to explain that targeting of the outer rings of the circle in order to achieve partial physical paralysis, may also in turn produce a psychological reaction in the leadership.⁷⁵ The most famous

application of Warden's theory is the 1991 Gulf War air campaign.⁷⁶ This campaign arguably proved the theory against a conventional military opponent, but does the theory remain applicable in the current operating environment against disparate non-state actors?

The 2006 Israel-Hezbollah war provides an interesting case study since it involved a nation state using kinetic air power in an attempt to cause strategic paralysis of a non-state organisation. Israel used air strikes to mount an intensive parallel attack on a diverse set of targets including the leadership, infrastructure (bridges and fuel depots) and fielded forces of both Hezbollah and the state of Lebanon.⁷⁷ Instead of achieving the planned paralysis, Israel found that Hezbollah was an enemy that: 'not only defied the standards of conventional war making, but also proved to be sophisticated and prepared'.⁷⁸ As well as failing to paralyse and thus defeat Hezbollah, the negative psychological effects of the air campaign helped to galvanise anti-Israeli opinion in the wider international community.⁷⁹ So where does this leave the notion of achieving the physical paralysis of an insurgent group or terrorist organisation? Using J.F.C. Fuller's 'body' analogy that was mentioned earlier, the non-regular enemy can be considered a 'germ' that has no central 'brain' that can be attacked directly in the way that Fuller suggested.⁸⁰ In summary, Warden's physical approach is less applicable against non-state actors since not only does the organisational structure of the opposition not fit the five rings model, but attempts to physically target key elements of the opposition can cause negative

strategic psychological reactions.⁸¹

When comparing these two approaches: Boyd's psychological paralysis through the use of processes to operate within an opponent's OODA loop and Warden's physical paralysis through direct, parallel attack, they initially appear to be non-compatible. Both however, offer options to a commander as how to approach the question of achieving strategic paralysis and can be applied in different situations. In a conventional 'force-on-force' conflict, an air campaign strategy which combines aspects of psychological attack (Boyd) and physical attack (Warden) is likely to achieve synergistic results since both elements would contribute to the strategic paralysis of the adversary. In other forms of operations such as COIN, or as faced by Israel in 2006, then the notion of strategic paralysis is less applicable. Nevertheless, technology has enabled air power to be applied rapidly where it needs to be thus allowing the commander to move quicker around his OODA loop and therefore the Boyd's notion of psychological paralysis remains valid. An alternative approach called Joint Action has been recently articulated in British Defence Doctrine and merits analysis.

Joint Action is defined as 'the deliberate use and orchestration of military capabilities and activities to realise effects on other actors' will, understanding and capability, and the cohesion between them'.⁸² The doctrinal framework was published in 2008 and recognises that the proper application of both physical (manoeuvre and fires) and psychological activity (influence) is

important. It is implicit in the title that Joint Action involves all aspects of military force, or the threat of force, to achieve the desired outcome,⁸³ but for air power the approach has particular potential. Air power's inherent speed, reach and ubiquity mean that it has the capability to influence events on a vast scale. Therefore the need to fully integrate physical and psychological planning is clear to ensure that the targeting of the *will, understanding, capability* and *cohesion* is effective.

The Joint Action approach theoretically allows campaign planners to adopt a mixed physical or psychological strategy to either directly or indirectly influence the opponent according to the effect desired and the context of the action. As part of psychological influence activity to target the opponent's will, Stephen Hosmer advocates the use of a strategy that makes demoralisation an air campaign objective.⁸⁴ This approach, which brings influence to the fore of the commander's mind, is in line with emerging British thinking that, 'where information operations once supported combat operations, influence can now dominate the contemporary approach [to operations]'.⁸⁵ Hosmer's approach recognises that in the past, the psychological effects of air attacks were largely unplanned. Thus deliberate joint coordination is required to ensure that the influence message that the commander wants to convey is supported by air power's physical use, whether it is kinetic or non-kinetic, and vice-versa. Nevertheless, Joint Action offers a potentially effective yet flexible approach that would be applicable across the spectrum of warfare from

major combat operations to COIN and PSO.

Conclusion

This paper has shown that the psychological effect of air power should now receive greater prominence in British air power doctrine. Despite a great deal of evidence supporting the theories that show that the effect air power can deliver to an opponents' morale outweighs the physical effect, this element of air power has remained underrated since the Second World War. In order to remain relevant, military thinking has to adapt with the times and be subject to 'constant and critical interrogation',⁸⁶ and British Air Power Doctrine, AP 3000, has recently been updated to reflect current operations. That said, although the context of conflict changes over time, Colin Gray reminds us not to: 'misread recent and contemporary trends in warfare as signals of some momentous radical shift'.⁸⁷ Arguably though, complexity of the contemporary strategic environment demands a rapid continual update of doctrine to ensure its relevance.

The lessons learnt from the application of the four coercion strategies; punishment, risk, decapitation and denial during the Twentieth Century have led Pape to argue that denial is the only strategy that works.⁸⁸ It is important though to apply a contextual filter to any lessons since the constraints faced by early air power protagonists differ greatly from those of today. In terms of addressing the changes in the doctrine of coercion, the U.S. Air Force offers its commanders clear guidance.⁸⁹ It is likely that a coercive

strategy will play a role in future major combat operations therefore British doctrine needs to be amended to address this shortfall.

Air power offers operational commanders a significant asymmetrical advantage in COIN and other operations other than war. Deployed tactical commanders understand this and apply the psychological effect of air power, but these lessons need to be captured in doctrine and be supported by the capabilities to put the theory into practice. Unfortunately the Royal Air Force's capabilities in the areas where physical effects could have significant psychological effect in winning the support of the population, in particular air transport and ISTAR, require enhancement in order to remain credible. The application of air power to address Maslow's hierarchy of deficiency needs could offer a potential approach for air power's future application in PSO and stability operations in particular and merits further investigation.

The need to reflect the possibility of achieving synergistic effects by combining a physical and psychological air strategy is long overdue in British doctrine. The emerging British joint doctrine which puts influence to the front of a commander's mind appears to have utility across the spectrum of warfare.⁹⁰ Additionally it appears to recognise that air power's physical and psychological use cannot be separated.⁹¹ The concept of strategic paralysis may have less utility in current COIN operations than in major combat operations, but should not be discounted out of hand. Therefore the possibility of achieving

synergy by applying air power to paralyse an opponent's ability (physical) and will (psychological) to wage war is significant, and should be reflected in British air power doctrinal thought. Since the future use of British air power is likely to be uncertain and varied, thinking should cover the diverse possibilities. The new doctrinal framework of Joint Action offers a potentially flexible and effective approach to combining the physical and psychological elements of air power. Thus future air power doctrine should reflect the possibility of achieving synergy with combined psychological and physical air power strategies.

Air power can sometimes appear to be the best means of delivering psychological effect, especially strategically, but it may not always be appropriate: 'the fact that air power appears so obviously to be the natural military instrument of coercion does not mean that it is automatically the right instrument to choose'.⁹² Nevertheless, air power offers an asymmetric advantage which has for a number of years been underrated and underused. The physical use of British air power in operations today is constrained by concerns about collateral and proportionality, therefore the further development of non-kinetic options for the use of air power is required. Air power doctrine should articulate the need to use a mixture of kinetic and non-kinetic means to influence an opponent and thus the recent update to AP3000 is welcomed. Air power is more than about the application of force and thus the shift towards describing airpower's ability to influence is a good sign. It is important to remember that

doctrine offers guidance and that airmen pride themselves on the ability to be flexible and adapt to the situation faced at the time. Meilinger reminds us that: 'Airmen, from any country, have seldom been accused of being thinkers, and precious few have taken up the pen to write down their thoughts on how air power should be used'.⁹³ Perhaps now is the time to capture airmen's thoughts, which have been shaped by recent operational experience, and develop air power's potential psychological use for the future because, like the concept of influence as a whole, it is a growth area for the future.

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⁹³ Meilinger, 'The Historiography of Airpower: Theory and Doctrine' article, 467.

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