‘Building a Good Instrument’: Assessing the likely characteristics of Future conflicts and their implications for the air component

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Trying to predict the nature of future warfare is fraught with difficulty. The recent emergence of non-traditional adversaries, an exponential change in technologies, increasing globalisation, economic interdependence and the economic downturn have all served to cloud the picture. This paper outlines the possible causes and several projected models of future conflict and discusses its probable characteristics, before exploring the utility of the air component in the most likely future scenario - irregular conflict.
The paper concludes that, given the likely characteristics of future conflict, the air component will remain important, seeing an evolution of the way it is currently utilised. This will mean a requirement to fight across the spectrum of warfare, utilising air power’s strengths and characteristics and developing mastery of the intellectual dimension in order to facilitate cultural understanding of potential opponents and to enhance the ability of air component personnel to think in terms of the strategic level of conflict which their actions at the tactical and operational levels may influence.

'A man who wants to make a good instrument must first have a precise understanding of what the instrument is to be used for; and he who intends to build a good instrument of war must first ask himself what the next war will be like'

General Giulio Douhet, 1928.

Introduction

Trying to predict what will constitute future warfare is fraught with difficulties. The recent past has seen the emergence of non-traditional adversaries, an exponential change in technologies, increasing globalisation, economic interdependence and the inevitable economic downturn all serving to cloud the picture. Given the likely characteristics of future conflict, there will continue to be a role for the air component, and this role is likely to be an evolution of the way it is currently utilised, not least because platforms procured today could be in service for the next 30 years. That there will be conflict in the future, is almost certain, for, as Gray suggests, humankind has yet to demonstrate that, '…(it) is in the process of curing itself of the habit of war.'[1]

This paper outlines the possible causes, and exploring several projected models of future conflict, discusses the probable characteristics of future conflict, before exploring the most likely utility of the air component in the most likely future scenario – irregular conflict - towards the end. Here, relevant factors such as training and education for airmen and procurement issues for air platforms will be covered. This paper only looks out to the 2030 timeframe, as advances in technology and the rapidly evolving global environment militate against longer-term predictions. The focus will be on both the UK and US Air Forces, although where it is relevant, other nations' uses of their air component will also be discussed. The US Air Force (USAF) has brigaded 'Air', 'Space' and 'Cyberspace' together as stated in their mission statement, '…to deliver sovereign options for the defense of the United States of America and its global interests - to fly and fight in Air, Space, and Cyberspace.'[2] However, that is not true of all air forces, or indeed air components, and so this paper only considers both space and cyberspace when it is relevant to the discussion of the air component generally.

As Colin Gray observes, 'It is more than 100 years since Wilbur and Orville Wright achieved the first sustained heavier-than-air flight, and those years have been liberal in providing a host of opportunities for airpower to demonstrate its contemporary prowess.'[3] Air Commodore Paul Colley notes that, '…the wider utility of air power in irregular warfare is less obviously clear.'[4] Nevertheless, the air component is a force-multiplier, and in the future is likely to remain so providing the intellectual dimension is there to support it.

The UK's Defence Concepts and Doctrine Centre (DCDC) suggests that the greatest risk of large-scale conflict will come from those areas where there is a history of recurring conflict, where there is demonstrable economic hardship, demographic and environmental stresses and where there is enduring inequality.[5] Challenges such as climate

change, transnational terrorism, pandemic diseases, inequality and globalisation, particularly with regard to the economy, are likely to have global effect. For DCDC, the areas of change over which conflict may occur in the future are set out within four key themes: population and resources; identity and interest; governance and order; and knowledge and information.[6] First, population growth, resource competition, urbanisation and changing demographics are all loosely related, and may lead to tensions, either singly, or in combination. Clearly, if global population levels grow, then it is not unreasonable to assume that resources such as water and energy will also be at a premium, and competition for them will increase. The trend towards societies in the developed world having an increasingly ageing population, where health care and lifestyle have had a positive effect for increased life-expectancy, present funding challenges in those nations which may impact upon defence expenditure. Here, funds that could be used on defence budgets may have to be diverted to health and social care as the result of pressure from voters, with possible adverse effects on overall levels of defence spending.

In other areas of the world, where societal conditions militate against long life, and where inequalities (both real and perceived) can lead to bloody and brutal conflicts, there exists a 'youth bulge', where the majority of the population is less than 25 years of age. This bulge may cause conflict, given the potential lack of gainful employment, and sufficient social infrastructure for these people to live their lives. Furthermore, perceived historical slights and tensions between different groups in society may be exacerbated and become sources of confrontation, as has been seen in areas as diverse as Africa and the Balkans in recent years.

Second, migration, which is likely to increase, '…in response to environmental pressures, deprivation and the perception of economic opportunities offered in towns and cities, as well as in wealthier regions and countries', is a likely source of tension and potential confrontation.[7] Such migration is likely to lead to increased urbanisation, whereby populations congregate in cities for reasons of employment or forced migration, and this will have particular implications for the military should a conflict erupt, a point explored later in this paper. Forced migration caused by failed or failing states also has military connotations, not least through the mixing of combatants with non-combatants and all that this means for the use of force.

International organised crime is forecast to expand with emerging markets, increased profitability and volume.[8] The implications for the air component derive from the ability of criminals to gain ever more sophisticated means to protect their trade. In Colombia, for example, drug production and trafficking is protected by the Revolutionary Armed Forces of Colombia, which operate freely within a huge demilitarised zone that was set up in 1998 in the South of the country.[9] If this type of sophisticated illicit activity with significant military capability increases, counter strategies will need to be developed across all components. The ability for an

opponent engaging in this type of activity to deny the air component control of the air is a real threat, and one that would require the capabilities to provide traditional air surveillance and the suppression or destruction of the enemy's air defences, even if these are limited to man-portable systems.

One of the most militarily significant factors for the future is likely to be the demand for new energy sources. There may be a need for a well-funded research programme by governments to seek alternative fuels for their military capabilities. The demand for dwindling stocks of hydrocarbons is also likely to continue to cause conflict in the future, such as that caused by Iraq's invasion of Kuwait in 1990 for, (amongst other reasons) control of disputed oilfields spanning the common border. Will climate change also drive the air component to invest in technologies that move away from hydrocarbons in favour of biofuels or other forms of energy? The USAF, for example is certifying its fleet to use biofuels in order to reduce its reliance on traditional supplies.[10]

It is clear that a great many factors could influence the characteristics of future conflict, but it is unsurprising that there is no consensus of what the most significant characteristics will be. It is clear that key decision-makers would be imprudent to ignore the possibility of participation in conflict across the spectrum of warfare - from high to low intensity, from major peer competitor, in nuclear or conventional war, to irregular warfare. For the air component, this range of possibilities means that its constituent forces will need to be chameleon-like in order to adapt to their circumstances reflexively.

Some theorists argue that the likelihood of future major interstate wars is slim for the next 30 years or so. For Rupert Smith there is no doubt: 'It is now time to recognize that a paradigm shift in war has undoubtedly occurred…the old paradigm was that of interstate industrial war. The new one is the paradigm of war amongst the people…'[11]

Lind, Schmitt and Wilson contend that future war will not be a trinity between the Government, the Army and the People, but like in the past, wars will be fought between groups, not states.[12] They argue that, 'the nation state is losing its monopoly on war, and its hold on its citizens' loyalty, in a growing portion of the world…when it loses the ability (or perceived ability) to do that, it will lose the loyalty of the people… (they) will transfer to whatever organizations can protect them' and suggest that this is particularly true in parts of the world such as the Middle-East, Asia and Africa, where the nation state has rarely had the same degree of loyalty from its population as has been seen in the western world.[13] This presents many complications for armed forces, particularly those engaged in intervention operations, and is particularly challenging for the air component which may be called upon to achieve a number of desired effects through exploitation of its perceived utility in the domains of deterrence and coercion without being able to target clearly defined centres of political or military significance with the facility that it

has in previous conflicts, such as that in Kosovo in 1999.

The DCDC suggests that, in the 2007-2036 timeframe:

Major interstate wars will be unlikely, because of the increasing economic interdependence of states in a globalized economy and the need to confront the symptoms of a challenging range of transnational problems, which will enhance the requirement for cooperative governance and action.[14]

However, even since the publication of that statement in 2006, there have been indications that state on state and intra-state warfare can not be easily disregarded as a possibility. The recent Russian invasion of Georgia in 2008 is a case in point. Russian tactics that combined conventional force with cyberwarfare to disable Georgian command and control underscored the range of threats.[15] Flexibility of attitude by all components will be vital to addressing these emergent challenges. Gray predicts that while irregular conflict 'may well be the dominant mode in belligerency for some years to come' interstate war, with the possibility of conflict between major powers, 'will enjoy a healthy future.'[16] It must be asked whether increasing state interdependence through the globalized economy may not transpire as readily or as rapidly as predicted given the current world economic climate. It may be that states will wish to isolate themselves from the international market in order to try and protect themselves from the downward spiral.[17] If the global economic downturn is viewed as a 'strategic shock' (an unexpected event that has strategic implications that breaks the prevailing paradigm), this could in and of itself be a catalyst for future conflict.

There is every sign that conflicts and crises in the future, will be complex and sometimes unpredictable, with the methods employed by belligerents becoming increasingly irregular.[18] The IISS also recognises that potential opponents of the United States have:

…taken note of US conventional superiority and acted to dislocate it. Non-state actors… developed 'asymmetric' approaches that allowed them to side-step US military power - either by rendering it functionally irrelevant, or by operating in environments where the US cannot brings its conventional superiority to bear.[19]

Frank Hoffman argues that, "Irregular warfare" is inspired by the ideologies that spawned Islamist terrorism and Osama bin Laden…' and 'Irregular warfare is a natural reaction to globalization and America's overwhelming military superiority.'[20] There are a number of theories that use a similar construct and describing future conflicts in which opponents will use a multitude of approaches simultaneously with which to undermine an enemy - conventional war, cyber-warfare against financial or military targets, terrorism, the employment of biological agents and media-manipulation.[21]

To counter some of these threats, Hoffman suggests that America's military posture when deployed should be 'less direct and appear less intrusive', where 'maximum influence should be sought from a minimum footprint'.[22] This may have implications for America's allies in

general, and for the air component in particular. In some scenarios, the air component's footprint can be quite sizeable, given the need for aircraft refuelling, flight maintenance and cargo-loading, which may militate against the reduction of the size of the footprint of American and coalition forces. Conversely, air power's inherent reach could also be used to minimize in-Theatre basing as evidenced by the USAF's successful use of Diego Garcia to undertake air missions in Afghanistan.[23]

In the Pentagon's 2006 Quadrennial Defense Review, the shift in terms of future conflict has been recognised. The report states that, 'In the post-September 11 world, irregular warfare has emerged as the dominant form of warfare confronting the United States.'[24] The characteristics of irregular future warfare have been projected in varying ways by authors such as T X Hammes, as well as Hoffman and Smith, and it is useful to analyse their thinking in order to consider how the air component might have to adapt to meet the concomitant challenges.

Hammes introduces the concept of 'fourth-generation war' (4GW), as: 'an evolved form of insurgency…[that] uses all available networks – political, economic, social, and military – to convince the enemy's decision makers that their strategic goals are either unachievable or too costly for the perceived benefit.'[25]

In Iraq, for example, the insurgents believed that if the Coalition could raise the standard of living for ordinary Iraqis, this would lead to its gaining popular support. Consequently, insurgents attacked economic or social targets in a bid to disrupt Coalition efforts in this field and to remove the prospect of popular support arising from the resulting improvements in infrastructure and the concomitant increase in living standards.[26] This approach to conflict is very difficult for western armed forces, with a focus on more conventional war-fighting operations, to counter, hence Hammes' description of 4GW as, 'America's 'Achilles Heel'.[27]

The motivation for fighting a larger and more powerful opponent in this fashion is highlighted by Hammes who observes: 'Our opponents know 4GW is the only kind of war America has ever lost – and done so three times: in Vietnam, Lebanon and Somalia.'[28] It appears that the enemies of the US are studying its tactics and using its past failures to good effect. Hammes suggests that 'the consistent defeat of major powers by much weaker fourth-generation opponents makes it essential we understand this new form of warfare and adapt accordingly.'[29] This suggests that a new mindset may be required at all levels, and this thread of military education will be developed below.

Another key characteristic of 4GW is enemy use of the media to bombard the public with images of the battlefield, in real time to raise the profile of their struggle.[30] This aspect has been seen with particular clarity in recent years, with the exploitation of the media evolving from Saddam Hussein's rather crude attempts at media manipulation during the 1991 Gulf War to the much more effective harnessing of an array of media technologies by insurgents in both Iraq and Afghanistan in a bid to

make western societies question the legitimacy of their involvement in the conflicts in those countries.

The final key characteristic of 4GW is that these conflicts tend to last for decades as can be seen in the Vietnamese, Afghan/Soviet and Palestinian conflicts. Hammes is convinced that opponents in 4GW can be beaten, though, but to achieve success requires, 'coherent, patient action that encompasses all agencies of the government and the private sector.'[31] Even with the effective integration of all these agencies, the likely duration of this model of conflict presents serious challenges for western nations, particularly in maintaining sufficient public support for continued involvement.

Developing the ideas of 4GW further, Hoffman argues that, 'future contingencies will be more likely to present unique combinational or hybrid threats that are specifically designed to target US vulnerabilities' and that, 'we can expect to face competitors who will employ all forms of war and tactics, perhaps simultaneously.'[32] In essence, a hybrid threat combines conventional tactics with irregular ones, the use of terrorist acts and criminal activities, and this combination seeks to destabilise the opponent and undermine the legitimacy of the host state.[33] Hoffman argues that hybrid warfare complicates future defence planning, though he does not believe that it replaces planning for conventional warfare.[34] The US Secretary of State for Defence, Robert Gates observed:

Other nations may be unwilling to challenge the United States fighter to fighter, ship to ship, tank to tank. But they are developing the disruptive means to blunt the impact of US power, narrow the United States' military options, and deny the US military freedom of movement and action.[35]

Hybrid means of conflict will surely be highly attractive to future opponents. Hoffman is convinced that these means will develop rapidly, that opponents will build on their successes, and adapt to use high tech means to improve their killing methods. To add to the complexity, hybrid attacks will capitalise on Western vulnerabilities, such as casualty aversion and the enduring pursuit of no or low collateral damage. By drawing the fight into urban and littoral areas, an opponent will seek to exploit these weaknesses in the Western approach, drawing out the conflict, driving up costs and sapping national will.[37]

Hoffman predicts that future opponents will seek innovative ways with which to fight - using technology to seek advantages in unanticipated ways, but fundamentally, an opponent who will 'accept no rules (on the battlefield)'.[38] Other experts agree. Michael Evans notes that we may see a future where '…symmetric and asymmetric wars merge and in which Microsoft coexists with machetes and stealth technology is met by suicide bombers.'[39] Hoffman predicts future adversaries will be found 'blending high-tech capabilities, like anti-satellite weapons, with terrorism and cyber-warfare directed against financial targets.'[40] Whilst this paper cannot cover the entire spectrum of cyber-warfare, it is relevant to note that it is conceivable, even highly likely, that an adversary would seek to exploit

what Shaud refers to as our 'reliance on cyberspace (which) has turned a technological advantage into a vulnerability…'[41] It was precisely this vulnerability that Russia sought to exploit in its 2008 war with Georgia.[42]

Smith takes a different tack. He argues that 'wars amongst the people' are literally that. He says, '…it is the reality in which the people in the streets and houses and fields - all the people, anywhere - are the battlefield.' For Smith, the military must be prepared to engage anywhere, and civilians are the 'objective to be won'.[43] For the air component serious difficulties arise when opponents use the urban environment to shield themselves. Air platforms, may find it extremely difficult to maintain reference upon fleeting targets - particularly fast jets, given their speed, operating height and turning circles - even with the most capable of sensor pods.[44]

Smith concurs with Hammes and Hoffman that these types of conflicts tend to be long and drawn out, not because of a lack of willingness from the military to fight for a decisive (and quick victory), but because the guerrilla, terrorist or insurgent, will only fight at the time of his choosing.[45] Smith also argues that the fight must be won by' capturing the will of the people', by adapting and adapting again as a reaction to the enemy, who is living amongst the people. The whole basis for success in such a campaign is an understanding that a military solution is not the answer - it just sets the conditions to allow other agencies to sustain the outcome.[46] Traditional air power paradigms that foresee victory achieved through bombing opponents into submission must therefore be reconsidered.

The characteristics of future warfare will affect the way that each component prepares itself to fight. Before the events of 9/11, and the subsequent 'War on Terror' was launched, the preceding years had seen Western warfare waged from a distance - greater reliance on air and maritime strike, rather than the use of ground forces.[47] The problem with this kind of approach, one informed by the idea of a 'Revolution in Military Affairs', is that this was founded on emerging technologies, and the need for pervasive surveillance and information dominance, all of which were based on the assumption of traditional target sets.[48]

In terms of shaping the armed forces for future conflict, a balance of capabilities will be required -. not only between the different components, but between the armed forces and the other government departments which contribute to nation building and stabilisation through a form of cooperative approach (formalised as the Comprehensive Approach in the UK). Secretary of State for Defence, Gates recently underlined this need for balance by saying, 'To truly achieve victory as Clausewitz defined it - to attain a political objective - the United States needs a military whose ability to kick down the door is matched by its ability to clean up the mess and even rebuild the house afterward.'[49]

The IISS suggests that there will be a need for smaller, more agile military teams which are, 'deliberately optimised for operations in complex, urbanised, populated areas marked by pervasive media presence and

globalised communications.'[50] There will almost certainly be a counter-evolution by irregular opponents, and the ability for regular forces to continue to adapt will remain paramount. The air component will therefore have to be ready to apply effects or set decisive conditions across the spectrum of warfare from conventional state on state, or high-end war right down to conflict prevention and defence diplomacy. As high-end war fighting is comparatively well-understood within the air component, only the area of irregular conflict and the challenges it presents for air will be explored in detail below.

General T Michael Moseley, the former USAF Chief of Staff, asserts that, 'No modern war has been won without air superiority. No future war will be won without air, space and cyberspace superiority.'[51] Colley makes clear that air power has a key role in irregular campaigns, and distils its utility down to 4 key areas, which are useful for this discussion: Control of the Air; Rapid Mobility and Lift; Intelligence and Situational Awareness; and Coercion.[52] For many control of the air is paramount in any kind of conflict, a fact long since recognised by ground commanders. General Montgomery famously said, 'If we lose the war in the air, we lose the war, and we lose it very quickly.'[53]

The same is true in an irregular conflict, where the lower airspace will often be besieged with small arms fire and man-portable air defence weapons, leaving rotary assets and slow fixed wing aircraft vulnerable to attack.[54] To some extent this threat can be countered with force-protection (at operating bases) and by employing suitable tactics and countermeasures to mitigate the threats. Of the Summer 2006 conflict between the Israeli Defence Force (IDF) and Hezbollah, Hoffman comments that, 'Hezbollah even managed to launch a few armed UAVs that required the IDF to adapt in order to detect them.[55] The implications of this are plain to see. Not only does the ground commander have to deal with the complexities of the hybrid threat, but the air commander does too. Colley goes further and says that this conflict represented strategic failure for Israel because there was failure to deliver anticipated air power for either strategic or operational success, due to the inability of the air component to find, track and engage fleeting targets amongst the wider population.[56] This again serves to underline that there is a clear implication for the air component in urban conflicts with respect to aerial targeting and surveillance.

Moseley agrees, saying, 'Airpower's unprecedented lethality and effectiveness deters opponents from massing on the battlefield, driving them to adopt distributed and dispersed operations.'[57] Of course, this actually makes things more challenging for the air component and perversely leads to criticism over the general utility of air power in these operations. However, it is clear that all components will need to find new strategies to counter the tactics of new adversaries.

When considering air for rapid mobility and lift, the ability of the air component to support light and Special Forces with air lift (and battlefield evacuation) is likely

to continue to be paramount to a successful prosecution of any irregular campaign.[58] The UK's air component is successfully supporting land forces in Afghanistan and Iraq in current operations in this manner, although many of the platforms and trained crews are heavily over-tasked. Any future decision maker should invest in the types of air capabilities that enable these light and Special (Ground) Forces to be inserted, carry out decisive missions to secure ground, or to sustain them through precision air drops of vital supplies.[59] For intelligence gathering and gaining situational awareness, the air component is highly effective in irregular campaigns and this trend should continue for future conflicts. The ability to both identify and detect individual objects or people by using the latest air and space technology will continue to be in high demand with ever increasing exploitation of technology to deliver and enable commanders to gain the information edge on any opponent.[60]

The air component has traditionally played the coercion role well, albeit with some difficulties (such as during the Kosovo campaign in 1999)[61] and the ability to provide a show of force, or to use precision attack will continue to be relevant for any future irregular conflicts. Of course, it will be easy for an opponent using hybrid means to use these strengths against us, particularly where precision air strikes are necessarily used in an urban environment. Images of an imprecise strike, such as those used against the IDF by Hezbollah in the Summer of 2006 can seriously undermine an air campaign. Colley states that, 'air weapons have undoubted utility for irregular warfare,' but he also warns, 'planners and operators should not underestimate the potential for unintended psychological effects on the population…'[62] He acknowledges however, that the presence of air can have a psychologically lifting effect on its own ground forces.[63]

Turning to other areas, Gray identifies an obvious issue for the air component, although one that could easily be overlooked, in that, 'combat aircraft…are…expected to remain in service - barring attrition through combat and accident - for thirty or forty years or even longer.'[64] The same is clearly true for other types of air-platform - helicopters, air transport and UAVs. The implications of this are clear - it will not be possible to rapidly acquire new capabilities at very short notice and the air component, certainly for the UK, will have to fight in the air with what it already possesses. Upgrades and modernisation refits can extend the life of today's platforms still further (the Canberra aircraft was a prime example flying for over 50 years with multiple upgrades to its capabilities) and these will be key to unlocking potential for dealing with emergent threats and adversaries.

For future air component procurement, Gates stated that, 'Given that resources are not unlimited, the dynamic of exchanging numbers for capability is perhaps reaching a point of diminishing returns. A given ship or aircraft, no matter how capable or well-equipped, can only be in one place at one time.'[65] The air component, like the others, will continue to be constrained by the realities of the defence budget. Perhaps the solution,

as Gates contends, is that whilst you can use high end equipment for low end warfare, '…the time has come to consider whether the specialized, often relatively low-tech equipment well suited for stability and counterinsurgency missions is also needed.'[66] Others with recent operational experience in Afghanistan agree with this sentiment.[67] Perhaps therefore, rather than concentrating solely on the equipment, the key to unlocking airpower's potential will be by looking at the other (UK) Defence Lines of Development.[68]

First, looking at training and education, Moseley argues that his airmen must be educated for key joint leadership positions, in skills such as potential opponent's culture, language and defence studies, in order to be, '…capable of fully integrating and leveraging our distinctive (airpower) capabilities in joint and coalition arenas.'[69] It is not just the military who are turning to education and training. Gray says that, 'Capable enemies who have studied the US style in warfare would be hugely motivated to reduce the American airpower advantage. Such a reduction might be achieved not only by air defense but also by contesting the uses of space or cyberspace'.[70] The only tangible counter to this is by educating military personnel across all components, and not just at the tactical level. Air Commodore Subramaniam, Indian Air Force, warns that his nation's airmen have their training too skewed towards the tactical level, and suggests that, '… in the furtherance of India's strategic objectives…training and thinking (is needed) to fight strategically.'[71] Doctrine too needs to catch up. General Sir John Kiszely suggests that military doctrine needs to be flexible and agile enough to adapt to changing circumstances, but he also warns that, '…the nature of complex insurgencies is that they are amoeba-like…dynamic…agile…insurgents, being thinking enemies, study our doctrine.'[72] On the organisational side, air components will need to stay agile and use existing platforms in new and innovative ways whilst training alongside the other components to maximise chances of success, whatever the type of conflict.

To conclude, predictions of the likely characteristics of future conflict are, at best, difficult. Whilst state on state conflicts cannot be ruled out, they are not as likely to be the main area for conflict in the foreseeable future. The general consensus appears to be that future opponents will adopt irregular or hybrid campaigns, designed to seek out vulnerabilities. These are likely to be based on a combination of factors that will seek to undermine national will, by using techniques such as skilful information campaigns, terrorism, and prolonged conflicts, that are both costly in terms of funding and in the lives of the military. For the air component, this means a requirement to fight across the spectrum of warfare, whilst utilising airpower's strengths and characteristics to prosecute successful air campaigns in irregular conflicts. To do this, more low-end platforms may be necessary, especially those capable of being a force-multiplier, such as battlefield helicopters, but the overall message for the air component is clear - the need to master the intellectual dimension - and educate the airmen to be able to think strategically and to develop cultural understanding of potential

opponents.[73] The temptation for air components to do what they have always done in the past - see a new threat as a catalyst to buy new equipment to solve that problem should be avoided, not least to counter the rising costs of defence technologies, and the commensurate reduction in overall platforms. Kiszely's advice is that armed forces not only need to recognise that they should be adaptable, but that they must 'institutionalise' this adaptability to be successful in post-modern warfare.[74]

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