



## AIR POWER IN EFFECTS-BASED WARFARE PART III: CHALLENGES TO EFFECTIVENESS

*'EBO [effects-based operations/warfare] is an inherently rational way to approach war. Yet the barriers to making it work are formidable. Although our analytical tools have improved dramatically over the years, it often seems as if we are peeling an onion; as we remove one layer of problems and questions, it merely leads to several more layers.'*

Dr Phillip S Meilinger,  
*Air Warfare: An Historical Perspective, In Effects Based Warfare, p. 77.*

Air power's inherent characteristics of range, rapid response and the focused weight of attack that could be brought to bear made it ideal for employment in effects-based warfare. The concept of operations developed for effects-based warfare in the late 1980s were brought to a culmination in the Gulf War of 1991. Although the air campaign in this war was touted as an absolute success and a blueprint for future campaigns, air power faced few challenges in fully exploiting the concept of effects-based warfare. It was also noticed that there was a distinct gap between the ends-ways-means equation and the implementation of the refreshing concept that had been developed.

Effects-based warfare abounds in command and control (C2) challenges, at all levels of command and warfare. Effects-based warfare is essentially joint in nature, since the effects to be created need the judicious application of all elements of the military force. This effort will have to transcend and align with a whole-of-government approach to containing the adversary. Such an integrated approach is considered necessary to contain emerging and complex threats to national security.

Centralised control and decentralised execution has long been accepted as the basic tenet that determines the C2 arrangements of an air campaign. However, in pursuing an effects-based concept of operations, this tenet may be difficult to achieve, especially when the force is the air element of a coalition, functioning within the bounds of a

multi-national alliance. The tenet of C2 has been somewhat modified in recent times—at least in some advanced air forces—to centralised command, distributed control and decentralised execution. This is a more nuanced way of enacting C2 on the air elements functioning within a coalition. The assurance of creating the necessary effects reduces with the reduction in the effectiveness of C2.



**USAF aircraft of the 4th Fighter Wing fly over Kuwaiti oil fires, set by the retreating Iraqi army during Operation Desert Storm in 1991.**

Selection of targets, which when neutralised would create the desired effects, is another aspect of effects-based warfare that is a complex process. Neutralisation of a target can create direct effects; primarily in one of the three levels of conflict—strategic, operational and/or tactical. However, direct effects are invariably followed by indirect and cascading effects, which are unpredictable. Targeting is complicated because the indirect effects tend to impinge both on the higher and lower levels from where the direct effect has impacted. In simple terms, even when target selection is appropriate to create the desired effect, the secondary effects of the action cannot be predicted with any level of assurance. This conundrum encapsulates the complexity of adopting an effects-based warfare concept—the desired direct effect of prosecuting a selected target does not provide any indication of the range of possible causal consequences of neutralising that target.

An associated challenge is in measuring the effect that has been created by one's own actions. The expected effect on the adversary is not always easily discernible. Complicating matters further is the difficulty in determining

the actual effect and its impact on adversary behaviour in a clear and quantifiable manner. Air power can minimise these intractable challenges by ensuring that assessment obtained through the fusion of mission debrief, tactical air reconnaissance, signals intelligence, satellite imagery and human intelligence is fed back into the target selection and operational planning processes. Success in effects-based warfare requires the commander to have a clear strategic view of effects created and their impact—achieved only through the seamless fusion of C2, assessment feedback and operational planning.

The air campaign of Gulf War 1991 could be considered a path-breaking effort that generally adhered to the central tenet of air C2, based loosely on Warden's Rings. However, practical challenges detracted from air power realising its full potential in effects-based warfare; the sheer weight of air effort over the initial 39 days of the war was equally important in air power assuming a decisive role in the success of the war. Immediately following this war, the air campaign over Bosnia—Operation *Deny Flight*—demonstrated all the challenges in achieving efficient and centralised C2 in the conduct of coalition air campaigns. Operation *Deliberate Force* of 1995, could be considered the coming of age in conducting a successful air campaign within the construct of effects-based warfare, even though air power operated under some extreme constraints. Success stemmed from correct target selection to create carefully considered strategic, operational and tactical effects.

At the turn of the century, analysts had started to look afresh at the 1991 Gulf War and the campaigns that followed in the next decade. It was realised that in all these cases the effect that was being sought to be created was one of denial—in the Gulf War the stated aim was to deny the Iraqi Air Force the freedom of action necessary to intervene in ground operations; and in the Balkans to deny the Yugoslavian Air Force the ability to interfere with NATO operations. The transition to full-fledged effects-based warfare during these campaigns had not taken into account the 'what ifs' of operating in a contested airspace when the operating situation would change. The effects to be created to ensure that adequate control of the air could be achieved had not been any considered.

Although the concept was well understood at the strategic theoretical level, the campaigns that followed the 1991 Gulf War brought to light another challenge to the practical application of the concept. The security interests of the individual nations in a coalition always influenced the appreciation of the desired end-state and therefore would shade the effect to be created. Under these circumstances,

the validity of target selection became open to question and debate. At the strategic political level it became apparent that the cohesiveness of coalition operations itself was a function of the commonality of understanding and acceptance of the effect to be created. The salutary lesson that emerged from the campaigns of the 1990s was that in a campaign adopting an effects-based strategy, coalition operations may not be able to create the critical effects necessary to achieve the desired end-state in an optimum manner.

It also emerged that effects-based warfare was almost totally dependent on rapid and timely decision-making at all levels of war. If this fundamental requirement could not be met, the concept was bound to fail, as repeatedly demonstrated in the campaigns of the 1990s. The air campaign in effects-based warfare, envisaged as a sudden downpour that would deluge the adversary, will not be successful if air power is applied as an intermittent drizzle that hardly drenches the opposition.

As a result, the concept of 'time-sensitive-targeting' came into vogue in the late 1990s in an attempt to shorten the time between spotting a target and prosecuting it successfully—tacit acceptance of the crucial need for clarity in C2 arrangements to ensure efficacy in effects-based warfare.

As much as air power capabilities have become focused, moving from being a sledge hammer in World War II to the finely tuned rapier of today, a higher strategic level of control determines its effectiveness, especially in effects-based warfare. Friction within the C2 process and in delegation will always be detrimental to pursuing effects-based warfare. The focus on effects-based warfare from the early 1990s highlighted the inevitable friction in the C2 process and the resulting inefficiencies when multi-national campaigns are undertaken, which perhaps exceeds the benefit of political legitimacy that the multi-nationality of coalition forces provide.

## Key Points

- *Effects-based warfare is essentially joint in nature, since the effects to be created will need the joint application of all elements of the military force and abounds in C2 challenges, at all levels of command and warfare.*
- *The conduct of effects-based warfare is complicated because it is difficult to determine and quantify the actual effect and its impact on adversary behaviour.*
- *A coalition campaign adopting an effects-based strategy may not be able to create the critical effects necessary to achieve the desired end-state in an optimum manner.*



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