

# Systematizing Effect Based Air Operations

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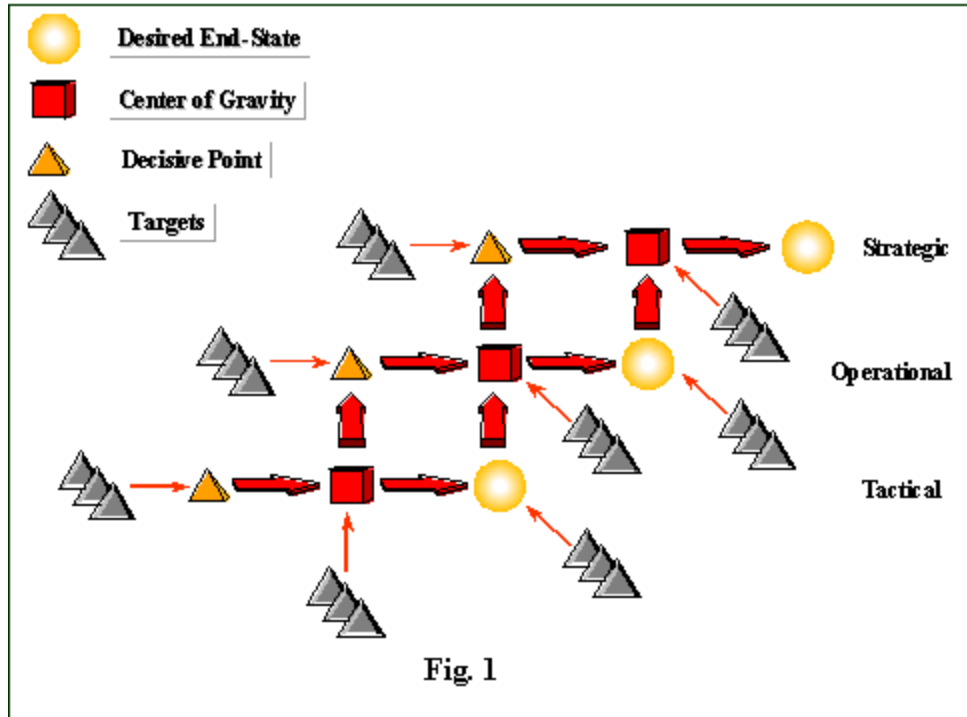
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Conceptual thinkers on the application of air power all seem to agree, that air power should be used with maximum effect directed towards the Strategic Center of Gravity (CoG). Effect based targeting is the key word and in this I am also a firm believer. However, when it comes to the doctrinal description on how we make the CoG to target process effect driven, then we still have a way to go. One of the reasons for this is that we still use a 2 dimensional – surface centric operational level terminology to describe the effects we desire to achieve. The purpose of this article is to propose a way to systematize the operational level effects-driven planning process. My aim with this article is to inject some food for thought for further doctrinal development at the operational level.

Since the war in the Gulf in 1991 Air Power thinking has undergone a dramatic development. Prior to 1991 Air Power thinking was generally divided in two. On the one hand Air Power was strategic employment of nuclear weapons and on the other hand Air Power was support to army land operations. After 1989 the nuclear exchange strategy was no longer valid, which only left us the Air-Land Battle doctrine to build upon. The Air-Land Battle doctrine was developed for the European Theater as the US doctrine for opposing the Warsaw offensive army doctrine. The doctrine developed for these operations was a tactical level doctrine designed to facilitate a common language for tactical level joint operations between airmen and the army, and it is this language upon which we develop today's doctrine.

The current versions of United States Air Force AFDD-1 and NATO AJP-01(A) and AJP-3.3 emphasize theatre level air operations in support of the overall campaign. They all emphasize the ability to employ air power independently, and they organize own military operations at the strategic, operational and tactical level of war. This is in accordance with the latest thinking on the application of air power and in line with a number of national air power doctrines (Incl. AFDD-1, AP 3000 and The RDAF Air Operations Doctrine). The joint nature of air operations is further underlined on AJP-3.3, where the AJFACC is designated as the supported commander for Counter Air Operations, Strategic Air Operations etc.

Effects based targeting really is about identifying Center(s) of Gravity (CoGs) at the strategic, operational and tactical level and subsequently identifying Decisive Points (DP) and the associated targets at each of the three levels of war that if serviced will achieve the desired effect. The relations between the desired End State, CoGs, DP and targets can be illustrated as follows (**fig.1.**).



The terms we have available to describe the operations we will conduct to achieve the desired effects is the categories of air operations, AI, CAS and TASMO, which we have inherited throughout history. That terminology however, is related to surface based two-dimensional warfare, and best suited to the tactical executing level. For the pilot CAS, AI and TASMO all are excellent descriptions of the missions he is about to conduct. This terminology adequately describes the purpose of the mission, there are clear and distinct Tactics, techniques and procedures (TTP) related to each of them, and the coordination requirement with other Component Commands is identified e.g. FACs.

However for the operational level commander CAS, AI and TASMO are bad ways of describing the campaign the commander is about to conduct to achieve the desired effects. Neither CAS, AI nor TASMO can be directly related to a CoG, and that is the essence of the problem. We need terminology that creates the linkage between on the one side the military objective and the CoG, for which we have good terminology, and on the other side the targets at the three levels of war.

The following suggests a way by which this linkage can be created.

In our effort to describe effects based targeting, we need a way of systematizing the CoG(s) and the effects we desire based on the identified military objective. Col. Warden five-ring analysis (**fig. 2.**) has become a well-known tool for that and his model is usable for more than just CoG identification.

## FIVE RING SYSTEM ANALYSIS

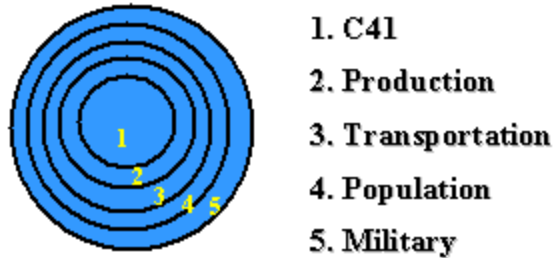


Fig. 2

When using COL Warden's five-ring analysis model as a template for the identification of CoGs at the strategic, operational and tactical level, CoGs will be defined within the following categories:

1. Leadership (C4I)
2. Production / Industry
3. Transportation
4. Population
5. Military

This means that the effect we seek is to be achieved by servicing targets within these very same categories of CoGs. Accordingly the desired effect can be described within the same categories. From each of these CoGs, at the strategic, operational and tactical level, a number of targets can be identified. What we now need to do is to develop a terminology that can describe the air campaign and the effects we desire to achieve. Targets are related to a specific CoG / DP, which means that we can categorize the targets according to the CoG / DP they are related to. Similarly we can categorize the air operations we conduct according to what CoG we want to service and finally we can apportion the campaign in relation to the CoGs based on a prioritization of the CoGs and the targets. This will be further discussed in the following, where I will go through an air campaign planning process and describe the tool and terminology I envision.

### **Step 1.**

Identify the desired strategic End State.

### **Step 2.**

Based on the desired strategic End State identify the military objective, which is the military state of affairs which leads to achievement of the strategic End State.

### **Step 3.**

Through the five-ring analysis identify CoGs and DP's at the strategic, operational and tactical level.

### **Step 4.**

For each CoG identify the desired state of affairs of the CoG, which determines the desired effect of the air operation for each CoG. Categorize the air operations i.a.w. each CoG. This process is illustrated in fig. 3.

### **Step 5.**

Identify whether certain CoGs have priority over the others and apportion the air power assets available accordingly. In a time phased campaign the priority of CoGs often change according to the phases.

### **Step 6.**

For each CoG / DP identify targets that if serviced will provide the desired effect at the CoG / DP. Targets should be identified based on the COG /DP they relate to. A target can relate to more than one CoG / DP.

### **Step 7.**

Draft a Master Air Attack Plan (MAAP) based on the apportioned (prioritized) categories of air operations and subsequently issue the Air Tasking Order.

This will be further debated in the following.

## **CATEGORIES OF AIR OPERATIONS.**

As mentioned above one can identify the desired state of affairs for each of the CoGs, which determines the desired effect of the air operation for each CoG. Air operations and Joint operations in general should be Categorized i.a.w. each CoG and the subsequent apportionment, the allocation of air assets to task by percentage, should be done i.a.w. the CoGs and Categories of air operations. In the following this process of categorizing air operations i.a.w. the CoGs and the possible effects that can be achieved from each CoG are discussed on the strategic and operational level of war.

***Thereby a vocabulary / terminology is created for the operational level commander by which he can express his intentions, how he wants to pursue the military objective by servicing the identified CoGs.***

## **STRATEGIC AIR OPERATIONS.**

By using the five-ring analysis model as a template we can identify strategic CoGs within the following categories:

1. Leadership (C4I)
2. Production / Industry
3. Transportation

4. Population
5. Military

This means, that the effect we seek is to be achieved by servicing strategic CoGs and should be described within these very same categories of targets. From each of these CoGs a number of strategic targets can be identified. What we now need to do is to develop a vocabulary that can describe the strategic operations we want to conduct and the strategic effects we desire to achieve from the operation.

Strategic Air Operations are executed at the strategic level and are likely to be shaped by political aims and constraints. Strategic attacks are carried out to defeat an adversary's Center of Gravity or attack other vital target sets including command elements, war production assets and key supporting infrastructure to achieve the desired effects at the strategic level.

Strategic Air Operations are aimed directly at the enemy CoGs. The aim is to cause such a degree of paralysis/destruction or dissolution of the enemy civil or military capacity so the enemy loses the will or ability to continue the conflict. It must be emphasized, that it is the target complex and the anticipated effect, that qualifies an operation as being strategic, not the weapon or delivery platform.

Conventional Strategic Air Operations can be used as political "signaling", as punitive measures against smaller scale aggressions or as an integral part of a campaign. Past Air Warfare experience has amply demonstrated, that it is crucial to select and keep prosecuting the right target complex, if these operations are to lead to the attainment of the desired End-State. These operations are planned at the military-strategic level, and may be executed by an operational level commander. Strategic Air Operations are conducted with aerial weapons and platforms, aerodynamic and ballistic irrespective of their parent service. ***Using the five ring CoG analysis model Strategic Air Operations can be subdivided into the following categories deducted from each of the possible CoGs as illustrated in fig. 3.***

# STRATEGIC AIR OPERATIONS

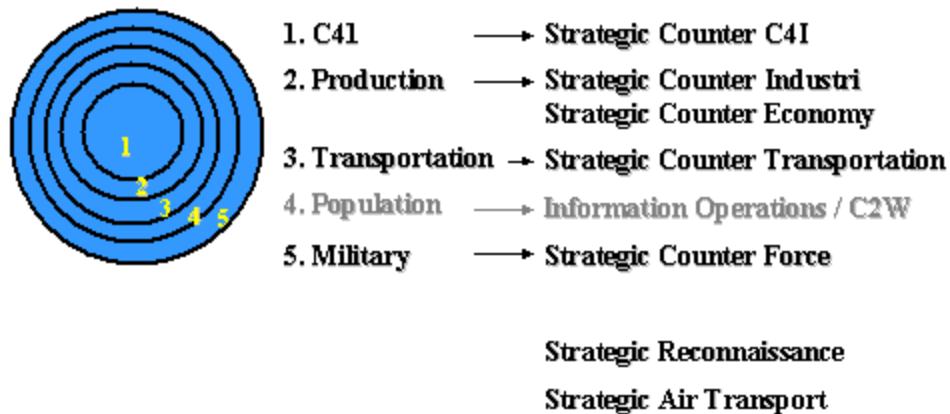


Fig. 3

This categorization of air operations establishes the linkage between CoGs /DP's and the related targets and as described in the following, the categorization of air operation serves as the terminology we seek to explain the operational level concept of operation, how we want to achieve the military objective.

Strategic Counter Command and Control, Communications and Information (C4I). The purpose of war is to make the enemy act i.a.w. our will. This makes the enemy national command authority and military-strategic leadership an attractive and natural target- a CoG, if not THE CoG. The types of operations listed below will indirectly affect the enemy leadership, but the individual leaders and their C4I systems may also be subjected to direct lethal or electronic attacks. These operations could be called Strategic Counter C4I operations. The effects we may desire from a Strategic Counter C4I operation could be strategic paralysis, with the purpose of giving the opponent a sense of futility and isolation.

Strategic Counter Industry. Strategic Counter Industry operations are conducted against enemy key industries. The prosecution of the right target complex will eventually have the effect that the enemy ability to wage war will be aggravated. In an industrialized society the production of electrical power and oil drilling and refinery facilities seems to offer attractive target complexes.

Strategic Counter Economy. Strategic Counter Economy operations are closely related to Counter Industry but are conducted for the desired effect of causing a collapse of the enemy economy and thereby putting pressure on the strategic CoG. With the increased dependence in industrialized countries on information technology for the conduct of all economic transactions, the offensive application of all the facets of C2W seems to be a very attractive option.

Strategic Counter Transportation. Strategic transport in general may have a commercial as well as a military aspect. Nations all over the world are reliant on imports and especially transport of oil over the sea is vital, whereas strategic transport of military forces by air, sea or land may be decisive for the defense of the opposing nation. E.g. during the cold war Russia had plans for Strategic Counter Transportation operations in the Atlantic trying to counter US reinforcement of Europe. Strategic Counter Transportation operations may be directed against vital transportation centers and transport means. This may be a Strategic CoG that can change the course of the war and worth going for.

Strategic Counter Population or Information Operations /C2W. Ethics and international law rule out the direct targeting of the enemy civilian population and supporting infrastructure. Therefore the term "Strategic Counter Population" operations should not be deducted from the five-ring analysis model. Public opinion is, however, a vital mean to influence the will of the opponent that must not be discounted when friendly CoGs are identified. Information Operations and PSYOPS directed against the enemy population is a legitimate course of action, which should be exploited and air power has the ability to support that. C2W is a part of Information Operation and has to be seen as an entity even though Information Operation has aspects beyond the military sphere.

Strategic Counter Force. Strategic Counter Force operations are conducted against those enemy military forces and weapons systems, which if used have the ability to achieve strategic effect and may pose a direct threat towards one's own Strategic CoG. Since own CoG defines the key to own strength and will, such a threat automatically gives Strategic Counter Force operations a high priority. E.g. Strategic Counter Force operations can be directed against weapons of mass destruction for the purpose of destroying his ability to use these weapons.

The Iraqi Scud campaign against Israel during the Gulf war was an operation directed against coalition cohesion, which was the coalition's CoG. In continuation of the above mentioned terminology the coalition anti Scud campaign was a Strategic Counter Force operation for the purpose of denying Iraq the ability to launch against Israel and thereby preventing Israel from retaliation which could endanger coalition cohesion.

Strategic Reconnaissance. Strategic Reconnaissance is conducted for the purpose of collection of information at the strategic level, i.e. matters with relation to international politics and military forces with a possible strategic impact e.g. weapons of mass destruction. Strategic Reconnaissance is conducted with a variety of collectors, technical and human, in order to establish the intelligence data base required to support the planning and conduct of campaigns. Aerodynamic platforms - manned and unmanned - and satellites are employed in this activity.

Strategic Air Transport. Strategic Air Transport is employed in support of all types of operations conducted by all the services. A typical example could be the force build-up prior to the conduct of a campaign. An air transport operation can, however, be the campaign in its own right. It should be recalled, that the singular most important

strategic air campaigns conducted by the western allies after the second world war was an air lift operation - "The Berlin Air Bridge".

Strategic deterrence. Air Power can be used for strategic deterrence if the opponent is convinced, that we have the ability, capability and will to employ Air Power in pursuance of our objectives. This instrument can be used in a very flexible way ranging from increasing the state readiness at the home bases, performing a deployment into the crisis area (selective or massive as desired) and performing force demonstration flights or exercises in the crisis area.

## OPERATIONAL AIR OPERATIONS.

Operational Air Operations are executed at the operational level directed toward the enemy military forces and the infrastructure supporting the military operations to attain the operational objectives within a designated area of responsibility. It is at the operational level that tactical air successes achieved in engagement and major air operations are combined to achieve air campaign objectives. These operations are planned and implemented by the COMAJF Force Commander and are executed by the AJFACC as independent air operations aimed at DP's and if possible against CoG. Analogous with Strategic Air Operations, Operational Air Operations are conducted through the employment of aerial weapons and platforms - aerodynamic and ballistic - irrespective of their parent service. By using the five-ring analysis model operational level air operations can be categorized i.a.w. the CoG they service and the desired effects for each of the CoGs can be described as depicted below.

## OPERATIONAL AIR OPERATIONS

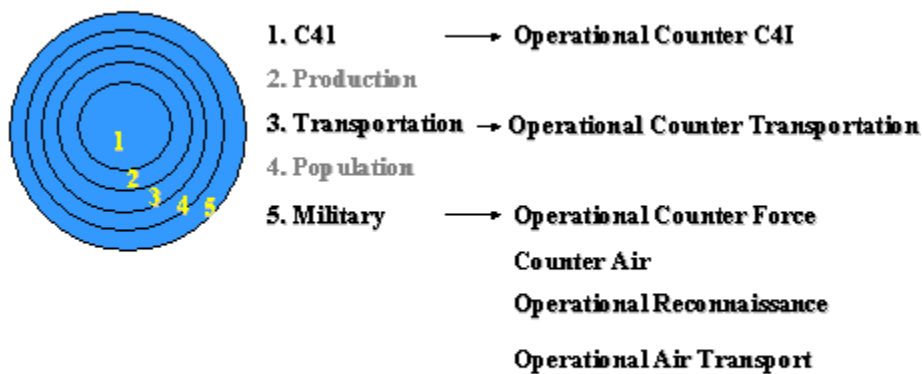


Fig. 4

Operational Counter Command, Control, Communication and Intelligence (C4I). Operational Counter C4I operations are conducted as Joint C2W against enemy headquarters and units from all services aimed at degrading, disrupting or destroying



the enemy ability to orchestrate his forces at the operational level. The operational level C4I is normally a valid operational level CoG and therefore Operational Counter C4I operations are given a high priority. The desired effect we pursue can be degradation, disruption, destruction, neutralization, deception or psychological impact. Some of these are easy to measure, however when it comes to disruption of will, determination and psychological impact it becomes difficult even though it is often a valid area for targeting.

Production. Production is normally not a military matter and is dealt with at the strategic level.

Operational Counter Transportation. Operational Counter Transportation is covering military operations against intra-theater transport of military forces. The word "transport" is to be seen in its widest possible sense. Transport covers Lines of Communication, transport of military forces and the supporting infrastructure, power distribution and transportation nodes, depots, POL storage facilities and pipelines. The desired effect may be to delay or destroy supply to military forces with the purpose of preventing or slowing down enemy military operations.

Operational Counter Force. Operational Counter Force operations are conducted against those forces and elements in the enemy military, which are expected to be employed at the operational level and that may have theater wide effect. The enemy's operational level military CoG (ring 5) may often threaten own military CoG, which makes it a high priority target. Of particular importance could be enemy precision guided theater ballistic missile launch systems - landbased and shipborne that may threaten own C4I systems or enemy operational reserves/the 2<sup>nd</sup> operational echelon. These may be the military forces by which the enemy derives his strength and may be decisive for his pursuance of his military objectives. The effect we may desire from Operational Counter Force operations could be destruction, neutralization of ability to be used or disruption of organization. The air campaign against the Iraqi republican guard in the Gulf war is a typical Operational Counter Force operation. The coalition had identified the Republican guard as an operational CoG and the associated air operations can be categorized as Operational Counter Force operations with the purpose of destroying the enemy's ability to conduct offensive land operations.

Counter Air.

Air superiority is a prerequisite for joint military land, sea and air operations and should accordingly be categorized as an operational level operation. Suitable forces, platforms and weapons systems from the other services participate in these operations as decided by the JFC. These operations are carried out to achieve and maintain the desired degree of control of the air. The degrees of control of air are:

- a. Favorable Air Situation. A favorable air situation is one in which the extent of the air effort applied by the enemy air forces is insufficient to prejudice the success of friendly land, sea or air operations.

b. Air Superiority. Air Superiority can be defined as that degree of dominance in the air battle of one force over another which permits the conduct of operations by the former and its related land, sea and air forces at a given place and time without prohibitive interference by the opposing force (AAP-6).

c. Air Supremacy. Air Supremacy is that degree of control of the air wherein opposing forces are incapable of effective interference with friendly air operations.

At the tactical level Counter-air operations are divided into Offensive Counter Air (OCA) and Defensive Counter Air (DCA).

Operational Air Transport. Operational Air Transport is conducted as intra-theater airlift support to formations from all three services.

Operational Reconnaissance. Operational Reconnaissance is conducted with manned and unmanned platforms in order to update the intelligence database required to support Joint planning and conduct of operations.

## TACTICAL AIR MISSIONS

Military operations are executed at the tactical level as missions, and tactical level air missions should be categorized i.a.w. the requirements there are for planning and conduct of the mission. The operator at the tactical level is not in the mission execution concerned with the effect inflicted on the strategic CoG as result of an attack. The operator's immediate concern is the planning and coordination requirements that are associated with conducting the mission.

Counter Air Missions. At the tactical level Counter-air missions are divided into Offensive Counter Air (OCA) and Defensive Counter Air (DCA). Counter-air missions are conducted for the purpose of achieving the necessary level of control with the air. OCA involves destruction or neutralization of enemy forces mostly ranging throughout enemy territory and generally conducted at initiative of friendly forces. OCA may include fighter sweep, fighter escort, airfield attack, attack against missiles and associated systems on the ground and Suppression of Enemy Air Defenses (SEAD). DCA involves destruction or neutralization of enemy forces conducted near to, or over, friendly territory and are generally reactive to initiative of enemy forces. DCA includes employment of air defense weapon systems such as fighters, surface-to-air missiles and anti-aircraft artillery, complemented by passive defense measures.

Air Interdiction. Air interdiction missions are conducted at the tactical level with the purpose of delivering effect in depth.

Air Reconnaissance. Air Reconnaissance missions are conducted at the tactical level with the purpose of providing intelligence information for strategic, operational and tactical decision-makers.

Air Transport. Air Transport is a tactical level mission with the purpose of transporting goods or personnel.

Close Air Support. Close Air Support is conducted at the tactical level in support of the Land Component Commander within his AO, which requires detailed coordination and control in the final stages of the mission.

Tactical Air Support Maritime Operations. Tactical Air Support Maritime Operations is conducted at the tactical level in support of the Maritime Component Commander within his AO, which requires detailed coordination and control in the final stages of the mission.

## FINAL REMARKS

By systematizing air operations at the strategic and operational level i.a.w. the identified CoGs, we have created an effect-driven linkage between the desired end state - the military objective – the identified CoG / DP at the strategic and operational level – and the targets. Thereby a vocabulary / terminology is available that enables the planner to describe what he wants to do and the effect he desires to achieve on the specific CoGs at the strategic and operational level. Finally, the terminology we have used so far, i.e. AI, CAS and TASMO will be used for what they originally were intended, which were tactical level tasking/execution of air missions.

This article is the result of beneficial discussions with Col. M.F. Svejgaard, Chief of Staff, Commander Operational Forces Denmark, whom I wish to thank. I am also grateful for the figures that Col. M.F. Svejgaard has contributed with. The intention with this article is to start a discussion on how we can improve operational level doctrine utilizing an effect based planning process. Further more I hope doctrinal authors in the US and NATO may use this as food for thought and evaluate whether we can do it better. Finally I hope, that planners at the operational headquarters throughout the United States and NATO may be inspired by this article, and use this article to further develop their planning process.

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