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US JOINT DOCTRINE: SERVICES INFLUENCE AND “DISJOINTNESS”

Separate ground, sea, and air warfare is gone forever. If ever again we should be involved in war, we will fight it in all elements with all Services, as one single concentrated effort.

Dwight D. Eisenhower.

It is firepower, and firepower that arrives at the right time and place, that counts in modern war.

B.H. Liddle Hart.

Doctrines for joint fire support and joint interdiction operations employ a common process that is called targeting. This process is not new as it has been formalised as a discipline for over 60 years. “During the inter-war years, the US Army Air Corps started an Army Corps Tactics School, which emphasised and quantified basic targeting principles.”¹

After the Second World War, Paul Nitze, George Ball, John Kenneth Galbraith, and Fred Searls wrote “US Strategic Bombing Surveys” based on lessons learned during the war. The primary lesson was that the United States had to develop greater focus and precision for strategic bombing to ensure efficient use of resources and humane treatment of civilians.² This analysis demonstrated to the US Air Force the requirement for developing a better targeting process. After World War II, the US Air Force led the development of targeting doctrine.

After the Vietnam War, the senior US military leaders realised that tactical victories did not necessarily equate to winning a war. They did a thorough review of the way they

¹Dan Smith, “Doctrinal Issues in Joint Targeting,” *Military Intelligence*, (Oct.-Dec. 1994), p 37.

² *Ibid*, p 37.

were prosecuting war that led to a new doctrine. The major tenets are manoeuvre warfare, joint operations under a unified commander, and combined operations.³ “The old war fighting model of wearing an enemy down with industrial might was abandoned and the strategy adopted took advantage of technological superiority while limiting casualties.”⁴ In 1986, the Goldwater-Nichols Act was passed making joint operations/doctrine the law. The Services were required by law to embrace “jointness” despite their reluctance to change or adapt their own doctrine.

Despite the legislative directives, at the outset of Desert Shield in August 1990, United States Central Command had few on-the-shelf documents that addressed joint targeting for the command and its components. Moreover, joint targeting procedures for interaction between the joint force air component commander and US Central Command were non-existent.⁵ The Services were still using their own doctrine and their own terminology to explain their targeting processes.

Since the Gulf War, there has been a deliberate US effort to write joint doctrine that has resulted in a proliferation of joint publications. Today, there are over 140 joint publications. To achieve this result, the US Forces central/joint staff sub-contracted a good portion of the joint doctrine writing to lead agents e.g. the Army, Navy, Air Force, Marine Corps and Special Operations Forces. This has provided each of the Services a great opportunity to influence the joint doctrine writing and created a lack of doctrine integration

³ United States, Report to Congress, *Conduct of the Persian Gulf War*, (Washington: Government Printing Office, 1992), p 414.

⁴ James, Kitfield, “Prodigal Soldiers,” *New York: Simon & Schuter*. (1995), cover page.

⁵ John W. Schmidt, and Clinton L. Williams, “Disjointed or Joint Targeting?” *Marine Corps Gazette*, (Sept. 1992), p 67.

and synthesis. One area that is particularly contentious is the lack of integration and synthesis between the doctrines for joint fire support and joint interdiction operations. Each Service has imported its particular doctrine in the joint arena under the cover of joint publications. This lack of integration has created a multiplication of terms and a multitude of joint doctrine publications, all describing similar activities on the battlefield in different ways. This may lead to confusion, potential fratricide, less than optimal command and control, and employment of attack assets on the battlefield.

As each Service downsizes, it becomes even more important to use complementary forces to achieve victory. To this end, it is imperative to seek operational unity of effort. Joint fire support and joint interdiction operations are doctrines developed to synchronise, through the targeting process, all lethal and non-lethal fires. To minimise the fog of war, we have to make sure that all Services speak the same “language,” e.g. doctrine. Unfortunately, by reviewing the US joint doctrine, it becomes obvious that each Service has influenced the joint doctrine writing to serve its own culture, interest, or ego. However, the predominance of the US Forces in the world and the fact that they will likely lead any future coalition in which Canada would participate makes it essential that their joint doctrine genuinely be joint and clear in order to avoid confusion that could lead to fratricides.

Despite legislators, well intended commanders, and a major US effort in writing joint doctrine manuals, the Services’ influence on joint doctrine writing has resulted in a “disjointed” doctrine lacking integration with the potential of creating confusion.

It is not the intent of this paper to do an exhaustive study of all the instances where there is a lack of doctrine integration that might exist among all existing US joint doctrine

publications. Throughout the paper, Joint Pub 3-09 “Doctrine for Joint Fire Support” and Joint Pub 3–03 “Doctrine for Joint Interdiction Operations,” will be used as examples to demonstrate that the Services’ influence on joint doctrine writing has created a lack of doctrine integration, and therefore confusion.

First, the paper will briefly discuss the US joint doctrine publication writing in general terms. Some definitions to reach a common understanding of the main expressions will be provided. Then, to avoid duplication, a discussion under the same headings will address the differences and similarities between joint fire support and joint interdiction operations. For clarity and to limit the discussion to a manageable level of details, the focus of the discussion will be on the comparison of the Army and Air Force. Discussion of the other Services: Navy, Marines Corps, and Special Operations Forces will be kept to a minimum for simplicity. The main areas to be explored are: the attack assets, the targets and objectives, the attack locations, the fire support control measures, targeting, and command and control. A summary and discussion of the differences, similarities and problem areas, will follow. Finally, the paper will conclude with comments and recommendations regarding joint doctrine writing.

US JOINT DOCTRINE PUBLICATIONS WRITING

Following the Goldwater-Nichols Act, and more specifically since the Gulf War, there has been an incredible number of joint publications produced. By looking closely at these publications, one can read between the lines and discover that many of these publications are in fact Services’ publications that have been repackaged using the buzzword “joint” throughout the text to supposedly make them joint publications or joint doctrines.

What are the causes of this phenomenon? Is it because the Services want to protect their funding or wish to seek predominance for their Services for fighting on their own the future Wars? This wish is discussed in the article “Joint Experimentation – Unlocking the Promise of the Future” written by Dan Coates who chairs the AirLand Subcommittee of the Armed Services Committee.⁶ In the US, there is a lack of consensus on future military capabilities and the defence policies needed to realise them. Some advocate precision-strike air power, others while advocate decisive land power. Each approach requires a radically different investment policy, organisational structure, and doctrine.⁷ This may explain in part why the Services are reluctant to embrace “jointness.” It is anticipated that this problem will remain in the future and the Services will continue to influence joint doctrine writing by importing in the joint arena their way of fighting or prosecuting wars.

The paper will show typical examples of the Services influence on joint doctrine writing that could have potential disastrous consequences on the battlefield. A lack of doctrine integration could create confusion and fratricide. The best examples of this phenomenon are Joint Pub 3-03 “Doctrine for Joint Interdiction Operations” and Joint Pub 3-09 “Doctrine for Joint Fire Support”.

The above two joint publications were sub-contracted for writing to the Air Force and the Army. The lead agent for the writing of Joint Pub 3-03 was the US Air Force⁸ and we can easily sense the Air Force’s influence by looking at the vocabulary employed (Air Force’s

⁶Dan Coates, “Joint Experimentation – Unlocking the Promise of the Future,” *Joint Forces Quarterly* (Autumn/Winter, 1997-98), pp 13-19.

⁷ *Ibid*, p 13.

⁸ United States, Joint Publication 3-03, *Doctrine for Joint Interdiction Operations*, (Washington: Government Printing Office, 10 April 1997), p B-1.

terms), and the explanations of the doctrine given from an Air Force's perspective. The Army was the lead agent for the writing of Joint Pub 3-09.⁹ The vocabulary and explanations of the doctrine are also largely influenced or expressed from an Army's perspective. This individual Service's view will become evident as we review these publications. The Joint Staff doctrine sponsor for these two publications is the Director for Operational Plans and Interoperability (J-7). The J-7 had the responsibility to oversee the integration of these two doctrines. Could it be that in its haste to publish joint doctrine he has overlooked the content? Or perhaps, he was incapable to resist the pressure from the Services to publish these publications to satisfy/protect their interests? While it is nearly impossible to reach a conclusion on this dilemma, it is possible to notice the results and their implications.

Before proceeding with the comparison, it is essential to review some definitions, to have a common understanding of the major terms and expressions.

DEFINITIONS

The title of Joint Pub 3 – 09 “Doctrine for Joint Fire Support” leads to the conclusion that it has an Army genesis by using the expression “fire support.” The same could be said with respect to the title of Joint Pub 3-03 “Doctrine for Joint Interdiction Operations”, this title has an Air Force genesis by using the expression “interdiction operations”. They both use Services’ expressions with the term joint as prefix. Is it sufficient to make them joint doctrines? The definitions below will provide a framework in a view to understand these nuances.

⁹ United States, Joint Publication 3-09, *Doctrine for Joint Fire Support*, (Washington: Government Printing Office, 12 May 1998), p D-1.

Fires are defined as “the effects of lethal or non-lethal weapons”¹⁰. Non-lethal weapons are designed and employed to incapacitate personnel or material, while minimising fatalities, permanent injury to personnel, and undesired damage to property and the environment. Fires are a broadly used term that include most of the combat or offensive attack assets of all the Services.

Joint fires are defined as “fires produced during the employment of forces from two or more components in co-ordinated action toward a common objective.”¹¹

Fire support is defined as “fires that directly support land, maritime, amphibious, and special operation forces to engage enemy forces, combat formation, and facilities in pursuit of tactical and operational objectives.”¹²

Joint fire support is defined as “joint fires that assist land, maritime, amphibious, and special operations forces to move, manoeuvre, and control territory, populations, and key waters.”¹³

Interdiction is defined as “an action to divert, disrupt, delay, or destroy the enemy’s surface military potential before it can be used effectively against friendly forces.”¹⁴

Joint Interdiction operations are defined as “those actions executed by more than one Service and can achieve tactical, operational, or strategic level objectives.”¹⁵

¹⁰ *Ibid*, p GL-6.

¹¹ *Ibid*, p v.

¹² *Ibid*, p I-1.

¹³ *Ibid*, p I-1.

By reviewing the basic definitions of fires, joint fires, fire support, and joint fire support on one hand, and comparing them with the definitions of interdiction and joint Interdiction operations, we can see that there is an overlap. We will see that what is defined as joint fire support and joint interdiction operations could have been integrated in one truly joint expression as opposed to importing Services' expressions and adding the term joint as prefix. To illustrate this, we will now compare the two doctrines in specific areas that are common to joint fire support and joint interdiction operations.

WHAT ARE THE ATTACK ASSETS?

Both joint fire support and joint interdiction operations use lethal and non-lethal weapons. Lethal weapon effects include those from naval surface fire support, indirect fire support, manoeuvre operations, special operations forces direct action operations, air operations, and even nuclear weapons. Non-lethal weapon effects include those from electronic warfare that are not directly connected with the destruction of equipment and personnel, certain psychological operations such as leaflet drops, some information operations such as disrupting the enemy's information networks, illumination, smoke, or incapacitating agents.¹⁶ Non-lethal weapons include non-penetrating blunt impact munitions, acoustic systems, entangling devices, and sticky foams.¹⁷

¹⁴ United States, Joint Publication 3-03, *Doctrine for Joint Interdiction Operations*, (Washington: Government Printing Office, 10 April 1997), p v.

¹⁵ *Ibid*, p v.

¹⁶ *Ibid*, p I-1

¹⁷ *Ibid*, p II-17

Joint fire support and joint interdiction operations use Air Force, Navy, Marine Corps, and Army aircraft to conduct air-to-surface attacks. These air attacks may include the lethal effects of close air support in the close battle and air interdiction in the deep battle by fixed and rotary-wing aircraft. Organic Army and Marine Corps mortars, artillery, rockets, missiles, and naval surface fire support systems conduct surface-to-surface attacks.

Both joint fire support and joint interdiction operations have access and use the same attack assets. This creates command and control problems such as duplication and increased complexity that could lead to unnecessary fratricide. Who should control and co-ordinate these attack assets over the same battle space? The different Services with complex coordination between them or the joint force commander? We can see an advantage of integrating the Air Force and Army doctrines to create a genuine joint doctrine that would de-conflict the command and control of the attack assets.

WHAT ARE THE TARGETS AND OBJECTIVES?

Joint fire support and joint interdiction operations both aim to attack surface targets. Surface targets can be enemy's weapons systems, formations, command and control sites, personnel/population, lines of communications, and infrastructure. In Joint Pub 3-09, the joint force commander provides guidance on the types of targets and priorities. It also explains what the effects of fires should do to the enemy e.g., deny, disrupt, delay, suppress, neutralise, destroy, and influence.¹⁸ In Joint Pub 3-03, the desired objectives are the diversion, disruption, delay, and destruction of enemy surface military potential by either

¹⁸ *Ibid*, p 1-2.

lethal or non-lethal means.¹⁹ As can be seen, both doctrines have more or less the same desired effects on the targets. Within their area of operations, supported commanders will usually attempt to strike targets with their organic assets first. Joint interdiction operations and joint fire support assets are limited resources. Nominated targets by the different components will usually outnumber assets capable of attacking them.²⁰ As an example, analysis of the Gulf War has revealed that of the 3,067 targets submitted by Army Central Command for inclusion in the air tasking order, only 1,582 were flown.²¹ This is why all the attack assets from all the Services are used to attack targets in the close and deep battle spaces. The joint force commander sets the priorities and where the weight of effort has to be applied.

Both joint fire support and joint interdiction operations are used to shape the battlefield to assist manoeuvre. Joint fire support and joint interdiction operations aim at attacking targets, the loss of which prevents the enemy from interfering with friendly operations or developing their own operations.²² As we can see, ultimately joint fire support and joint interdiction operations have the same targets/objectives. Why do we have two different doctrines describing the same activities? Joint doctrine should have integrated these two Services' doctrines in a unique genuine joint doctrine.

¹⁹ *Ibid*, p vii.

²⁰ *Ibid*, p ix.

²¹ Robert H. Scales, "Certain victory: the U.S. Army in the Gulf War," *Washington: Brassey's*, 1994: 189.

²² United States, Joint Publication 3-09, *Doctrine for Joint Fire...*, p III-2, and Joint Publication 3-03, *Doctrine for joint interdiction...*, p I-2.

WHERE ARE THE ATTACKS CONDUCTED?

Joint interdiction operations at tactical level concentrate on targets which are generally closer to friendly forces and usually produce more immediate effects, and joint interdiction operations at operational and strategic levels, generally occur deeper in enemy territory and produce more delayed effects.²³ Joint fire support is usually within the boundaries of the land, maritime, or amphibious force. However, the requirement for joint fire support is not necessarily confined to a land, maritime, or amphibious operational force commander's area of operations. Special operations forces may need close air support and other joint fire support at locations well beyond the land, maritime, and amphibious operational force commander's area of operations.²⁴ While some fires will support operational and tactical movement and manoeuvre by land, maritime, amphibious, and special operations forces, other fires are independent of manoeuvre and orient on achieving specific operational and strategic effects that support the joint force commander's objectives.²⁵ The Joint Pub 3-03 states that "the intent of deep operations is to bring force to bear on opponent's entire structure, at the tactical, operational, and strategic depths, in a near simultaneous manner."²⁶ Strategic depths are not defined. What is the difference between operational and strategic depths? If they are both in the same theatre and if we consider that a theatre is at the operational level, is there such a thing as strategic depth or should we talk of

²³ United States, Joint Publication 3-03, *Doctrine for Joint Interdiction...*, p vi.

²⁴ *Ibid*, p I-7.

²⁵ *Ibid*, p I-1.

²⁶ United States, Joint Publication 3-03, *Doctrine for Joint Interdiction...*, p II-2. This is an Air Force definition of deep operations. The Army sees deep operations mostly at tactical and operational levels, not at strategic level.

operational or strategic objectives? This is a doctrinal issue that should be resolved in order to minimise potential confusion.

Joint fire support and joint interdiction operations overlap over the same battle spaces. There is a nuance in the weight or emphasis of fire applied on the battlefield depending on who control the attacks. The predominance of fire for the joint fire support tends to be closer to friendly troops. The preponderance of fire for joint interdiction operations tends to be farther away of friendly troops. With the continuous improvement of technologies, all the Services are acquiring capabilities that are reaching deeper and deeper in the battle space. More specifically, it has created an ongoing debate between the Air Force who pushes for developing a “Precision Strike Air Power” and the Army who pushes for developing a “Decisive Land Power.” This has the consequence that what used to be the exclusive Air Force deep battle space is now increasingly becoming the realm of all the Services. Having two similar activities using the same attack assets on the same type of targets on the same battle space and being called something different lead to confusion. Again, for clarity in the joint arena it would have been much simpler and clearer to coin a joint term so as to describe the activity of attacking surface targets.

FIRE SUPPORT CONTROL MEASURES

Within their operational areas, land and naval force commanders employ permissive and restrictive fire support control measures to expedite attacks of targets; protect forces, populations, critical pieces of infrastructure, and sites of religious or cultural significance; de-conflict fire support/interdiction operations; and establish conditions for future operations. Fire support co-ordination lines (FSCL) are permissive fire support co-ordinating measures.

FSCLs facilitate the expeditious attack of targets of opportunity beyond the co-ordinating measure. An FSCL does not divide an area of operations. The FSCL applies to all fires of air, land, and sea-based systems using any type of ammunition against surface targets. An FSCL is established and adjusted by the appropriate land or amphibious force commanders within their boundaries in consultation with superior, subordinate, and supporting commanders. Forces attacking targets beyond an FSCL must inform all affected commanders in sufficient time to avoid fratricide, both in the air and on the ground. In exceptional circumstances, the inability to conduct this co-ordination will not preclude the attack of targets beyond the FSCL. Air strike short of the FSCL (both close air support and air interdiction must be under positive or procedural control to ensure proper clearance of fires e.g., forward air controllers, and tactical air command post. Anticipated adjustments to the location of the FSCL are normally transmitted to other elements of the joint force sufficiently early to reduce potential disruptions in their current and near-term operations.²⁷

Establishment of the FSCL too far forward of friendly forces can limit the responsiveness of air interdiction sorties. Control of air-to-surface operations short of the FSCL requires detailed synchronisation, increased communication assets, more restrictive rules of engagement, positive identification procedures, and more key personnel involved in the decision cycle than for those missions conducted beyond the FSCL.²⁸

The FSCL is a control measure that is a source of conflict between the Army and Air force. On one hand the Army wants the FSCL as far as possible from their own troops to

²⁷ United States, Joint Publication 3-09, *Doctrine for Joint Fire ...*, p A-5.

²⁸ *Ibid*, p II-15.

have more flexibility to use its integral long range Fires and the other Services' fires to prosecute the deep battle. On the other hand, the Air Force wants the FSCL to remain as close as possible to friendly troops to minimise its requirement of being under positive control of Army or Marine forces when attacking targets short of the FSCL. This is a good example of the overlap between the Services; they both use joint attack resources on targets that are part of the same battle space.

TARGETING

Targeting is the process of selecting targets and matching the appropriate response to them, taking account of operational requirements and capabilities. Targeting is a cyclical process which begins with guidance and priorities issued by the joint force commander and continues with identifications of requirements by components; the prioritisation of requirements; the acquisition of targets or targets sets; the attack of targets by components; component and joint force commander assessment of the attacks; and continuing guidance from the joint force commander on future attacks. Targeting occurs at all level of command within a joint force and is performed at all levels by forces capable of attacking targets with both lethal and non-lethal disruptive and destructive means. Targeting is complicated by the requirement to de-conflict duplicative targeting by different forces or different echelons within the same force and to synchronise the attack of those targets with other components of the joint force.²⁹ Subordinate commanders contribute to the operational targeting effort by nominating targets that could enhance their operations. In this way, the operational targeting

²⁹ United States, Joint Publication 3-56.1, *Command and control for Joint Air Operations*. (Washington: Government Printing Office, 14 Nov 1994), p IV-2.

or operational fire plan is considered to be top-down planned and bottom-up refined.³⁰ The essence of the targeting process at the operational level is to match the objectives and guidance of the joint force commander to the appropriate lethal or non-lethal weapon systems best suited to achieve the objectives in order to optimise the use of limited assets.³¹

To acquire the targets or targets sets, the components have a variety of organic and attached acquisition assets to assist in the target acquisition effort, e.g., combat units, intelligence and electronic warfare systems, and manned and unmanned reconnaissance aircraft. Other aerial, subsurface, surface, national, and multinational systems also support the target acquisition effort for joint fire support and joint interdiction operations. With the digitisation of the battlefield, all target acquisition assets are increasingly integrated and their output is available to all Services. Technology more than joint doctrine has allowed a good level of integration and sharing of information.

The joint force commander may establish and task an organisation to accomplish broad targeting oversight functions or may delegate this responsibility to a subordinate commander. Typically, the joint force commander organises a joint targeting co-ordination board (JTCCB) at the joint force HQ and, if the joint force commander so designates, the JTCCB may either become an integrating centre to accomplish the broad targeting oversight functions, or a joint force commander-level review mechanism.³² The role and composition of the JTCCB are defined by the joint force commander and typically include reviewing target

³⁰ Leonard G. Tokar, Jr. "U.S. Doctrine for Command and Control of Operational Fires," (School of Advance Military Studies, Command and Staff College, Fort Leavenworth, Kansas, 30 April 1996), p 10.

³¹ United States, Joint Publication 3-55, *Doctrine for Reconnaissance, Surveillance, and Target acquisition Support for Joint Operations (RSTA)*, (Washington: Government printing Office, 1993) p IV-1.

³² *Ibid*, p I-4.

information, developing targeting guidance and priorities, and preparing and refining joint target lists. The JTCB maintains a macro-level view of the theatre and ensures targeting nominations are consistent with the joint force commander campaign or operation plan.³³ The JTCB must be sufficiently/properly manned and the staff must have a balance representation of the Services. Otherwise, there is a risk of having the targeting process being hijacked or at least unduly influenced by one predominant Service as occurred during the Gulf War. The JTCB was headed by a Lieutenant-Colonel who had a staff of only three officers. The target lists were the purview of the “Black Hole”, the air planning staff of the Central Air Force HQ with no formal joint staff review.³⁴ “the combination of overwhelming air force representation in the Black Hole with the extreme secrecy of the planning effort reduced the amount of interaction and co-ordination with central command and component staffs.”³⁵

Tokar claims that “The analysis of the changing nature of the battlefield clearly shows the need for a doctrine, detailing a structure for command and control of operational fires.”³⁶ This will have an impact on the existing different targeting processes; possibly we will see an integration/synthesis of these processes. The joint force commander should maintain a centralised joint planning cell that concerns itself with co-ordinating various component assets to attack the operational targets that will influence the future campaign.

³³ United States, Joint Publication 3-56.1, *Command and Control for Joint Air Operations*, (Washington: Government Printing Office, 14 Nov 1994) p IV-1.

³⁴ Marc Dumais, “Operational Art and the Gulf War – Masterpiece or Forgery?” (Canadian Forces College, Toronto, Canada. 13 Oct 1998) p 18.

³⁵ Mark D. Mandeles, Thomas C. Hone, and Sanford S. Terry, *Managing “Command and Control” in the Persian Gulf War.* (Westport: Praeger, 1996) p 186.

This planning cell should be established on a permanent basis as opposed to ad hoc, which is often the case with JTCB.

The joint force commander will normally delegate the authority to conduct execution planning, co-ordination, and de-confliction associated with joint air targeting to the joint force air component commander/joint force commander staff and will ensure that this process is a joint effort. A targeting mechanism, tasked with detailed planning, weaponneering and execution, is also required at the other component level to facilitate the process.³⁷ The Army has the deep operation co-ordination cell and the Air Force has the joint force air component commander that perform that function. These processes must be synchronised under a joint process.

The joint force commander's guidance and objectives will identify targeting priorities, joint target list/joint integrated prioritised target list planning guidance, procedures, appropriate manoeuvre and movement control, joint fire support/joint interdiction operations co-ordinating measures, rules of engagement, and what defines component direct support sorties.³⁸ This guidance will also include the joint force commander's air apportionment decision. Joint targeting is still multi-level with a number of processes that need further integration.

³⁶ Leonard G. Tokar, "U.S. Doctrine for Command and Control of Operational Fires," (School of Advance Military Studies, Command and Staff College, Fort Leavenworth, Kansas, 30 April 1996) p 40.

³⁷ United States, Joint Publication 3-56.1, *Command and control for Joint Air Operations*, (Washington: Government Printing Office, 14 Nov 1994), p VI.

³⁸ *Ibid*, p IV-7.

The J-3 is responsible for the co-ordination, integration, and synchronisation of joint fires with other major elements of the campaign/operation such as manoeuvre, information operations, special operations, and logistics. The J-3 may be assisted in this task by a joint fires element. The joint fires element is an optional staff element that provides recommendations to the J-3 to accomplish fires planning and co-ordination.³⁹ Not only do we have to integrate the different targeting processes, but there is also a requirement to integrate the joint fires/joint targeting/joint fire support/joint interdiction operations with the other staff processes. The proliferation of staff processes/committees further compels the urgent requirement to integrate these processes before the command and control structure becomes paralysed/overloaded.

There are too many different processes dealing with targeting. We have to find ways to simplify or merge these processes in order to have everybody from the different services and specialities to understand each other and optimise efficiency. An example of it is given by Major Robert F. Kluba, US Marine Corps, in an article in Field Artillery. He argues that the Army's *Decide-Detect-Deliver-Assess* targeting methodology parallels the joint targeting process. "*Decide-Detect-deliver-Assess* targeting and joint targeting are similar processes, both of which are integral to tactical and operational decision making."⁴⁰

"Eventually, we must eliminate the concept that there are separate targeting processes and fully integrate the methodologies into a complete battlefield operating/functional system

³⁹ *Ibid*, p I-5.

⁴⁰ Robert F. Kluba, "De-Mystifying Joint Targeting," *Field Artillery*, (Jan.-Fev. 1996), p 4.

decision-making process.”⁴¹ There must be unity of effort with centralised control (tasking/guidance) with decentralised execution at the proper level. The Army deep operations and the Air Force deep strikes are now overlapping. “Deep strike operations, a traditional domain of the Air Force, have evolved with the advent of long-range land-based and sea-based weapons. To maximise force effectiveness and synergy in the adjacent close battle, joint doctrine must define deep strike operations as well as concomitant responsibilities for command and control and mission execution.”⁴²

The Army argues for the operational targeting responsibility to reside within the JTCB. The Air Force however, argues the ideal element for operational targeting responsibility is the joint force air component commander, a single commander responsible for all air forces within the theatre.⁴³ If all targeting activities are centralised at the JTCB, there is a danger that the JTCB will be overwhelmed by the number of targets to co-ordinate on the battlefield. Some decentralisation will have to be achieved to avoid overloading the co-ordination capabilities of the JTCB. the ideal mix of decentralisation versus centralisation is open for debate. What is of importance is the capabilities for efficient and timely command and control for servicing the targets.

In future, technological advances may support the JTCB in its co-ordinating tasks and could help avoiding overloaded created by the centralisation of targeting. As an example of emerging technology, the rapid targeting system provides and correlates imagery from

⁴¹ Robert F. Kluba, “De-Mystifying Joint Targeting,” *Field Artillery*, (Jan.-Fev. 1996), p 7.

⁴² Albert R. Hochevar, et al, “Deep Strike: The Evolving Face of War,” *Joint Forces Quarterly*, (Autumn 1995), p 81.

⁴³Jonathan B. Hunter, “Joint Operational Targeting: Who’s In Charge; CINC,JFACC or JTCB,” (School of Advanced Military Studies, Command and Staff College, Fort Leavenworth, Kansas, 6 May 1994), p 2.

satellites or “national technical means” with the imagery from tactical airborne reconnaissance assets. “The aim is to provide real-time information into the cockpit of F/A-18 Hornet and F-15E Strike Eagle aircraft for attacking mobile targets such as Scud launchers within five to 10 minutes.”⁴⁴

With the information age we have a close to real time picture of the battlefield. With the new weapons systems available to each component commander, it is essential to arrive at an efficient and safe way to command and control the servicing of targets on the battlefield, be it through joint fire support or joint interdiction operations. We have to optimise operational fires using an efficient joint targeting and avoid potential fratricide. To achieve this, we need a real joint doctrine and a real “purple staff” that will provide a joint perspective with an eye on the entire campaign (air, land, and sea).

COMMAND AND CONTROL

To facilitate synchronisation, the joint force commander establishes priorities that will be executed throughout the theatre, including within the land and naval force commanders’ area of operations. In co-ordination with the land and/or naval force commander, those commanders designated by the joint force commander to execute theatre wide functions have the latitude to plan and execute these joint force commander’s prioritised operations, and attack targets within land and naval area of operations.⁴⁵ Joint fires support requires co-ordination and integration of airspace as well as co-ordination of air and

⁴⁴Barbara Starr, “USA’s rapid targeting reaches new heights,” *Jane’s Defence Weekley*, (4 March 1998), p 22.

⁴⁵ United States, Joint Publication 3-09, *Doctrine for Joint Fire...*, p 1-3.

air-to-surface attack resources. This co-ordination is normally done by the joint force air component commander.

In accordance with the US joint fire support doctrine, the land and naval force commanders are the supported commanders within the area of operations designed by the joint force commander. Within their designated areas of operations, land and naval force commanders synchronise manoeuvre, fires, and interdiction. To facilitate this synchronisation, such commanders have the authority to designate the target priority, effects, and timing of fires within their area of operations.⁴⁶

Joint fire support and joint interdiction operations engagements follow detailed procedures allowing simultaneous attacks from air, land, sea, and special operations forces. Usually, joint fire support and joint interdiction operations are planned using established command and control liaison elements to communicate inter-component requests. Synchronised and integral joint fire support and joint interdiction operations link weapons effects to the joint force commander's campaign or operation objectives through component operations.⁴⁷ The joint force commander provides guidance to integrate components' capabilities and synchronise the execution of fires through two different processes: Joint fire support and joint interdiction operations. Why having two processes to command and control the attacks of the same surface targets? Integration of these two processes would certainly minimise the requirement for the existing large number of co-ordinating elements. To illustrate this, we will review the main existing co-ordinating elements.

⁴⁶ United States, Joint Publication 3-09, *Doctrine for Joint Fire...*, p vi. and Joint Publication 3-03, *Doctrine for Joint Interdiction...*, p II-4.

The Army provides a battlefield co-ordination detachment as the interface for selected battlefield functions with the joint force air component commander. The battlefield co-ordination detachment co-ordinates pre-planned close air support and air interdiction missions with the air operations centre. The battlefield co-ordination detachment assists the synchronisation of joint air operations with Army manoeuvre and fires, and the exchange of operational and intelligence data.⁴⁸

Service and functional components provide hierarchy of fire support co-ordinators, fire support co-ordinating agencies, and liaison officers. The Army has established fire support elements or fire support co-ordination centre from battalion to corps level. Corps and echelons above corps, and some divisions, have a fire support staff capability in the deep operations co-ordination cell. These elements advise the manoeuvre commander on capabilities and the effective use of fire support assets, and assist in the planning and co-ordination of fire support. Working with the battlefield co-ordination detachment and other co-ordinating elements, the deep operations co-ordination centre plans and co-ordinates as appropriate the use of fires in support of Army deep operations.⁴⁹

Joint fire support co-ordination is a continuous process of planning and executing fires. It includes efforts to de-conflict attacks, avoid fratricides, reduce duplication of effort, and assist in shaping the battle space. In order to keep fire support responsive, the lowest level having effective means available should deliver it. Fire support planners and/or co-ordinators must determine what is needed. If assets are inadequate, they must request

⁴⁷ United States, Joint Publication 3-09, *Doctrine for Joint Fire...*, p x.

⁴⁸ *Ibid*, p II-7.

additional fire support from the appropriate echelon or component. The requester is usually in the best position to determine fire support requirements. However, fire support planners and/or co-ordinators are in a position to weigh the request against the commander's guidance on priority targets and the current and future needs for fire support.⁵⁰

The tactical air control party establishes and maintains facilities for liaison and communications between supported units and appropriate air control agencies. An air officer leads the tactical air control party normally with two teams assigned per manoeuvre battalion. Their mission is to inform and advise the supported ground unit commander on the employment of supporting aircraft and to request and co-ordinate air support missions.⁵¹ The air support operations centre is the key Air Force theatre air control system agency involved in co-ordinating close air support for ground forces. It performs co-ordination, direction and control of the air effort to support land forces objectives, usually at corps level and below. The air support operations centre is subordinated to the air operations centre.

As can be seen the command and control of joint fire support and joint interdiction operations require varied co-ordinating elements, and is very complex. There are Air Force and Army representatives involved in co-ordination of joint fire support and joint interdiction operations from battalion to component level. A single joint doctrine to allocate and control joint attack assets to service the targets in the close and deep battle spaces would simplify the command and control of joint fires.

⁴⁹ *Ibid*, p II-7.

⁵⁰ *Ibid*, p III-11.

⁵¹ *Ibid*, p II-11.

“Operation Desert Storm observations are clear; our current joint doctrine fails to provide essential harmonisation of fires and air space co-ordination.”⁵² Command and control of joint fires at the operational level were previously concerned with the employment of air assets. The operational commander now has surface-to-surface fire assets in the form of Army Tactical Missile System and Tomahawk Land Attack Missiles. De-confliction of indirect fires with air interdiction aircraft is now an operational concern.

Components’ planning, target acquisitions, and execution capabilities often overlap. Due to the diversity of systems capable of providing command and control, target acquisition, and fires, joint doctrine must ensure unity of effort throughout the joint force. Harmonisation of joint targeting with the different components’ targeting processes will be a good step to ensure unity of effort.

From what we have seen so far, we can ask ourselves the following question: What is the difference between joint interdiction operations and joint fire support? It becomes difficult to find a meaningful or substantial distinction of those two operations in the joint arena. It would have been wiser and clearer to coin a new joint term to integrate these actions that originated from the AF and the Army respectively.

SUMMARY AND DISCUSSION OF DIFFERENCES, SIMILARITIES AND PROBLEMS AREAS

Battles are won by fire and by movement. The purpose of the movement is to get the fire in a more advantageous place to play on the enemy. This is from the rear or flank.

George S. Patton, Jr.

⁵² Sammy L.Coffman,, “Fighting with Fires,” *Field Artillery Journal*, (June 1992), p 5.

Joint Pub 3-03 states that “Strategic attack operations target the enemy centre of gravity and such other vital target systems as government and military leadership command and control, command, control, communication and intelligence networks, weapons of mass destruction and the means to deliver them, critical materiel stockpiles, and other war sustaining capabilities. Strategic attack and interdiction operations complement one another through their effects.”⁵³ Here Joint Pub 3-03 makes a distinction between interdiction and strategic attack contrary with what we have seen earlier. Interdiction is adding depth to operations, and deep operations include strategic depth. Are strategic attacks any different from interdiction operations or are they the same? The thrust of the actual doctrine is that interdiction operations are normally conducted at the operational level but can also be at the tactical and strategic levels. Joint doctrine has to be clearer to avoid confusion. This confusion seems to be the result of importing Air Force doctrine in the joint arena. We need to do more than simply importing, we need to integrate the Services’ doctrines into a genuine joint doctrine.

In summary, joint interdiction operations and joint fire support are mostly conducted at tactical and operational levels and their depth could be extended to the strategic level. Their objectives are to attack enemy surface military potential by either lethal or non-lethal means. They can be conducted by all Services using their organic or joint target acquisition and attack assets in the close or deep battle spaces.

The Army deep operations and the Air Force deep strikes are now overlapping. “Deep strike operations, a traditional domain of the Air Force, have evolved with the advent of

⁵³ United States, Joint Publication 3-03, *Doctrine for Joint Interdiction...*, p IV-4.

long-range land-based and sea-based weapons. To maximise force effectiveness and synergy in the adjacent close battle, joint doctrine must define deep strike operations as well as concomitant responsibilities for command and control and mission execution.”⁵⁴ The Army and the Air Force are both doing joint fire support and joint interdiction operations with organic and/or joint attack resources. This overlap is an indication of a lack of integration of Services’ doctrines in a genuine joint doctrine. Why is that so? Is it due to a Forces structure problem or the Services fighting for a limited defence budget?

In theory and logically, the Services’ doctrines should derive from joint doctrine. The reality, as seen above, is expressed by Hochevar who says “The problem is that a systematic and synchronised approach to employing fires and interdiction does not exist.”⁵⁵ In practice, because doctrine is authoritative but not dogmatic, the commander has the latitude, in exceptional circumstances, to dictate otherwise. In accordance with the prefaces of all joint publications, if conflicts arise between the content of a joint publication and the Service’s publications, the joint publication will take precedence for the activities of joint forces unless the Chairman of the Joint Chiefs of Staff, normally in co-ordination with the other members of the Joint Chiefs of Staff, has provided more current and specific guidance. This is the theory, in practice we can see that more often not to say the norm, joint doctrine derives from the Services’ doctrines. This creates the lack of integration that we have seen so far.

Joint Pub 3-03 and Joint Pub 3-09 have liberally defined their processes/doctrine to encompass all targeting for the close and deep battles. They both describe targeting on the

⁵⁴ Albert R. Hochevar, et al, “Deep Strike: The Evolving Face of War,” *Joint Force Quarterly*, (Autumn 1995), p. 81.

same battle space using different (Army and Air Force) terms and control mechanism. Both are using the same assets (air, land, navy, and special operations forces) to attack the same targets on the same battle spaces. The result is a duplication of terms, procedures, and control mechanisms that can lead to confusion if you do not pay attention to whom has written these supposedly joint publications.

The main distinction or nuance between the two doctrines is that the preponderance of fires for joint fire support is closer to friendly troops. With the new Army's capabilities to detect and deliver deep, its fires are reaching farther and farther away from friendly troops. The preponderance of fires for joint interdiction operations is farther from friendly troops, but it also has fires close to them. These preponderances are getting blurred or are disappearing with the introduction of new target acquisition and delivery technologies that are available to all the Services. We are at a juncture where new technologies are eliminating, or at least diminishing, the capabilities difference between the Services. Each Service can operate in what used to be more exclusive Services' battle spaces or areas of operations.

We are reaching the point where it is essential to have a truly joint doctrine. We have to simplify joint doctrine by eliminating duplication of processes and by simplifying the vocabulary using genuine joint accepted terms. It is not by adding the word "joint" in front of a Service's one that makes it Joint. The only thing it does, it multiplies the number of terms, acronyms and definitions. Joint Pub 3-03 and Joint Pub 3-09 are good illustrations of this phenomenon: they both added joint in front of Service' activity/process; joint fire support

⁵⁵ Matthew T. McCracken, "Understanding Operational Fires and Interdiction" (Naval Command and Staff College, Newport, R.I. 18 June 1993) p ii.

and joint interdiction operations. What was the cause of it? Was it because these publications were written by lead agencies in this case the Air Force and the Army, or a Forces structure problem?

With the new digitised battlefield, improved command and control and target acquisition, and long range attack systems, the commanders of all Services are in a position to fight the close and deep battles. But who does what to whom? Who is responsible for what part of the battle space? Some argue that “Interdiction and operational fires should be considered synonymous with each other.”⁵⁶ We can see why it becomes more and more important that the command and control of targeting be exercised by the joint force commander and that we develop clear joint doctrine that eliminates duplication and possible confusion.

Non-lethal fires such as PSYOP are more diffuse and overlap close and deep battles and inter-Services boundaries/area of operations responsibility. Since all Services claim to use PSYOP as non-lethal fire, who has control? Or how much overlap/duplication is there? The JTCB has been created especially to eliminate or diminish this lack of integration. The JTCB cannot control all fires for deep and close battles. Over centralisation will neutralise or paralyse the JTCB or the joint staff efficiency because of the volume of data and co-ordination activities that will fall under their responsibility. A balance has to be struck between what has to be centralised and co-ordinated by the joint staff and what can be decentralised with proper control measures. The solution will not come, or should not come, from the Services. It is up to the purple staff writing joint doctrine to establish who does what

⁵⁶*Ibid*, p 2.

to whom. This would avoid the conscious or unconscious Services' bias influence.

Eventually, the Services will have to be involved in the joint doctrine writing process but

CONCLUSION

Forces on land, sea, and air can re-inforce and complement each other at a continuously increasing rate. The enemy is subject to acquisition, tracking, engagement and battle damage assessment from a variety of systems that belong to the different Services.

The joint force commander can plan and execute operational fires with decisive results; the shortcoming is that the procedures are not uniform across the spectrum of the components, nor standardised in doctrine. Since all components can contribute to the campaign, unity of effort is required to focus on the centre of gravity while avoiding duplication, waste and confusion. The ability to conduct force application planning, the matching of target with the appropriate weapon and delivery systems to service the targets is at the heart of targeting.

The complexity and speed of modern combat operations requires a single commander to be given the responsibility, the resources, and the command authority to effectively conduct operational targeting from target selection to target execution.⁵⁷ Joint doctrine should offer a common perspective from which to plan and operate. It would establish uniformity among the Services, save time, improve understanding, avoid having “disjointed” joint doctrine and confusion, and increase efficiency.

Joint doctrine is in a catch up mode with modern technology. “The weakness lies in a lack of established doctrine and command , control, communications and intelligence

⁵⁷ Jonathan B. Hunter, “Joint Operational Targeting: Who’s in Charge; CINC,JFACC or JTCB?” (School of Advanced Military Studies, Command and Staff College Fort Leavenworth, Kansas, 6 May 1994) p 45.

structures keeping pace with our own weapons' technology and war fighting requirements."⁵⁸

To achieve decisive results the enemy must be attacked in depth simultaneously, striking his command and control, destroying his logistics, and contributing to his moral collapse. The key to success in this type of operational environment is centralised planning employing assets from all the Services. To achieve this, we need to integrate the different Services' doctrines in a truly joint doctrine.

We have seen that Joint Publication 3-09 "Doctrine for Joint Fire Support" and Joint Publication 3-03 "Doctrine for Interdiction Operation" were written by lead agents respectively the Army and the Air Force. It resulted in Services' doctrine that have been repackaged using the buzz word "joint" and Services who are trying to sell it as joint doctrine.

What are the causes of this phenomenon? Is it the result of the Services wanting to protect their funding, or their ambition to seek predominance for their Services for fighting on their own the future wars? Is it because some joint doctrine writing has been sub-contracted to lead agents (the Services) giving the later an influence which has for consequences that they import their doctrine in the joint arena using the prefix joint? Is it because the Joint Staff doctrine sponsor, the Director for Operational Plans and Interoperability (J-7), in his haste to publish joint doctrine has not done a proper integration? Or was he incapable to resist the pressure from the Services to satisfy/protect their interests? It is impossible to define precisely the exact cause, and perhaps it is a blend of all of the above. Nevertheless, it is important to recognise the problem and its potential for confusion

⁵⁸ Matthew T. McCracken, "Understanding Operational Fires and Interdiction." (Naval Command and Staff College. Newport, R.I. 18 June 1993) p 18.

and fratricide. It is doubtful that we will ever see a truly joint doctrine due to the actual structure and funding of the US Forces.

Genuine joint doctrine could be sought by having it written by purple staff. This method would de-conflict the targeting processes, simplify the vocabulary, eliminate duplication and confusion, and optimise the Services' assets. To achieve this, the Services would have to abandon their quest to wanting to fight the future wars on their own. The Services would also have to make a genuine and conscious effort in assisting in the development of truly joint doctrine.

ANNOTATED LIST OF WORKS CITED

Coats, Dan. "Joint Experimentation – Unlocking the Promise of the Future." *Joint Forces Quarterly* (Autumn/Winter 1997-98), pp13-19. The article provides an excellent perspective of the fight between the Services for limited funds and the consequences of this fight. It helps to understand why there is still difficulty to have jointness and the impact that it has on joint doctrine writing.

Coffman, L. Sammy. "Fighting with Fires." *Field Artillery Journal*. (June 1992). The article was assessing the shortcomings in C2 of fires during the Gulf War. I agree with most of what the author advanced. It was difficult then and now to challenge or underline the shortfalls of the Gulf War because it was a great coalition victory.

Crews, Fletcher. "PSYOP Planning and the Joint Targeting Process." *Special Warfare*, (Winter 1998), pp16-21. The article is addressed to the PSYOP community and is quite specialised. It mostly discuss the PSYOP planning process and it briefly relates it to the JFC's planning process and targeting. It had very limited value for this essay.

Dumais, Marc. "Operational Art and the Gulf War – Masterpiece or Forgery?" (Canadian Forces College, Toronto, Canada, 13 October 1998). The essay discuss the Operational Art using the Gulf War to illustrate the main tenets. It provides very good historical examples that illustrate some flaws on doctrine application.

Hochevar, Albert R., et al. "Deep Strike: The Evolving face of War." *Joint Forces Quarterly*, (Autumn 1995), pp 80-85. The article is a joint attempt by four different

authors (1x USN, 1x USA, and 2x USAF officers) to define or redefine deep strike. It brings together the views or perspectives of the different Services on the semantic of the topic. It brings some concepts that are controversial, not to say against current doctrine.

Hunter, Jonathan B. “Joint Operational Targeting: Who’s in Charge: CINC, JFACC, or JTCCB?” (School of Advanced Military studies, Command and Staff College, Fort Leavenworth, Kansas, 6 May 1994). The essay is very detailed and gives a very good overview where was joint doctrine in 1994. Also it uses three good historical examples (Overlord, Korea, and Desert Storm) to illustrate its trust. Unfortunately, I found that the author was mesmerised by the Gulf War and is recommending to taking it as a model for doctrine and organisational structure for C2 of operational targeting.

Kluba, Robert F. “De-Mystifying Joint Targeting,” *Field Artillery*, (Jan.-Fev. 1996). The article’s title is misleading. As opposed to simply describing joint targeting, the author proposes the integration of two processes: the intelligence and joint targeting processes. The article is technical and specialised, and is addressed to an educated audience in these processes.

Mandales, Mark D.; Hone, Thomas C.; and Sandford Terry S. *Managing “Command and Control in the Persian Gulf War.”* Westport, Praeger, 1996. This reference was taken from Col’s Dumais “Operational Art and the Gulf War – Masterpiece or Forgery?” (Canadian Forces College. Toronto, Canada. 13 Oct 1998, p 14). I cannot provide further comments on the source not having read it.

McCracken, Matthew T. "Understanding Operational Fires and Interdiction." (Naval Command and Staff College. Newport, R.I. 18 June 1993). The essay briefly explains operational fires and Interdiction and criticise the lack of joint doctrine to effect proper C2. Despite the fact that the article was written in 1993 and that new joint doctrine have been written on the subject, most of the author's comments are still pertinent.

Scales, Robert H., *Certain Victory: The US Army in the Gulf War*. (Washington: Brassey's, 1994). This reference was taken from Col's Dumais essay "Operational Art and the Gulf War – Masterpiece or a Forgery?" I cannot provide further comments on the book not having read it.

Schmidt, John W.; and Williams, Clinton L. "Disjointed or Joint Targeting?" *Marine Corps Gazette*, (Sept. 1992). The article underlines the joint targeting difficulties encountered during the Gulf War. It proposes a solution to make joint targeting more purple, thus ensuring overall campaign continuity of effort, or an honest broker in targeting. This is a short, to the point article, that gives a good perspective of the problem.

Smith, Dan. "Doctrinal Issues in Joint Targeting." *Military Intelligence*, (Oct.-Dec. 1994), pp 37-39. The article provides a brief historical overview of the evolution of joint targeting and briefly explains the relation between intelligence and joint targeting. The main trust of the article is to raise a great number of questions regarding diverse joint targeting problems that need resolution. It doesn't provide any solutions and is therefore not much useful.

Starr, Barbara. "USA's rapid targeting reaches new heights." *Jane's Defence Weekly*, (4 Mar. 1998) p 22. The article briefly describes the technology involved in RTS and its capabilities. It uses too many acronyms and is too superficial. It is too short and incomplete. It doesn't provide with a good understanding of the topic.

Tokar, Jr. Leonard, G. "U.S. Doctrine for Command and Control of Operational Fires." (School of Advance Military Studies, Command and Staff College Fort Leavenworth, Kansas, 30 April 1996). The essay provides two historical examples to illustrate the requirement of having doctrine to co-ordinate operational fires. Those examples were Operation Cobra during the Second WW and Operation Desert Storm. Operational fires are again another term to describe the targeting process with an emphasis at the operational level. Good reading, but do not provide much new thinking except for the requirement of having a central planning for operational fires.

United States, Joint Publication 3-0, *Doctrine for Joint Operations*, (Washington: Government Printing Office, 1 February 1995). This publication is a capstone document and is general. It does not provide specific details on joint fire support and joint interdiction operations, but provides a good baseline to better understand the subordinate joint publications.

United States, Joint Publication 3-03, *Doctrine for Joint Interdiction Operations*, (Washington: Government Printing Office, 10 April 1997). This publication is fairly recent and give a good description of the targeting process seen from an AF perspective. What is described as joint interdiction operations can also be described as joint fire support or operational fires with minor nuances.

United States, Joint Publication 3-09, *Doctrine for Joint Fire Support*, (Washington: Government Printing Office, 12 May 1998). The most recent joint publication available, it is very detailed and explain the targeting process with an Army perspective. What is described as joint fire support can also be described as joint interdiction operations or operational fires with minor nuances and different C2 architecture.

United States, Joint Publication 3-55, *Doctrine for Reconnaissance, Surveillance, and Target Acquisition Support for Joint Operations (RSTA)*, (Washington: Government Printing Office, 1993). This joint publication was more neutral/objective in its explanation of the targeting process. The content is more technical in nature and was of limited utility for the purpose of this essay.

United States, Joint Publication 3-56.1, *Command and Control for Joint Air Operations*, (Washington: Government Printing Office, 14 Nov 1994). This joint publication was well written and provides a comprehensive understanding for integrating all Services' air assets. It focuses on JFACC duties and responsibilities but has devoted a chapter on targeting and tasking for joint air operations. It was describing targeting from an AF perspective.

United States, Report to Congress, *Conduct of the Persian Gulf War*, (Washington: Government Printing Office, 1992), p 414. This is a very good report that try to explain as objectively as possible the lessons learned during the Gulf War. Personally I found it quite objective.