



Proceedings of the Army of Tomorrow Seminar Wargame

Director General Land Capability Development
Kingston, Ontario

28 August - 1 September 2006

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In the future security environment Canada's Army will be required to operate within an international arena marked by uncertainty, volatility and risk in order to meet the nation's national security needs and expectations. In tomorrow's world, the prospect of wars featuring large force on force exchanges will be eclipsed by the realities of asymmetric and irregular warfare conducted by highly adaptive, technologically enabled adversaries; media-savvy foes intent less on defeating armed forces than eroding an adversaries will to fight. The challenges presented by this type of irregular warfare will be further exacerbated by potential adversaries taking full advantage of the complex human, physical, and informational environments that the world's large and densely populated urban areas can provide.

It is within this uncertain context that the Directorate of Land Concepts and Doctrine (DLCD) is working to develop the broader implications of the future security environment on land operations. To that end the Directorate's Land Futures staff (formerly DLSC) has undertaken a project to develop a Force Employment Concept (FEC) for the Army of Tomorrow (AoT) that is clear, relevant, and forward-looking. This FEC, titled, "Land Operations 2015: A Force Employment Concept for the Army of Tomorrow" will be the foundation upon which Land Force capabilities and doctrine are developed and/or synchronized in order to ensure the Land Force remains strategically relevant, operationally responsive, and tactically decisive throughout the future battlespace.

Building upon previous work presented in Future Force: Concepts for Future Army Capabilities and Crisis in Zefra, DLCDC Land Futures recently produced The Army of Tomorrow: Assessing Concepts and Capabilities For Land Operations Evolution primer document which introduces a series of operating, functional, and enabling concepts that collectively describe an approach to future land operations characterized by the deliberate use of dispersion undertaken by adaptive forces in order to create significant tactical advantage. In this environment, Land Forces will be a major contributor to the joint team producing integrated effects through a robust network.

The concepts presented in this primer will be analyzed and further developed through a series of seminar war games and Army Experiments. The culmination of this concept development and experimentation effort will be the publication of the FEC for the AoT in January 2007. In support of the Land Operations 2015 development effort, DLCDC conducted the AoT Seminar War Game (SWG) to further refine AoT concepts, capability requirements, and the AoT Battle Group (BG) structure. The focus of the SWG was the AoT BG in the JIMP environment and the Human Dimension implications of the adaptive dispersed operations. Key lines of investigations addressed include:

- ◆ The AoT BG organizational structure and required capabilities;
- ◆ Aviation support for the AoT BG in dispersed operations;
- ◆ The requirement for a DFS or mounted combat capability;
- ◆ The JIMP capability required in the AoT BG; and
- ◆ The implications of adaptive dispersed operations on the training, education, and development of junior combat leaders.

An overview of the SWG findings are presented in these proceedings. If further details are required the Directorate of Land Concepts and Doctrine will make all materials available to further the vision of the Army of Tomorrow.

J.B. Simms
Col
DLCD

Methodology

The game is played out in a series of three moves by three player cells. The Blue cell represents the Army of Tomorrow Battle Group Command Staff. The Red Cell represents not only enemy combatants but also “friction,” factors — natural or otherwise — that adversely affects Blue Cell’s actions and goals. All other players in the battlespace including the public, governmental and pressure groups, international and non-governmental organizations, and public opinion in general are represented in the White Cell. A Control Cell manages play and provides guidance and support to all players if necessary. The three panels — Modular Battle Group, Human Dimension and JIMP — are composed of representative experts and interested parties. An Operational Research planning team, and a team involved in Army Experiment 9 Alpha each make observations

A game move begins with a scenario briefed to the plenary session. The participants then break up into their respective cells and panels for discussion. The Blue Cell develops a course of action which is briefed along with identified weaknesses in concepts and structure the next morning at the plenary session. Each panel discusses their respective topic in relation to the scenario and Blue Cell’s proposed course of action. The Red and White Cells brief their actions/reactions in the morning plenary session after observing the other cell and panel discussions. These backbriefs provide key insights and recommended changes to concepts and structures, not only for gameplay but for future research and development.

Agenda

Mon	Tue	Wed	Thu	Fri
In-Briefs	Move 1 Back Briefs (Cells and panels)	Move 2 Back Briefs (Cells and panels)	Move 3 Back Briefs (Cells and panels)	Outbriefs
AoT Concepts				OR Way Ahead
Game Objectives & Design				AE9A Way ahead
Scenario & FSE				
Move 1, Scenario and Problem	Move 2, Scenario and Problem	Move3, Scenario and Problem	General Discussion	Endex
LUNCH & PT				
Blue COA	Blue COA	Blue COA	Panel discussion and preparation for out-brief	
Panel Discussion	Panel Discussion	Panel Discussion		

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The Scenario

Background

Two independent nations share the island of Splash. The two countries, Daloon and Zefra share a common border. Both are relatively impoverished nations with very little in terms of natural resources or major economic activity.

Daloon, a former Spanish colony, gained its independence in 1947 and initially enjoyed relative political stability although it faced significant economic challenges. The major security concern to Daloon came from sharing the island with Zefra, a country whose history unfolded quite differently and in which insurgency and internal strife were all too common. Daloon initially maintained a policy of trying not to antagonize Zefra; however, this changed in the early 2000s.

Zefra was a French Colony that was granted independence in 1951. It is a country dominated by a well-educated, Bongo minority population. Under French colonial rule, the Bongos gained stature as functionaries of the colonial government and developed as an entrepreneurial middle class. The French largely marginalized the Truscans. This disenfranchisement led to a number of Truscan uprisings through the colonial period.

The Bongo population has dominated the central government and led economic development since independence. Zefra was initially formed as a republic based on the French model, however it has gradually transformed into an autocracy.

The Bongo dominance in government, the civil service and the judiciary further alienated the Truscan population and led to a series of local uprisings across the country. What followed was a civil war from 2002 to 2009.

The civil war in Zefra caused a flow of refugees into Daloon. Mixed in with the refugees were Truscan insurgents from Zefra who began to establish safe havens on the Daloon side of the border.

The civil war ended with a peace agreement brokered by the UN that

created an autonomous region under PLM/PLA control as part of Zefra. There was a period of relative calm until the mid-2010s.

Offshore natural gas was discovered in Daloon territorial waters in 2011. Southern European interests were quick to support Daloon's development of this resource as a source for meeting their own rising energy demands. International investment and development activities significantly improved the Daloon economy. Daloon used this investment to quickly modernize its armed forces.

During this time a narcotics processing and transshipment industry was developing in Zefra. Zefra had been a transshipment point for cocaine for quite some time. In 2015, a more extremist central government in Zefra violated the peace agreement by disbanding the autonomous region and replacing it with three provinces. Almost immediately, the opposition groups began a protracted guerrilla campaign against the central government. The government reacted with strong military action; however it was not able to achieve a decisive victory.

The fighting had a tremendous humanitarian impact on the population in the Zefra. Large segments of the population fled to Daloon and to the major urban areas in Zefra to escape the violence.

International pressure on the Zefra government did not have an appreciable effect on the humanitarian conditions; however, it did change the government's approach to prosecuting the conflict. In 2018, bowing to international pressure and facing the economic impact of continuing to prosecute military operations, the Zefra government declared a ceasefire. In reality however, it continued to conduct its campaign, but by other means. The government had been encouraging the formation of Bongo militia forces and used them to conduct proxy operations.

The fighting has continued to generate a flow of refugees from Zefra into Daloon, stressing the latter's

capability to support this displaced population. Daloon remains concerned that Zefra's internal strife might spill over into Daloon with the refugee flow.

International aid and humanitarian organizations have been active in the area for sometime and are operating on both sides of the border. Agencies in Daloon have been assisting Daloon authorities in dealing with the refugee situation. The focus of agencies operating in Zefra has been internally displaced persons. Their operations have been hampered by the continuing violence by armed groups and a general lack of support from Zefra government authorities.

Continued international pressure on the central government to rein in the militias and come to a peace agreement with other belligerents has to date been unsuccessful. The government is consistent in its claim that it does not control, nor support the militias despite damning evidence to the contrary.

UN efforts to mediate a peace agreement directly, or through the other regional organizations, have been unsuccessful. The human suffering continues and has held the attention of the media for the past several months. Daloon has welcomed international initiatives to resolve the conflict. It has already accepted assistance from the international community to deal with the growing refugee problem and indicated that it might agree to host elements of an international force if one were deployed. At the same time it has clearly indicated that it would not participate in the operations of such a force.

In response to this crisis, the International Conference for Zefra (ICFZ) was formed under the leadership of the United Kingdom. ICFZ members include Australia, Canada, France, New Zealand, the Russian Federation, Spain, the United Kingdom and the United States of America. The UN Security Council has recently passed a resolution calling on a coalition of like-minded nations to force an end to hostilities.

Zefra authorities responded to the UN resolution and obvious ICFZ resolve by agreeing to abide by the conditions of the resolution and ac

cepted the deployment of a UN sponsored ICFZ force. Canada's commitment to ICFZ is a joint task force consisting of Land Task Force of battalion/regimental size that will operate within a multinational brigade; an air expeditionary force and a naval task group composed of two frigates, one joint support ship and two MCDVs. National command will be exercised by a Canadian Joint Task Force Commander and National Command Element. A task-tailored National Support Element has also been formed.

Forces Operating in Zefra

Zefra Armed Forces

The Zefra Armed Forces report to the Ministry of Defence. The Army is primarily a home defence force equipped with a mixture of 1990s vintage French, Russian and British equipment. The Army has limited field mobility, firepower and communications.

The Air Force is structured into three wings. 1 Wing has a ground attack squadron of 12 F5s, a Utility Transport Squadron of 12 Bell 212s and a Presidential Flight with four light fixed wing aircraft. 2 Wing has a Transport Squadron with four C160 and four Buffalo aircraft, and a Lt Helicopter Squadron with six Jet Rangers. 3 Wing consists of a Coastal Patrol Squadron with three Beech Queen Air aircraft. Aircraft serviceability for all aircraft is a continuing challenge.

The Navy has three Coastal Patrol Squadrons that employ a mixture of corvettes and fast patrol boats. There are two coastal submarines.

Zefran Internal Security Forces

Internal security forces report to the Interior Ministry and include the National Gendarmerie, an approximately 15,000 strong force that is 75% Bongo and 25% Truscan. It is largely ineffective outside of the urban areas.

The Internal Security Bureau (ISB) is 100% Bongo and fiercely loyal to the government. It is the government's principal instrument to quell dissent and is believed to be behind several of the atrocities that

have been committed against the Truscan population.

The approximately 800 strong Customs Bureau controls access through maritime and air ports. Its responsibilities in the border region have been taken over by the Army.

Irregular Forces

There a number of irregular forces operating within the territory of Zefra:

Zefra Association (ZA), a government sponsored Bongo nationalist militia;

Internal Solidarity Movement (ISM), nominally a Bongo right-wing separatist movement that has developed into a drug based criminal cartel;

Peoples Liberation Movement (PLM)/Peoples Liberation Army (PLA), a Truscan opposition group seeking autonomy within Zefra. The PLA is the armed component and the main opposition group in Zefra; and

People for a Greater Zefra (PGZ)/Peoples Force (PF), a Moderate,

multi-ethnic party seeking an inclusive democratic Zefra. The PF is the armed component. It is the most sophisticated armed group that exclusively targets government assets.

International and Governmental Organizations

United Nations Development Programme (UNDP)

United Nations High Commission for Refugees (UNHCR)

World Food Program (WFP)

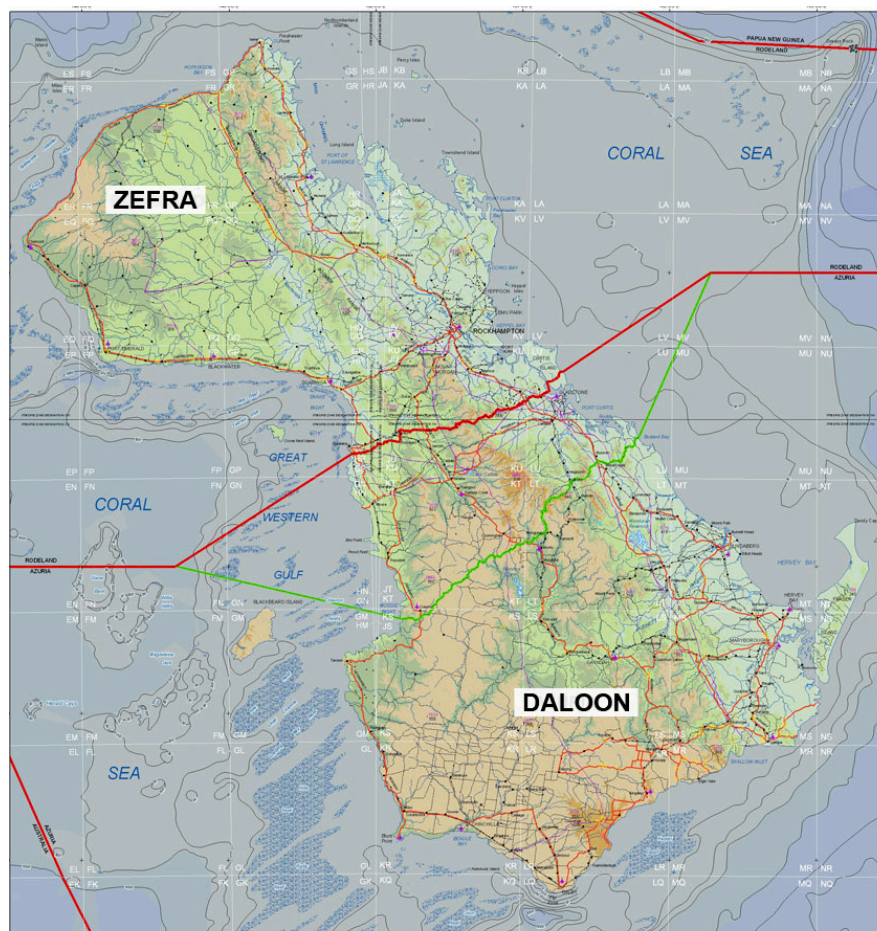
World Health Organization (WHO)

United Nations Development Fund for Women (UNIFEM)

Food and Agriculture Association (FAO)

Oxfam International

Médecins Sans Frontières (MSF)



Move I

SCENARIO: DEPLOYMENT

The Government of Zefra (GOZ) has reluctantly acceded to the demands of the United Nations (UN), and the International Community (IC) expressed in United Nations Security Council Resolution 9000 to accept the deployment of an international force to assist in ending the humanitarian crisis in Zefra, with a view to creating the conditions under which the Zefran people can govern themselves in a free, safe, secure and inclusive society. The GOZ's decision to accept the deployment of an international force can be attributed to the IC's resolve, demonstrated by the implementation of an air and sea embargo by the International Conference for Zefra (ICFZ) Combined Joint Task Force (CJTF) and the deployment of CJTF land forces to Daloon.

CJTF Land Component forces have completed their deployment into an Assembly Area in the northern part of Daloon and have completed preparatory training. Transfer of command authority from national authorities to CJTF has occurred. The Land Component Commander has issued his initial Operations Order.

Blue Cell Course of Action

Blue Cell noted a few questions about the operational scenario which they filled in with assumptions. These assumptions were that 1) Special Operations forces and strategic ISR assets are in place and providing situational awareness, 2) there are no restrictions upon UAV flights into critical areas of interest (BRUCE Hwy, Airfield and Port), and 3) we have priority for aviation assets in Phase Ia.

Blue Cell noted several capabilities that the Battle Group will need to achieve its mission. Military police will be needed for investigations, detention and liaison with civilian police, and possibly traffic control. Engineering detachments will be needed for armoured support, construction and bridging, and other detachments are need liaison, PSYOPS and CIMIC roles. Soldiers with expertise in translation and cultural awareness are needed, down to section level if possible, and on this point Blue raised the question of whether there should be a new specialist military occupation for this, covering the 18 areas of concern recently approved by the CDS. Resources would be needed for (re)-establishing the justice and security sector. For crowd control or confrontation, the Battle Group will need effective tools for applying non-lethal force. [The need for tools of non-lethal force was stated by many participants throughout the entire seminar wargame]. Mini or even micro UAVs at sub-unit & sub-sub-unit level were identified as a highly desirable asset, as was a counter-UAV/Recce capability. With respect to this last item, it was noted that commercially available toy planes and cameras are already making it possible for opponents to conduct mini-UAV reconnaissance, and therefore the CF should have a capability to deny the sky to them.

In the plenary session discussion the prospect was raised that the proliferation of UAVs may demand the implementation of air-space control systems.

Blue stated that to conduct ADO operations effectively, adequate airlift is required to enable rapid transiting of the AO. A long range precision fires capability was also identified as a requirement (the AO in this scenario being 100km x 150km). In the plenary session there was discussion about what assets were best suited. 105mm artillery was passed over in favour of 155mm, coupled with mortars for

immediate short range fires, the sentiment being expressed that the infantry want this "pocket artillery" under their direct control. While it was contended that in a networked environment ownership is irrelevant since all assets are available to everyone, others insisted that it will still matter, in the sense of who decides where a fires asset is sited, what it supports, and who maintains it.

Other necessary capabilities were remote mine detection vehicles (and EW "burns" along route), NBCD decontamination capability, a forward surgical capability, electronic warfare assets, and air defence capability. With regard to this last item, it was noted that cruise missiles and UAVs are steadily becoming cheaper and more effective, and that common civilian aircraft equipped for crop-dusting could inflict numerous casualties if loaded with chemical agents.

Several weaknesses were identified in the AoT Battle Group structure as it was put forward for this exercise. A better political framework is needed, including liaison officers trained for JIMP interactions, and considerations for OGA (other government agencies) and JIMP players inside the wire. A clear delineation is needed of which combat functions will be integral to Battle Group and which will likely be held at a higher level (EW and Avn for example). Clarification is needed on the extent to which CSS will be 'self-shielding,' as this has tasking implications for rest of Battle Group. Do they have integral security troops, or do such have to be detached to provide it for them? Also, there were too few Forward Observation Officers.

Several weaknesses were also identified in the ADO concept. The specified tasks (such as providing security at key points) leave little force to cover other key parts of the Area of Operations, as urban operations reduce Battle Group footprint very quickly. Information operations have been given too much preeminence. Negotiation skills are needed down to the level of the strategic corporal, which demands a greater training investment and professionalization.

The tactical details of how Blue Team allocated and deployed their forces in this phase of the seminar war game can be found in the Powerpoint presentation in the attached appendices.

Red Cell

The Red Team Cell represented five different local political/military factions present in the theatre of operations whose goals and agendas were in conflict with those of the CJTF-Z, of which Blue Team was a part. Comprehensive personas for each of these organizations (ZAF, PLA, PF, ZA, and ISM) had been generated in advance and may be found on pages 26-37 of the Army of Tomorrow Seminar Wargame Handbook.

Although Red Team's course of action was distinct for each of its five component actors, in move one all were characterized by avoiding major direct confrontation with Blue/CJTF-Z while assessing them, and deciding how to achieve their own goals with or against the efforts of Blue/CJTF-Z. The component players of Red Team directed their efforts to such things as consolidating territorial and political gains, working closely ("hugging") with Blue to influence their situational understanding, defending their narcotics business, and manoeuvring for advantage against each other.

It will be important for Blue not to mistake the initial lack of hostile kinetics for success. There is a honeymoon period while Red is assessing Blue and formulating its response. Furthermore, the population might be terrorized just outside the wire without Blue realizing it.

Red observed that all Zefran belligerents perceived positive advantages for their own agendas in Blue force's deployment plan, and therefore were generally pleased about it for selfish reasons. In general, the goals of Red's component players are the pursuit of political legitimacy and consolidation of their positions. As Blue acts, Red will adjust their strategies and exploit opportunities.

Red perceived several problems and challenges for Blue team. Blue needs to identify who are the good guys and who are the bad guys. Blue needs to have flexibility and retain initiative, because there are multiple actors involved across a large AO. Blue needs to be aware of and focus on "hearts and minds" aspects of the campaign. To conduct effective IO and Counter-IO, Blue needs to define its target audiences, and this raises the question of whether it has the personnel assets to think about it. Blue needs to have a substantial physical presence on the ground in order to engage the enemy in close combat and to instil a sense of security in the population. UAVs roaming the skies may enhance security for our force, but this is unlikely to make Joe Civilian on the ground feel secure. Blue needs to be cognizant that security must be broader than just force protection.

When Blue first arrives, Red takes little action while they are assessing Blue and preparing to grapple with them. It is important

The key aspects of this competition will be over holding the initiative and influencing strategic and local targets. While Blue tends to imagine the competition beginning when they disembark in theatre, Red begins shaping public perception as soon as the intended mission is announced. To counter this, Blue needs to begin its shaping IO in the earliest stages.

A fundamental premise of Red's assessment is that Red will think strategically while Blue will think tactically. A

connected observation was that Red is in this for life, while Blue is in it for six months.

White Cell

In addition to the domestic and global publics, who influence strategic outcomes, the "White" forces include the local population. In fact, the local population is the supposed reason Blue Force is in Zefra. To paraphrase Mao, the people are the sea and the guerrillas are the fish who swim in it. In other words, society is the new battlespace.

The population's trust and confidence are vital. There first concern will be basic human security issues such as personal safety, food and shelter. Trust and allegiance go to whoever can provide these. This confidence is the center of gravity for the Zefrans, and the Red forces have a head start in shaping this.

Situations within the population will be complex and ambiguous. Perception is reality. Perception is implemented by the media, word of mouth, cell phones and distorted rumour. Situations are resolved by calming the people down, and ensuring they go home happy.

The measures of effectiveness for deadly force are relatively simple. Non-deadly force is a much more complex issue thus new measures are needed. Taking the lives of obvious lethal enemy are, ethically, something we think we understand. The lives of innocent locals arguably have at least the same value as our own or conceivably more, in terms of operational costs.

Battle Group Panel

A major reoccurring concern for the Army of Tomorrow Battle Group structure is how far down should capabilities should be pushed, particularly with regards to Joint Fires Support. Another general observation made was how critical the network was to BG capabilities. Furthermore, portable/autonomous capabilities may affect the physical footprint of the BG, possibly reducing the NSE requirement.

Modularity as the appropriate organizational concept was questioned in regards to the current or future Management Ready System. What affect will the MRS have on the total number of task forces? Upon further examination of the proposed battle group structure, attention was drawn to the lack of representation of Aviation, Artillery, Engineers, CSS units, Military Police etc. In a complex environment the military police would prove a valuable asset in dealing with prisoner of war tasks, or taking criminals/civilians into custody while observing proper legal norms. Furthermore, the use of reserve units was not obvious. Should reserves plug into the battle group structure as a self-contained unit? Or should reserves continue to play a role in individual augmentation. Finally, the question was asked whether or not the AoT BG needed to be infantry led.

Specifically in regards to Move 1, the battle group seems to lack sufficient assets to complete some of its assigned tasks. ADO will need integrated aviation to be successful. Combat support assets such as military police, medical and engineers needs to be increased. The Network is critical to success, and there needs to be more robust integration or interface with JIMP partners.

Human Dimension Panel

Discussions about the Army of Tomorrow do not offer absolute definitions of either the structure of the Army, or the individual soldier – nor can they be expected in any form other than a presumption or series of conditions. However, these are important questions from a Human Dimension perspective, as it helps direct research on how the individual is impacted – by their duties, and by the environment under which they function. As the Army of Tomorrow develops its doctrine into one of Adaptive Dispersed Operations, it is clear that the decision-making process on the battlefield will be dynamic and occur at a lower point on the rank structure than it currently occupies. As the way decision are made changes, so too will the approach to leadership.

The transparency of technology opens the door to adaptation, modification and questioning of orders and decisions. Greater input will need to be sought from the lowest level of the Army structure. Herein lies a research project to identify ways to shape culture and practices will point to mission command methods that will maximize the potential of decentralized decision making.

As the structure and role of the military unit evolves, will the role, responsibilities and requirements of a soldier change as well? Once a definition of the soldier of tomorrow is achieved, what they do can be identified. At that point, the recruitment, training, and retention of soldiers can be addressed.

Do we need a warrior culture or warrior identity? Does the Regimental system allow the warrior culture to help develop some element of pride, professionalism, identity? Can it be realized that those of other Regiments can carry a similar value? The Air Force and Navy do not hold that same attitude; once the standard has been met, you are now part of the team, not a part of the Ship or the Squadron. However, the so-called “purple trades” like Public Affairs, are still hard to integrate.

Just as hard to integrate are the Primary Reservists brought in to augment the Task Force or Battle Group. The level of training in theory between Regular Force and Primary Reserve infantry is identical. However, the lack of exposure and experience will always exist, as Primary Reservists cannot always obtain the same levels of cognitive experience due to their nature. This was reflected in deployment of Primary Reservists to Bosnia. Research interviews conducted with members of a Battle Group suggest that Reservists at the rank of Master Corporal and below were capable of being effective; senior NCOs and junior officers faced challenges in subconsciously learning the skill sets to be able to function in the Battle Group.

Tied into this is the structure of the Army of Tomorrow. Currently, Battle Groups and Task Forces are developed around a Regular Force Infantry Battalion, complemented with artillery, armoured, engineer, communication and medical units, and augmented by members of the Primary Reserve. An examination of the structure of Battle Groups, beginning with the United Nations Protection Force in 1992, would be a good place to start to help establish the “historic norm”. From this point, the format of the Army of Tomorrow can begin to be developed.

Currently, the entire Battalion does not go overseas. As well, sections of Battalions may be called upon to augment other Battle Groups depending on the role of the section. This results in a fractioned Battalion, impacting on cohesion, morale, attitude, identity. If the model of the Tactical Self-Sustaining Unit is adopted, is it capable of having individuals develop to occupy higher ranks – and thus perpetuate the traditions of the unit? This presumes that the TSSU would adopt a Regimental identity. If the TSSU is not created but rather adapted or modified from an existing unit, this may generate biases depending on the members of the TSSU – and whose identity is kept or lost as part of the development process.

In the Army of Tomorrow if you accept the TSSU concept for modular plug and play, you have to assume that when you plug one unit into another, social and task cohesion would have to be developed quickly. In the Army of Today what are the characteristics and enable and disable this? Does the distinction between the Regular Force and Reserve force exist? What are they? Can they be overcome? What happens when support units are integrated? What about when elemental branches are mixed (i.e., inserting Air Force or Navy troops into an Army unit) Can it be done? If so, what are the factors – and how do you change them?

Up to the point of move one, Army of Tomorrow concepts do not introduce any critical human dimension issues that would suggest that it would not work but careful management of changes will involve Human Dimension expertise and research along the way. Human Dimension specialists should be engaged with the experimental team throughout the capability development process including Army 9A experiments and the experimental TSSU and should be available to help define Human Dimension problems and offer assistance to find solutions.

JIMP Panel

The environment in which the Army of Tomorrow will operate is anticipated to be as described in the presentation on the Future Security Environment (FSE) (see appendices for Powerpoint presentation on this topic). Salient points of this are that: 1) the future will be characterized by increased complexity, 2) mechanisms for cooperation and coordination will improve as will access to technologies, 3) global organizations (e.g. UN) will continue to be important despite problems (UN improving operations, confers legitimacy), 4) regional organizations will also be important – NATO and EU especially), 5) NGOS will also become more important, could be key players in future, 6) not all players in the JIMP environment will be positive forces from the standpoint of military operations.

Members of the JIMP panel worked through several issues on the first day. Specifically, the panel discussed, 1) the days introductory briefs, which were satisfactory, 2) the assumptions one can make about the JIMP environment in the 2015 timeframe, 3) JIMP as a concept, and 4) the hypotheses advanced on the concept itself.

A point that was raised concerned that fact that the war game scenario tends to miss potentially key JIMP players (e.g. ICRC) but it was explained and generally understood that game itself is representative, and that those groups de-

tailed are representative of certain viewpoints and functions that we believe will exist in the future environment.

On the assumptions that we can make regarding the JIMP environment, there was general consensus that: 1) The future will likely be as complex if not more so than what we face today; and 2) That coordination and cooperation mechanisms within government will improve – although consensus was less clear on by how much.

Indeed while it was pointed out that some promising strides were being made by foreign affairs in this regard there was also some reluctance to believe that this would translate into major results. There was disagreement about whether concepts and initiatives such as 3-D, “Whole of Government” or START will permanently reduce obstacles to cooperation and coordination within the Canadian tent, or whether the constants of human nature and bureaucratic and ministerial turf wars will perpetuate the problems.

Similarly while most in the group agreed that JIMP players were likely to become more technologically enabled by 2015 – the degree that they would be truly networked was less clear – this was especially the case regarding NGOs. While there is no doubt that NGOs do today and will in the future possess up-to-date communications devices, few can be expected to muster the personnel resources necessary to facilitate constant communication and cooperation with other agencies. The leadership and resources for this must come from elsewhere, perhaps government agencies.

It was agreed that while the UN as a global body would indeed continue to face major problems it may continue to be useful (it is working hard on improving its operations, also it will remain a key in conferring legitimacy on missions).

Consensus also existed that regional organizations would be equally if not more important in coming decades – particular NATO which remains a key force in peacekeeping (and the EU).

There was no major disagreement with the fact that NGOs would be increasingly significant and could play an important role in operations.

There was also considerable agreement that not all JIMP players or bodies in the FSE would be positive forces from the standpoint of future operations. As such the idea that we can tap JIMP players and bodies as a resource most likely requires qualification. Also the P in JIMP is particularly problematic in the sense that this requires considerable elaboration.

There was a strong feeling that while the various players that we include in JIMP will indeed represent an important part of the environment and may well be useful in military operations if engaged appropriately (e.g. in areas such as improving cultural awareness), the concept as it stands, needs some fleshing out. In fact participants noted that JIMP has been variously referred to as a framework, an approach and an environment. Some additional thought must go into elaborating the concepts meaning. That said it was also noted that the term whole of government approach could be subject to similar criticism.

Regarding JIMP hypotheses the consensus was that while few can be termed blatantly wrong – they require revision. In some cases this may be achieved by “word-

smithing” a few key terms. Generally however, the view was expressed that they are too general and thus require some additional specification and elaboration.

Finally, a few insights were raised regarding research – in particular - the need to inventory JIMP players/resources in a manner which would allow ready identification of such potential resources quickly and efficiently so as to allow the military to engage them when needed.

The degree to which the capacity to resolve these challenges effectively exists or can be called upon – when needed – is unclear.

Certainly, the potential complexity of these conflicts as well as the growing complexity of modern life in general is likely to increasingly strain the capacity of governments to achieve lasting solutions by themselves. While coordination mechanisms and technological means of communication are likely to improve, bureaucratic turf battles will continue to exist and pose obstacles to effective action. In short, governments will need help.

To be sure, global organizations will continue to exist, but trends here are less than encouraging. The UN will likely continue to confront many of the problems which have plagued it recently and cannot be counted on to respond to crises quickly in any case. Thus while such international organizations will confer legitimacy, operationally their utility is somewhat mitigated.

In fact, more hope may arise in the form of regional organizations and we may see a relative growth in their power and utility in coming years (NATO, ASEAN, the African Union, the Gulf Co-operation Council, etc.). Such regional bodies may gradually develop more co-operative approaches to security and defence issues in years to come.

Also, it is likely that NGOs will be an increasingly prominent force in the years ahead (e.g. CARE, RED CROSS, Doctor’s Without Borders, etc.). While many may only last a short time, others are likely to grow in both their power and credibility in influencing important security issues (some may even amalgamate).

Some of these may not necessarily be entirely supportive of Western policies. But the fact that NGOs will at times have personnel working in areas in proximity to military operations and missions will increase interest in their capabilities and what they can bring to the table in terms of solutions to security problems (and in possibilities for cooperation). Many will be potentially important in swaying hearts and minds in various regional and local contexts.

The point is, that Western governments and their militaries will increasingly have to take these other organizations and interests into account in dealing with future security threats – either by actively seeking out their advice and expertise or – in some cases – trying to manage the impacts they can produce in the broader environment (i.e. on public perceptions, etc.).

Plenary session responses to this backbrief stressed the primacy of the human elements of the network over the electronic ones. Many comments were also made to the effect that JIMP encompasses many divergent players who are adverse to the notion of the military coopting or shaping their efforts, and that Government of Canada guidelines stipulate a separation of military and NGO space.

Move 2

SIMULTANEOUS OPERATIONS

The Land Component Stage One has been completed. Shortly after the Combined Joint Task Force (CJTF) deployment into Zefra it became clear that the Government of Zefra (GOZ) was doing its best to not comply with the provisions of United Nations (UN) Security Council Resolution (UNSCR) 9000.

The GOZ initiated a national and international information campaign in an attempt to promote itself and discredit ICFZ and the CJTF. The essence of the GOZ message was that the CJTF was an occupation force intent on unseating the “democratically” elected GOZ. Although the GOZ did not call for violent opposition to the CJTF’s presence, the GOZ through its government controlled media sources encouraged its population to be uncooperative. The GOZ’ message drew some response from a portion of the ethnic Bongo population, but was seen as hollow from the moderate Bongo and majority ethnic Truscan perspectives

The UN and IC’s reaction was to suspend the GOZ and replace it with an interim, multi-ethnic leadership. A Transitional Leadership has been appointed with a moderate Bongo and a moderate Truscan sharing the Interim Presidency. Both have ties to the People for a Greater Zefra. For a short period after the announcement of the suspension of the GOZ there was a concern that the Zefra Guard may try to breakout of their garrison locations. A show of force by the CJTF served to quiet the situation.

The ZA remains active throughout the country. Since the suspension of the GOZ, the ZA has become more violent and has engaged CJTF forces in direct attacks. Armed insurgency from the ZA is expected to continue and is likely to intensify.

The CA BG has accomplished its CJTF Land Component Stage One tasks. The National Gendarmerie has expressed its reluctance to become involved in crowd confrontation tasks and asked the CJTF to be prepared to perform this function if it becomes necessary. The CA BG is maintaining regular patrols along the Bruce Highway to facilitate the flow of humanitarian aid and CJTF logistics traffic.

The BG HQ has established a Sector Development Centre (SDC) as the main point of contact with the local population and IOs/NGOs operating in the BG Sector. The BG CIMIC Team is embedded in the SDC. Operating from the SDC is a three-person RCMP detachment, a three-person CIDA team and two representatives from FAC.

The CA BG has received warning from 8 (MN) Bde that Stage Two operations to expand the AOR westward will commence in 48 hours.

Blue Cell Course of Action

Blue Team reported that the Battle Group was stretched thin to handle all four assigned tasks.

Several items were added to the previous day’s list of assets which the Battle Group should have. Non-lethal weapons would potentially be very beneficial in conducting cordon and search missions, such as the one conducted in this game to secure (arrest) an individual. Furthermore, face recognition software and other biometrics at the lowest level would also be beneficial. To reduce the vulnerable CSS footprint ashore, the CSS elements could be based off-shore. Blue Force needs better tracker/COP functionality. The importance of non-kinetic effects (IO, CIMIC, PSY-OPS) was affirmed.

An additional weakness in the AoT BG structure was identified as the lack of experts on civil infrastructure. This expertise should not necessarily be integral to the battle group, but must be readily accessible to it.

Two additional weaknesses of the ADO concept were identified. The first was the human dimension of building two-way trust, so that the junior leaders have the training to perform their tasks and the latitude to do so, without micro-management interference from higher commanders. The

second weakness is that our technological advantage does not alter the fact that operations in complex terrain or environments are manpower intensive.

The tactical details of how Blue Team allocated and deployed their forces in this phase of the seminar war game can be found in the Powerpoint presentation in the attached appendices.

Red Cell

The component players of Red Team continued seeking to advance their own causes and intensified their internecine warfare. Some were happy with the current situation, and some were quite unhappy about it. Some decided to regard the Canadian BG and CJTF-Z as an enemies while others continued using information to turn the BG against their Zefran rivals. One particular issue was that the Zefran Armed Forces (ZAF) were sitting idle, and it was advised that Blue find a way to make them part of the solution before they find a way to go augment the problem.

The ISB-ZA, which has resolved to fight Blue team, pursued a strategy of targeting the “enemy” links between nodes, attacking soft targets, and avoiding hard targets unless the likely tactical defeat is outweighed by the value of

the perception created (an informational advantage). (An audacious attack can be very impressive to the publics, even if the attackers are wiped out). They are killing PLA and PF members and anyone they deem to be traitors, and regard the creation of general chaos as advantage to their goals. To restrict Blue's freedom of action and enhance their own targeting and observation capabilities, Red will seek to fix Blue in certain areas, specifically by tying them down in urban areas and along the main supply routes (MSR).

The ISB-ZA are concerned about Blue's information gathering capabilities, with which they are not completely familiar, but are encouraged by its localised use. They will attempt to identify areas where they have freedom of action, from which they can consolidate power. A heavy IO campaign will be conducted against the occupiers and "lackey" Transitional Leadership.

Red observed that Blue has fixed itself in a very localised manner over the past three months, and its ISTAR capabilities are not being exploited as much as they could be. Red questioned whether it was possible to operate effectively across a large AO in a complex environment, and whether the BG could identify, penetrate and exploit Red's C3 (command, control and communication) capabilities. Blue will need to recognize which is most important, force protection or mission success, and implement the ramifications of this in its force structure, posture and deployment. Finally, Red asserted that while Red is still thinking strategically, Blue is still acting tactically.

White Cell

Local Population Impressions

The population is not only the reason Blue Force is here, it is the complex aspect of the battlespace. It's the medium for the fully network-enabled Red, plus Red Information Operations (IO) and Red Situational Awareness (SA). It is also the medium for an important aspect of the Blue network in regards to IO and SA. What did the people see?

The mob at the SDC may have been told that the SDC is holding back food or medicine. Intervention by Blue may reinforce this perception. Intervention by the Zefran Gendarmerie may be easier to swallow. Evacuation through the back door may be best. All these responses leave the crowd's grievances, whatever they are, unsatisfied.

The snatch of the supposed ZA mastermind could have many unseen consequences. For example:

Video footage appeared instantly on TV and the Internet showing Blue kicking down doors, women and children cowering and crying, and bloodied faces. Neighbours have been intimidated and all claim innocence, and deny the presence of anything suspicious. Women and children complain of rough handling, and an "innocent" neighbour has been shot (perhaps unrelated, but still blamed on Blue).

Proactive Blue IO must get to the audience before the Red. The extension of SA into the Western sector may show that: Locals are confused, and at first suspicious or fearful; They will expect Blue to protect them from the ZA (and blame Blue if they're attacked);

The locals in this area are vulnerable to misinformation or healthy information. They are at the tipping point and can go either way. To reverse first impressions would be difficult, slow, and never complete.

Non-Lethal Effects

There are no obvious non-lethal solutions NOW but conceivably in ten years there may be non-lethal weapons that could disable MGs and pickups, a very useful capability. In regards to handling a mob, current non-lethal weapons would be effective but have serious limitations in terms of public sentiment. Future technology might be less violent. Using non-lethal weapons as part of the snatch plan appropriate.

Non-Kinetic

Blue always considered the non-kinetic first in the assessment of each task, but capabilities weren't always available. Negotiation requires language and cultural skills, which need to be available not only at the tactical level, but all levels. Negotiation might be a way to deal with mobs as well. Suppose teams of Gendarmerie and/or Blue soldiers walked into the crowd, mingled and asked them about their problems?

ADO Observations

Some issues that arose in regards to the ADO concept included the observation that physical aggregation in complex terrain is a slow process. Also, when units are dismounted communications may be a challenge. An advantage of ADO in this case is that it maximizes contact with the population, but maximize this advantage requires intensive language, culture and patrolling skills.

Battle Group Panel

Discussion surrounded the degree of self-sufficiency of the battle group. The point was brought up that there will be a support echelon: the battle group is self-sufficient, not autonomous.

The network though, must be able to be generated by the battle group. If Canada is called upon to lead a task force, or has to do a mission on its own, it must be able to project the network itself. There were numerous suggestions on how this could be done.

Mobility was also a major concern. In addition to some ground-based mobility assets, it was determined that the battle group needs to be somewhat air mobile. Chinooks and light utility helicopters will need to be included. Aviation assets could also provide close combat, tactical maneuver, MedEvac, lift and sensor capabilities.

The line between personal artillery capabilities and Joint Fires Support was also questioned. What types of firepower should be "owned" at the soldier level, and what types are to be moved into the realm of JFS?

Two final issues brought up in discussion including 1) the battle group's interactions with JIMP and the degree of JIMP "compliance"; and 2) to what degree is an air defence capability needed in the battle group? Is there a viable threat and what types of technology could ameliorate that threat?

Human Dimension Panel

The soldier on the ground in an operations zone is more than just a weapons platform. They are an integral part in the ground-level actions of civil-military relations. In the past the soldier of tomorrow has been able to communicate with the local population as part of winning the "hearts and minds" of the locals. The level of training and instruction given has been minimal, but it was agreed by the Human Dimension cell that further research might identify strengths and weaknesses for future effective approaches. This may mean development of skill sets or other tools for the soldier of tomorrow to use.

As part of that increased base of knowledge, introduction of the various non-governmental organizations, their roles, and their players needs to be made to the Soldier of tomorrow. Previous research into inter-agency actions shows a lack of understanding in what the parties do, how they are trusted, or how to connect with them. This increase in knowledge may reduce the stress level of the soldier in the operational theatre.

Soldiers experience stress and strain on many different levels in many different forms – such as cognitive and physical, to name two. Looking at the past, there is a perception on the part of science that more stresses are being added to the soldier of today. Nothing in the Army of Tomorrow literature suggested a deviation from this, and most likely stresses will increase.

It is anticipated that roughly one-half of soldiers deployed will return experiencing some injury or illness. The challenge is in getting the soldier to report the incident. Many do not for fear of repercussions, such as a forced re-mustering into a new trade, or termination. Stressors and strains are at every stage of the deployment – and afterwards. Questions such as "Are the strains identifiable?", "Are there compound effects – stress on chronic illness, memory/cognitive skills?", "Is the stress acute or compound?" become more profound. With research on stress, the topic of resilience – what it is, how it is identified and measured, and whether it is replaceable – becomes a secondary series of questions.

It is not known if the addition of sensors or equipment will increase the stress level of the soldier of tomorrow, but it is reasonable to conclude that the cognitive stresses will increase. With Network Enabled Operations, combat, and kinetic and non-kinetic activity all occurring concurrently, cognitive activity is increased. The risk of information overload increases dramatically, with multiple task-switching, and multi-level acceptance, selection, assessment, and processing of information – all of which occur on the battlefield in real time.

As the unknowns of the battlefield, or the unknowns of the combatant in an asymmetrical environment, become more prominent, this adds in to the processes and stresses the soldier faces on the field of battle. How long does an

unknown remain unknown? Is it merely the terrain and the method of operation – is it unknown or unfamiliar? Does the ability to detect differ/grow/change? It's what you can't see that can cause the stresses. Does the stress reduce? Does it change? Stresses are there, but not necessarily overwhelming. Opportunities when not on duty allow for relaxation and reduction in stress and strain.

Research in many of these areas is on-going and should continue. Challenges are being faced – and will continue to be faced. Use high-fidelity research methodology is encouraged. Army of Tomorrow concept will not create anything new or different than what is being experienced currently. Tempo in operations will increase; deployment timings ideally will not change. Things are not all rosy and still full of stress and strain. Based on stress and strain, there will be effects. As matters progress, monitoring and adjustment of how stresses and strains are addressed must be considered.

JIMP Panel

Deliberations of the JIMP panel focused on a number of key issues 1) following from the previous days deliberation – further discussion and insight into the JIMP concept and hypotheses 2) general observations on JIMP from the standpoint of the broad war game scenario, and 3) the relevance of a JIMP orientation to the initial war game problem.

1) Regarding the JIMP concept and hypotheses – while it was acknowledged that the hypotheses are broad – it was also pointed out that definitive statements were important as this was essential to the process of testing, falsification and significantly – useful revision of the hypotheses themselves. Use of flexible language carries the danger of rendering the hypotheses non-falsifiable.

The group also explored a few alternative characterizations of JIMP in an attempt to better convey the true meaning of the concept. In this regard, there was general consensus that the key here is the JIMP environment and *how* the AoT interacts with it. It is the *interaction aspect* (the ability to develop coordination and cooperation) that should be the key focus here. And how this is phrased is very important. Words such as collaboration, and shaping are viewed as unhelpful – risking giving off an impression that some JIMP players – particularly on the NGO side are being co-opted by the military. That said, consensus was still elusive on an alternative term for the concept. In fact suggestions vary from changing the term JIMP to a) An Effects Based Approach i.e. we must operate in a JIMP environment with an effects based approach) to 2) JIMP orientation, to 3) JIMP – capable. A fourth possibility [panel leader's after-reflections] – JIMP-enabled. Still consensus on how to label this concept continues to be elusive.

2) Turning to the war game scenario itself, some valuable general insights were made regarding the requirements and issues that an AoT should consider to be more JIMP capable – or if we prefer, better able to interact constructively with the JIMP environment.

There was a consensus that while it was crucial to keep in mind that the JIMP situation would be unique for each mission, the development of a number of basic business rules, and best practices would be useful for becoming more JIMP-capable and enabled. For instance:

One participant noted that the Commander or 2IC should sit in on meetings with public agencies in order to better enable coordination and the integration of civilian concerns in military planning. (This would demonstrate commitment, and it was stated that the current commander [Fraser] of Canada's contingent in Afghanistan does this already). In fact, panel members largely agreed that as a general principle the commander must be informed of the activities and intentions of the civilian, development and humanitarian agencies on the ground (in cases with UN involvement this could be done to some degree by establishing liaison with the designated representative of UN/civilian efforts (RC/HC resident humanitarian coordinator). In other cases, it might mean taking some creative initiative (for example helping to organize or facilitate meetings of NGOs – with an officer designated to play the role of gathering NGOs in cases where they need and ask for assistance)

A second principle that should guide the AoT regarding JIMP is that there should be widespread consultation of governmental agencies as well as non-governmental players in assessing the potential impact of every intervention (i.e. *before* the military actually executes it).

Other requirements included – strong liaison teams in order to establish contact with locals and stay engaged. And the presence of liaison personnel with strong training in appropriate languages and requisite cultural awareness and understanding. Some noted that CIMIC should become a career trade. [Many objections against this were raised by other participants of the seminar wargame in the plenary sessions]. The military should also include education on development objectives and principles in its training (indeed it was suggested that some exchanges between DND

and other government agencies (i.e. CIDA) would be useful here. The military also needs a better understanding of how to do programming — especially if it wants to build trust and win confidence in AOs where they are engaged. Also, despite the growth of communication technologies, face to face contact with civilian organizations and groups was seen as vital to establishing good relations and building goodwill and trust.

3) Regarding the specifics of the first game move, panel members generally agreed that the insights offered by red team regarding "what the enemy feared most" (i.e. the possibility of blue being seen by the population as the good guys - represented a strong endorsement for the importance of being a JIMP-enabled force, and the capacity to engage players in the JIMP environment in a constructive, meaningful way.

Indeed, there was a general feeling that blue cell deployment was a bit heavy-handed (heavy focus on the security of the military force) – and while this is to some degree inescapable, blue cell still might have been better served by taking a somewhat more JIMP-sensitive approach in their initial move – actively seeking out the views and advice of UN organizations, civilian leaders, NGOs and IOs regarding how best to go about fulfilling their mission (i.e. how they should deploy).

One member commented that by taking a more JIMP informed approach it might have been possible to avoid aspects of the inflammatory situation that materialize at game Move 2.

The point is, that operational planning has to include inputs from the JIMP environment to ensure situational awareness and build trust among the population.

Move 3

SUSTAINED OPERATIONS

The CJTF has now been deployed in Zefra for just under six months. The election of an Interim President scheduled to take place in three weeks time under the supervision and assistance of the United Nations Development Programme (UNDP). At the request of the International Conference for Zefra (ICFZ) political authorities, Combined Joint Task Force (CJTF) troop contributing nations were asked to extend their current contingents until at least 60 days after the Interim Presidential election.

Over the past month, Zefra forces have been operating alongside CJTF forces, albeit under CJTF operational control. Improvements in the operations of the National Gendarmerie (NG) have also been noted. There have been fewer incidents of NG misconduct noted on joint patrols with CJTF forces.

The Land Component Stage Two operation to expand the CJTF presence across the country initially went. The Internal Solidarity Movement (ISM) mounted an aggressive insurgency and has resisted all attempts to have it engage in the political process. Coalition operations have all but shut down drug operations in the area. This may be having the unintended effect of returning the ISM to its ideological aspirations for a right wing, independent Bongo state.

The Peoples Liberation Movement (PLM) has become engaged in the political process to represent the interests of the Truscan population. The UK BG and the CA BG had enjoyed some initial success in gaining the confidence and cooperation of the local populations but regrettably, well-coordinated Zefra Association (ZA) attacks served to undo the progress that the CJTF had made. The ZA used the outcome of these raids to ridicule the CJTF's ability to provide security.

The ZA remain active across the country and continue to be the CJTF's principal adversary. The frequency of various IED attacks remains high with approximately three per week directed primarily against soft targets such as logistic convoys and humanitarian vehicles. As the election nears, the ZA has turned some of its attention to acts of violence against the local population, particularly those that are seen to be cooperating with the Transitional Leadership and the CJTF.

A severe four-month drought over Splash has complicated operations. Crop failure on the island is raising the potential of food shortages in both Zefra and Daloon. The drought is also limiting the amount of fresh water that is available to the major urban centres of both countries. Satellite imagery has indicated that there is heavy equipment operating to divert the waters of one of the mountain streams that supplies Fallujah to another that feeds Gladstone.

Blue Cell

Blue Team articulated several new assumptions to clarify and limit their areas of responsibility in the game scenario. Finding that two thirds of the battle group has been tied down performing assigned tasks, Blue concluded that some taskings needed to be assigned to other elements of Combined Joint Task Force Zefra or the Canadian group would not be able to support the election. Blue picked the Bruce Hwy and FALLUJAH taskings for handing off. Furthermore, the military must leave it to the civilians to lead the nation building and aid efforts. Still, the ICFZ/CJTF does have, and should have, plans for contributing to nation building, particularly with regards to the police, military and DDR aspects. The battle group's planning for supporting the elections will be driven by the "Election Plan" which it is assumed is being spearheaded by the appropriate international organizations. Blue Team also assumed an added difficulty in the game scenario, namely that the PLA will refuse to participate in the joint patrols with the ZAF and the Battle Group.

Blue Team highlighted several key issues which stood out in this phase of the wargame. Noting that the IO driven electoral process will drive their Op Plan, they stressed that

integrated planning would be a must. The CJTF-Z would have alter its plans to deal with complications in the political dynamics, such as hostile reaction to joint patrols in PLA areas since the PLA itself is opting out of them. Blue's game move was to push back up to the CJTF-Z command that since the PLA cannot be persuaded to join, it would be better for the CJTF-Z to leave the ZAF behind and conduct the patrols solo.

Another identified issue was the need for a fund of money to be placed at the commander's discretion (CERF-Commander's Emergency Relief Fund) for building goodwill with the community. The trend toward increasing use of private security companies (PSCs) adds another layer to the complexity of joint cooperation, and raises the issue of whether they have a valid role in Canadian operations.

Blue noted its general conclusion that good relations with other actors in the JIMP environment is essential to mission success, warranting the involvement of the BG CO or DCO. To facilitate this, Blue employed the concept that the key to successful negotiations is identifying the common interests. For instance, the CJTF-Z and MSF (Médicins sans Frontières) would both like MSF to operate hospitals, and CJTF-Z and the ICRC would both like to see the CTJF-Z

adhere to international law. Therefore the military should focus on efforts to cooperate in areas of common interest, rather than strain the relationships by seeking cooperation in areas where the interests are divergent.

Blue identified PSYOPS transmission and publishing as further additions to its running list of capabilities which the BG needs to have. They also added an all-source Int Fusion capability at BG HQ, and Int analysis capability at the Coy/Sqn level as a minimum.

Further weaknesses were identified in the BG structure. Exercising the mobility envisioned in ADO requires ample aviation assets, but even if these are available operations can be badly hampered by SAMs. To enable continuous and adaptive training within theatre, the BG should have a dedicated Training Team, perhaps a platoon, rather than relying on ad hoc efforts.

Further weaknesses were also identified in the ADO concept. It being envisioned that we will have a very high tempo and rate of movement, there will be an increased need for tactical pauses and tempo management, or stress and fatigue will take a heavy toll. There is a disparity in capability between the envisioned AoT forces and the forces we are training now. In this era of embedded media as low as the section level, there is a requirement for increased Media awareness and training down to the lowest levels.

In its course of action for move 3, Blue team advocated conducting the election in rolling stages, so that it could provide adequate security coverage. The BG HQ would be co-located with the Senior Electoral Commission HQ (JIMP concept in action). Unit and Sub-unit AOR boundaries would be drawn up coincident with electoral boundaries.

In summary, Blue observed that this scenario has pushed their ADO force to the edge of its operating envelope.

The tactical details of how Blue Team allocated and deployed their forces in this phase of the seminar war game can be found in the Powerpoint presentation in the attached appendices.

Red Cell

During the third move of the wargame, the component players in Red Team took stances towards the CJTF-Z ranging from good cooperation to suspicious obstruction to outright warfare. On the latter end of that spectrum, the ZA pursued a strategy of attacking the leadership of the Zefran Armed Forces and the National Gendarmerie, and civilian targets, particularly those that are seen to be cooperating with the Transitional Leadership and the CJTF. To disrupt the election, political killings, local intimidation and use of IED's were increased.

The CJTF-Z's problems were compounded by widening ethnic rifts, IDP/refugee dilemmas, drought, ensuing crop failure and strife over water resources.

Red observed that the essence of the contest is now the election and attendant process. The real battle will be fought at the local level, and action against Blue will be only incidental to the larger aim.

Regarding the tactics of the ADO concept, Red observed that dispersion to lower levels (section) may present targets which are too tempting for Red to leave alone, regardless of Blue's demonstrated capability to quickly aggregate and exact retribution.

Red also speculated that there might be a danger of the AoT performing at an operational tempo that so much outpaces our enemies' OODA and communication ability that it would not be phased by it.

White Cell

The people are worried and confused. A scenario:

I'm a poor housewife. My husband is a small farmer and occasional truck driver. I have six kids, and the eight-year old minds the young ones while I work part time as a school teacher. I'm not sure what my husband does when he's on the road; I think he's brought me back some sort of disease.

I hear about some sort of election that's supposed to solve all our problems. Maybe it's a good thing. My cousin in the PLA hasn't told us what to do. I hope it turns out. Mostly, though, it's the ZA I'm worried about; I hear they might be back around here again. There've been some foreign soldiers around here. I don't understand their language and I don't know why they're here.

We haven't heard who these people are, and we haven't heard much from the government. I hear it's changed, but I think perhaps they're all the same.

The school is out of money, and I may not get paid. The crops don't look good, and if the irrigation isn't restored soon, I don't know what we'll eat this winter.

Each citizen of a developing nation has a mind of her own, but when they lack information they are vulnerable and often can be easily led, and will often act as a group.

The social battlespace is a complex system, dynamic and non-linear. Small inputs can produce large outputs which are generally irreversible. This is the idea of the tipping point. Once the population decides one way or another, it is not easy to turn around.

Information Operations are vital to this type of operation and the battle group requires organic IO capabilities. ADO has the advantage of dispersing troops who can deliver the IO message directly to the populace.

Battle Group Panel

The Adaptive Dispersed Operations operating concept does not require significant alteration to recognize the application of mounted combat. It is likely that mounted combat will consist of a mix of capabilities including air, land vehicle, semi and fully autonomous systems. The language should reflect this relationship.

Additionally, there is a need to be cognizant that semi and fully autonomous systems will alter the structure and logistical requirements of the BG. There will also be Human Dimension factors to be considered in terms of human trust in semi-autonomous systems, as well as physical risks to humans. It was pointed out that the value of semi-autonomous systems increases with cost. Disposability of semi-autonomous systems should be explored.

Furthermore, the desire for new capabilities will invite the creation of more systems. We should endeavour to create fewer systems with more capability (eg. multiple function ammunition, modular airframe packages, etc.). The battle group should also have enough personnel to exploit all of the capability that is built into it.

Some vulnerabilities within the battle group were pointed out. Simultaneous mission requirements will strain the BG to provide adequate responses to all tasks. Also, there is a lack of lethal/non-lethal capabilities.

Human Dimension Panel

The Army of Tomorrow must be prepared to train and promote for the uncertainties of the asymmetries of future warfare – and for the anxiety of peacetime. Dynamics of situations, experiences, and environments must be kept in mind as well. Are the core values of soldiers, or of members of the Canadian Forces, known? In an Army concept, do they differ between Regiments? It is known that research has been done on what core values are. However, the tracking of values – and whether they change during training and service – could be researched

From a research perspective is it realistic to believe that in battle, value sets exist, and that they are applied? In an advanced dispersed operations situation (vice early Napoleonic warfare, for example), the rules of drill, discipline, and controlled leadership and the command structure (which aided in keeping troops conditioned) becomes exceptionally relaxed. Research may be necessary to help determine if cohesive discipline will exist in the dispersed environment, and if so in what form and to what degree.

When in battle, the actions of the soldier are governed by the Rules of Engagement. A study on the use of ROE and use of force directives to determine that perhaps restricting the full spectrum of force should be the exception and not the rule. It is inherent for the soldier that the mission be defined accurately, rather than being lost in the appropriate definition for the ROEs.

Professional needs to be maintained from an ethical perspective. They need to be educated on the factors of asymmetrical warfare. If you are going to prepare people for these unethical situations, do you include them in training? In short, the soldier must learn to “hate the act, not the person”. Knowledge of adversarial intent will help soldiers to prepare for the unknown.

As a result of this increased level of decision making, and the consequences which can arise from it, the Soldier of Tomorrow has to be prepared for the ethical challenges moral dilemmas faced during the decision-making process – and beyond. Research will need to be made into how a soldier can be best prepared for these challenges.

On the presumption that the Army of Tomorrow will continue as a values-based force as identified in documents

such as Duty with Honour, and based on what we know those core values to be, research needs to be undertaken in which the Canadian Forces continues to be monitored for those values so they can adapted as required for Army of Tomorrow.

Further, on the presumption that the Army of Tomorrow will face an uncertain environment with an opposition force or forces which may not adhere to the rules, traditions, ethos and values which the Canadian Forces are rooted in (and perpetuated in documents such as Canada’s Army, Canada’s Soldiers, and Duty with Honour), soldiers must be prepared as best as possible for the physical, mental, and ethical challenges of an asymmetrical warfare environment. As required, research needs to be performed to ensure that the proper challenges are identified and addressed in future training.

Professional culture and military ethos needs to be retained and maintained. It will evolve as the Army of Tomorrow develops. As a result, training will need to evolve as necessary to adapt to Army of Tomorrow and its future situations. Research is required to operationalize the constructs of the profession of arms in Canada. Also research is required to understand our adversary’s intent, what they are capable of to be better prepare our soldiers.

JIMP Panel

Deliberations of the JIMP Panel’s Third session focused on three main areas: 1) Discussion of and general agreement on the proper terminology for a JIMP enabling concept, 2) discussion and identification of potentially fruitful areas for the conduct of research on JIMP, and 3) the JIMP issues and insights arising from move 2 of the war game itself.

1) Regarding the JIMP concept itself, it was generally recognized that while the concept is relatively new and still somewhat vague in places, the clear significance of JIMP as a factor in addressing the conflicts and challenges of the FSE, along with recurring indications of its importance in play of the war game itself warrant JIMP’s status as an important AoT concept. A consensus has emerged that the term “JIMP enabled” offers the most useful characterization of the concept *at present*. The concept posits a JIMP environment within which the Army works *and of which it is a part* along with many other organizations, agencies and groups (both governmental and non-governmental, public). Within this context, a JIMP-enabled AoT is one that possesses the capacity to interface and interact constructively and effectively with other players in that environment. A JIMP-enabled AoT would have the tools and skills necessary to work constructively with other players in achieving goals.

Some of these tools, processes, and procedures can be outlined in a general way (rules of best practice, training in key JIMP areas, and means to allow interfaces (plug-ins) between the Army and other organizations and groups). That said, the sheer diversity of organizations within the JIMP environment, along with differences in their character means that specific details of what is needed for effective interaction have to be investigated and researched further. As such, further investigation is needed to find the appropriate means of interface between the AoT and each of the JIMP areas (i.e. joint, interagency, multinational and public). And this can only occur and evolve over time.

Still, the potential payoff of being more JIMP-enabled is too important and valuable to ignore. Hence, JIMP should be viewed as a key concept *and also* a work in progress.

2) Regarding JIMP Research — group members pointed to several potentially fruitful lines of inquiry, for instance:

The mapping of JIMP players through the creation of an inventory or database that would allow for quick identification of JIMP players, their capabilities, and points of contact (NATO is already pursuing this and we should get on board and work in tandem with them).

Oral histories of past operations focusing on the JIMP aspects and elements in each, and

Examination of historical case studies of the JIMP aspects of past operations with a view to uncovering key insights and lessons for JIMP (this research should consider operations throughout the spectrum of operations and where possible the JIMP experiences of other countries as well — i.e. British and Dutch in Yugoslavia).

3) As for general comments and insights offered on JIMP from the standpoint of move 2 of the war game, two key points emerged — both in reference to the riot situation which develops in the vignette itself.

First — panel participants agreed that early consideration of the JIMP environment and active consultation with JIMP colleagues early on may have increased the chances for anticipating such an event, its potential to get out of hand, and thus for planning for such a contingency prior to its occurrence. Simply put, early emphasis on JIMP has the potential to increase our ability to anticipate events and hence better address them when they arise (or perhaps avoid them altogether).

Second, and given the fact that the military cannot and should not be charged with doing everything in such situations — the wise use of JIMP as a means of anticipating problems would also better allow us to identify those who *should* be involved as well as help ensure that they are present in the strength needed to effectively address the situation. In effect, anticipating the problem and identifying who should be there to address it (all through use of a JIMP approach) would allow the military to better argue the case for the involvement of others and at sufficient levels if their participation was essential.

In short, the JIMP environment offers important means by which the AoT can improve situational awareness, understanding and in this case — contingency planning.

Summation

Blue Cell

BG Structure

We must be cognizant of the pitfalls of pushing too many capabilities down to the BG/tactical level. Dependencies upon higher HQs and their involvement remain extant. We can not expect a BG to perform functions normally aligned with Bde level and higher (acting tactically, thinking strategically). Structures beyond the BG level must be explored to paint the entire AoT environment, especially while on deployed operations.

Human Dimension

Technology is an enabler only, it does not replace the requirement for “boots on the ground”. It is faulty to assume that enhanced technological capability automatically justifies a reduction in unit size.

Training

Awareness training (cultural, media, etc.) will need to be pushed to lower levels in order for soldiers to be more effective in their duties. However, this must be rationalized.

Aviation

Without adequate aviation assets, and neutralization of any threats to these assets, the ability to conduct successful Adaptive Dispersed Operations (ADO) will be severely limited.

Network

Since ADO is heavily dependent on its communications network, fail-safe and back-up mechanisms are necessary to avoid critical failures. Rather than attempting to train and maintain the full skill set and equipment complement of pre-ADO days as a back-up plan, efforts should be directed toward ensuring the robustness and resilience of the new network. Recognizing the impossibility of preventing enemy action from ever disrupting the network, each unit does need to be able to fend for itself during the contingency of a short network collapse.

Red Cell

Laying aside its game personae as the Zephran factions, Red Team offered the following general observations and insights on the AoT BG and ADO concepts which were tested during the exercise.

The senior leadership of the Army of Tomorrow is in the CF today. Therefore decisions need to be made very soon regarding acquisition, education and training (changes in concepts, organizations, doctrine, type-capabilities). Some of the AoT’s leaders are on course across the road at CLFCSC- their participation should be sought for the follow-on Army Exercise 9A.

For the AoT BG to function as a Canadian joint task force within a multinational force, strategic operational and tactical responsibilities and capabilities need to be delineated, and the implications for force design and employment need to be acted on.

The success of the AoT BG and ADO concepts will depend on education and reduction of internal CF/Army cultural obstacles to “change”, more so than on technology and platforms. The strategy for change should focus on operational need, verities of conflict/ combat, and functional utility (first principles).

Information Operations is the vital concept/capability for success. In most cases the medium, in this case the individual soldier or the entire force, is the message, for good or bad.

We must analyze whether the adoption of dispersed operations is a volitional choice or an inevitable and automatic change. We must crack the sustain, shield and risk management/ mitigation code to enable dispersion!

ISTAR needs to be comprehensive, robust and *fully* integrated within the BG. Information exploitation capability and dissemination must be implemented down to lowest command level. Information needs to be on tap everywhere to everyone all the time.

Can we design capability packages (modules) in such a way as to avoid excessive re-grouping? Can we design organizations for the usual and re-org for the unique? Force generation

should reflect force employment rather than drive it.

In the JIMP context any unit/ formation HQ needs to be designed for “JIMP” interaction. We need to make ourselves either the universal receptacle or universal plug-in for the other actors.

White Cell

Local Population Perceptions

The population is the social battlespace. The population is probably the reason we are here. The trust and confidence of the local population is probably the tactical vital ground. The population is a major actor in the contest. The population is the transmission medium for Blue and Red IO and Red Network Enabled Ops.

The population is what makes the complex environment complex. It is a dynamic non-linear system where outputs are disproportionate to inputs and are generally irreversible. Individuals think for themselves, but when the population is without information, it is vulnerable to IO. This is the tipping point.

Non-Lethal Effects

Two hypotheses have come out of the seminar wargame:

- ◆ Non-lethal effects should provide the AoT with useful options.
- ◆ Non-lethal effects of some sort should always be available to the soldier.

Deadly force is simple. Non-deadly force is complicated and ambiguous. With the present technology the use of non-lethal weapons is manpower-intensive. That is, lethal weapons are a force multiplier. Therefore, isolated bricks may not be able to apply adequate non-deadly force.

Non-Kinetic Effects

In some operations non-kinetic force may be the decisive factor. Non-kinetic effects are sometimes initiated, supported or frustrated by kinetic force. This is why soldiers are still a necessity. Non-kinetic effects may include

persuasion, intimidation, bribery, trickery, fabrication of media messages and internet hacking. Whether or not assassination is considered kinetic is debatable. Should “Joint Fires” be “Joint Effects”?

BG Capabilities

The Army of Tomorrow Battle Group requires non-lethal weapons or quasi-weapons. It also requires a strong Information Operations capability as well as language and culture capability.

ADO Issues

Adaptive Dispersed Operations enable face-to-face Information Operations. This requires language and culture capability. Isolated bricks in non-lethal situations may be outnumbered without the advantage of lethal firepower. Dependence on Joint Fire Support may be rash if precise and carefully calibrated force, deadly or non-deadly, is required. That is, in most FSE ops, JFS as currently envisaged may not always be appropriate.

Battle Group Panel

The ADO concept did not suffer any critical failures in its employment of the Army of Tomorrow Battle Group concept. There are many capabilities absent from the proposed AoT BG that need further consideration, inclusion, or extrapolation. The battle group must have some element of air-land integration to deliver desired effects. The battle group would benefit from the inclusion of semi-autonomous capabilities. Individual soldier augmentation is also beneficial. The AoT battle group must include the personnel needed to fully exploit all capabilities. It cannot, and should not, try to do more with less. Capabilities should be combined where appropriate. In order to ensure cohesion of Task Forces (TF), there is a need for permanency of soldiers and sub-units in the TF. Otherwise we see high attrition due to lack of common values, loyalties and culture. This is in line with the TSSU concept and supported by MOSART. Lastly, the battle group may not be the level where tactical self-sufficiency is achieved, this may come at the brigade task force level.

Human Dimension Panel

The final day of discussion in the Human Dimension panel led to these key research points being identified. There were no Human Dimension Issues that would suggest AoT Concept would not work. That being said a great deal of HD research support is required as the concept is developed and built.

Junior Leader Task Analysis

A Task Analysis of deployed junior combat leaders today combined with the existing data from MOSART, DAT and estimate of proposed non kinetic activities can provide insight into the future training requirements and the standard of soldier we must recruit and train for AoT.

Decentralized decision making culture

The rise of Network Enabled Operations allows for the greater flow of information – and the chance to comment or challenge information. In the Army of Tomorrow and Advanced Dispersed Operations, decision-making rests with the Junior Leader. This decentralized decision making may result in a cultural change, and/or a shift in the command and control perspective. Levels of Trust and Communication/decision making processes may change. Previous testing of information flow in SIREQ may have occurred, but were the conditions reflective of higher order decision making activities among group leaders which are more indicative of the battlefield of the Army of Tomorrow.

Cohesion

As the structure of the Army of Tomorrow changes, its impact on task and social cohesion will need to be examined. By extension, operational effectiveness in light of task and social cohesion will need to be explored as well. Augmentation and ADHOC teams and the focus on modularization points to the need to understand how fast and how efficient we can produce cohesive units in these conditions.

Stress and Strain

There are many levels of stress and strain on the soldier of tomorrow which

need to be researched. The type and tempo of operations – be it asymmetric and/or advanced dispersed – will impact the soldier. The development and implementation of decentralized decision making and the complexity of the technology and communication flow also needs to be researched in terms of its impact on the soldier of tomorrow.

Values and Ethics

The enemy of tomorrow may not share similar values and ethics – and the soldier of tomorrow may be faced with numerous ethical and values based challenges. Research into adversarial intent, coping strategies and operationalizing the profession of arms to maintain common corps values for the Army of Tomorrow, and an exploration of ethical decision making models, would be beneficial.

CF/JIMP Relationships

The Army of Tomorrow will continue to develop an interactive role with external agencies. As a result, the soldiers of tomorrow AND the non-governmental organizations will need to be able to interact effectively as the hearts and minds of the indigent population. The Army of Tomorrow will have to prepare soldiers for the future security environment, including a possible asymmetric environment. Research into culture, organizational dynamics and behaviour can lead to establishing linkages for non kinetic effects based approaches.

Human Enhancement

Human Enhancement is a fact today and there has been no research directed on the uncontrolled activities of our soldiers re cognitive and physical enhancement. Research is required to understand these phenomena. In addition, as society becomes more permissive and acceptance grows strong, enhancement involving the merge of human and technology will require research. Soldiers will benefit from cognitive and physical enhancement, as it will impact on their survivability. As we provide medicine today to fight disease, the AoT soldiers will require this support to meet the challenges of the future enemy.

JIMP Panel

Deliberations of the JIMP Panel's fourth session focused on three main areas: 1) Discussion of the JIMP issues and insights arising from move 3 of the war game itself. 2) some reflection on the week's proceedings from a JIMP perspective, and 3) what this means for AE 9A, i.e. what the key JIMP issues are and how they should be considered from the standpoint of the battle group.

1) Regarding the JIMP issues and insights arising from game move 3, a number of points were noteworthy.

I) Participants were in agreement for instance that the manner in which the blue team rep. discussed the situation, and blues overall orientation to the problem – captured in effect the type of attitude and orientation *that is essential* for effectively operating in a JIMP environment. Particularly important here was blue's recognition of the fact that it was crucial that the battle group be aware that other actors and organizations were involved at this stage of the scenario and that an awareness of and respect for the mandates of these other players was important to overall success. The idea conveyed that nation-building was not a primarily military job was significant. Indeed such an orientation sets the proper climate for effective JIMP coordination and cooperation.

II) There was also a consensus that – as in previous game moves, some of the main problems and tasks that are being encountered by move 3 (e.g. developing an IO campaign, the issue of possible drought, etc) may well have been alleviated or minimized somewhat if a concerted, active effort was made to establish constructive relationships with other players within the JIMP environment from the beginning of the scenario.

In the case of the impending water issue – this may have been anticipated and thus factored into planning to some degree (crisis prevention, better ideas on management).

Perhaps more significantly, the need to develop an IO campaign to counter bad press may have been less difficult. In fact this should have been a requirement from the outset so that if problems arose later, press opinion would already have been on the side of the battle group. Here it should be noted that favorable opinions some-

times take time to develop and it is better to start from the get go than when a crisis is around the corner. True, some problems cannot reasonably be anticipated or prevented – still – there is no reason to not utilize JIMP resources to try one's best. An ounce of prevention here may be worth a pound of cure.

III) As for the handling of the election and the military role, panel members noted that this would be determined by the UN mandate. Still, it would be important to consider how to avoid conveying any image of military involvement impinging on the process (important from a PR perspective). Also, local commanders would need some clear instructions and guidelines on how to behave (i.e. how to avoid conveying an intimidating presence at the polls). Once again a JIMP-enabled AoT, well connected with other organizations and players, would help ensure that such direction was accurate and effective.

2) Regarding the week's proceedings, a number of general points emerged:

Most notably upon revisiting of the hypotheses, there was a general feeling that despite some problems of word choice as well as the need for some additional clarity in specification, *most if not all have some plausibility and are valid*. This became increasingly more evident during the proceedings and especially in light of the Red Team reps comments throughout the week on adversary strategy and perceived vulnerabilities. Indeed, the capacity of Blue to create a favorable image among the populace was a constant concern of Red, and this is an area where a JIMP-enabled AoT could make real headway. Effective interaction with other players in the JIMP environment could work to win the trust and confidence of locals and thus reduce the influence of Red on the hearts and minds front.

A few additional comments were also made about further research to elaborate the JIMP concept. These included:

What does JIMP imply for each level of command? And how does each command level interact with each of the various JIMP segments (Joint, Interagency, Multinational, and Publics)? This is seen as important for having a truly useful JIMP enabling concept.

Also it was noted that much like the overall AoT operating concept itself – A JIMP-enabled AOT must also by definition be adaptive and dispersive. How this is accomplished as one interacts with the JIMP environment may represent a useful area of inquiry.

3) As for general comments and insights offered on the JIMP implications for AE 9A (Army Exercise Nine Alpha) and the battlegroup – participants generally were of the opinion that the main issues of concept development and elaboration have been handled in the SWG proceedings with clear lines of inquiry and research identified to take the JIMP-enabled piece to the next stage. Hypotheses are valid and the concept – while a work in progress – is generally accepted as important to the AoT.

That said, some JIMP representation at AE9A would be useful in that it may yield additional insights. Specifically, it would be useful to include some representation of a few JIMP players at the battle group headquarters to provide their views on the game as it plays out. This may expose weaknesses in the structure or at least raise issues of practice and procedure. Players chosen moreover should be at a fairly senior level so as to ensure that a strategic dimension informs even tactical moves. (Organizations represented should include Foreign Affairs, CIDA, the UN and the RCMP. A Civilian Advisor could represent NGOs).

Finally – it was suggested that there should be JIMP input into the Red Cell, and that the experiment also consider representing organizations that are either opposed or unsympathetic to the blue cell. While the stereotypical NGO today originates and draws its support from Western nations, the possibility must be faced that a future theatre may include the presence of significant NGOs whose cultural, ethnic or religious roots incline them more toward the forces of our adversaries than towards our forces. This would portray a potentially significant part of the JIMP environment and might be best taken on by white cell.

Overall then, while much remains to be done, progress is being made. As noted however further inroads require a diverse research program that goes beyond – but ultimately complements – AE 9A.

Operational Research Plan

Fred Cameron, Land Capability Development Operations Research Team Head

I have reordered the enabling concepts as shown here and will cover each below.

- ◆ Command
- ◆ The Network
- ◆ Sensor Fusion and KM and Sensors
- ◆ Omni-Directional Shield
- ◆ Distributed Automated Systems
- ◆ Human Dimension
- ◆ Modularity
- ◆ Full Spectrum Manoeuvre
- ◆ Joint Fire Support
- ◆ Info Ops
- ◆ JIMP
- ◆ Focused Sustainability
- ◆ Force Generation

At the bottom I have included “force generation”. I do not mean to propose this as a new enabling concept. Rather it is on the list because the structures for the Army of Tomorrow will have a “resource bill”.

The “resource bill” for future concepts is generally viewed as acquisition costs for new equipment, sometimes incorporating R&D to get to the fielding stage. But there are many other resource issues with fielding new concepts, and many of these fall under “force generation”.

The “Human Dimension” panel is exploring these issues which, although acknowledging new equipment, is more focused on the soldier’s human issues. An important component of “Force Generation” will be the calibre of our future soldiers, and the Human Dimension panel has many points in this area. The JIMP panel will also provide a number of their own list of research proposals.

Command

The first issue under command relates to the stage of the Operational Planning Process currently known as “wargame”. This is the point where courses of action are tested. Depending on the commander’s guidance there may be only single course of action (COA) that must be evaluated. Or, there may be several COAs that must be compared one against another. Until recently it was appropriate to call this stage “wargame” as it usually comprised testing the proposed COAs in a combat situation against the devious ploys on someone notionally called “RED”. On operations in recent years, the COAs that need to be tested are not the decisions of the past: “Is a right flanking or a left flanking the best tactic to take the objective?”

In theatres like Afghanistan or Iraq, proposed courses of action must be evaluated against criteria that were in the past never part of the “wargame” phase of the operational planning process. And so we must consider how this phase

should change. Clearly, if COAs involve combat, some form of wargaming may still be appropriate – with calculations of the lethality of munitions and so on. But comparisons of COAs for decisions in the Contemporary Operating Environment must draw in factors not considered in wargaming in the traditional sense.

Another area fruitful for investigation is the use of tools that are used on the public Internet for collaboration including Wikipedia, Blogs, Messaging, Flickr, Ebay, MySpace, RSS etc. Wikipedia is a community of volunteer contributors to an Internet encyclopaedia that rivals Encyclopaedia Britannica for accuracy, timeliness, and usability. Blogs are used by individuals to put their opinions on display to the public. Instant Messaging allows a group with common interests to exchange view in real time. Flickr is a forum to which individuals contribute images that are meaningful to them. Ebay allows providers and consumers to make contact and exchange resources. MySpace is a cosmos where individuals “advertise” their interests in the hope of contacting others with compatible interests. RSS or Really Simple Syndication is a means for subscribers to get up to the moments feeds of new information. These tools are available over the public Internet. All have, at least notionally, military applications. With in the implementation of backbones like CENTRIXS (an intranet for coalitions), the technical capability now exists to provide services in a coalition headquarters like those available over the Internet to the public. So the challenge is to find collaboration tools that contribute more to a coalition than they may detract. For all the attractiveness of collaboration tools that are available on the Internet there are some that may limit their value in military applications.

First, such tools do not come free. Someone has to maintain the contents. For many public Internet tools there are a surfeit of contributors who have time to spare to keep blogs and syndication rolling. It doesn’t take long before content becomes stale and views begin to seek their information elsewhere. To avoid this in military applications, someone has to be drawn away from their “day jobs” to keep the application from decaying.

Second, many possible intranet applications may seem appealing, but end up as mere distractions to the main objective. A rather ruthless decision will have to be made at some point over whether some Intranet services have greater value than their costs – including the intangible costs of distracting personnel from my productive contributions.

The Network

Studies will be required to determine a robust topology for future networks. For traditional networks for combat net radio, rebroadcast facilities could extend a network or provide redundancy. There are many new technologies that may be incorporated into the network of the future. Once these technologies can be better specified, analyses will be required to determine what lay downs are most efficient and least vulnerable.

The Army is striving to field digital command and control systems. These efforts should be reviewed to predict critical aspects in the fielding of future systems. For such technological marvels as digital C2 systems, barriers to the adoption of their successors may depend on largely non-technical aspects, e.g., the training of the operators and maintenance personnel, or the simplicity of some of the critical components.

Interoperability across international boundaries in a coalition was discussed. A high profile initiative to deal with this is MIP – the Multilateral Interoperability Program. This has gateways that will allow sharing of data between headquarters level nodes. But barriers for sharing at the soldier level between different nations will also be important. There are already initiatives in this area (DLR 3 participation in NATO Land Capability Group 1 was mentioned as an example).

The issue of reach-back has been discussed of late. Some participants indicated that more practical approaches may be timely – and this might include providing access from relatively low echelons (individual soldiers?) back to defence labs or to cultural advisors (and translators). Questions were asked as to whether some sort of “tactical internet” might allow soldiers to “Google” all available information that pertains to their “issue of the moment”.

Some frustration was expressed that security issues are inhibiting the practical value of new technology. A valuable study would be one that investigates for pros and cons of security concerns against practical value.

There was a discussion of using the network and “reachback” to provide translation services. One participant pointed out that the US Army has field “voice-to-voice translation boxes” in Iraq. These may only be prototypes. But, an investigation of their utility and wider application may be appropriate.

Sensor Fusion and KM and Sensors

The Army has fielded a variety of sensors in recent years. Some of these are fairly exotic, e.g., the Sperwer UAV. Others have simply been a wider availability of improved sensors based on those of the past, e.g., the latest night-vision goggles. Maj Wyatt earlier in the week described the value of simply putting sensors on a balloon that could provide continuous coverage at considerable distance from the tether point, e.g., over a camp or bivouac area.

There are Technology Demonstration Projects already underway that should be exploited for what they might contribute to the Army of Tomorrow. Two that were singled out were Self-healing and Autonomous Sensor Network (SAS-net) and ALERT (technologies that might be incorporated into the mid-life refit of the Coyote Recce and Surveillance vehicle).

HUMINT and its value in the Army of Tomorrow were widely discussed. While not intended to detract from measures to develop a more robust HUMINT capability in the army, there was some discussion of how technology might make a contribution. In the relatively benign surrounding of our cities, shopping centres, and schools, video surveillance is becoming ubiquitous. It is becoming an essential aid to police forces and others who deal with security in a domestic context. Something equivalent in a more military context

to complement the more personal side of HUMINT seems appropriate.

The cognitive demands will be great on those processing information in the Army of Tomorrow. Intelligence analysts are an obvious trade to focus on, but other trades may similarly have cognitive stresses that have not yet been anticipated.

With the introduction of new sensors and the testing of prototypes, there should be opportunities to learn more about ISTAR issues and how they may affect the Army of Tomorrow.

Participants discussed the issue of local situational awareness in the immediate proximity of future vehicles. Partly because some of the new sensors have a considerable range, the importance of security around the vehicle itself may be overlooked. One option to improve this could be to have the driver monitoring video surveillance around the vehicle while other crew members are using longer range sensors. There may be other potential solutions as well.

Many systems now rely on accurate digital terrain data. Unfortunately there are many parts of the world that are not yet covered at a suitable resolution. The US Army has demonstrated prototypes to develop “rapid terrain visualization”. This typically entails flying appropriate sensors on parallel tracks over the area of interest. Within days (maybe hours) the necessary digital products for terrain (and maybe building/vegetation) can be produced for use in C2 systems, SA systems, and simple soldier and vehicle navigation.

One participant pointed out that ‘data mining methods’ are becoming prevalent in civilian situations that involve vast amounts of data. Perhaps there are opportunities to transfer some of these methods to the military environment.

Omni-Dimensional Shield

The term “omni-dimensional shield” covers considerable ground. Some are shown here. A more complete taxonomy of the shield issues is required. Then an aggressive plan for further research may well be needed.

Some obvious points are shown here. The HSS (Health Service Support) and medevac/casevac issues will be covered in a moment. But there are also engineer issues (or other branches) involved in NBC, CBRN, and TIM (Toxic Industrial Material).

The term “golden hour” is a term popularly used to focus on the need for immediate care for casualties. If appropriate medical aid can be provided in a short time (less than 60 minutes?), the chances for recovery improve considerably. There may be technical means to “cocoon” a casualty and to provide information for triage.

Once a casualty has gone down, the responses cross many traditional “corps/branch” boundaries. Clearly medical personnel are a critical component. But so are tactical aviation resources (e.g., the US Army’s DUSTOFF service from Vietnam). The land forces itself can improve a casualty’s recover chances through programs like “Combat First Aid”.

Distributed Automated Systems

Many discussions of “distributed autonomous systems” dealt with ethical issues. There was some discussion of robotic “follower vehicles”. Memories of the riots in Afghani-

stan following a US Army truck's traffic accident were cited, but, in future scenarios, the issues were magnified by suggestions that "robotic follower vehicles" might be involved in similar accidents.

The vivid imagery of the near future raised issues how to deal morally and ethically with relatively innocuous situations, e.g., a follower vehicle that kills a youngster from the indigenous population. And these ethical issues are magnified if a robotic platform controls lethal force.

Beyond seemingly innocuous follower vehicle scenarios, there may be situations where autonomous systems could have the authority to initiate lethal engagements (e.g., remotely controlled weapons on the perimeter of a camp or even "soldier-robots"). Such systems may bring considerable improvements in military effectiveness. But the potential negative impacts have to be dealt with as well.

A study of DAS would need to delineate various levels of autonomy and of the extent of the power (lethal force) that DAS may control.

Modularity

The Battle Group panel proposed a historical study of past deployments. Various structures have been used over the years. Most structures have presumably been adjusted in view of the mission, the threat, and other aspects too – overall cost of the mission, constraints on resources. The review may uncover what issues are the most critical in the structure of appropriate battle groups.

Many participants spoke up for what might in the past have been termed "combat function studies". One particularly eloquent speaker claimed that the role of the military police is changing drastically. No longer will their role be traffic control of BLUE forces. Indeed, with GPS BLUE forces ought to know where they should be and how to get there. But there are now MP roles of proper detainment of prisoners, and the collection of appropriate evidence (to an appropriate judicial standard). While this example is for the MP role, many other supporting branches and corps are changing, and their contributions to the Army of Tomorrow requires detailed study.

The Integrated Soldier System Project has developed some material on the pros and cons of sections of various sizes and compositions. The size of infantry sections remains a contentious issue. Further study is required. Even if there is no size that may be universally applicable, insights on how to structure a section for a specific mission, environment, or threat would be valuable.

With the term "multi-mission effects vehicle", there are new questions arising over just how multipurpose future vehicles should be. There is some value in adding diverse capabilities to a single platform – some economies seem almost self-evident. But there are also arguments that favour specialization in some applications, a multi-mission effects vehicle may do all the necessary jobs, but poorly.

Another issue of MMEVs, was over the task load on crew members. Traditionally the driver just drove. But in future MMEVs, the crewmen in the turret may be too busy for some of their traditional responsibilities, e.g., monitoring threats in the immediate vicinity of the vehicle. Thus the driver may be drawn into non-traditional roles (given appropriate displays of the area around the vehicle).

Some participants clearly felt at a loss to know where technology may be taking us. In an effort to overcome this, there was a proposal that the DRDC TAGs should develop "technology roadmaps". Those considering the Army of Tomorrow could use these roadmaps to determine appropriate paths to enhanced capabilities for AoT.

Full Spectrum Manoeuvre

An area that is timely for research is Tactical Aviation. There are many aspects to this. A particular issue is whether tactical aviation can provide lift for one company. There was some discussion of what should constitute "company lift" – perhaps it would be feasible to lift a company in two waves. It is also not clear if the term "company lift" should include heavier weapons or even some vehicles.

There was consensus that a study is required of what sorts of combat vehicles may be required in the Army of Tomorrow – a tank-like mounted combat vehicle or a DFS vehicle more suitable for infantry support.

There are several initiatives on joint fires currently underway. A particular focus of the JFS TDP has been how fire from various systems will be allocated. As studies of these sorts proceed, the issue must be resolved over what assets should be considered "joint" and what will be "intimate". At some point the Army will need to determine the platforms and munitions that will comprise its "indirect fire" inventory.

Non-lethal weapons were discussed at some length. However the nature of such weapons and how they may be employed requires further study.

There was a discussion of "complex terrain" and the point was made that not all types of complex terrain present the same challenges. Urban, jungle, and mountainous terrain are all versions of complex terrain, yet each has unique challenges. Future studies should ensure that all types of complex terrain are addressed so systems are tested against all sorts of challenges.

Joint Fire Support

The Army of Tomorrow project requires studies of what weapon mix is required in the joint fires realm (and within integral capabilities too).

As already mentioned under "Full Spectrum Manoeuvre", there should be studies of where the boundary should be between systems that are integral and "on call". The JFS TDP currently is looking at how the allocation of fire should be made in the future. The Navy and Air Force have indicated they are prepared to see recommendations on what weapon systems they should acquire and contribute to the "pool" of JFS. The Army has acquired M777 for the mission in Afghanistan, but the nature of indirect fire beyond that remains to be studied in greater detail.

Once again the need to study non-lethal weapons was raised. Clearly they will have a role in the Army of Tomorrow, but more study is required to determine where and how they could be or should be employed.

Army gunners have a considerable and precise lexicon for the effects they can currently deliver. There will be a broader range of effects likely in the Army of Tomorrow, certainly from non-lethal weapons, and probably from new lethal capabilities too. The lexicon that is used when calling

for fire will have to be expanded to incorporate this new broader range.

Information Operations

Information Operations was widely acknowledged as important in the Army of Tomorrow. There was agreement as well that higher echelons and lower echelons may be seeking different results from IO activity. Nevertheless the higher and lower plans should remain consistent and complementary.

When focusing specifically on a battlegroup, there was considerable discussion on how much specialization of personnel may be required. Rather than having personnel whose careers are focused on specialities like PsyOps or CIMIC, it may be better to have personnel with some skills, but not to the point they have degraded general skills that may be more in demand.

Clearly appropriate equipment for IO missions should be available at BG level. This may include radios, printers, and the like.

IO is a large and complex area. There seems to be considerable promise if a BG can employ it effectively. It was clear that IO and the requisite skills, equipment, and training require study.

Focused Sustainability

There are several ongoing studies of sustainment. There is work in combat simulations in Kingston on convoy protection. There are also trials with equipment that is prominent in civilian logistics (e.g., vehicle tracking with GPS based systems) or with allies (e.g., US Army use of RFIDs). However, these activities should be more clearly endorsed for the Army of Tomorrow.

The participants discussed the value of “off-shore basing” to reduce the vulnerability of sustainment resources. This has advantages in reducing vulnerability in many respects, but there are likely also to be disadvantages, e.g., increased costs or inconvenience.

Participants acknowledged that the precise means to provide sustainment to the dispersed elements in the ADO concept was not yet clear. In many ways the AoT (relying on ADO) will be far more dependent on air resources to deliver materiel and personnel as and when required.

Force Generation

While not specifically part of the Army of Tomorrow portfolio, force generation issues came up. At some point, once a force employment concept is taking shape, force generation issues will have to be addressed. Some of the points include:

- ◆ Determine maximum number of Task Forces or Battle Groups that can be sustained
- ◆ Determine for one BG/TF, the Force Generation tail
- ◆ Exploit current work in LFORT on Force Generation modelling (currently focused on current ops)
- ◆ Specialist trades – where does system break when under stress?

The Land Force Operational Research Team is developing methods to analyze “force generation” constraints and

limitations for the current army structures. Once BG or TF structures for the AoT have been more clearly defined, methods like these could be focused on AoT structures to determine if force generation would be a limiting factor.

From the Force Generation issues being discussed for the Army of Today, it is clear that there are “stressed trades”. Similar problems are likely constrain the Army of Tomorrow and should be studied.

Op Research and Studies

Some of the more salient study areas are shown below:

- ◆ Tactical Aviation
 - Tactical Airlift/Airmobile, Escort, Recce/Surv/Overwatch
- ◆ MedEvac/CasEvac
- ◆ Combat Vehicles
 - Mounted Combat or Direct Fire Support (Cavalry Concept?)
- ◆ Joint and Integral Fires
 - Boundary, “Force Mix” – weapons/platforms/lethality
- ◆ Distributed Autonomous Systems
 - Ethical issues, Range of autonomy/unintended consequences
- ◆ Sensors (probably classified)
- ◆ Command – COA Analysis, Collaboration, Shared Understanding
- ◆ Logistics

Most have been described previously.

There was wide agreement that the whole area of Tactical Aviation needs to be studied. Medical evacuation and casualty evacuation needs to be studied, both in terms of tactical aviation as already mentioned. But it brings in medical personnel, training of soldiers in advanced first aid (focused on trauma wounds), and technology like telemedicine. Combat vehicles in the AoT should be a major study area in its own right. JFS and fires integral to the AoT BG need to be studied, especially where the delimitation should be between integral resources, and they that have to be requested.

DAS raised a number of issues (many more ethical than R&D) that should be investigated.

There are many aspects of sensors that need to be studied, see several bullets scattered through the previous slides.

Under the “command” concept, there should be studies of new means to do COA analysis and to exploit tools already on the Internet for collaboration in a military context.

Logistics (see previous slides) should be given some stimulus by the AoT work since there seem to be solutions within grasp, e.g., RFID, containerization, and vehicle tracking (e.g., commercial “OnStar” type of systems).

Conclusions

As a result of bring so many people together for the Seminar War Game, it was clear that there are studies already initiated by others. The AoT should track these activities and derive the greatest possible benefit from them. For the purposes of the AoT, some existing studies, trials, or research should be “fast tracked” and exploited to the maximum. With the publishing of the AoT force employ-

ment concept, it should be more feasible to guide ongoing research and studies to deliver results that are tailored to AoT issues. Where no studies are already underway, the AoT should initiate studies of its own.

Army Experiment 9A

Maj T.S. McLean, Directorate of Land Synthetic Environments

The Army Experiment 9 Alpha will be held in Kingston, Bldg A-31 from 20 November to 01 December 2006. The aim of the experiment is to provide a degree of confidence that ADO will be able to deliver the necessary kinetic effects in the FSE.

Environment

The system of interest is the Army of Tomorrow Battle Group, specifically the role of Joint Fires Support. The terrain, scenario, Red and White elements will be those used in the AoT Seminar Wargame. The experiment will be a human-in-the-loop computer wargame using constructive simulation and role players. It will cover a series of tactical

vignettes to examine the use of lethal and non-lethal kinetic effects.

Blue Force

Blue Force will be based on the AoT BG structure modelled to the “brick” level in simulation. The effects of joint fires will be modelled in the simulation. Players will be at various levels including the BG HQ, sub-units and some lower elements. Concepts including the network, the human dimension, CSS and HSS, information fusion and knowledge management, etc. will be assumed.

Participants

Blue Players: DLCD, Field Force, DFAIT, RCMP, DevAd

Red Players: Cdn LO USMC

White Cell: D/PD CCS, NGO rep

HICON: CFD, CFEC, DGLCD, LFDTS, CIDA

Interactors/role players: Calian

Analysis: LCDORT, DRDC, LPCP

EXCON and Admin: DLSE 4

Readings

Selected recommendations from panel and cell heads.

Red Cell

Asprey, Robert: War in the Shadows: The Guerrilla in History. Doubleday, 1975

Barber, Noel: War of the Running Dogs: Malayan Emergency 1948-1960. Weybright, 1972

Bowden, Mark: Black Hawk Down: Story of Modern War. Atlantic Monthly, 1999

Clutterbuck, Richard: Long Long War: Counterinsurgency in Malaya & Vietnam. Praeger, 1966.

Fall, Bernard B. Last Reflections On a War. Garden City, N.Y.: Doubleday, 1967. 428 pp.

Ford, Christopher. Speak No Evil: Targeting a Population's Neutrality to Defeat an Insurgency. Parameters 35 Summer 2005.
<http://www.carlisle.army.mil/USAWC/Parameters/05summer/ford.pdf>

Galula, David. Counterinsurgency Warfare; Theory and Practice. New York: Praeger, 1964.

Hammes, Thomas X. Insurgency: Modern Warfare Evolves into a Fourth Generation. Strategic Forum 214 (January 2005). <http://www.ndu.edu/inss/strforum/SF214/SF214.pdf>

Hoffman, Bruce. Combating Al Qaeda and the Militant Islamic Threat. RAND Testimony (February 2006).
<http://www.rand.org/pubs/testimonies/CT255/>

Kepel, Gilles. The War for Muslim Minds: Islam and the West. Cambridge, Mass: Belknap Press of Harvard University Press, 2004.

O'Neill, Bard E. Insurgency & Terrorism: From Revolution to Apocalypse. Washington, D.C.: Potomac Books, 2005.

Scales, Robert: Firepower in Limited War. National Defense Univ., 1990
Articles and Other Documents

Cassidy, Robert M. "Back to the Street Without Joy: Counterinsurgency Lessons from Vietnam and Other Small Wars." Parameters 34 (Summer 2004): 73-83.
<http://carlisle-www.army.mil/usawc/Parameters/04summer/cassidy.pdf>

Chiarelli, Peter W., Patrick R. Michaelis. "Winning the Peace: The Requirement for Full-Spectrum Operations." Military Review 85 (July-August 2005): 4-17.
http://www.army.mil/professionalwriting/volumes/volume3/october_2005/10_05_2.html

Hoffman, Bruce. Insurgency and Counterinsurgency in Iraq. Santa Monica, CA: RAND, National Security Research Division, 2004.
http://www.rand.org/pubs/occasional_papers/OP127/index.html

Metz, Steven. "Insurgency and Counterinsurgency in Iraq." Washington Quarterly 27 (Winter 2004): 25-36.
<http://www.au.af.mil/au/awc/awcgate/milreview/mcfate3.pdf>

Record, Jeffrey and W. A. Terrill. Iraq and Vietnam: Differences, Similarities, and Insights. Carlisle Barracks, PA: Strategic Studies Institute, U.S. Army War College, 2004. CARL: 355.033573 R311i
<http://handle.dtic.mil/100.2/ADA423779>

Sepp, Kalev I. "Best Practices in Counterinsurgency." Military Review 85 (May-June 2005): 8-12.
<http://www.au.af.mil/au/awc/awcgate/milreview/sepp.pdf>

Tomes, Robert R. "Relearning Counterinsurgency Warfare." Parameters 34 (Spring 2004): 16-28.
<http://carlisle-www.army.mil/usawc/Parameters/04spring/tomes.pdf>

Battle Group Panel

DND Published Sources

Anon. "The Combat Development Process", Canadian Army Doctrine Bulletin, No.3 (September 1981), 15-20.

Canadian Army. Advancing With Purpose: The Army Strategy, One Army, One Team, One Vision. Ottawa: Land Force Command, May 2002.

Canadian Army. Purpose Defined: A Force Employment Concept for the Army. Ottawa: Chief of Land Staff, March 2004.

DLSC. Future Army Capabilities. DLSC Report 01/01 (Kingston: DND, January 2001).

Land Force Command. Strategic Operations and Resource Plan, 1997-2002. (Ottawa: DND, 1997).

Land Force Development Guide 1992.

Land Force Development: Director General Land Force Development Staff Orientation Briefings, 21-22 September 1992.

Land Staff Working Group. Army Transformation Project. (Ottawa: DND, 19 November 1999).

Maloney, Sean M. *An Identifiable Cult: The Evolution of Combat Development in the Canadian Army: 1946-1965*. Kingston: DND, Directorate of Land Strategic Studies Report 9905, August 1999.

Reay, LGen. GM. 'Land Force Mission and Land Force Command Business Plan', (Ottawa: DND, 1995).

Books

Bland, D. *Chiefs of Defence: Government and the Unified Command of the Canadian Armed Forces*. Toronto: Canadian Institute of Strategic Studies, 1995.

Jockel, J. *Canada and NATO's Northern Flank*. Toronto: Canadian Institute of Strategic Studies, 1986.

Maloney, S.M. *War Without Battles: Canada's NATO Brigade in Germany, 1951-1993*. Toronto: McGraw-Hill Ryerson Limited, 1997.

Maloney, S.M. *Chances for Peace: Canadian Soldiers in the Balkans, 1992-1995 – An Oral History*. St.Catherines: Vanwell Publishing Limited, 2002.

St. Denis, T. ed. *Canada's New Field Army*. Ottawa: Conference of Defence Associations Institute, 1989.

Articles

Belzile, LGen. (Ret'd) C.H. "Required Structural Changes in the Land Forces", *Canadian Defence Quarterly*, Vol.16: 4 (Spring 1987), 9-14.

Bezeau, Capt. M.V. "A New Canadian Army Staff Organization", *Canadian Defence Quarterly*, Vol.13: 3 (Winter 1983/84), 29-32.

Dangerfield, MGen. J.K. "The 1st Canadian Division: Enigma, Contradiction, or Requirement?", *Canadian Defence Quarterly*, Vol.19: 5 (April 1990), 7-14.

Farrell, Theo, "Sliding Into War: The Somalia Imbroglia and the US Army Peace Operations Doctrine", *International Peacekeeping*, v.2:2 (Summer 1995), 194-214.

Fox, J. "The Restructuring of the Canadian Army", *NATO's Sixteen Nations*, (October 1988), 19-22.

Gervais, LGen. J.C. "Land Force in Transition: Challenges and Opportunities", *Canadian Defence Quarterly*, Vol.21: 3 (December 1991), 7-12.

Gervais, LGen. J.C. "Land Force in Transition: Challenges and Opportunities – Part II", *Canadian Defence Quarterly*, Vol.22: 2 (October 1992), 6-11.

Gervais, J.C. "Moving SLOWLY Towards Total Force", *Forum*, (Spring 1992).

Gronbeck-Jones, Major D.A. "The Combat Development Process in the Canadian Army", *Canadian Defence Quarterly*, Vol.12: 2 (Autumn 1982), 25-29.

Herold, Capt. R.A. "Militia Reconnaissance: A New Direction" *Canadian Defence Quarterly*, Vol.13: 1 (Summer 1983), 22-27.

Hope, LCol. I. "Misunderstanding Mars and Minerva: The Canadian Army's Failure to Define an Operational Doctrine", *The Army Doctrine and Training Bulletin*, Vol.4: 4 (Winter 2001-02), 16-35.

Hutchings, Maj. M. "L'Avenir de la 1re Division du Canada", *Canadian Defence Quarterly*, Vol.22: 6 (July 1993), 16-22.

Jablonsky, David, "Army Transformation: A Tale of Two Doctrines", *Parameters*, v.31:3 (Autumn 2001), 43-62.

Last, Capt. D.M. "Equipping the Total Force Army", *Canadian Defence Quarterly*, Vol.18: 2 (Fall 1988), 17-31.

Lock-Pullan, " 'An Inward Looking Time': The United States Army, 1973-1976", *The Journal of Military History*, 67 (April 2003), 483-512.

Lock-Pullan, Richard, "Civilian Ideas and Military Innovation: Manoeuvre Warfare and Organizational Change in the US Army", *War and Society*, v.20:1 (May 2002), 125-148.

MacDonald, Col. B.S. "The White Paper, the Army Reserve, and Army Reform, 1987-2002", *Canadian Defence Quarterly*, Vol.17: 4 (Spring 1988), 9-20.

Maloney, Sean M. "A Proportion of Their Cavalry Might Be Converted: Light Armoured Force Development in Canada's Army, 1952-1976", *Army Doctrine and Training Bulletin: Canada's Professional Journal on Army Issues*. Vol.2: 4 (Winter 1999), 85-103.

O'Connor, BGen. G.J. "Developing a Total Force Army", *Canadian Defence Quarterly*, Vol.18: 2 (Fall 1988), 9-15.

O'Connor, BGen. G.J. "Effective Reserves – The Challenge of the Total Force Army", *Canadian Defence Quarterly*, Vol.18: 5 (April 1989), 19-24.

Pentney, David. "Manning Priorities: Does the Army Have Them Right?", *Canadian Army Journal*, Vol.9.1 (spring 2006), 68-79.

Pittfield, LCol. D.V. "Is There a Future for the Canadian Light Infantry?", *Canadian Defence Quarterly*, Vol.27: 2 (Winter 1997), 10-12

Reay, MGen. G.M. "Army 2002 – Perceptions From the Coal-Face", *Canadian Defence Quarterly*, Vol.19: 2 (Fall 1989), 28-32.

Reay, MGen. G.M. "Building An Army That Can Fight", Forum: Journal of the Conference of Defence Associations Institute, Vol. 6.1 (April 1991), 9-11.

Shadwick, M. "Canada's Commitments to NATO: The Need For Rationalization", Canadian Defence Quarterly, Vol.15: 1 (Summer 1985), 22-27.

Taylor, Cdr. R.K. "2020 Vision: Canadian Forces Operational Level Doctrine", Canadian Military Journal, Vol.2: 3 (Autumn 2001), 35-42.

Thompson, R. "Total Force Army or Total Farce: A Critical View of Canada's New Military Structure", Forum, (Spring 1992), 15-16.

Von Sandrart, Gen. Hans-Henning. "Defence of the Central Region and Canada's Contribution", Canadian Defence Quarterly, Vol.18: 4 (February 1989), 13-18.

Human Dimension

Wesensten N.J., Belenky G., & Balkin T.J. Cognitive Readiness in Network-Centric Operations. Parameters Spring 2005. pp 94-105

Scales R. Cognitive Transformation and Culture-Centric Warfare. Testimonial before US Armed Services Committee 15 July 2004

Barnett T.P.M. The Seven Deadly Sins of Network-Centric Warfare. Proceedings US Naval Institute 1999.

Williams T.J. Strategic Leader Readiness and Competencies for Asymmetric Warfare. Parameters Summer 2003 pp 19-35

Day A., Somalia Redux? The Yahoo Defence, Terminal Bullshit Syndrome and the Myth of the Isolated Incident. Media and Defence Analyst Perspectives on Canadian Military Leadership in From the Outside Looking In Chapt 10 2006

Celestine A. Warren R., Boyd E., and Turner L. Integrating Cultural Factors in Military Modeling and Simulation: Anecdotal Literature Review and Framework for Application. Army Center for Human-Centric Command and Control Decision Making 10th International Command and Control research and Technology Symposium

Network Centric Warfare - More than Just Technology. http://www.mitre.prg/news/digest/defence_intelligence/09_03/di_new.html

TRADOC Pamphlet 525-3-91 Objective Force: Tactical Operational and Organizational Concept for Maneuver Units in Action 2 Nove 2001 V2

Farley K.M.J., and Catano V.M The Battlefield as Workplace: Violence in Warfighting in E.K. Kelloway. J Barling.

J.J. Hullrll, Jr (Eds) Handbook of Workplace Violence (pp 281-307). London: Sage Publications 2006

Burns K., Mental Models in Naturalistic decision Making The MITRE Cooperation 2003

US Army Research Institute For Behavioural Sciences' Basic Research Programme 19-1-2006

Gratch J., Modeling Interplay Between Emotion and Decision-making. 9th Conference on Computer Generated Forces and Behavioural Representation 2000

Gold T, Welch L.D. Defense Science Board Task Force on Advanced Modeling and Simulation for Analysing Combat Concepts in the 21st Century. May 1999

Krulak C.C. The Strategic Corporal: Leadership in the Three Block War. http://www.au.af.mil/au/awc/awcgate/usmc/strategic_corporal.htm 2005-10-19

McCreary D. Review of Constructs Contributing to Resiliency. W7711-057959/A DRDC paper 2006

Murphy P.j. Fatigue Management During Operations. A Commanders Guide. Land Warfare Development Centre Australian Defence Force 2002

Capstick M. Farley K. Wild B. and Parkes M. Canada's Soldiers: Military Ethos and Canadian Values in the 21st Century ISBN D2-165/2005 0-622-68810-0

Duty with Honour: The Profession of Arms in Canada 2003 ISBN 0-662-67561-4 <http://cda-acd.forces.gc.ca>

JIMP

CPCC, (2003). NGO/Government dialogue on Provincial Reconstruction Teams (PRTs) in Afghanistan and the militarization of humanitarian assistance. Proceedings of Canadian Peacebuilding and Coordinating Committee, Peace Operations Working Group, December 4, 2003. <http://www.peacebuild.ca/whatsnew/PRT-Dialogue-FinalReport.doc>

Fitz-Gerald, Dr. A.M. (2004). The centrality of Security Sector Reform in Post-conflict war-to-peace transitions: Implications for the military. Conference of Defence Associates Institute Annual Seminar, 2004. http://www.cda-cdai.ca/seminars/2004/fitz_gerald.htm

Fitz-Gerald, Dr. A.M. (2003). Security sector reform: Streamlining national military forces to respond to the wider security needs. Journal of Security Sector Management, 1 (1), 21 pages. http://www.jofssm.org/issues/jofssm_0101_fitgeralda_link_ages_2003.pdf?CFID=867113&CFTOKEN=80524966

Fitz-Gerald, Dr. A.M. and Walthall, Col. F.A. (2001). An Integrated Approach to Complex Emergencies: The Kosovo Experience. *Journal of Humanitarian Assistance*, 16 August 2001, 9 pages.

<http://www.gov.mb.ca/ana/apm2000/index.html>

Jenkins, L. (2003). A CIMIC contribution to assessing progress in peace support operations. *International Peacekeeping*, 10 (3), 121-136. Available from Ebscohost Database.

Jenny, J. (2001). Civil-military cooperation in complex emergencies: Finding ways to make it work. *European Security*, 10 (2), 23-33. Available from Ebscohost Database.

Mockaitis, T.R. (2004). Reluctant partners: Civil-military cooperation in Kosovo. *Small Wars and Insurgencies*, 15 (2), 38-69. Available from Ebscohost Database.

Peabody, D. (2005). The challenges of doing good work: The development of Canadian Forces CIMIC. Masters Thesis submitted to University of Calgary, Centre for Military and Strategic Studies. Unpublished.

Snow, D.M. (2003). *Cases in international relations*. New York: Addison Wesley Longman, Inc.

Stockton, N.J. (2002). The failure of international humanitarian action in Afghanistan. *Global Governance*, 8 (2002), 265-271. Available from Ebscohost Database.

Van Baarda, T.A. (2001). A legal perspective of cooperation between military and humanitarian organizations in peace support operations. *International Peacekeeping*, 8 (1), 99-116. Available from Ebscohost Database.

Vidal, D. (2003). Reconstructing states: A guide to nation building. *Monde Diplomatique*, December 2003.

<http://www.globalpolicy.org/security/issues/iraq/after/2004/2003reconstructstates.htm>

Watson, J.A. (2005). The centrality of Security Sector Reform in Post-conflict war-to-peace transitions: Implications for the military. Conference of Defence Associates Institute Annual Seminar, 2005.

<http://www.cda-cdai.ca/seminars/2005/Watson05.pdf>

Winslow, D. (2002). Strange bedfellows: NGOs and the Military in humanitarian crises. *The International Journal of Peace Studies*, 7(2). Available from

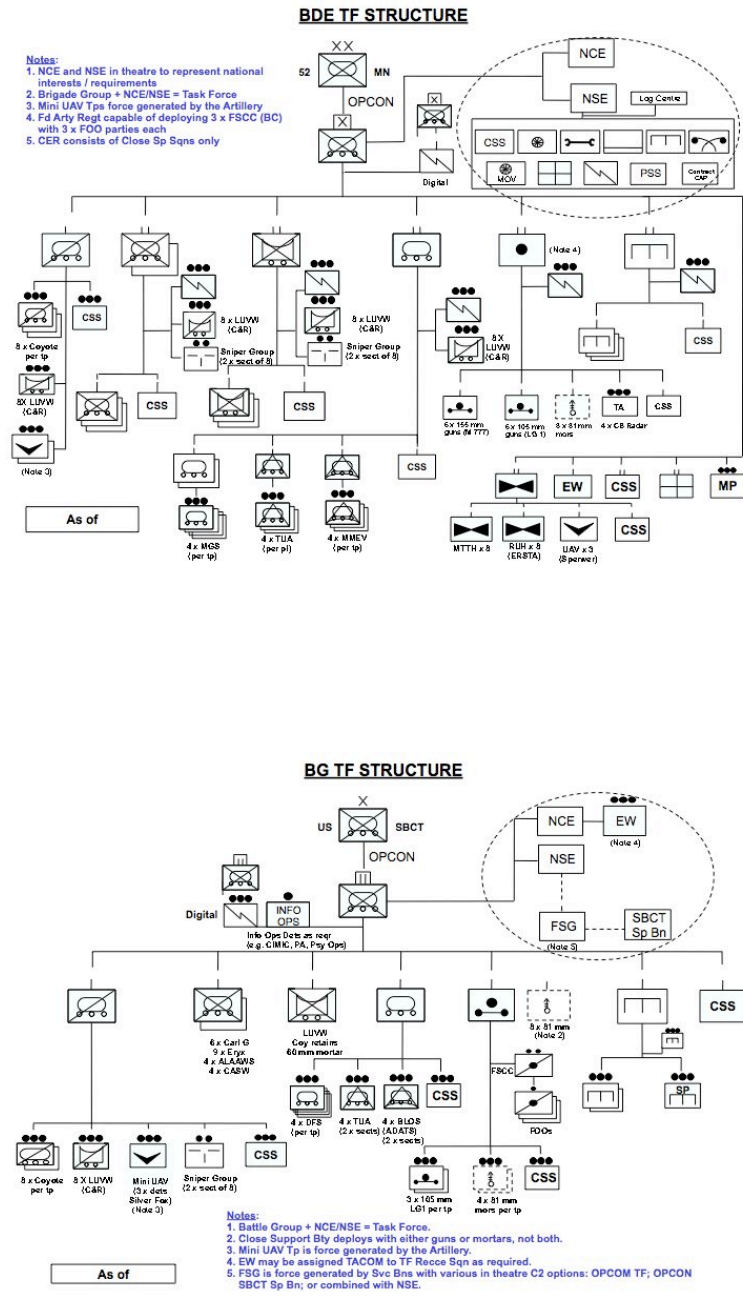
http://www.gmu.edu/academic/ijps/vol7_2/cover7_2.htm

Appendices

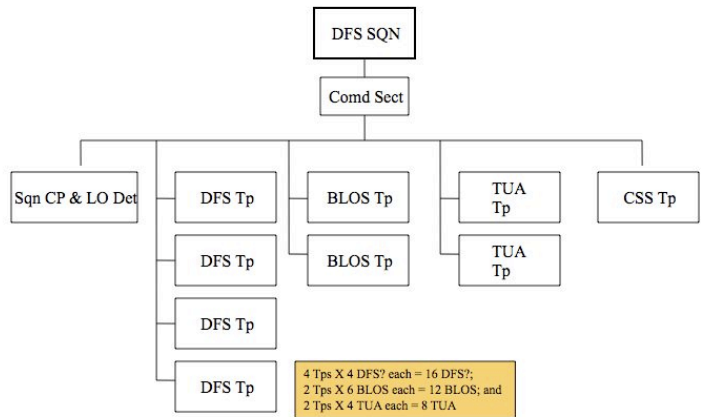
Slides and reference materials, including a database of observations by game participants, can be found on the attached CD or downloaded from the specified URL.

Battle Group Conceptual Force Structures

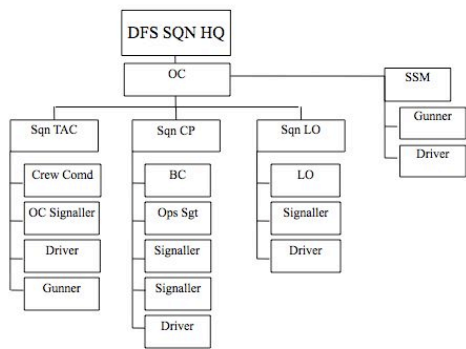
These following are the initial orbats used for the exercise. AE9A will employ a revised conceptual structure based on the panel discussions.



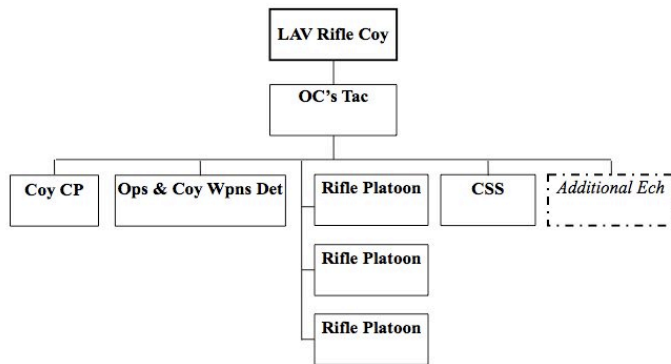
DFS SQN STRUCTURE



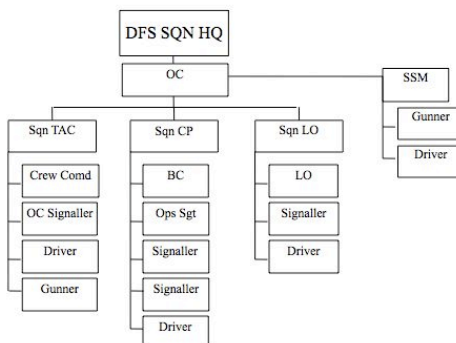
DFS SQN HQ STRUCTURE



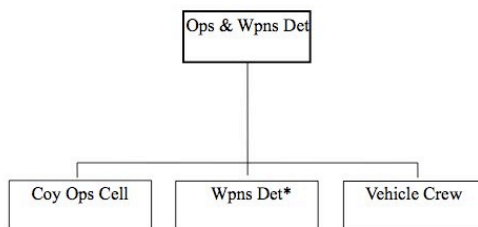
LAV RIFLE COY STRUCTURE



DFS SQN HQ STRUCTURE

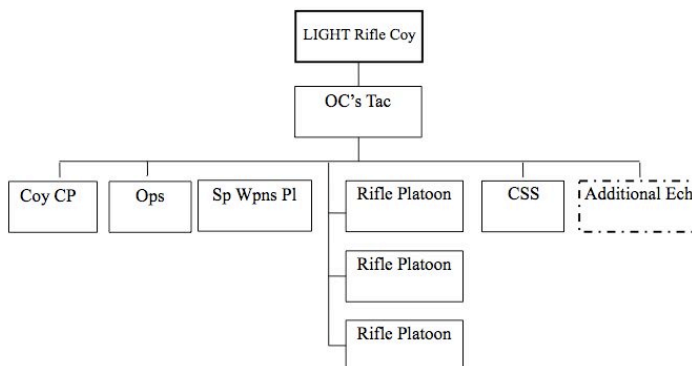


LAV RIFLE COY – OPS & WPNS DET STRUCTURE

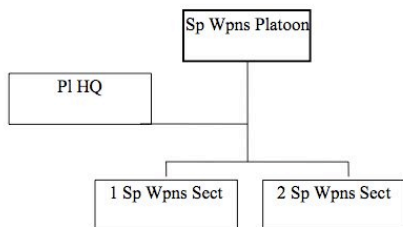


*NB: Wpns Det capable of manning 2 x sp wpns at any time, one of which may be CASW. The second CASW held by Wpns Det may be allocated to rifle pl when required.

LIGHT RIFLE COY STRUCTURE

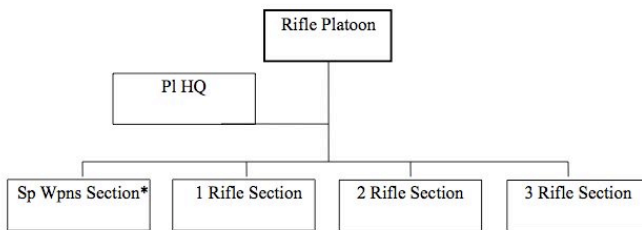


LIGHT RIFLE COY – SP WPNS PLATOON STRUCTURE



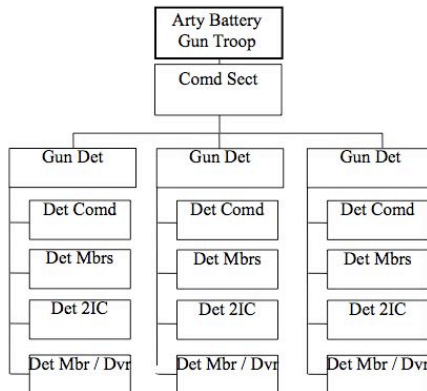
- *PI Sp Weapons:
 2 X CASW
 1 X GPMG C6
 1 X ALAWS
 1 X 84mm Carl Gustav
 1 X 60mm Mortar
 2 X HMG .50 cal

LIGHT RIFLE COY – RIFLE PLATOON STRUCTURE

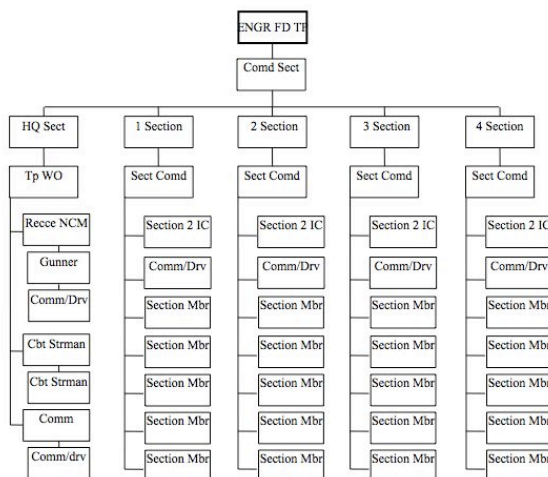


- *PI Sp Weapons:
 1 X GPMG C6
 1 X CASW
 1 X ALAWS
 1 X 84mm Carl Gustav
 1 X 60mm Mortar

ARTILLERY BATTERY GUN TP STRUCTURE



ENGR FD TP STRUCTURE



TF CSS COY STRUCTURE

