

## **MILITARY AND CIVILIAN INTEGRATED LOGISTICS: CAVEAT EMPTOR (LET THE BUYER BEWARE)! CONSIDERATIONS FOR THE NATO ARTICLE V BATTLEFIELD<sup>1</sup>**

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### **Abstract**

The past 25 years has seen the increasing use of commercially contracted firms to provide logistic support to Western armies, especially in the British, US, and Australian militaries. The resulting integration of civilian and military logistic personnel and systems to form a joint military-civilian/ public-private integrated logistic system has required a number of adjustments and changes in order for the product to be efficient, effective, and functional and remains a dynamic and ongoing process. In 2018, commercial logistic support is now at the point where certain militaries are deploying non-military logistic contractors forward into 1<sup>st</sup> and 2<sup>nd</sup> line logistic support roles. This article will briefly describe the western military trend to commercial logistic contracting, highlighting key points and considerations of which any military will require awareness, if contemplating a similar expansion. It will also emphasise that this growth of civilian contracting has been predicated on low intensity, counter-insurgency conflicts such as deployments in Iraq and Afghanistan. 1<sup>st</sup> and 2<sup>nd</sup> line commercial logistic support hence remains completely untested in the event of a potential peer or near-peer conflict. The untested nature of commercial contracting in a forward support role is the greatest potential critical vulnerability of military-civilian integrated logistic systems, especially in the context of a potential NATO Article V -type conflict. The lessons for the Polish military as it considers greater integration of military and civilian logistics as part of a modernised force structure are clear.

**Key words:** 1<sup>st</sup> and 2<sup>nd</sup> line logistic support, military-civilian integrated logistics, high intensity-high lethality conflict, asymmetrical information/ unlimited liability contract

<sup>1</sup> The opinions expressed in this article are exclusively the personal view of the author and do not represent the official views of the Department of Defence, Commonwealth of Australia.

## First and Second line logistic support - some definitions

Most NATO armies utilise some form of commercial contracting at some stage of their logistic supply chain. This is commonly found at a national or supra-national level (NATO 4<sup>th</sup> line) at strategic levels. One current example of the use of commercial outsourcing is NATO's current STRATLIFT contract, which is provided by commercial providers under a Rapidly Usable Executable Contract (RUEC) arrangement [1, 2]. What is less common is contractor logistic support at lower operational and even tactical levels.

This article will focus on the provision of logistic services at the level of either unit or formation. In NATO joint logistic terms, this is termed 1<sup>st</sup> and 2<sup>nd</sup> line logistic support. All discussion in this article will apply to contractor logistic support at Formation (usually Brigade level) or below. 3<sup>rd</sup> and 4<sup>th</sup> lines of support (such as the NATO STRATLIFT contract mentioned above) will not be discussed by this article.

NATO's overarching reference on operational logistics (NATO Allied Joint Publication (AJP)-4, *Allied Joint Doctrine for Logistics*) [3] defines the various logistic lines of support as:

- First line support capabilities that are organic or allocated to a ship, unit or squadron,
- Second line support capabilities that are organic or allocated to a formation,
- Third line support capabilities provided to a military force at the operational level or at installations established along the strategic LOC,
- Fourth line support capabilities provided by strategic-level resources such as national depots and contractors and industry.

UK Ministry for Defence Joint Doctrine Publication 4-00: *Logistics for Joint Operations*, 2015 [4] defines lines of support similarly but goes slightly further, linking these to specific echelons:

- 1st line, Unit support: The unit's own logistic support (usually held within its echelon)
- 2nd line, Formation support: The logistic support held within a brigade or a division.
- 3rd line, Force support: The logistic support behind the rear boundary of a brigade during medium scale operations or of a division on large scale operations but forward of the theatre point of entry
- 4<sup>th</sup> line, Home base Logistic support provided from the UK strategic base.

As a direct result of its experiences of expeditionary deployments in Iraq and Afghanistan (and following the key Defence Strategic Defence and Security Review in 2010), the UK itself has "civilianised" its logistic support system considerably [5] and deploys contractors directly into 1<sup>st</sup> line logistic support roles. The key point is that placing civilian contractors into 1<sup>st</sup> and 2<sup>nd</sup> line logistic support roles places them well forward in the military logistic supply chain increasingly exposing them to the direct effects of enemy action. It is important to analyse both the implications this will have on the force and the subsequent risks which will need to be mitigated.

In addition, the replacement of military logistic staff with contractors at both first and second logistic support lines imposes a specific set of both restraints as well as constraints on any prospective Force Commander. These factors will be discussed further in this article.

### **Armies and Logistic Support: “Tooth to Tail” ratios in the 21<sup>st</sup> century result in larger logistic footprints**

The modern army has a so-called “tooth to tail” ratio (T3R) of roughly 2 logisticians for every war fighter, 2:1, being the reverse of the T3R ratio in the 1914-18 conflict some 100 years earlier [6]. Over the last century, this ratio has continued to steepen, despite profound technological and organisational advances in computerisation, supply chain management (SCM) systems, materiel handling, distribution, asset tracking, and information systems, amongst other developments [7]. This T3R figure is a reflection of a modern army’s more prominent logistic “tail” and “footprint” than that of its 1918 counterpart. In 2018, a force’s logistic tail and logistic footprint have expanded to the point where they represent one of the force’s most vulnerable targetable assets.

In addition, the increasing use of civilian contractors ( as opposed to military personnel) imposes further constraints on a Force Commander, especially in terms of providing protection, as these force elements cannot actively defend themselves. Western militaries hold to the principle of “responsibility to protect” civilians, further prioritising the task. Allocating sufficient military personnel to protect will further tax a Force Commander’s scarce resources. On the other hand, a major restraint for a Force Commander directly relates to where and how civilians can be employed. To state the obvious, civilians are not soldiers, and placing them in the same range of situations and risk as soldiers faces considerable barriers, not the least being the potential refusal of a civilian contractor to undertake that task. Civilians accept only limited liability when carrying out their tasks: it is termed “limited” as they are not expected to carry out the mission up to and including the point where they may lose their lives in doing so. On the other hand, soldiers accept “un” limited liability, understanding that they may be called on to carry out and pursue the mission right up to and including the point where they may lose their lives in doing so. The next section discusses this notion.

### **Civilian contractors do not have an “Unlimited liability contract”**

Soldiers render military service under what has been termed “the unlimited liability contract”[8]. The “unlimited liability contract” is not a formally written contract, but rather an implied and collective understanding that lies at the heart of all military service, regardless of nationality. Fundamental to this “implied contract” is the

notion that the mission is paramount. Liability is accepted as unlimited-the soldier accepts that he or she may lose his or her life in carrying out the mission.

The same cannot be expected of civilian contractors. No implied “unlimited liability” understanding applies to civilian contractors who are not expected-and importantly, have no expectation- that they may like their military counterparts be expected to sacrifice their lives and well-being for the ultimate success of the mission. Civilian contractors do not accept “un” limited liability: they will carry out their duties, but only up to a certain point. Their liability is limited by their overarching need to preserve their own lives in preference to sacrificing them for the success of the mission. This is a significant paradigm difference from that of soldiers.

In general terms, commercial firms attempt to mitigate risk via a number of control measures. These include the use of risk management tools such as insurance for a variety of applications that include public liability risk, professional indemnity risk, currency risk, insuring against force majeure considerations, and so on. Ultimately, the risk control mechanisms for commercial logistic providers may also include removing staff from situations that contain an unacceptable level of risk. Clearly when danger presents itself, military personnel cannot simply remove themselves if the risk level exceeds that which is unacceptable to civilian contractors. The requirement to prevent and protect civilian contractor force elements from facing the same level of risk as military personnel is one of the greatest restraints facing a Commander as it implies removing these assets from “harm’s way” at critical points.

### **Commercial contractors, conflicts of interest and “Logistic Triads”**

Most commercial logistic businesses are profit seeking entities. If listed on stock markets, this profit is commonly returned to stockholders as dividend profit. The corporate managing team may be remunerated by a combination of salary, incentive profit share, stock options or all three. If the firm does not make a profit, it does not survive. This is in contrast to a public body such as a military, which, whilst required to maximise efficiency and cost-effectiveness, is not generally required to operate as a for-profit entity.

A conflict of interest can occur where a commercial firm’s need for profit conflicts with the military customer’s need for efficiency and cost savings. In an increasingly resource constrained economic environment, militaries are increasingly required to show value for money as they spend their budget allocations ,producing efficiencies, whilst still maintaining cost-control.

In general, where military logistics meets civilian logistics, a successful Military Integrated Logistics Systems seeks to balance 3 general needs:

- The need to increase efficiency,
- the need to decrease or minimalise costs, and
- the need to decrease variability.

The last factor concerning “variability” requires a small note. Supply Chain Management issues are complicated by the number and variability of stocklines. Variability in stocklines has the potential to affect a number of factors such as cost, ease and speed of handling, transit times, and so on. In general, a system is more efficient if stocklines are well-managed. Efficiency tends to be enhanced by reducing the diversity of stocklines.

An attempt to show this relationship between the three needs is shown diagrammatically below in the “blue” triangle (Figure 1). Some degree of dynamic tension is built into this “logistic triad”. It will be seen from the diagram that this dynamic tension can “skew” or unbalance the shape of the triangle in favour of one parameter or the other. Notwithstanding that this triangle is somewhat of an oversimplification, it nevertheless demonstrates the fact that the military logistic contracts manager must apply the correct attention at various points in order to balance all three factors.

Below is shown a similar “red” triangle (Figure 2), as it might apply to a commercial contractor in the same situation. Here, although the paramount metric remains the need to increase efficiency, it can be seen that the parameters at the 2 other points are quite different when compared to the “military” triangle. The lower right angle of the alternative “red” commercial contractor triangle reflects the situation of the commercial contractor supplying product. It may increase company profit if the number and diversity of product lines is increased. This is in contrast to the need to decrease stock variability.

These two triangles are simplifications and are produced here to underscore the fact that military and commercial goals can often be very different. Most importantly, it should be noted that in an ideal situation, both military and commercial triangles can be identical. Where both military and commercial sides share common ideals, goals, and values, the points of the triangles can be the same. Success is determined by how closely the two frameworks align.

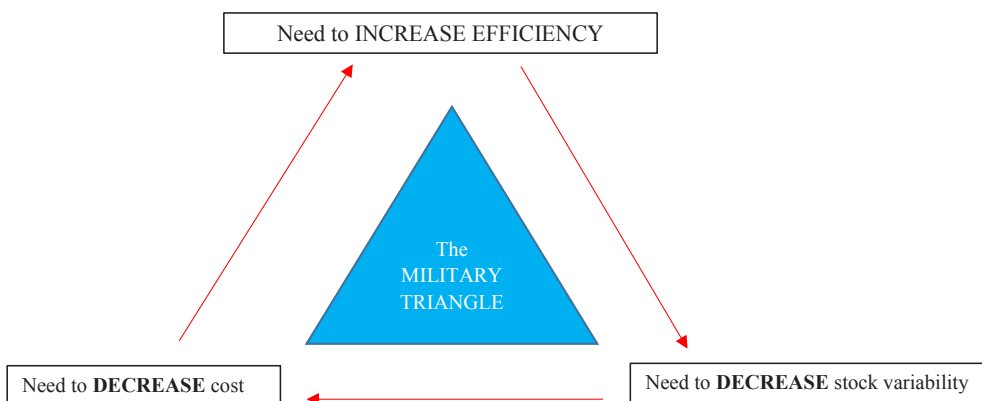


Fig. 1.

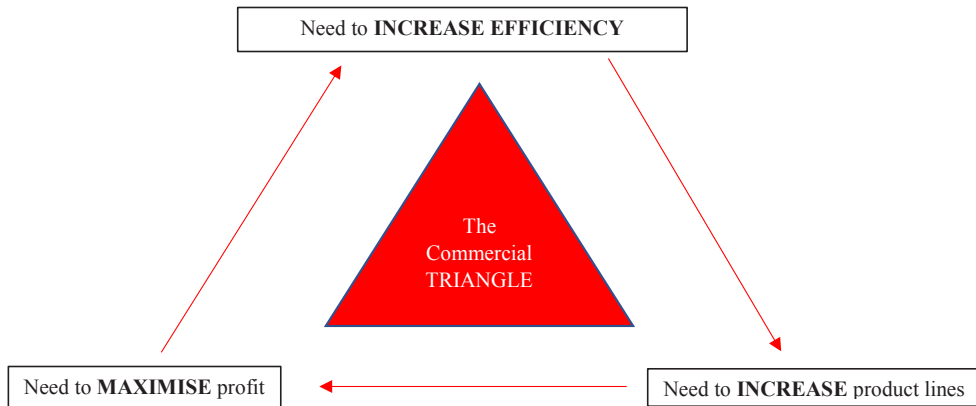


Fig. 2.

### The Problem of “Asymmetry”

At its root, military contracting of commercial firms in order to purchase a service is an economic transaction. Because of this, the concept of “asymmetry” or “information failure” is present. One definition of “asymmetry” is:

... “*Asymmetric information, also known as information failure, occurs when one party to an economic transaction possesses greater material knowledge than the other party. This normally manifests when the seller of a good or service has greater knowledge than the buyer, although the reverse is possible. Almost all economic transactions involve information asymmetries. In certain circumstances, asymmetric information may lead to adverse election or moral hazard. These are situations where individual economic decisions are hypothetically worse than they would have been had all parties possessed more symmetrical information...*” [9]

Information asymmetries are some of the key risks that need to be mitigated by the military logistic contract manager. In any commercial relationship between a military customer and its commercial contractor where the profit motive is present on one side ( the commercial contractor) and the need for efficiency and cost saving is present on the other side ( the military customer), tension is present because of two potentially conflicting needs.

Contract pricing is one reflection of the presence of asymmetric information. The military customer is commonly not be granted full access to costing structures which underlie bid pricing submitted by commercial firms for logistic work. The commercial firm may attempt to derive as much profit as possible whilst “hiding” margin throughout its pricing. The military customer will attempt to identify and negotiate the lowest price by focussing on areas where profit margins may be present. Subsequent price negotiation attempts to level information asymmetries and mitigate information failure risk, especially for the military customer. In some situations, seeking to eliminate extra margin built into the bid price the military customer may

specify that the margin must be declared and that some or all costs must be passed on to the customer at cost, i.e. with no mark up. These so-called “cost plus” contracts have been a feature of some US logistic contracting.

The recent US deployments in Iraq and Afghanistan contain many examples where information failure resulted in considerable economic disadvantage for the military customer. Most “lessons learnt” reports focus on poor contract management coupled with lack of transparency as key factors in information failure [10]. For the military contract manager, in managing the issue of asymmetry in military-civilian logistic relationships, excellent professional military contract management and control is crucial [11].

### **Contract management is not war-fighting (mostly)**

The increasing commercialisation of logistic support services has created a need for military officers tasked with contract and project management with formal training and experience in commercial contract management. Most military officers managing first and second line logistic contracts tend to wear either NATO OF 2 or OF 3 rank. The Australian Defence Force (ADF) offers OF3 and 4 ranked logistic officers formal training in commercial contract management encompassing topics such as contract law, negotiation, procurement best practice, and contracting standards. However, such specialised training is the exception, rather than the rule, in most NATO armies [12].

Military logistic contract managers need to acquire sound competencies in commercial project and contract management. This includes much the same skills sets as would be expected at middle to senior middle management in private multinational corporations. Competent business management skills, including commercial contractual negotiation and what comprises “Best Practice” in commercial contract management, are essential skills required by military logisticians in addition to conventional professional military education. Competent military logistic contract management is vital not only in maximising efficiency and effectiveness, but also in reducing the friction that is inherent in the system.

### **Commercial contracting since Gulf War II: civilians on the battlefield**

The 2003 2<sup>nd</sup> Gulf War heralded a significant expansion of contractor-provided services in logistics. The overwhelming logistic “push” of the largest conventional operation since the 2<sup>nd</sup> world war left the US military struggling to control, let alone manage, supply chain management issues. The emergent need in the initial year of operations led to massive wastage and cost, as regulatory systems, particularly military contract management, struggled to cope [13].



Military commercial contract and project management control and supervision practices in western militaries have improved since Gulf War II, but the problem of unequal distribution of information (especially regarding pricing, profit margins and cost effectiveness) continues to confound military contracting managers. In the past 15 years since Gulf War II, contractor personnel now comprise an increasing percentage of deployed personnel. The most recent US congressional report on contractor to military numbers in Afghanistan in early 2017 put the figure as almost 3 :1 [14, 15].

### **“Base mentality”: Iraq and Afghanistan**

Recent expeditionary deployments in Iraq and Afghanistan have been low intensity, high lethality conflicts characterised by counter-insurgency (COIN) operations. The adversary has not been a peer enemy and the deployed force (and their logistic support elements) have not faced any air threat or significant offensive fire threat. These campaigns have been characterised by forces based in fortified encampments, such as operating bases, forward operating bases, combat outposts, and so on. This battlespace has been a COIN situation and not a conventional war fighting one, lacking a clear “frontline”, and other dimensions of a conventional battlespace.

Current commercial contracting has evolved within this highly specific “Base” environment and remains untested by any conventional warfare situation. What could be termed a “base-centric” mentality has underpinned many assumptions underlying commercial logistic contracting. The principal assumption amongst the minds of many military and commercial logisticians is that this pattern of low intensity expeditionary operations against a non-peer adversary will continue to be the norm. Given recent developments in Eastern Europe, with the most likely NATO Article V conventional warfare situation occurring either in the Baltic states or on Poland’s eastern border, this view has been replaced by the growing realisation that commercial contractors will need to operate under far more stringent conditions. Should a conventional conflict ensue, this will subject commercial logistic contracting situations to its severest test to date.

### **Article V: An attack on one is an attack on all. High lethality-and high intensity warfare**

A “NATO Article V conflict” is generally understood to mean a conflict in which Article V of the North Atlantic Charter is invoked. Article V of the Charter defines an attack on one NATO member state as an attack on all of the other alliance member states, requiring a collective defensive response.

The most likely NATO Article V situation is currently considered to be a conventional, non-nuclear attack by Russian mechanised armoured formations on



NATO's eastern flank. In contrast to the expeditionary-type conflicts of recent years in Iraq and Afghanistan, subsequent NATO defensive operations will be conducted against a peer adversary, may not be primarily counter-insurgent in nature (although noting the significant caveats to this comment below with regard to Russian "new generation warfare") [16], and will be characterised by high intensity, high lethality conflict. The Russian doctrine of "deep battle", by its very nature, places all opposing NATO logistic elements in direct jeopardy. Extensive use of multiple level Unmanned Aerial Systems (UAS) by Russia during the Ukrainian conflict has substantially reduced the target acquisition-targeting-battle damage assessment loop necessary for the initial deep battle phase characterised by intense area fires. When combined with the increased use of both top attack munitions and DPICM (Dual Purpose Improved Conventional Munitions), one consequence will be the need for much greater dispersal of all forces on a highly lethal battlefield. In contrast to recent low intensity expeditionary deployments in Iraq and Afghanistan, the prospect of facing a peer enemy such as Russia has the potential to severely interdict, or even neutralise, most first and second line logistic support. The key question remains as to whether or not a contracted 1<sup>st</sup> and 2<sup>nd</sup> line civilian logistic provider has as much resilience as its military logistic counterpart. In order to be able to survive and function.

### **International Humanitarian Law: who is a combatant and who is not?**

Civilians on the battlefield require due consideration by militaries in respect of many issues, principally in terms of targeting, and compliance with the tenets of International Humanitarian Law (IHL) [17]. Given that civilian contractors are being deployed forward to 1<sup>st</sup> line logistic support roles, the potential for either inadvertent or intentional targeting is high. A discussion about the pros and cons of IHL with respect to commercial contractors on the battlefield is beyond the scope of this article, however a few general points can be made.

The three basic principles of IHL are: Proportionality-Military Necessity-Distinction. In terms of military necessity, it is clear that a commercial firm providing direct 1<sup>st</sup> line logistic support, say, in moving ammunition (= NATO Class 5 materiel) forward to a frontline fighting unit, comprises a legitimate target. Direct involvement by civilian contractors in this way could be argued as negating the non-combatant status of civilians under IHL. Given the increasing integration of both military and civilian logistic support personnel and cross-over functions, it is clear that the situation is becoming increasingly unclear.

In the context of a potential NATO Article V conflict, it may be the case that such a conflict will not be announced with a formal "Declaration of War". What has been (incorrectly) identified as the "doctrine" of Russian "New Generational Warfare" [18] includes rear area subversion and the use of de-identified national forces combined with proxies. In an incipient NATO Article V conflict situation lacking

a formal declaration of war, the combination of insurgent-like activity followed closely by ( undeclared) major conventional military action, will create more ambiguity with regards to the application of IHL. The general features of what is generally agreed to comprise Russian “New Generation Warfare” include a combination of both “low-end hidden state involvement” coupled with overt “high-end superpower involvement”. The use of proxy forces and provision of proxy sanctuary, together with political subversion and the undermining of civil institutions are amongst its features. The result is that it is much harder to perceive that a nation-state conflict has actually commenced. The question is: at what point is a war actually “declared” and when can IHL be assumed to apply?

The other consideration is whether a potential adversary actually respects and adheres to the principles of IHL. Such is the nature of contemporary conflict that frequent and repeated violations of IHL are now common, with civilians routinely targeted. The preliminary use of proxy forces in “pre-Article V conflict “ situations clouds the applicability of IHL as such proxies, being “non-state actors” ,are unlikely to be signatories to the relevant international conventions. With reference to the conflict in Eastern Ukraine, such proxy state actors have shown little to no consideration for the principles of IHL. A nation state which has signed the relevant international conventions is quite a “separate” entity to proxy forces and “little green men” to whom no clear state association can be attributed. Official denials of direct involvement make the situation even more ambiguous. The signatories to IHL are nation states, and not non-state actors such as “Peoples’ Republic military militias”, privatised adversaries, criminal gangs, and so on. The use of all of these entities in New Generation Warfare creates an ambiguity that further clouds the issue of the applicability of IHL.

In conclusion, in a potential NATO Article V conflict it is likely that commercial firms providing logistic support on the battlefield will be unable to derive comfort from the protections inherent in IHL. This is not a novel situation, as insurgent forces in both Iraq and Afghanistan to date have not been signatories to any international IHL conventions. The significant difference in a potential NATO Article V conventional conflict is that the likelihood of civilian contractor deaths and casualties is far higher. This has major potential to disrupt contractor morale and motivation, perhaps even rendering commercial logistic contracting completely ineffective.

This section is an important reminder that the principles and application of IHL should not be overlooked when contemplating the use of commercial contractors in 1<sup>st</sup> and 2<sup>nd</sup> line logistic roles.

### **The Future - Prime Contractor arrangements**

The trend to increasing commercialisation and civilianisation of military logistics is now well- established in most western militaries and is likely to continue, most likely under Prime Contractor arrangements which are becoming increasingly the

norm [19]. In contrast to previous years where a military contract manager would manage multiple separate acquisition and service contracts, the trend is now to place all subcontracts directly under a single Prime Contractor. The advantage to the military customer with such a Prime Contractor arrangement is a reduction in the number of separate entities that need to be managed. Having only a single point of contact streamlines the contract management process for the military customer. The corollary is that most, if not all, subcontract management passes on to become the responsibility of the Prime Contractor. As subcontract management now falls under the auspices of a Prime Contractor, the military customer may lose some (or all) visibility over these subcontracts. This is one major disadvantage of Prime Contractor arrangements, as a potential failure of delivery by a key subcontractor can be critical vulnerability. The risk mitigation for the military contract manager lies in good Prime Contractor management with very clearly defined expectations, and agreed key performance indicators of activity, outcome, and performance. Subcontractor performance indicators can (and do) form part of that management assessment process [20].

### **The Future - Improved and standardized military commercial contract management training**

Professional military education will increasingly include specific contract and project management training. This can be specific training for those branches of the military which deal with logistics, for example, the logistic or ordnance corps of an army. As lessons learnt from contracting are absorbed and percolate through militaries, the future will see the increasing implementation of this kind of training and education.

### **The Future - “Bespoke” military-civilian integrated logistics**

Ultimately, like every other tool, commercial 1<sup>st</sup> and 2<sup>nd</sup> line logistic support has both its applications and its non-applications. In order to mitigate the exposure of civilian contractors to unacceptable levels of risk (as the liability accepted by civilian contractors is not “unlimited”) commercial logistic support should best be “tailored” according to the nature and intensity of the operation. Generally, in *Humanitarian Assistance and Disaster Relief* (HADR) and *Peacekeeping* (PK) operations, the use of commercial contractors may be highly appropriate, efficient, and cost effective. Alternatively, the use of *any* commercial contractor elements in a conventional conflict situation may be highly inappropriate. The qualitative graph below (Figure 3) attempts to show this relationship, with high intensity, high lethality operations being those in which no contractor support at the 1<sup>st</sup> and 2<sup>nd</sup> is recommended.

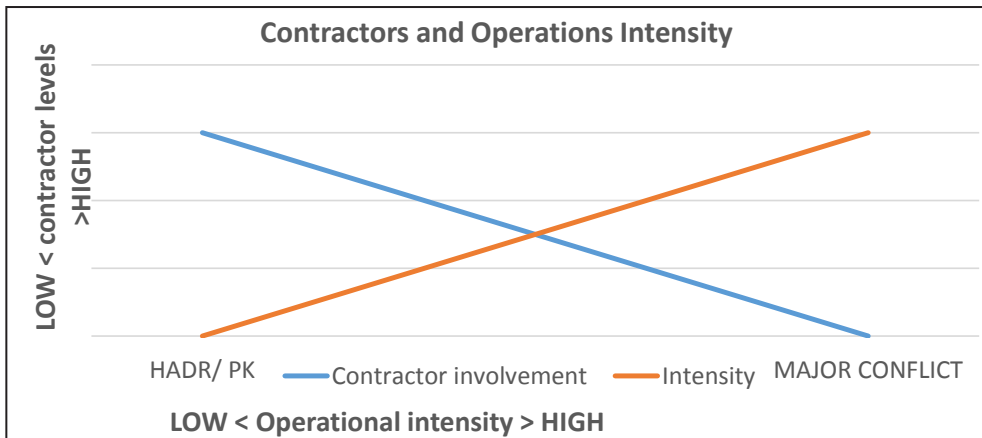


Fig. 3.

In relation to this notion of “bespoke” operational logistics, the Australian Defence Force (ADF) complies with this model. The ADF selects from a range of solutions for logistic support, dependent upon the specific operational situation. Contracts on operations are coordinated through a Joint Contract Coordination Centre (JCCC) within Joint Logistic Group [21].

In coalition operations such as in Afghanistan, ADF logistic support has been provided through coalition providers and multiparty agreements, with arrangements negotiated via entities such as the Quadrilateral Logistic Forum (comprising parties Australia, Canada, UK, and the US). In situations nearer to Australia (i.e. the recent Regional Assistance Mission to the Solomon Islands, or stabilisation operations in Timor Leste) where low intensity peace keeping and stabilisation operations are expected, ADF contracted logistic solutions via Prime Contractor arrangements have been deployed down to 2<sup>nd</sup> line levels of support. Unlike the UK, it should be noted that Australia does not contemplate deploying commercial logistic elements into forward 1<sup>st</sup> line roles in the future, thus maintaining a clear separation [22] [23].

## Conclusion

Creating Military-Civilian Integrated Logistic systems by including commercial logistic providers, particularly at first and second lines of support, requires a number of considerations, adaptations, and adjustments by any military. In essence, what military contract managers are required to do is “risk manage” the introduction of a significant non-military component of the logistic supply chain. As this support reaches lower echelon levels approaching tactical situations, risk increases and needs to be managed accordingly. This is challenging enough in peacetime or low-intensity “expeditionary-type” deployments. On the conventional NATO Article V battlefield, the issues inherent in managing commercial firms providing logistic support at the

1<sup>st</sup> and 2<sup>nd</sup> line will only be made more acute by the adverse environment. The very real possibility during high intensity conventional conflict is that 1<sup>st</sup> and 2<sup>nd</sup> line commercial providers will be transformed from being “Force Assets” in peacetime and low intensity COIN operations, (=saving costs, increasing efficiency, and delivering profit to shareholders), into “Force Liabilities”. This will produce a potent “devil’s brew” of the issues that make normal commercial contracting challenging, mixed up with the friction, uncertainty, lethality, and speed of conventional warfare, resulting in a logistic supply chain that may be rendered ineffective and impotent.

Prior to integrating military and commercial logistics at 1<sup>st</sup> and 2<sup>nd</sup> lines, let the military customer examine all of the implications before buying: *caveat emptor!*

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  - Operational Contracting,
  - Development and trends in the use of contractors in support of operations,
  - Current operations and contracts,
  - Understanding the importance of profitability,
  - Evaluation of contract performance,
  - Consideration of risk,
  - Relationship management and communication,
  - Finance, and the rights and obligations of all parties.
13. Report summary, *Commission on wartime contracting in Iraq and Afghanistan* CWC-NR-49, 31 Aug 2011. This report is particularly critical of the behaviour of US prime contractors.
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fellow with the European Council on Foreign Relations. It was Galeotti who first coined the term “the Gerasimov doctrine” in 2013. As the title implies, this short piece describes his disappointment at the widespread and faulty appropriation of this phrase as official Russian doctrine originating from the Russian Chief of the General Staff, without foundation.

19. Gansler, J.S., et al, *Prime vendor contracting: lessons learnt*, School of Public Policy, Centre for Public Policy and Private Enterprise, University of Maryland, March 2011. This publication contains some excellent definitions, and discussion on the benefits of prime vendor contracting at p. 6, and pp. 26-28.
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21. Spence, C., Air-Vice Marshal, *Logistic support to operations; an Australian perspective*, RUSI Defence systems, Spring 2007. This is a particularly good summary of the ADF’s logistic intent (which remains current in 2018) presented by a NATO equivalent OF 7-ranked senior Air Force officer who was a previous Chief of Joint Logistics (CJLOG), the ADF’s integrated tri-service national logistic command.
22. Readers who are interested in the current Australian OF7 CJLOG’s strategic intent are referred to: *Defence Logistics Enterprise Strategy 2016-2021*, JLOG publication, Canberra December 2016.
23. Land Warfare Doctrine LWD 4-0 *Logistics*, 2018, this is the capstone Australian Army logistic doctrine governing logistics at formation level and below. It is an open access document available via the Australian Department of Defence internet site for free download.