Reducing the logistic footprint

Applying to French land forces a program of cuts related to the logistic footprint is an attractive idea. *"Reduce the logistic footprint"*[1] is one of the major axis for *US Army* transformation. Starting from organization and equipment tailored to the cold war strategic concept, it should now adapt to 21st century crisis management.

The US Army considers it as a vital necessity and therefore dedicates resources in line with its finance and innovation capacities. But reducing the logistic footprint appears under very different terms in the French case. This is due first to frugality characterizing its forces and second because of their narrower freedom of action.

After analyzing American issues and their specificity, we will first see the conditions ruling any reduction of combat service support of an expeditionary force. Then we will review the reasons leading to consider that, **up to a foreseeable future of 15 to 20 years, there would be no significant changes in the way to sustain a deployed land force.**

It is even likely that mechanization and robotics development, air mobility as well as the mandatory drastic management of rare and expensive resources tend to increase the proportion of CSS[2] to combat. In the same time and notwithstanding the preceding, the portion of deployed logistics compared to upstream logistics may decrease.

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A solution to find?

Enthusiasm for the word "footprint" is not innocent, logistics is often considered as a vulnerability as well as a costly and personnel greedy activity. Anyone can dream of forces systems freed from logistic links operating in complete autonomy. But it would be very healthy **to consider logistics as an efficiency factor rather than a constraint.**

Logistic Footprint

Our American allies use this word to mean combat service support inherent to their armored and mechanized formations. These are pre-positioned on potential cold war operations theaters (Europe, Korea). Their own stocks constitute permanent logistic bases capable to accommodate mass reinforcements and, not to forget, forces followers, especially families, living abroad with American standards.

For the *US Army*, ***"Reduce the logistic footprint"*** means not so much to reduce logistics than to mitigate its inertia. This would be achieved through the employment of assets either easily deployable and mobile on operations theaters or available *from the sea*. This concept aims at **a better allocation of resources thanks to means of transportation of all kinds especially airlifts.** It matches with the

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implementation of less consuming combat equipment. In this respect, lessons learned in IRAQ highlight the shortage of transportation resources although in this matter the US have incomparable assets available...

Extrapolation?

Could we implement the US Model in France? Of course, not. As far as combat service support is concerned, almost everything differs between us: nature of equipment, deployments extents, standards and logistic culture as well as finance capacities.

What remains relevant and applicable to any military force is the necessity to reduce the overall weight of forces, to increase strategic mobility in order to reduce the deployed logistics and improve support productivity.

Even if French forces have a logistic trace much lighter than American forces, they have a large interest to improve in these domains. But this progress will be slow as **no technical or tactical change, being foreseeable up to 15 - 20 years, would be of a nature to radically change the courses of logistic action:**

- neither technological revolution nor equipment programs able to generate significantly more frugal, reliable and consistent equipments;
- no means of transportation efficient enough capable to sustain durably and reliably a critical flow of resources and services (A 400 M ?[3]);
- few logistics in-house investment programs enabling efficiency gains for combat service support units.

To convince ourselves, we will review the foreseeable evolutions of logistics consumption and the impact of new conditions of engagement, the possibilities provided by new ways of management and for transportation of resources and services.

Impact of technological evolutions

Notwithstanding technological developments leading to consider reducing the logistic footprint, **the requirements of a western mechanized army are still growing** denying then any decrease of the logistic weigh up to a foreseeable future i.e. 15 to 20 years.

POL Support

Diminishing the vehicles fuel consumption seems to be a first avenue of research. The significant developments achieved regarding uniqueness of employed fuel as well as consumptions strictly speaking, enable a reduction of POL support burden. As far as conceptual design is concerned, our equipment technology even for the most recent pieces is at least ten years old. The Army is operating its equipment 25 years and even more after refurbishment. Subsequently, its related lightening will appear only **when new generations of equipment are commonly used.**

Equipment Support

Ammunition

In this domain, one of the more important in terms of volume and weight especially for peace enforcement phases, several ways are possible. First of all, the technological approach through **improvement of ammunition power and accurateness.** Artillery shells with sub-ammunition OGRE type, laser-guided shells will no doubt generate a significant lightening of Field Arty ammo (Class V supplies). Let us remember that Field Arty is a high consumer of transportation assets. High tech ammunition is characterized by a high cost[4]. This would then mechanically and surely limit their quantity. Packaging as well as fire & transportation conditions generate more constraints than ordinary ammunition. The final impact in terms of lightening is then likely to be minimal.

The significant decrease of unit basic loads and stocks to be held will reduce volumes to be lifted and managed. On operation theater, the force shall always have stocks of days of supply at least equal to the duration of re-supply from the homeland. In this area, **expectations for diminishing the logistic weight** are relatively high but they do not belong to the logistician but really to the force commander who states stocks to be held, thresholds to be kept and subsequently risks to be taken.

Maintenance

Selection of equipment has a major impact on support volume. Deploying a single family of vehicles lightens and optimizes combat service support. It provides gains for specialist jobs, for stocks of spare parts, for carrying different sets of tools. However, considering missions and tasks to be carried out, several types of equipment may be needed, requiring then support adapted to each of them. Due to a threshold[5] effect, implementation of various pieces of equipment, even in limited quantities, will significantly load down maintenance. **The main improvement in terms of maintenance lies in materiel "maintainability".** What is this about? Architecture of modern equipment favors an organization enabling a quick change of the faulty sub-system with minimal dismantling and tools. This will result in an increase of the number of workshop trucks equipped with spare parts lots at battalion maintenance teams and even at DISCOMs[6].

The faulty sub-systems are then repaired on site or forwarded to organizations at the rear of the operation area. Flows will consequently grow.

1 In English in the original text.
2 Combat Service Support.
3 Translator's note: future airlift carrier.
4 A terminal-guided Krasnopol shell costs about 25 times more than an usual shell.
5 Threshold effect: strictly needed deployment to sustain a type of materiel.
6 Division Support Command.

Medical support

Medical support is really the dimensioning factor. Although an accrued protection of the fighting soldier and a lesser exposure to the enemy's fire are diminishing the casualties and subsequently medical support to be deployed on the theater, however, in this domain, there is few space to contemplate a lightening.

The soldier's protection is realized either by wearing successfully proven ballistic protections or by vehicle protection. These may be part of maneuver, combat support or combat service support forces. Fielding radio-guided armament, emphasizing battlefield automation, improvement of remote sensors are also avenues of progress to mitigate these risks.

French principles are known as forward medicalization and early casualty evacuation. To comply with, the whole logistic health chain requires a lot of medical and aerial resources. **We cannot choose to overlook this issue.** Peak treatment of simultaneous losses (up to 20 heavy casualties) will not contribute to a significant diminution of the logistic footprint.

Manpower support

Napoléon wrote: "the soldier marches frequently, fights sometimes but eats every day". Whatever progresses have been achieved, **basic needs regarding water and food cannot be reduced.** Current conflicts demonstrate that these needs are increasing endlessly or at least should be better taken into account.
Implementation of "modules 150"[7] loads significantly down the logistic burden. For a single company, 3 KC20 containers are requested to carry only the necessary for living on the ground.
The whole environment in means of communication, daily life weighs more and more in the overall logistic flows.
This requirement is a strong constraint, in particular when the force settles down durably. It is however demanded that daily needs are met in terms of quality and quantity.

Impact of courses of action

Current conflicts, fights in gaps, urban areas and simultaneity of various courses of action require performing equipment and a number of well equipped personnel. Dissemination of units, asymmetrical fight are looked for mostly by a rustic enemy ill- equipped but having a strong willingness. This would require that our forces, composed most frequently of very different units, are adequately supported.

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Three blocks war

Current operations will involve simultaneously all aspects of an engagement. That means forces coercion, violence control and assistance to populations as presented by General Krulak from the *US Marine Corps (USMC)* under the expression of *"three block war"*.
Concurrence of operations will force the logistician to satisfy various needs. This will not enable him to optimize is resources with the highest profit. He should in the same time forward ammunition and humanitarian assistance, support an operation of nationals evacuation, supply a population with water while re-establishing energy supply.

Combats in urban areas

Most operations such as *"Operation Iraqi Freedom"* will take place in urban areas. This trend can only increase as demonstrated by demographical surveys. Supplies will be difficult and require **numerous and protected assets** accompanied by a strong escort. Units should be allocated an **important basic load** increasing then their logistic footprint.
Recent examples are frequent especially during the Iraqi conflict when armor and helicopters units run short of fuel due to attacks on convoys. Needs of troops likely to fight this kind of battle are even more important: ammunition consumption is considerable, human losses peaks require a tailored medical support. **Supply is more complex** due to fragmented spaces and accrued vulnerabilities.
To materialize the war goals, soldiers shall occupy the ground and be to the population contact in order to be better accepted. This permanence on the ground and the weight of public opinions impose an efficient deployment as close as possible of the medical chain in order to protect better soldiers "life and so troops" morale.

Medias weight

Operations are and will be more and more covered by the medias; since the first Gulf war and what was called the **CNN effect**, all medias are present on operations theaters and broadcast pictures in

7 Translator's note: module 150: a set of equipment (tents, beds...) for 150 soldiers.

loops. Taking them into account from the beginning of the operations is then required.
Distributing water or food in front of TV cameras, care provided to the populations, treatment of prisoners of war have major impacts. It is then of primary importance in relation to end state to be achieved to bring all our attention and the needed logistic assets while supporting deployed units.
Logistics would then see its missions significantly grow in variety as well as in volume of moved goods.

Ways of progress

Towards a *supply chain*

Structurally operational logistics encompasses very different domains: transportation & supply, maintenance, medical support, manpower support POL[8] support and finally infrastructure engineering. Each CSS specific domain manages its supplies, sourcing, benefits from its own budget and is deployed on the full depth of the disposition.
Efforts could for instance focus on a **central purchasing agency.** It would have the merit of a global vision on the whole inventory and then try to standardize the pieces of equipment.
Considering all these domains, it would be useful to develop the concept of *supply chain management* thus adapted to joint military imperatives.
We should then be heading towards a **global common-user joint logistics.** Attachment of logistic elements to battalions/squadrons is counter-productive and does not allow to optimize the assets which should still decrease... How can we imagine general support mission with resources being disseminated in battalions/squadrons in a private logistic concept?
A survey of employment frequency for CSS units demonstrates that the OPEX[9] rotation rate is much higher for these units. Subsequently **encompassing the whole of logistic assets under a single command** is necessary in order to optimize all CSS system whether in overseas operations or on the homeland.

Doctrine

The concept of pulled flows can lighten the logistic burden. Before 1990, stocks were allocated to the forces and mechanically delivered. Today deliveries are arranged on request only. According to planned actions, to command-specified minimum stocks levels, battalions order what they need. **We are then going from "just in time" to "just enough".**
The battalion requirements condition the logistic chain. Acquisition assets will provide a precise map of belligerents and their assets. We can then specify the basic load of engaged units which will carry only what they need. CSS units will then be permanently informed on stocks status, situation evolution, future needs and will then be in a position to anticipate demands and deliver in due time, the just required quantity of supplies.
Research for targeted effects will enable the combined-arms commander to specify the most accurately the requirements for future actions. **Unit basic load will be tailored to the precise needs.** This will free vectors and resources then providing CSS units with a better capacity to react.

Battlespace digitization

Main evolutions will be the outcome of battlespace digitalization which would necessarily include CSS units. The lowest equipment level will indeed condition the efficiency of the whole chain.
In this domain, a large coherence effort is to be achieved.

Equipping all Army logistic units with a performing information system would enable a **better reactivity of logistics:** a more accurate knowledge of the needs, an improved capability of anticipation, a permanent awareness of stocks status regarding quality and quantity. These will be significant progress factors to be effective with real allocation of equipment.
As long as these obstacles are not passed, digitization contribution will not respond to the hopes and evolution of logistic systems will then be minimal.

8 Petrol, oil, lubricants.
9 OPEX: opération extérieure: overseas (or abroad) operational deployment.

An imagination effort should be made to develop other doctrines, other processes, to make best use of the possibilities offered by new technologies. This implies to be more pro-active and to be in a position to use all last technological advances despite their high cost. The missions of the Army are not divided into operational functions which are all required for the success of our arms. Existing financial constraints are determinant in the build up of our Army and the preparation of the future. Sharing allocations between logistics and tactics should not responding to budget constraints but to the missions and to our equipment technology. Meanwhile we should not forget the invariants being the soldiers with all factors enabling them to live and fight.
Aiming at reducing the logistic footprint cannot be just the custom of the day, this concept goes by the diminution of forces demands and subsequently of the nature of missions which generates technocratic threshold effects.
Specialization of European nations is a potential source of savings. However, this source can be exploited only by the existence of a strong political will, beginning then European Defense.