

Doctrine and Simulation

Giving another Youth to an Old Married Couple!

To think about the contribution of simulation to the benefit of doctrine is not a new or easy thing to do. In fact, if the simulation assets exist and provide today results that are less and less superficial and questionable, the reference to doctrine is still spoilt by a touch of mistrust and a proclivity towards intellectualism.

Furthermore, for a great deal of soldiers, a doctrine that would be generated by totally virtual engagements would be spoilt by an original crippling sin as far as its validity is concerned!

It is true that the term of doctrine is very generic and encompassing. It is however not useless to recall that it is a living process that links three types of activities: doctrinal research, elaboration or formalization of the employment of forces and lessons learnt. It encompasses a very large range of studies and documents pertaining to notions of tactical concepts, or to the organization and the operation of command and control systems, to the employment of units or the implementation of systems. These documents are issued for **two permanent purposes: teaching in schools and in training centers and implementation during operations and exercises.**

Up till now simulation was essentially used for instruction and training or operational preparation. The support to research and experimentation lied on operational research whose contributions one might rightfully revitalize. This communication is aiming at showing that, under certain conditions, **nowadays simulation can and must constitute a pertinent tool of research and of doctrinal elaboration.**

After rapidly examining its advantages and limits, we will detail the requirements and the aims it must fulfill in order to stress, above all, its conditions and modalities.

BY MAJOR GENERAL (RET) JEAN-MARC DE GIULI

Simulation: advantages and limits

Reconcile users with the tools

We have **two still remaining requirements:** reconcile doctrinal reflection with operational action, in the same way as we need to reconcile doctrinal reflection with the use of simulation. Naturally, the best simulation lies in engagements and their lessons: the lessons learnt process. But if one cannot wish war, one should on the other hand increase the efforts to reproduce its realities in the most possible concrete manner. This is one of the objectives of the simulation applications that have been fielded in most schools or training centers.

More and more user-friendly tools for operational personnel

Indeed it is this deployment and this audience of such centers that constitute the best arguments in favor of a broader usage. Everyone has been able to notice, individually

or collectively, the considerable added value that one draws from a stay or from an operational preparation session in a **center computerized** to this end.

An instrument for the transformation

It now constitutes one of the indispensable assets of the **new transformation concept** and of its development and experimentation triptych: concepts or new ideas, development or their concrete translation into systems or courses of action and procedures, experimentations or validation in laboratories or on the field of these creations. But these tools can and must implement more and more sophisticated data and parameters whether technical (weapons systems performances, protection, vulnerability, management of flows of information) or psychological (individual and collective behaviors, persuasion actions within the framework of negotiations, pertinence of the communication messages content, etc.).

Requirements and aims

Indeed, requirements change and multiply themselves, although one can still draw **several general outlines**.

A new challenge: better face complexity

There is no need to speak endlessly about the essential nature of engagements in asymmetrical situations during which the commitment of forces is aimed at reaching an end state of return to stability and confidence at the end of a stabilization phase of a variable duration during which we will have to act for the benefit of the population and against hostile factions, sometimes with high intensity, whilst mastering the information battle.

Complexity will also come from the specific environment that will now be the favored location of present and future confrontations, i.e. **built-up areas**, an environment characterized by the necessity of carrying out the action in its 4 dimensions (plan of the city, its superstructures, its underground spaces, its human environment, this latter one being divided into hostile, neutral, or favorable).

Complexity will also come from the **integration of the joint** nature, even from ministerial inter-agencies nature, as from the Bn task force tactical level and even at the company team one.

But this inventory does not push forward the requirements definition. Above all, facing complexity consists in **knowing and being able of giving coherence** to actions whose certain objectives and methods can be antinomial or in arranging things so that the end aim or the modalities of an action are not jeopardized by those of another action that is also essential. In concrete terms, to illustrate this, how is it possible to fight against an insurrection without jeopardizing the support of population or ensuring that the assistance to populations does not in the end benefit to the development of the insurrection. There is no doubt that this new approach of the operational decision issue requires a **more detailed study of the dilemmas¹** that should enable their modeling, their analysis and their confrontation thanks to an adapted simulation.

A permanent concern: usefully integrate technological developments

Simulation is the first laboratory tool aiming at developing and integrating new technologies into the systems, today amongst them is usually quoted in the first place **miniaturization, automation and digitization of operational information**. These techniques offer new capabilities and reinforce the previous capabilities but this is only valid if the operational structures, the decision making processes, the employment of assets are reviewed so that, in the end, technological gains are not jeopardized by doctrine



ADJ. Jean-Raphaël DRAHI/SIRPA TERRE

archaisms. There is always an ever increasing interaction between doctrine and the development of systems; the air-land sphere concept and its final objectives, the operational gains, will become a concrete reality only thanks to a joint technical-doctrinal process relying upon simulation tools.

Conceive doctrines that enable success at the lowest cost due to the performance optimization of the above-quoted technological developments.

Thus, transformation has a twofold doctrinal and technological aspect. It goes through the experimentation of new operational structures, and new operating modes. In fact, it is the case of **switching from a maneuver based on the management of assets to a maneuver of effects**, which would lead to a change from a pyramidal hierarchical organization to a network organization (information-centering or information-centered operations) linking the triptych of players of the system: the executives, the sensors, the effects providers.

The validation of these new concepts should be supplemented by the validation of new spatial and temporal standards, followed by the tuning of new procedures or new courses of action.

Employment conditions of simulation assets for doctrine studies

The commonly recognized idea during exercises carried out in the CP Battle Command Training Center according to which we could use the presently fielded applications tools (BBS followed by SCIPPIO) to validate the pertinence of courses of action remains valid but it was rather more pertaining to the conditions and to the modalities of the unfolding of the activity in question² than to the capability of the said tools.

Their employment remains possible but along very specific employment modalities requiring to **fall within experimental dedicated campaigns rather than the framework of exercises**. These campaigns could be organized by abiding to the following **few basic principles**:

❑ **precisely define the objectives** (domain and level to be studied, expected results) **and the specifications of the experimentation** (environment, modalities including the human and material assets to be

deployed). As it is often the case during an activity of that kind, this phase is often as crucial and important as it is neglected; therefore a great part of the quality of the obtained results will depend upon the strictness and the accuracy with which it has been conducted;

- ❑ **elaborate a tactical scenario** enabling to precisely highlight the searched experimentation objectives;
- ❑ dispose, even develop, and **use the software tools most adapted** to the nature and to the level of the studies to be carried out (there is no need to want to study the operational action at the company-team level with SCIPPIO, whilst the use of JANUS enables to go down to the squad and patrol levels);
- ❑ **the purpose of the experimentation must fall within the most realistic possible time-space framework**, especially as far as the friendly/enemy assets to be opposed and the delays of the envisaged action are concerned (a high intensity combat action even limited to a block of houses might take several hours);
- ❑ **ensure an absolute quality and performance of the human assets**, especially those located at the pivot of technique and tactics in order to obtain the best possible or the purest “observation signal” and limit as much as possible the background noises or interferences likely to jeopardize the quality of the findings and the pertinence of conclusions;
- ❑ **repeat and replay the simulation games** by only changing one parameter at a time (quantity and quality of equipment, layout, course of action, procedure). It must be noticed that the phase of analysis of results, beyond a perfect knowledge of the limits of the used models, requires the coming into play of operational research techniques in order to ensure the statistical validity of such or such indicators likely to give some elements of answer.

All this said, it still remains true that the **present systems remain notoriously insufficient and imperfect to simulate situations pertaining to the transition-normalization phase** that is characterized by the importance of immaterial effects over

multiple players and the employment of assets falling under the operational information domain, *PSYOPS*, *CIMIC* or “ACM”³. Thus, it would also be indispensable to develop more adapted tools for these types of issues. Several years ago, the **SPECTRUM application**, despite its limitations, its constraints and its imperfections brought a first answer that would have deserved to be further studied, improved and developed. In this respect, the **behavior simulation tools** are now **an interesting track to adapt and develop**.

These few ideas do not pretend to be original or innovative. They are indeed on their way to be achieved within the framework of

the technical-operational laboratory that the French Procurement Agency and the Army Staff will set up to validate and concretize the concept of the air-land operational sphere, but this is another debate.

1 This notion is not as new as it appears to be since one of the first tactical dilemma principles is that of “concentration/dispersion” of the employment or the allocation of assets.

2 Multiplicity of objectives, important numbers of players and intermediates of a various quality interfering between the simulation tool and the obtained result from the tested system (in this case the large unit CP).

3 Civil-Military Actions - CIMIC.



35° RI

Contrary to one might think, following the widening of the engagement fields of the land forces leading them to act within complex environments due to the major part taken by immaterial effects difficult to measure, **doctrine research and development could take the greatest benefit from simulation tools**. The need is real, minds are ready and receptive for it, the modalities are within our reach as long as one is ready to cultivate and fulfill the few basic principles already quoted by **focusing on the three following aspects**.

The first one lies upon the **imagination and the realism of the scenarios**, reality often exceeds fiction in terms of originality or complexity. The second one deals with the **appointment and training of quality technical-tactical operators**. The last one favors the **compliance to a concern for pragmatism and progressiveness** as far as the fine tuning and the achievement of tools are concerned in order not to fall into the trap of the tool for the tool or the complex gasworks, whose main interest in one case or the other focuses on the instrument itself, thanks to a wonderful *power point* presentation, detrimental to the results it enables to obtain.