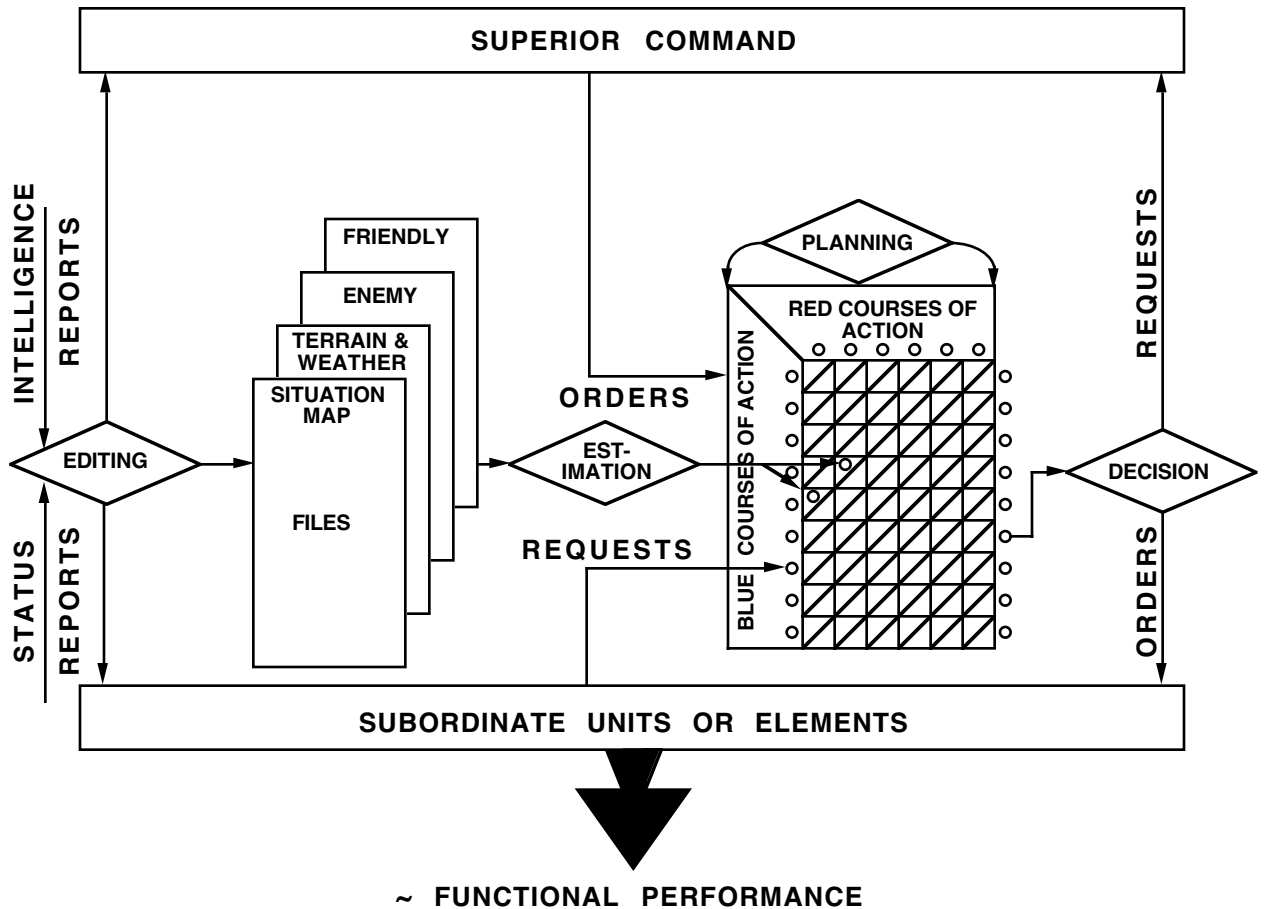


TACWAR # 33  
7 Dec. 71

**INTELLIGENCE FUNCTION**

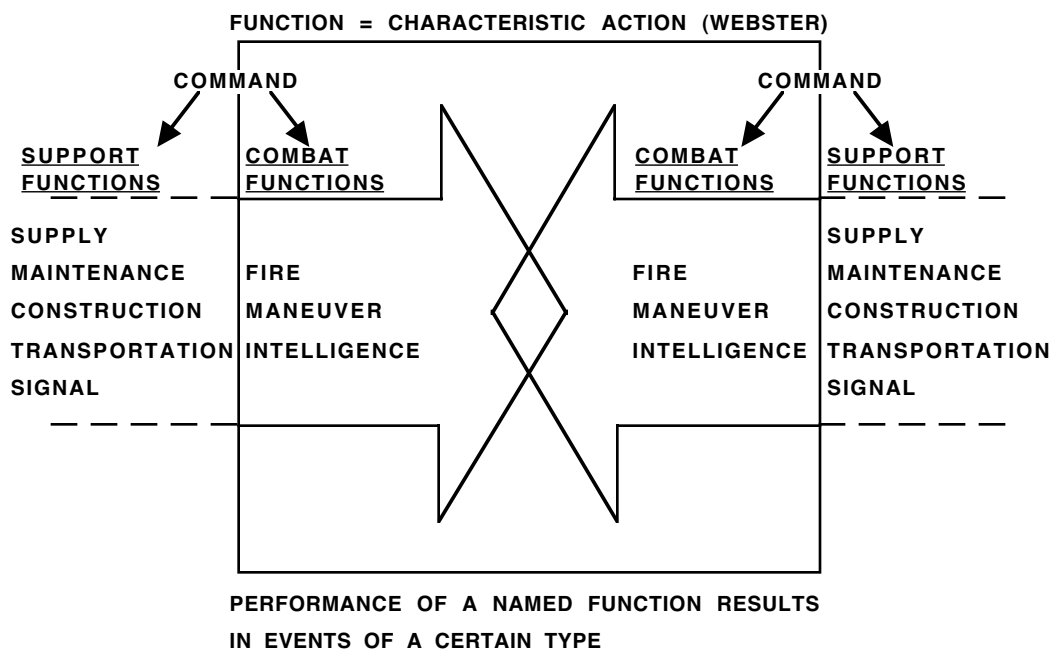
HCBrown

1. Intelligence should be viewed as that activity which fills two of the four information files of Command (Terrain and Weather, Enemy, Friendly, and Situation Map as shown in Figure 1) and positions the enemy elements and units on the Situation Map. The filling of these files is essentially different from that of the Friendly File (filled by Status Reports) because one source of information, Terrain and Weather, is passive, and the other, Enemy, is purposefully non-cooperative.



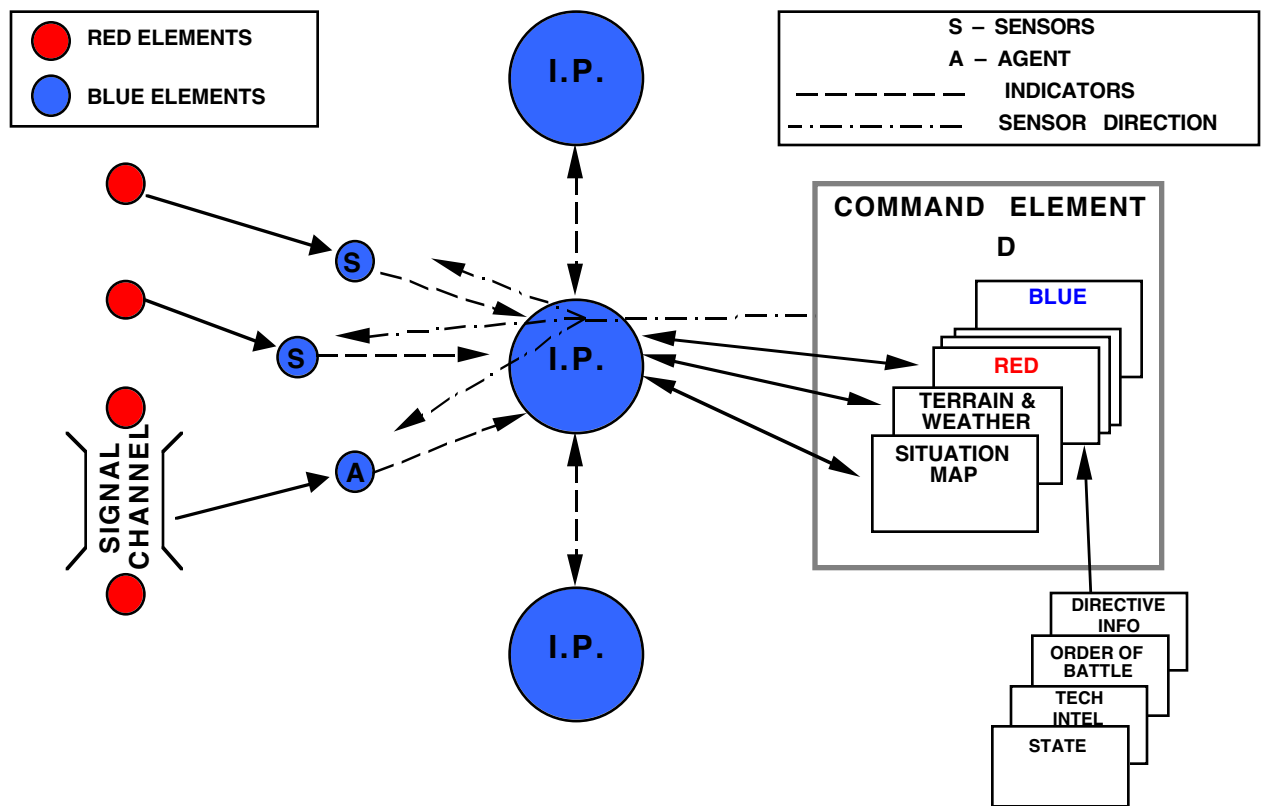
*Figure 1. Command Continuously Plans & Triggers Functional Performance.*

2. The files serve as an information source for the data necessary to estimate the profitability of alternative courses of action -- plans for the possible employment of friendly assets. It is actually necessary to plan for all functions, including the five listed support functions shown in Figure 2. For these latter, the terrain and weather information, at least, is important. However, this paper will concentrate on the information necessary to enable decisions concerning the three adversary functions -- Fire, Maneuver, and Intelligence. These latter decisions find their expression in three different sorts of outgoing orders: Fire Direction, Maneuver Direction concerns the positioning and movement of (Fire and) Maneuver Units, and Sensor Direction concerns the positioning, movement, and operation of Intelligence (sensor) units.



*Figure 2. The Battle is Decided by Functional Performance.*

3. Every command (decision making) element is pictured in Figure 3 as having a paired intelligence element (intelligence processor). The distinction may be somewhat artificial in the case of, say, a Platoon Leader, but is adopted to distinguish the various processes. These pairs are linked to other pairs according to an overall command structure established by the current allocation of forces. Certain of the intelligence elements may directly command subordinate intelligence elements; in other instance, their directions are passed down via command channels in the form of an Intelligence Annex to orders. In addition, intelligence elements ordinarily have wide latitude in transmission of intelligence reports to each other outside normal command channels.



*Figure 3. An Intelligence Processor Model*

4. Target acquisition is in many instances spoken of as if it were the whole of Intelligence, or at least a thing apart from other intelligence activities. It does occupy a somewhat special niche, because targets, if they are to be attacked at all, often require prompt action before they deteriorate. The Target Acquisition-Fire Direction chain should be regarded as simply a part of the Intelligence-Command processes, but one having some special communication channels and some established priority for processing. Post-strike assessment of the results of Fire is also an Intelligence function; it is performed if the information to be gained is expected to establish the value of some proposed course of action, such as to re-strike the same target rather than shifting fires.

5. Intelligence processors participate in the command (actually "staff") processes and function, illustrated in Figure 3, utilizing their special skills to interpret the available information regarding the enemy into the form of enemy "capabilities", intelligence annexes, periodic intelligence reports, etc. In performing these duties they are functioning like any other General or Special Staff Officer with a particular area of expertise. For simplification we assign these processes and functions to

Command, and consider Intelligence to be limited to the extraction and filing of information concerning the Enemy, Terrain, and Weather.

6. The information to be extracted concerns enemy elements and their groupings. For Fire Direction purposes we regard the elements as potential targets, and are interested in the groupings which may present composite targets or furnish an occasion for the attack of Surface Area Targets. For Maneuver Direction purposes we regard the elements as functional potentials affecting our own possible courses of action; the groupings of interest are those that can cooperate in resistance to any proposed friendly course of action or in execution of some possible enemy course of action. There is also an interest in the groupings established by the current enemy command structure, since a maneuver may be planned to take advantage of the difficulties of coordination between neighboring units. For Sensor direction we are especially interested in identification of enemy elements, since this contributes materially to the process of Inference <sup>1</sup>. A similar contribution is made by information concerning the command structure of the enemy.

Of particular interest, of course, is any information concerning the enemy's intended strategy, both military and political and the human factors (morale, physical condition, skill -- especially of command elements) affecting his potential.

7. The files should be pictured as having a certain format which organizes the incoming bits of information for editing, storage, and retrieval. Each bit of information should be accompanied by a date-time group and a credibility rating.

The Situation Map format establishes the space-time relationship of those entities described in other files which have been identified and located, and also any intelligence reports which have a location but have not yet led to an identification. In structure it is simply a space-time four-dimensional coordinate system which can furnish locator information, to any precision justified, for the items of information contained in the other files (including friendly). In use it should be a master register which can call up and present to any specified level of detail the contents of some space-time volume. (Note: The concept Situation Map is generalized -- it may be an actual map marked up in crayon, a mental image in the corner of the commander's brain, or a data processing register with access to the files and driving some display system.)

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<sup>1</sup> See Para. 8.

The "Enemy" file should be visualized as divided into three parts -- Order of Battle, Capability, and Potential. The Order of Battle file is formatted to hold a complete inventory of enemy elements, distinguished by individual identification, and grouped according to the current enemy command structure. This file is of particular utility in the Intelligence process of Inference and the Intelligence function of Sensor Direction.

The Capability file (analogous to "Technical Intelligence" files) is formatted to hold a complete catalog of the types of enemy elements and all information as to those performance characteristics which determine the functional capability of each type element.

Note that the two files just discussed can be filled to some extent prior to the occurrence of any specific tactical situation, and they do not change with the movement or change in state of the elements contained therein.

The Potential file, on the other hand, is filled with information the current state <sup>2</sup> of elements and those attributes of the immediate local environment which bear on the suitability of the element as a target or its near-term functional potential.

The above division of files of "Enemy" information furnishes some insight as to proper performance of the Editing process which determines what bits of information are placed in the files, and what are forwarded to other Intelligence processors. Order of Battle and Capability information is usable at all echelons, reasonably limited in volume, and rather slowly-changing. Thus it should be in every body's files, or at least readily available thereto. potential information, on the other hand, is voluminous, detailed, and rapidly-decaying. it should be transmitted to, and filed by, only those command elements that can use it as a basis for near-term decision. These elements will also use it in preparation of estimates, predictive in nature, which enter into the decision processes of higher command elements.

Intelligence elements are of just two basic types -- Sensors and Intelligence Processors. A sensor performs a process of Surveillance of a certain area (which may vary), either continuously or as ordered, and by a function of Observation extracts certain indications from entities within that area, furnishing these indications to an Intelligence Processor in the form of Sensor reports. The I.P., by a process of inference, transforms these indications into bits of Intelligence, and after Editing, places these bits of Intelligence in the Command Files or forwards them to other Intelligence Processors.

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<sup>2</sup> State - current value of those configuration, location, and performance variables which determine the functional performance of an element, or its vulnerability to Fire.

Some sensors, for instance ground observers, can process the indications into bits of intelligence; others, for instance a camera, have no capability for processing. In the first case it is probably useful to consider the element as a combined Sensor-I.P., but to preserve the distinction between the two functions. Thus the ground observer sees with his eyes, and processes with his brain.

The processor should be regarded as having some sort of Storage for unprocessed indications, and some operating register. Into this register are called selected indications and previously-processed bits of intelligence (perhaps selected for geographic proximity) for the process of Inference. Inference can go sometimes by rules of pure logic (such as the law of excluded middle), but must also depend on rational inference from the "doctrine" ascribed to the enemy, past experience of his operations or inherent military probability. Deception by the enemy is the provision of indications designed to lead to false Inference; concealment is an attempt to deny all indications. The available inferences from any set of indications are greatly increased when some stage of identification is reached. If indications from one specific area infer a type element described in the Capability file, all the characteristics available therein are immediately known. If identification of an individual element or unit is made, the Order of Battle File will furnish information as to its probable neighbors.

The capability of an intelligence processor is determined by the rate at which it can draw inference, the proportion of wrong inferences, and possibly the proportion of ignored correct inferences (?). This can perhaps be translated into the probability that any given bit of correct information will be in the Command files by a given time, and a probable error content of the same files at any given time (?),

8. Sensors are classified according to the type of indications they are capable of observing and reporting. They may vary from an agent or communication intercept means which is capable of obtaining a complete Enemy order to a "sniffer" which detects the presence of gas. The capability of a sensor is dependent on its field of view, scan rate and resolution; its potential is that capability modified by the "target" available and any degradation of its capability by the environment. An analytic model of a sensor should be capable of expressing the probability that some specified indication will be observed and reported by some specified time, the probability obviously being affected by the listed performance parameters and the "target" environment.

9. Sensor direction is an extremely important Command process . As described in Chapter 9, AOC, once a matrix of possible opposing courses of action is formed and the process of Estimation starts, it is possible to place at least relative values on the possession of certain bits of intelligence. If these bits are not already in the files, or are out-dated or of dubious credibility, sensors can be concentrated to obtain them. uniform surveillance of the battlefield is as faulty in concept as random distribution of Fire; though it is probably unwise to concentrate surveillance to quite the extent that Fire is because of the enemy's capability for deception or surprise.

