

TACWAR # 142
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THE NATURE OF A TACTICAL TARGET¹

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- 1. The list of target characteristics proposed by Col. Riccioni matches ours as follows.

<u>RICCIONI</u>	<u>ANATOMY OF COMBAT</u>
Vulnerability	Vulnerability
Recuperability } Importance } Time Relevance }Value
Recce-ability	Signature
Political Acceptability	Scenario Political Constraints

The approach described by Col. Riccioni is identical to that we have programmed into the Capability Model (CAPMOD) in Figure 1. For this model we use an input POTENTIAL target list from which any politically unacceptable (according to scenario) targets have been screened. Target signatures (detection and identification characteristics) are used on a probabilistic basis to establish an ACQUIRED target list. We then go through a Fire Direction process, based on considerations of both VULNERABILITY and VALUE to determine a DESIGNATED target list against which the available inventory of weapons is applied. Finally, the model can feed back changes in POTENTIAL target list, based on post-strike reconnaissance (again a function of Signature).

Our characteristic of VALUE incorporates Riccioni's three characteristics of Recuperability, Importance, and Time Relevance in the following way:

¹ See ATTACHMENT A: Paper entitled *THE NATURE OF A TACTICAL TARGET*, by Col. E. E. Riccioni, USAF/WADC.

$$V_{R_j} = \left[(\Delta\pi_c | R_j) \Delta t_R + R \right]_t^2$$

The Value (V) of damaging a specified Red target (R_j) is determined by the damage done to his Combat Potential ($\Delta\pi_c | R_j$), given R_j , during the time required to Repair or Replace the target (Δt_R) plus the effort required for repair (R). However, this value must be limited to that achieved in some period of interest to Blue, prior to time t_2 (as noted in Col. Riccioni's comment on the tank factory). Further, the value depends in part on the enemy reaction - i.e., he may elect not to invest the necessary effort in repair, saving the amount R but losing the capability for the entire period until t_2 . For this reason, we calculate the value both ways and take the lesser value achievable within the time limits, thus giving credit for the enemy decision most adverse to our interests.

2. Following are further detailed comments keyed to Col. Riccioni's text:

A. Vulnerability. The considerations of finding the target and of its potential movement are covered in our assignment of a standard deviation of weapon accuracy:

The considerations of suitability of available weapons for the intended target is taken care of by our factor L (Lethality) which varies for each target/weapon combination.

We consider aircraft attrition not under the heading of Vulnerability, but in the overall mission equation. If the predicted loss in aircraft value exceeds the expected gain from target attack, CAPMOD does not "fly" the sortie. Attrition predictions are made with the RISK Model (or sometimes manually) and input to CAPMOD.

B. Recuperability. The factors listed enter into R , the repair effort, and Δt_R , the repair time. Redundancy of target type can affect the value assigned, as in the case of supply trucks.

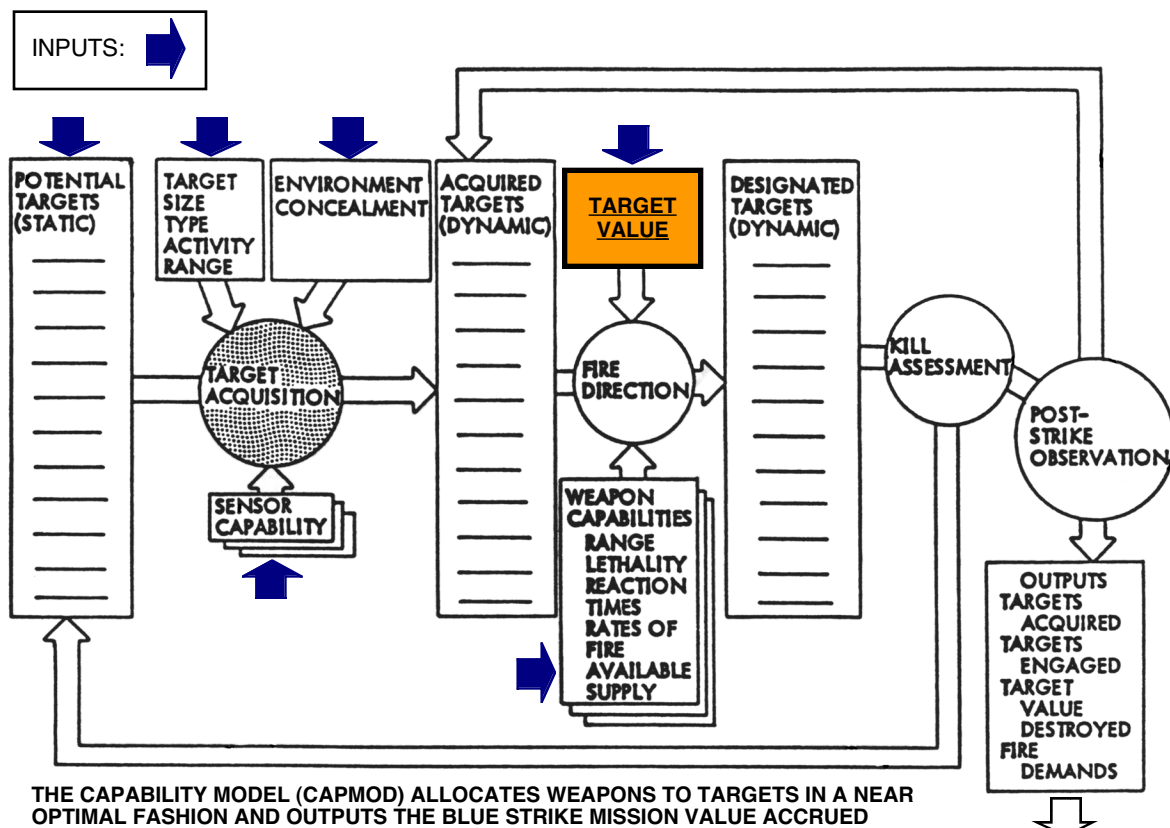
C. Importance. Our methods of valuing do not extend to the psychological effects (as cited for city destruction). These are undoubtedly important, but we have found no satisfactory method for quantification. In all other respects, however, our approach to target importance seems compatible.

D. Time Relevance. Discussed above.

E. Recce-ability. Discussed above. It should be noted, however, that we are really pretty lacking in accurate data as to target SIGNATURES. TARGET ACQUISITION remains THE subject most deserving of thorough analysis.

F. Political Acceptability. As noted, this is indeed an "On-Off" switch. Hopefully this extends only to preclusion of certain targets, rather than political selection among those targets not excluded.

The "reciprocal question" of target protection is also recognized. We assume that investment in dispersal, hardening, and active defense is appropriate up to the point where that investment matches the basic value of the target (the penalty for its destruction). These principles should be applied in constructing a Target List for input to CAPMOD - we must give the enemy credit for rational conduct within whatever constraints can be placed on him.



$$\sum P_{V_l} V_l^B$$

Figure 1. THE CAPABILITY MODEL - (CAPMOD)

ATTACHMENT A
TACWAR 142**THE NATURE OF A TACTICAL TARGET**

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A great deal of weaponeering of targets is done in the military world. This is usually done by a quick-look categorization of the intended object for attack; and the number of bombs, rockets, sorties, etc., is evaluated. For some purposes this approach is justified; for other purposes it becomes very inadequate. Especially is this inadequate in the final stages of making a war plan. By a war plan is meant not the usual contingency plan or option for action, but rather a plan for battle, a plan to achieve a military result in a campaign. An attempt is made to clarify this thing called a "TARGET".

Before a candidate item receives its proper classification as a TARGET suitable for attack, a number of its characteristics must be reviewed in an absolute sense and some by comparison to others. Then a rationale decision can be made in ordnance and sortie allocation. The characteristics are not mutually exclusive and the ordering is not necessarily related to importance.

1. Vulnerability
2. Recuperability
3. Importance
4. Time Relevance
5. Recce-ability
6. Political Acceptability

1. Vulnerability. For a potential target to be vulnerable, it must be subject to being seen* and attacked. One cannot fruitfully attack what can't be seen. (If it is a stationary target, this restriction may soon be lifted, but in general it still stands.) If the target is capable of movement, or if it is ephemeral, it usually becomes less vulnerable than if it were stationary.

* By some sensor type.

It must be relatively easy to destroy the target with the ordnance available. When steel truss bridges with heavy concrete abutments were faced by "dumb bombs", they were not very vulnerable; e.g., the Than Hoa Bridge. With the advent of heavy laser guided weapons, the bridge became much more vulnerable.

The intended target must not be highly lethal to the attacker. If an unacceptable attrition must be accepted to suitably damage or destroy a target, it cannot be classified as a target. Hence, one should not weaponize a target without making some assessment of the expected losses. The defenses in the immediate vicinity of the target, as well as the surrounding area defenses, are a vital factor in its classification. One may not win a war by refraining from an attack, but one may (will) lose it less rapidly by refraining from an excessively costly attack.

2. Recuperability. If a target is damaged or destroyed, yet is capable of rapid reconstruction, it becomes less acceptable as a target. Thus the ability of a target to reconstitute itself or to be repaired (in terms of man-hours, skills, materials, and time) becomes a vital consideration. Can redundancy nullify the attack on a particular target? If so, this factor must be weighed in sortie allocation.

3. Importance. The importance of a target is related to its undisturbed ability to foster the enemy's war effort. Destruction of a museum may be important to the enemy in a historical or cultural sense, but destruction of his officers' clubs (with officers) and command and control centers would reduce his war effort much more. By this definition, a city might not be a target. If the will of the people is stiffened to weld them into concerted action more effective than before the bombing, it becomes counter-productive to bomb cities. This usually happens with conventional weapons. An overall measure of the target's importance, i.e., its ability (contribution) to aid the war effort must be made.

If the target is one of relatively few similar targets, and if the continued existence of these targets is required for other target types to exist, then these few targets may be extremely important (the "weaklink" concept). A chemical factory producing chemical vital to the petroleum industry constitutes an example.

4. Time Relevance. Closely allied to "importance" is the time relevance of destroying a target. To commit to attacking a tank factory while planning for a five-day war is inane. In a stabilized six-month to three-year war, however, attacking tank factory might

be extremely sensible. The time-relevance factor must be weighed, quantified, and entered into the evaluation of target priorities.

5. Recce-ability. This is the capability of the attacker to determine if his action has accomplished his aims. This addresses the attacker's requirement to perform prestrike and poststrike recce of the target, and the characteristics of the target its environment that make definitive recce difficult.

6. Political Acceptability. The political acceptability of a target is always an "on-off" (yes-no) switch. The "yes" constraint must be met else it is not a target, no matter how vulnerable, important, or attractive it appears. On the other hand, the political acceptability of a given target can be influenced by the progress of the conflict.

Items 1 through 6 are all subfactors which must be weighed simultaneously for each potential target. Note that the hierarchical ranking of a target becomes established as a fall-out to the investigation of its acceptability as a target. Only when the above exercise has been effected may a potential object for attack receive its proper classification as a military TARGET.

(ESD-ITI)

As an afterthought, it becomes rational to ask a companion reciprocal question in any rational plan for war, i.e.:

"Given insight and knowledge into this object called a TARGET, what defensive actions should properly be taken by military and national planners to suppress the vulnerability of their country to the enemy?"

This offers a whole new domain for proper analysis, which analysis must be done in any national planning. Immediate questions are the proper placement (underground?) of future nuclear power plants, the dispersion, mobility, and redundancy of systems, etc. This work, these results will come.

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