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EXECUTIVE DECISION MAKING PROCESS DURING COMBAT: A PRETEST OF THE CONTENT ANALYSIS SCHEMA

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HQ AMCCOM
AMSMC-PCW-HA
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Prepared By:

HORIZONS TECHNOLOGY, INC.
3990 Ruffin Road
San Diego, CA 92123-1826

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Dr. Michael Drillings ARI/PERI-BR
Alexandria, VA 22333-5600

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9 Hanassi St. P.O.Box 97 Zikhron Ya'akov 30900, Tel.06-396818 ,06-397085

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Executive Decision Making Processes During Combat: A Pretest of the Content Analysis Schema

Dr. Nehemia Geva

April 1988

THE ISRAELI INSTITUTE FOR MILITAY STUDIES
9 Hanassi st. P.O.Box 97 Zikhron Ya'akov
ISRAEL 30900

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Introduction

The present paper describes an initial attempt to employ the tentative schema for the content analysis of decisions of military commanders under combat situations.

The preliminary schema (enclosed as Appendix A) consists of a list of variables that are perceived to affect the underlying processes of combat related decisions made by military commanders at the division and brigade levels. The list of the variables that was extracted from the current literature on decision making and from probing military experts represents the following factors:

a. Environmental/situational parameters of the battlefield (e.g. the context in which the decision is embedded).

b. Intra-personal parameters of information processes (e.g. how the decision makers obtain, select, organize the information to generate alternatives and choose among them).

c. Inter-personal parameters of the situation which describe the interaction of individuals involved in the decision (e.g. utilization of staff).

d. Organizational parameters account for the informal and formal setup in which the decision makers operate (e.g. hierarchy in chain of command, norms of communication, etc.).

The main purpose of the present analysis is to explore the applicability and relevance of the previously proposed schema to several instances of of decision making in a highly complex combat situation. The instances were extracted from occurrences during the first days of of the "Yom Kippur War" (October 1973), at the Suez canal region in the Sinai frontier. These questions were characterized by a relative autonomy of their decision makers at the investigated level (division and brigade commanders). Furthermore, the amount of fog and friction that existed in this particular battlefield may pose a stronger challenge to the proposed analysis schema, and thereby may provide a better test case than other combat situations.

The information serving as the preliminary data base for the present analysis was collected from direct reports by a division commander who played a major role in these events, a battalion commander in the same division, and a summary of events issued by the editors of "Defense Update International". An attempt was made that most of the facts utilized in the analysis would appear in more than one of these sources. (In addition, the fact that one of the P.I.'s of the study participated as a company commander during the analyzed events helped to gain insight to some of the events).

Despite all of these precautions, the investigators are aware of the problems inherent in the analysis of self reported historical data. Part of the problem will be attenuated in the near future when radio communication transcripts and field reports will be utilized to corroborate the analysis. Yet, it is important to note that since the work is focused on processes rather than justifying the contents of decisions that were made, some of the potential biases were

circumscribed.

The definition of the decisional question

One of the first issues that had to be resolved prior to conducting the analysis was the definition of the focal unit of analysis - i.e. what are the boundaries of a particular decision.

According to the Webster's New Collegiate Dictionary a decision is "to arrive at a solution that ends uncertainty or dispute". This definition is compatible with the various terms used in the social sciences literature that appeared in the literature review that we conducted (for a reference list see Appendix B to the progress report).

Thus, in most cases of decision analyses, the decision is considered as a discrete unit. In other words, a single question or uncertainty is raised and has to be dealt with until it is resolved. The problem is that in many cases, and especially on the battlefield, the situation is an unfolding complex saga in which it is difficult to establish or define what is certain and what is uncertain. In fact, the situation can be characterized as a continuous series of decisions or sub-decisions, in which each resolution feeds as an input to other decisions.

Hence, for the purpose of evaluating the proposed analysis schema we included as decision instances "simple" cases in which it was relatively easy to identify the decision question as an independent occurrence, and instances in which the decision question is unfolding with the activities in the battle.

The four pre-test cases used in our analysis represent typical

samples of commanders' decision making during combat command and control. Basically, the main themes of the decisions are the assignments (and changes in the assignments) of divisional sub-units to combat missions.

All the cases in this analysis are characterized by high levels of uncertainty. Yet, they portray different aspects of evolving situational pressures, and situational complexity. That is, the later cases are more combat critical than the prior cases, the decision makers are more tired with the passage of time, the quality of information available decreases, etc. Since all the instances pertain to the same division commander (commanding an armour division), the analysis maintains as a constant factors such as leadership style or particular decision-making style. Hence, the analysis can highlight the "net" effects of the situational differences along the decision processes.

Finally, the following cases represent various levels of processing on a global continuum ranging from spontaneous decisions made with almost no contribution of other individuals, to more reflective processes in which other officers were involved in different degrees.

<u>The Decision Cases</u>

a. The ambush on the northern road (Oct. 7).

b. What to do with the shattered brigade. (Oct. 7).

c. Planning the first counterattack. (Oct. 8).

d. A sequence of decisions during the divisional counterattack on October 8.

The background Script

The combats activities analyzed hereafter took place during the second and third days of the Yom Kippur War (Oct. 7-8 1973) following the Egyptian surprise attack along the Suez canal, in which they succeeded in crossing the canal over to the Israeli side.

From the Israeli perspective, the fighting at this stage can be described as an attempt to block the invasion and stabilize a defensive line from which a massive counterattack would be launched, in order to subsequently return the fighting to the other side of the canal.

It should be emphasized that the fighting of the first 24 to 48 hours was conducted mostly by units of the regular army, while many of the reserve units were still in the process of being mobilized.

The present analysis deals with one of these reserve armour divisions; The division arrived at the fighting zone during the second day of the war. Though a reserve division, its C.O., General A., as well as many of his staff and subordinate officers were regular army officers. Most of them with extensive combat experience (from the Six Days war, and some with previous experience). The commanding core of the division and brigades were experienced in working together.

Characteristics of the decision maker:

General A. was a highly motivated armour officer with combat experience which started in the 1948 Israeli war of independence.

Decision Problem #1

The context

The 7th of October. Dawn. The brigades of the division are moving from the central part of Israel to the combats in Sinai. They are under the command of the deputy division commander.

General A., the division commander, after a night driving arrives with his G-3 officer, his Adjutant, and a driver at the territorial H.Q. of Northern Sector of the Suez. General A. receives a briefing about the first 24 hours of war from the local brigade commander, and from General M. a specially assigned GHQ commanding officer to the area.

General A is now assigned by GHQ the responsibility of entire Northern sector of canal.

General A. is exposed to numerous details about Egyptians bridgeheads, surrounded Israeli outposts, about crashed armour battalion in the area, and about the locations and activities of the armour brigade commanded by Col. G. This brigade was the only force at this time to help the surrounded outposts and to block the penetration of Egyptian forces.

While the briefing is conducted in a distance of about 25 KM from the canal, the noises of combat are not heard.

General A. decides that he must meet brigade commander G. in order to gain a better comprehension of the battlefield.

On the way to Colonel G., General A. receives on his radio a message from Colonel N. (one of his brigade commanders) that one of his armour battalions ("alpha") already embarked from the carriers and is moving on tracks to the front; The second battalion reached

the embarkation point and was attacked from an ambush. Two tanks and one APC were hit, and they have casualties.

Following the report General A. continued to monitor the brigade's network. Thus, he heard that Col. N. directed his "alpha" battalion to turn around and attack the ambush.

General A. calls Col. N. and interferes against the plan. The division commander wants that the attack on the ambush will be conducted by incoming units, rather than returning a battalion approaching the front. Yet, when Col. N. provides more information about size of the ambush and its location, General A. accepts the brigadier's solution. However he adds orders to his division deputy to direct all other incoming units toward a different route to the front.

<u>The decisional problem</u> - "What" and "How" to deal with the blockade (ambush) on the road that prevents the arrival of the divisional forces ?

The participants in the decision and their characteristics: -

The main characters in this decision were General A. the division commander, and colonel N. the brigade commander.

Both officers were experienced armour officers. Motivation wise, both commanders were relatively unabsorbed in the current situation at the northern canal sector. Yet, General A. was more in tune with the situation, had a broader picture of the battlefield, and had a better sense of the urgency for the reinforcement. On the other hand, Colonel N. was more in tune with the situation at the blockade. While both commanders were surrounded with elements of their staff, they and only they were involved in the decision.

Location of decision makers:

General A. was driving in a command car to meet brigade commander G. He was about 15 KM from the front line fighting, and about 10 KM from the blocking ambush.

Brigade commander N. was on location of the blocking ambush. In his vicinity was the Deputy Division Commander who was in charge of the movement of the division to the front. However, the latter did not participate in the decision making.

Naturally these distances affected the amount of available information and its salience as reflected later in the information processing section.

Social setting:

As mentioned previously both commanders were accompanied by elements of their staff. General A.'s staff consisted of his operation officer, and his adjutant - all of them seated in the command car. Colonel N. had with him most of the brigade staff in their mobile tactical HQ.

The two participants of the decision used radio as means of communication.

Types of pressure:

a. **time:** The decisions (both by Colonel N. and by General A.) were made swiftly by the commanders as a reactions to a situational development, i.e. the ambush. The reports did not indicate critical time pressures. However, it is clear from the communications that General A. was more sensitive to the urgency to overcome the obstacle.

b. **organizational pressure:** At the time of the decision General A. was not pressed by superior HQs. Furthermore, there was no

pressure from the subordinate level, since Colonel N. came up with an operational decision to deal with the problem.

c. combat consequences: The main consequence of the decision was the extent of delay in the arrival time of the divisional units to the canal combat areas. Thus, we are dealing with an indirect consequence for the divisional unit, and with more direct consequences for the entire sector.

In sum, the decision cannot be characterized as being embedded in, or generating severe pressures on the decision makers. (This is also evident by the fact that General A. did not continue to devote his full attention in an extensive monitoring of this combat).

Information processing:

The reports suggest very gross information processing by General A. Mainly the application of general FM procedures in cases of road blockades. There is no indication of information search beyond the global information about the ambush conveyed in the initial report by Colonel N.. Thus, probably, the decision was made under assumed information that can be generated along schematic processing of experienced decision makers.

The amount of information available by Colonel N. is not that small, and is illustrated by the fact that Colonel N. (with similar training to General A.) came up with a different plan.

As Colonel N. provides General A. with additional information about the situation (size of ambush and facts about the terrain), in order to explain his decision, no further checks of this information was performed.

Thus, between the two decision alternatives (one planned by Colonel N. on the basis of local information; and one raised by

General A. on the basis of regular F.M. tactics), General A. accepted the brigade's plan. However, the division commander added another element that reflects his broader perspective. This element dealt with the order to detour other forces to a by-passing route.

It is of interest that Colonel N. did not convey to his superior commander full details of the execution plan. Nor did General A. ask for such details. This (in addition to the previously mentioned fact that General A. did not attend closely to the development of this particular combat) may serve as another indication that the event was not considered as critical by both commanders. From the division perspective this attitude can be understood in the context of the overload of information pertaining to the events along the canal outposts.

Another point to note is the fact that relevant information about the battle (e.g. lack of infantry forces, immobility of the tanks on the dune turf) arrived at the the divisional HQ only about two hours after the fighting started. This information led General A to a decision to assign an unattached infantry platoon on 4 APCs to help Colonel N. This decision can be viewed as an improvisation based on a need (expressed by the brigade), and on an unplanned opportunity that came up. During this hasty sub-decision that was made by the division commander, no effort was made to check information about the original assignment of the infantry platoon, or the whereabouts of its mother unit. Such information search would have happened if the situation was not perceived as stressful.

Outcomes - About 100 Egyptian commandos were killed and their commander captured in a three hours of combat.

Decision Problem #2

The context

The 7th October, early morning. The event consists of the meeting between General A. with Colonel G., the commander of the armour brigade that participated in the defense of the northern canal sector during the first phase of the Egyptian offense. Most of the brigade's tanks were hit, and the brigade is partially dispersed. Actually the brigade held under direct command only 9 tanks.

As mentioned earlier, the meeting was initiated by General A. in order to obtain a direct picture of "what" and "why" things had happened the way they did.

General A. hears the story of the surprise, the splitting of forces, and their hurried run to the front. He hears about the extensive number of casualties, and about the attempts to dislodge and reorganize forces.

While the main issue is learning from mistakes of the current activities, the question that had to be dealt immediately is outlined below.

The decisional problem - What to do with the brigade?

The participants in the decision:

The main characters in this decision are General A. (described earlier) and Colonel G. the armoured brigade commander (an experienced armour career officer).

General A.'s main motivation in this event was to learn from a first hand witness about the essence of the situation, and the conditions of the front brigade. In other words, to use the meeting for information processing that would enable him to extract

operational consequences for further fighting.

For the exhausted and sleepless Colonel G. the meeting was more of a morale boost as he could finally see the long awaited reinforcement being materialized.

Location of decision makers:

The meeting was conducted on the APC that served as Colonel. G.'s THQ. The carrier was crowded with other members of the brigade's staff. They were situated on a dune hill that was quite removed from the direct battlefield (about 10 KM), and they just hear the battlefield noises.

Social setting:

It was a face-to-face group meeting of a the division commander and battle-exhausted commanders of the brigade. In the near vicinity the group was audienced by crews of a few tanks which were part of the THQ of the brigade.

Every one was attentive to the words and reactions of the focal person, General A.

Types of pressures:

a. **time:** While time is always an important factor in a battlefield, the reports of the meeting do not convey a critical sense of immediate urgency.

b. **Organizational pressures:** At this particular situation the main organizational pressure was an implicit pressure coming from the subordinate level. It was a pressure stemming from the expectations of the brigade officers that the arrival of a higher commander with reinforcement will ease off the grave situation.

c. **Combat consequences:** The reports on the combat difficulties (e.g. rate of casualties, surrounded outposts, etc.) of the first

hours of war served as a continuous pressing factor for the commanders. Yet, as the meeting was conducted under a perception that a reorganization phase begins, it may be cautiously assumed that no specific immediate combat consequences were impinging on the decision maker.

To sum, The main pressures of this particular decision were related to the attempt to clear uncertainties about the situation by gaining more information (to an extent of a cognitive overload), and to the role of a division commander to provide at least psychological reinforcement to a battle that had worn the commanders of the brigade.

Information processing:

The processing of information relevant to the specific decisional question was embedded in a more general question related to the comprehension of the entire battlefield at this particular canal sector.

This processing required multiple dimensions that simultaneously compete for cognitive capacity. The dimensions consisted of attempts to organize conclusions and evaluations of how the Israeli forces fought, and how the enemy performed, and conclusions and evaluations about subsequent alternatives for both the Israeli and the Egyptian forces.

The processing of these general questions (embedding the specific focal decision of this analysis) involved searching for much information that was transmitted indeed presented in an unofficial and unsystematic way by Colonel G. and his THQ staff. Parts of the information were repetitive of facts that General A. had heard in the previous briefing at the regional HQ. Yet, in a way the information

was non-redundant, since it served to ratify previous information that was hard to accept (since it negated previous knowledge of Israeli-Arab military encounters).

Amidst of these complex processes came up the immediate question of what to do with the brigade.

General A. reports two basic alternatives that came to his mind:
(1) disperse the brigade and assign its scattered tanks to the incoming brigades.
(2) maintain the structure of the brigade and give them a chance to recuperate.

Within the second alternative a sub-variation was developed:
(2.a.) assigning a second line mission to the brigade.

The key information elements that were involved in the processing of the alternatives were as follows:

- The brigade was left with few operating tanks.
- The brigade has low morale (this was a speculation based on the high rate of casualties, rather than on direct evidence.)
- The brigade demonstrated, so far, high fighting spirit (an element that was supported by the fact that the brigade's command did not ask to be dislodged from the front line).

Several points should be made with regard to these elements that reportedly were considered by General A. First, it is easy in retrospect to detect a potential inconsistency between the two latter information elements. Second, the above elements demonstrate the ease with which schematic suppositions about the "normal" relationships between variables (casualties and morale) enter the process with a full status of "hard" information. Thirdly, it is possible to see the

emergence of a decision alternative as a consequence of processing one element of information (i.e. the dependency of the alternative 2.a. on the last information element). In other words, the actual processing of decisions consists of sequential emergence of alternatives rather than generating an exhaustive list of alternatives and then evaluating all of them.

The entire decision process was made by General A. on the basis of the information he obtained from Colonel N.

Outcomes: Alternative 2.a. was chosen. The brigade eventually recuperated and continued its fighting as a contact unit. At the end of that day (Oct. 8) the brigade included two battalions with 25 tanks each. The brigade was reinforced later in the day with an armour battalion from the mechanized infantry brigade.

Decision #3

The Context

The 8th of October at 0130. General A. returned from a command conference at the central HQ of the Southern Command at Um Hashiva where he received general orders about his division's mission in the counterattack planned for the next morning (Oct. 8). General A. thereby conducts a planning and command meeting at the THQ of the division. The divisional offensive mission consisted of attacking enemy forces from the point "K" southward. The original mission specifically indicated not to approach the immediate area of the canal.

The decisional problem - How to conduct the divisional attack ?

The participants in the decision:

The consolidation of the general plan developed earlier in the command conference was executed by the division commander, with the participation a small element of the division staff: the intelligence officer, the operation officer and the signal officer. The orders were issued and discussed in the presence of two brigade commanders (Colonel G., Colonel N.), while the third brigade commanderr (Col. K.) was absent. General M, who was assigned the responsibility of the sector from Point "K" and northward, was also present.

Location: The meeting was conducted at THQ of the division which was situated at the lateral road (about 30 KM east of the canal and from the main concurrent combat activities).

Social setting:

In this face-to-face interaction the limited staff actually served as audience to relatively simple planning, which was based on

limited updated information about the enemy and basic information about the approachment of the divisional brigades.

The orders and briefings were given to the present two brigade commanders face to face, while to Colonel K. on the radio.

Types of pressure:

time: As it was necessary for the divisional units to start their movement to the attack area at about 0400, the actual time for planning and issuing orders for a divisional attack was quite limited.

Organizational pressures: Since during the planning stage there were communication problems with the Southern GHQ, the divisional planning team did not face pressures from superordinate levels. Yet, situation contained a certain level of pressure due to the fact that not all the division forces were already at appropriate starting locations. Furthermore, the divisional HQ was unaware of the specific whereabouts of one of the brigade commanders (Colonel K.) and his units.

Combat consequences: These pressures were inherent in the situation mainly via the acquired knowledge of results of the battle so far (e.g. rate of casualties, surrounded outposts calling for reinforcement, etc.), which increased pressures for fast accomplishments in, what was perceived to be, a very difficult battle.

To sum, the main pressures at this stage consisted of a relative lack of time to iron and coordinate the details of the divisional plan on the one hand, and to collect intelligence on the enemy on the other hand.

Information Processing:

The main information that was searched for and that was utilized concurrently related to the location and level of organization of the divisional units. This information clearly determined the assignment of the missions to the brigades. Hence, the choice to employ Colonel K.'s brigade as a divisional reserve was based primarily on the fact that Colonel K. was not present in the divisional conference, and that the GHQ were not certain about his units level of preparation for the attack. In this regard the choice was less influenced by the facts that the two other brigades already participated in battles (G.'s brigade defensive battles, and M.'s fighting the road blockade).

Additional information that was salient in the process was the already learned facts about the effectiveness of the anti-tank weapons employed by the Egyptians, and the problematic mobility of tanks in parts of the targeted terrain. This information was employed during the briefings to the commanders and mainly in the specification not to approach too close (3 KMs) to the canal.

Outcomes:

At about 0400 the divisional THQ and the brigades started the approach to their positions. The attack was supposed to begin at 0800.

Decision Problem #4

From 0400 on the 8th of Oct. the command of the division is totally encompassed in command and control of an intensive battle - the first, and unsuccessful counterattack along the canal. At this time the Egyptians are busy strengthen their holds along their accomplished bridgeheads.

Many consecutive decisions are made as part of the attempt to execute the plan. Yet, it is difficult and in a way meaningless to disect the process into discrete decisions, as one decision feeds as input into the next one. It is this case that represents the second type of combat decisions outlined in the introduction - the "muddling through".

The context

The plan called for a divisional attack from the north to the south along the canal, yet without getting too close to it. Two brigades, commanded by Colonels N. and G., were to approach westward to point "K" and then proceed southward with the attack. Colonel K's brigade was issued to remain in reserve at the east flank.

Several changes occurred along the execution as illustrated below in conjunction with their antecedent factors:

a. Changes of intentions in the Southern Command HQ which suggested as parts of the mission to approach engulfed outposts and potentially employing Egyptian bridges to cross the canal westward.

b. Brigade N' while approaching the starting point "K" near the canal was entangled in a combat that prevented them from further moving to the south. This forced a change in which brigade K (minus one battalion, assigned as reserve) was order to replace Brigade N assault to the south.

c. Difficulties in the assault southward and pressures from HQ to proceed with the attack, necessitated to use part of N's brigade (two of the three battalions, as one remained in the northern flank, near point "K").

d. A pull-out of Israeli neighboring forces (Division S) by SCHQ, at the southern flank of General A., and an Egyptian attack from this area forced the division commander to commit the brigade commanded by K to the south.

e. The resistance of strong Egyptian forces, the shortage in air and artillery support, and jamming of the communication networks, made it difficult to concert a two brigade divisional attacks, but rather to employ one armour battalion at a given assault.

As night approached it became evident that the attack was unsuccessful, and the pushing of the enemy to enlarge their bridgeheads was hardly stopped by moves of the divisional units.

The decisional problem - As mentioned earlier this case exemplifies an on going series of consecutive control and command decision with the goal of accomplishing the division's mission.

The participants in the decision

The main characters of this case are the division commander, General A. and his nucleus operation staff (mainly his G-3) which monitored the battlefield from the crowded Command Post APC.

Location of the decision makers

One of the most crucial aspects in command and control of a developing complex battle of any military unit, and more so as we deal with a large military outfit is the location of the commander. While it is beyond the scope of this paper to discuss all the

elements relevant to the choice ofthe location of the Command Post, it is sufficient to mention just a few points.

The location should enable the commander to obtain (in real time) the most relevant information to the critical elements of the battle, and thereby provide him the possibility to affect the battle. The location should provide ample conditions for relatively undisturbed information processing (e.g. not under direct enemy fire). And finally, the location should portray the leadership of the commander, thus affecting the fighting spirit of his units.

In order to fulfill these (and additional requirement) an offensive act (as the one currently analyzed) require the Command Post to be mobile, shifting from one place to another as demanded by the changing situation.

An analysis of the movement of the division Command Post which was composed of 5 APCs is compatible with the above analysis.

At 0400 the CP began its move to point "V", a dune hill overlooking Point "K", where the attacking brigades were to begin their assault southward. Subsequently as the brigades headed south the division CP moved initially between the two brigades, and then moved to point "Z", an observation point overlooking the battleground of two of his brigades. As complications arouse General A. drove to confer with his two brigade commanders near the front line. Further battlefield development led the CP to point "H".

In all these locations the division commander could see most of the actions of his two leading brigades, however he had no observation on the actions of the brigade commanded by Colonel K.

The current emphasis of the ability to observe the action is made, since in many cases communication networks were jammed or non-

operative. Hence, eye-sight became a critical means to control the battle.

During one phase of the battle (point "Z") the CP was under heavy artillery barrage which resulted with some direct hits. Hence, increasing the already problematic communication network, and directly influencing the decision process relating to the activities of Colonel K.

Social setting

The actual members of the decision team were mainly the commander as the central member, and as supporting members: his deputy, and the G3. This support became more significant as the situation became more demanding. In such cases the delegation of tasks became necessary both as providing operational suggestions, and as monitoring and coordinating lateral communications with neighboring forces. However, it should be acknowledged that the communications lines in the 1973 APC did not allow too many options.

Most of the communication during decision making relied on radio communication, (even among the division staff in the CP). The difficulty inherent in this means is expressed by the fact that when the opportunity raised for face to face briefing (e.g. the one held by General A. and his two brigade commanders) they all felt that it was a relief to hear each other and the battle noises, rather than listening to the radio networks.

The types of pressures:

Time: The attempt to concert a divisional attack, in which armour attack was to be coordinated with air and artillery support, and for which the initial planning was very sketchy, increased the needs for "on the spot" monitoring and control. As activities

departed from the original plan time pressures increased as coordination of subordinate unit became more difficult.

Organizational pressures: Several aspects of organizational pressures operated simultaneously. In terms of superordinate organizational pressures the Southern Command Head Quarters (SCHQ) introduced pressure in the following manner:

a. Changes or modification of the original mission.

b. Their search for information about the current battlefield (the reports indicate a case in which General A. explicitly demanded SCHQ to stop communicating with him, since he was busy commanding his units).

Additional pressures came from the subordinate level - as expressed in their repeated requests for air and artillery support, and for reinforcement.

Combat consequences: This pressure was built up as the battlefield picture portrayed a theme that "nothing is going right" and the rate of casualties and loses became very high. In other words, the fate of entire division offensive became more and more questionable.

This case included also additional pressing elements that were related directly to the well being of the command personnel. The command suffered in addition to the physical fatigue, due to the continuous effort, also sheer physical threat by the way of the the artillery barrage on the command post.

The latter case represents vividly the culmination of the three types of pressure, because during this barrage, brigade commander K. reported desperate conditions in the southern flank of the division

(organizational pressure) that required fast decision (time pressure), while at the same time the division commanders are under direct physical threat.

Finally all these pressures were part of a foggy situation full of uncertainties.

Information processing:

One of the main features of the command and control activities during this long day was the search for reliable information.

The information sought related to location of units, about their accomplishments, and naturally, information about the enemy - its location, its force and its activities.

Most of the information search was done by the commander, with occasional help by the staff (mainly in relation to SCHQ and/or neighboring forces).

The amount of comprehensive information was scarce, partly, because the potential providers of the information were occupied leading their own busy units. In addition, the reliance on radio communication increased havoc as the networks were jammed by electronic devices by enemy, and by mechanical failures; In addition, the networks were overcrowded by division units, and by SCHQ requests for information.

One can state that because of uncertainty commanders wanted and tried to utilize all the potential incoming information. However, the fragmentation of the information and its unorganized flow led to several phenomena.

First, it was difficult to fully organize and integrate all the available information. For example, the "neglect" to give greater significance to the fact that the neighboring forces of division S

are pulling out from the area.
(Part of this neglect can be attributed to the fact that this move was not compatible with regular F.M.'s schemas).

Another example illustrating the problems in integrating and organizing the information is the attempt to conduct a face to face meeting between General A. and his two brigade commanders G., and N. amidst the heavy fighting in order to form a mutual comprehensive picture of the battlefield and issue ad-hoc specific plans. The meeting was terminated just as it began, since the heavy fighting demanded the brigade commanders to leave to their units.

Secondly, the flow of fragmented and disorganized information while decisions had to be made, did not leave much time or possibility for reliability and validity checks of this information, nor to explore its consistency. One noted exception is the case in which the inconsistency between two sources of information was too great to ignore. In that particular case information portraying the enemy's break down in General A.'s sector arrived from SCHQ, and was checked immediately by inquiring Colonel G. about his view which then disconfirmed the HQ report.

Thirdly, the need for fast decisions diminished the elaborations of the information and hence the number of the alternatives that were generated. Thus, when the brigade commanded by Colonel N. faced difficulties at Point "K", General A. reacted by assigning Colonel K.'s brigade to the attack, ignoring that by this he remained with no reserve forces. It was his G-3 that suggested to leave one of Colonel K.'s battalion as a reserve.

From the analysis of the material it seems that while the greater portion of the time was devoted to obtaining and transmitting

the fragmented information, minimal time was set for deeper processing of the data.

In retrospect the processing may be illustrated almost as an S - R situation, in which a report comes in, and almost automatically the first appropriate response that comes to mind is executed. Alternatives were not raised beyond the first satisficing one that was generated (and was usually quite schematic). Occasionally, alternatives were replaced when subordinate commanders suggested improved variations of the alternative, or indicated that the raised alternative was unfeasible. For example when Colonel K. asked for reinforcement, he naturally asked for his battalion that was deployed with Colonel G. His suggestion was accepted and ordered by General A. Consequently, Colonel G. suggested to send another battalion, since the suggested one was busy in battle. Considerations of unity of forces were not part of this decision. Yet, eventually this factor was found to increase subsequent control problems.

Outcomes

The counterattack failed and the division hardly succeeded at nightfall to stabilize a defense line about 10 KM from the canal. From a starting force of 170 tanks 100 tanks were left. The division paid with a long list of casualties including battalion commanders and many other officers and crew.

Table 1 summarizes the main features of the four cases along the different parameters of the analysis schema.

Insert Table 1 about here

Summary

As the main purpose of this presentation was to explore the applicability of the proposed analysis schema, the basic question to be reviewed in this section are the following:

a. Did the suggested parameters differentiate among various instances of battlefield decision making in a meaningful way ?

b. Did the cases suggest additional parameters or indicate that several parameters are irrelevant ?

The rest of this section will be devoted to answering these questions by reviewing the previously suggested parameters as they were reflected in the four decision cases.

1. The background script, and the decisional question.

The analysis indicated that the nature of the decisional question is tightly related to its general background or context. We found that quite often it is difficult do disect a decision problem into a discrete event that can be analyzed independently of additional related activities (cognitive, social and organizational). Quite arbitrarilly, the four cases represent several types of decisions which vary in terms of their complex association to other on going activities.

The first case reflects a decision with regard to controlling decisions made by of a sub-unit of the division. The second case portrays a relative simple event of a "discrete" question - "what to do with an almost shattered brigade". Yet, even this "discrete" decision was embedded in a more general question of how to react to an "unforeseen" battle situation.

Case # 3 represent a typical "pre-battle" decision activity - planning a divisional attack. The fourth case illustrates a typical battlefield situation of successive interlinked decisions which all relate to the general question of how to execute a complex division assault mission.

It is plausible that subsequent development of this research project will generate a framework for mapping significant categories of combat decisions.

2. Participants in the decision

The second parameter of analysis involves the characterization of the individuals involved in the decision-making process.

In all the reviewed cases (and as expected by anyone familiar with military settings) the focal person in the decision making is the commander. However, we found it important to include as participants additional members. These members can be divided into two categories that may occasionally overlap. The first category includes members of the commander's staff (his deputy, the operation officer, signal officer, etc.). The second category consists of either subordinate commanding officers of sub-units or commanders at higher levels.

In the cases analyzed here, the contribution of these two types of participants was characterized by providing information or by raising alternatives.

In case #2 the brigade commander provided information, and the decision was made solely by the commander of the division.

In case #1 a brigade commander provided both the information and the decision alternative, which then was elaborated by the division commander. Case # 3 illustrates a case in which information and

alternatives were discussed between the division commander and a nucleus of his staff. Finally, the fourth case reflects a situation in which commanders of the sub-units and SCHQ provided information and alternatives that were further processed for decisions basically by the division commander, with some help of his nucleus staff.

It should be noted that since all the reviewed cases dealt with a single division commanders, no attempt was made to analyze decisional styles in relation to distinguishing characteristics of the commander.

3. Location of the decision maker

The location and the physical setting of the division commander (the main decision maker), differed in the four reviewed cases. In the first case he was on route in his command-car and quite removed from the target decision area. In the second case the decision was made on the crowded APC of Colonel G.'s command post. On the third case he was stationed on the ground, quite removed from the fighting, in order to plan the next day's attack. The fourth case illustrates the mobility of the command post, constantly shifting from one place to another, in an attempt to monitor the battlefield from close distances. With the exception of the first case, the location of the commander reflects a desire to make the decision on the basis of first hand information, acquired by face to face communication, or directly by eyesight impression, rather than by radio communication. The price for this effort was usually operating in relatively inconvenient locations for information processing.

4. Pressures

The three proposed pressure elements were demonstrated at different degrees in each of the analyzed cases.

Time pressure was mostly prevalent in the fourth case, and in a different mode in the third case (the problem of completing the plan of a divisional attack in about one and a half hours).

Organizational pressure from superior levels was a central feature of the fourth case, and relatively unfelt in the other decisions. However, pressures from subordinate levels appeared both in the first, and fourth cases.

The "combat consequences" parameter was the least defined among the pressure parameters. Its a priori definition implied immediate consequences for the current or immediately impending combat of the division. However, the review of the cases revealed that these consequences could be outlined on various dimensions. In a global sense, case #4 had the most severe implications on this parameter, while the second decisional case had the lowest level of this pressure, The other two cases were of intermediate levels of this pressure. One of the options to "scale" this type of pressure was to consider the ability of the decision maker to "correct" or to change the decision if proven to be wrong. However, further work should be devoted to this parameter.

Finally we introduced another pressure element, i.e. the amount of direct physical pressure inherent in the situation. This parameter consisted of physical fatigue and direct physical hazards as being under fire. While the elements of fatigue increase from case #1 to case #4, the decision maker was under direct fire only at one decision point described in the analysis of the fourth case.

Social Setting:

It was already mentioned that the division commander was in most

cases the sole decision maker, employing (at least as reported by him) only minimal help from other members of his staff.
From our analysis it seems, that the main obstructing factor her was the means of communication with the other participants, a point that was already discussed in the context of the location of the decision maker.

The main problem with this parameter is that the raw material that was analyzed did not contain too much information on this topic. Planned interviews with eyewitnesses to these cases will be used to clarify more on this factor.

Information Processing:

The nature and quality of information processing during the decision-making activity depends (besides the attributes of the decision maker, that in this case were constant) on the definition of the decision problem, and on the previously stated situational and social factors.

While some of the actions pertaining to the general framework of information processing may be directly observed (active information search, information transmitted, alternatives raised by decision participants), many more activities have to be indirectly inferred or extracted by self reports of the participants. The latter type pose a problem for an archieval research, and suggest the use of experimental designs.

In general the review of the four cases reveal one of the main characteristics of a battlefield - decision making under high uncertainty.

One of the main activities of the commander in such cases was

information gathering. Among the four cases, the greatest effort to gather information was exhibited in case #4. Interestingly, in case #3 (the planning of the attack) there are no specifications for extensive information gathering.

The two classes of information types that were mostly sought were: location and fighting conditions of own sub-units (sometimes also relating to sub-units of neighboring forces), and information about enemy forces activities.

In most cases no attempts were made to re-evaluate or double-check the information.

A central feature of the transmitted information in the two cases that dealt with direct combats (case #1 and #4) was its fragmentation. This in part was due to the reliance on radio-communication in jammed networks. More importantly, this fact motivated the commander to conduct face-to-face meetings with the sub-unit commanders, in order to get a comprehensive picture (c.f. case #2, and case #4).

Another a-priori parameter of information processing was the generation of decision alternatives. In three of the cases there were indications of more than one alternative of action. In the first case, Colonel N., started to act upon one decision alternative, while General A. preferred another alternative. In the second case, General A. himself vascillated between two alternatives concerning the brigade commanded by G. Finally, during the fighting described in case #4, several alternatives were raised on various occasions. However, only in the second case the alternatives were compared prior to casting the decision. In all other cases, the first raised alternative was adopted as the decision. Normally, other alternatives

emerged subsequently, either when the original alternative was reported unfeasible by the subordinate commander, or when it was perceived as such by a member of the decision-making team.

Outcomes

A review of the four cases reveals that the outcomes of two of the cases met the expectations of the decision makers. In case #1 the brigade was successful of overcoming the ambush, and in case #2 the brigade was successful in maintaining its framework as a fighting brigade. The conjunctive review of case #3 and #4 suggests that the general plan and the execution of the counterattack failed to meet the expectations.

However, at this stage of analysis it cannot be stated what were the relationship between the decisional process and its consequences.

To sum, the present analysis suggest that with several minor modifications, the suggested multiple-dimensional analysis schema is applicable to study the complexities that are involved in the decision making processes of brigade and division commanders during combat. Further analysis of additional sources pertaining to the above cases (personal interviews, radio transcripts, and field operation diaries), and enlarging the sample of cases will lead to the construction of a broad data base. This data base will serve to extract the process model that is relevant to battlefield decision making.

Table 1. Summary Table of the Four Analyzed Cases

	Ambush on Northern Road	Reorganization of Brigade	Planning the Counterattack	Executing the Counterattack
The context	a. On the move to combat position. b. A sub-unit is ambushed.	a. A brigade almost disintegrated. b. Other brigades not yet in place	Division is ordered an offensive mission	a. Division is part of a larger offense. b. Forced changes during combat. c. Stronger resistance by enemy than expected.
The decisional problem.	What to do and How to deal with the ambush?	What to do with the brigade ?	How to conduct the attack ?	Consecutive C² type decisions throughout the divison attack.
Participants in the decision making process.	a. Division Com. A. b. Brigade Com. N.	a. Division Com. A. b. Brigade Com. G.	a. Division Com. A. b. Parts of Div. HQ c. 2 Brigade Coms. (G. & N.) - third not present d. Gen. N. Areal Com.	a. Division Com. A. b. Nucleous staff
Location	a. 10 KM from the event. b. Not under fire, c. Mobile.	a. 10 KM from battlefield. b. Within battle noises.	a. 30 KM from front line. b. Stable (on ground)	a. Command Post APC b. Constantly moving c. Close proximity to battlefield d. Occasionally under fire
Social setting	Process done by radio-communication	a. Face-to-face. b. Near-by audience	a. Face-to-face with 2 subordinates. b. Radio with third. c. Presence of small staff.	a. Mostly by radio. b. Small staff present. c. Occasional face-to-face briefings.
PRESSURES				
Time	Urgency	No immediate urgency	Limited	Intensive time pressure.
Organizational Pressures	None	Expectations from subordinate unit	Uncertainty about other units.	a. Coordination prob. b. Pressures from above (info.) and below (support)
Combat Consequences	Delay to Division Reasiness.	Maintaining or dispersing the brigade	Critical consequences for entire front.	The fate of the Division's offense.

Continued

Information Processing	a. Regular procedure. b. No info. search. c. Choice between 2 alternatives.	a. Searching more formal & informal information. b. Integrating info. with several considerations c. Choice between two alternatives	a. Concurrent search of information. b. Decision affected by absence of one Brig. Commander.	a. Continual search for updated info. b. Action-Reaction type process. c. No time, and no info. for processing.
Outcome	a. Adopting brigade's alternative. b. Plan executed succesfully. c. Opening a route for reinforcement	a. Adopting the brigade's preference, with some variation. b. Brigade remains effective.	Division opens an offensive thrust.	Counterattack fails.

APPENDIX A

A tentative schema for the preliminary content analysis.

1. The background script, and the definition of the decisional question.

2. Definition of the contextual elements (along a time dimension):

    2.1. Location of the decision making:

        2.1.1. Distance from the combat activity.

        2.2.1. Physical setting.

    2.2. Types of pressure in the situation:

        2.2.1. Time.

        2.2.2. Organizational pressures.

        2.2.3. Combat consequences.

    2.3. Social setting:

        2.3.1. Amount of people present in the situation.

        2.3.2. Amount and categories of individuals involved in the decision making process.

        2.3.3. The type of communication employed in the process.

3. Characteristics of the decision makers: rank, position, experience, motivation, etc..

4. Information processing: (The choice of elements listed below was based on their relevance to decisional freezing and unfreezing, mentioned in our conceptual model, and on recent models of information processing in decision making).

5. The dynamic of decision definition.

6. Information gathering:

6.1. Type of information search (in relation to FMs) by different individuals in the situation.

6.2. Amount of information available in the setting in general, and amount used by participants in the situation.

6.3. Proportion of relevant and irrelevant information in the system.

6.4. Reliability and validity checks of the information, (including treatment of inconsistencies).

6.5. Amount (or proportion) of time spent on the various elements in the process.

7. Information interpretation:

7.1. Methods of information interpretation by participants. Essentially, the way new information is incorporated in the knowledge structure of the decision makers, and the potential biases in this sub-process.

7.2. Organization of information - selection, extrapolation, integration, summary, and presentation of the organized product.

8. Generation of alternatives and their evaluation:

8.1. Amount and diversity of alternatives raised and considered by decision makers.

8.2. Methods of evaluation of alternatives, and mainly, the criteria employed in these evaluations.

9. Consequences of the decision. In this regard it is not meant to evaluate the association between characteristics of the decision process with its consequences, but, rather to explore various possibilities of coexistence of the process and its consequences.

APPENDIX B

Preliminary Reference List for the Annotated Bibliography

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