SOVIET STYLE WARGAMES

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I. Introduction

This is a preliminary discussion of what the Soviets taught at the Voroshilov and Frunze academies about the nature of and the methods for conducting wargames. Working with Colonels Jalali and Wardak US analysts of Soviet military issues have been reviewing this subject to see how wargaming in the USSR compares with that in the US. It is clear that the two former colonels in the Afghan army know a great deal about wargaming, more from practical experience in participating in wargames than from formal study of the subject at Soviet schools. This is an attempt to outline their knowledge and start to do comparisons. It may lead to a capability to conduct a full scale Soviet style wargame here in the US. In this way DOD experts and decision makers might learn both the form and style of Soviet wargaming as well as the content of a Soviet style assessment. This could lead to identifying implications of US actions and capabilities based upon conducting Soviet style wargames.

The purpose for conducting a Soviet style wargame is to demonstrate Soviet planning, research, and gaming techniques in action. It is to illustrate Soviet style analysis techniques of the subject used in the game. In addition, it will provide some insight into the likely content of the analysis Soviet war game users might derive from a similar game on the same topic.

In addition to the formal training at the senior military schools, wargaming was one of the activities the Soviets introduced into Afghanistan during their advisory period (1962 - 1979). The purposes of these games were for training, planning, and research. This paper focuses on the role of wargames in support of scientific military study, how the Soviets use wargames, who plays and who controls, where they play them and how they conduct them.

This paper focuses on the development of the role of wargaming in Afghanistan under Soviet advisors, supplemented by information on the theory of wargaming as discussed in Soviet senior military schools. Colonel Wardak attended the Frunze Military Academy and completed the Voroshilov Academy in 1977. Colonel Jalali completed the Frunze Academy in 1980.

In general, the report outlines and where possible provides information related to wargaming on the following subjects:

1. Theory - Role and place of wargames in military science: Their use in the scientific development of military art, their advantages and limitations, appropriateness for use in various situations. (figures 4 and 5) Figure 2 is a depiction of the relationship of the troop control process to the combat (battle) process. The function of wargames is to provide a mechanism for study, test and analysis of this relationship.

2. Uses - and types - Discussion of wargames from different levels and for different purposes:

3. Structure and Contents of wargames:

4. General and specific tasks and responsibilities in a wargame
5. Preparation and conduct of a wargame

II. Soviet Wargaming

Wargaming is a practical step within the Soviet system of scientific investigation of warfare as a phenomena. Sometimes the Soviets use wargames to analyze, test and develop ideas that emerged during training exercises. Or they use games to develop theories imposed by policy decisions, for instance: “Can we actually conduct conventional war or not?” Or “what will we need to conduct a conventional war in a theater”? Or “how large must the advanced detachment be?”

The first step required to develop or initiate a wargame is the directive for its conduct. This directive specifies the content, limitations, constraints, hierarchical level, (tactical, operational or strategic) and purposes of the game. The directive is prepared by the headquarters ordering the wargame. This might be a military district, army, academy, the general staff or other unit. The directive specifies who will provide each type of support for the wargame (such as transportation, logistics, material, personnel, and facilities). The directive establishes a control group to organize and conduct the game, and describes how the group should obtain resources to provide its own support.

The organization phase of the wargame involves setting up the control group, the umpire group and the player teams and establishing their structure and the roles of each participant. The control group is headed by a chief controller who has a deputy and a chief of staff. This team in turn creates the other groups (figure 18). The control group prepares a calendar plan for the conduct of the wargame to show the real and game times (figure 21).

The next step is preparation of the materials needed for the game. These materials may be unique and relate to the purpose. The control team performs this work. The team has members (assistant chief controllers) designated for each functional specialty required for the wargame. Each is responsible for the preparation of the portion of the materials related to his specialty.

The control team includes a detailed area study. This includes the military, economic, social, morale, and political factors in the area of the wargame. The details of interest in the area study are related to the purpose of the game. If the game objective is to study offensive warfare the control team will study terrain and roads etc. using that offensive scenario, but if the objective is related to defensive warfare the study will be conducted in another way. The control team may travel to the area covered by the wargame to get a first hand perspective.

The team develops tables showing the TOE of the units, capabilities of weapons and forces and other similar data. The control team prepares these from reference materials in the headquarters.

The team prepares the place for conducting the wargame. The facilities normally include working rooms such as a room for the chief controller, his deputy, the chief of staff, a large room that doubles as the playing room and a briefing room and rooms for the assistant chiefs for each arm or service. Each team has its own room. The umpires do not have a separate room since they work with the teams. The teams have communications equipment, maps, audio-visual aids and office supplies. (Conspicuously
absent in the Soviet schools or in Afghanistan were modern computers, data handling machinery etc.)

Next, the team prepares the “concept of the operation” for the operations within the game. They write other documents which specify the role and activity of each member of the control group.

The team develops the “initial situation” that will provide the context for and initiate the game and prepares the documents that will provide data to the players about this military situation. This includes a general military situation and the specific situations of the various staff functions such as reconnaissance, logistics, engineering artillery, etc. (figure 17).

Next, the control team works out the procedure for player actions and presentations. The control leader specifies the rules and methods for interactions, how they will present their solutions and similar aspects or ground rules.

The role of the umpires is specified by the chief controller. The umpires are allowed to provide information and to suggest alternatives, but not to direct or interfere with the decisions of the teams. The control must also determine the time phases (time intervals) for the wargame action. The Soviet technique is to conduct each game as a vignette focused on specific critical actions or activities which the control wants to investigate or to teach to the players. The method for handling the decisions made by both sides in each of these scenarios is one of the most critical aspects of the game design. In many if not most games there is only one time step. The next time step becomes another wargame.

The plan for the wargame includes the method for drawing conclusions from these team decisions. The conclusions from each action / incident are the basis for setting up the next scene for the new situation. (Basically each round is almost a new wargame.) There are many calculations which the control team must make in order to establish what the outcome of the first situation was and then what will occur between then and the next wargame situation that the players receive. Play can continue for three or four or more situations, depending on the objectives of the wargame.

The situations and tasks specified for the wargame are as close to the real Situation as possible and in accordance with accepted norms or projected norms. At the end of each phase or vignette the players gather in the briefing room and the chief controller listens to the decisions and reports. The assistant chief controllers and umpires and other control team staff help the chief controller evaluate the decisions. The development of each situation is projected in accordance with this evaluation of the actions of both sides. The best, logical decisions are rewarded by success in the combat simulation.

Next, the control team develops the plan for preparation of the critique. The critique occurs immediately after the game. The plan must show who will prepare what parts of the critique and what they will use for the basis of their part. The plan for the wargame shows how the critique will be conducted. The critique will have general and specific parts.
At the end of the day all participants gather again and arrange their documents, maps, etc. on the wall for easy reference. The chief controller leads the critique session by summarizing the theme and research or training questions. He discusses the conduct of the game and underscores the positive and negative sides. He spells out the outcome and lessons learned. Specific and general critiques are also made by the assistant chiefs and umpires. The details of and requirements of the critiques are included in the original wargame plan.

Finally, the wargame plan describes how the final report will be prepared. This report will incorporate the critique and forward the lessons learned to higher headquarters.

III. Questions, answers and comments on major issues related to Soviet wargaming

What do the Soviets teach about European wargaming?

The Soviet teachers criticize the French and British for failing to integrate properly theory and practice, especially on the eve of WWII. The Soviets say that no action can be effective unless it is based on theory and study. One must act in accordance with theory. At the same time action develops theory and no theory can be valid unless it is based on real action.

What are the purposes of Soviet wargames?

The Soviets use wargames for research and development by teams of analysts. They use games for developing actual war plans. There are examples of instances in which a wargame proved a plan was faulty and they changed the plans. The changes might include disposition of forces. Another conclusion might lead to the development of new equipment or weapons. Another might lead to the redistribution of weapons and new TOE.

The Soviet term for wargames used to be Boyevaya igra (literally a war game), but the term was changed to signify that the activity was being brought more in line with the other phases of educational activity. The new term is Kommand - stabnii uchiniye or a staff training exercise. Thus, wargames are considered a part of the overall spectrum of training exercises. This terminology for wargaming is a more accurate description of the process being used. This is because training is always a central feature and purpose of all activities. The staff training exercise is frequently supplemented by actual field exercises using a part of the troops depicted on paper. The Soviet theory is that theory must be closely related to practice. Especially when the purpose of the exercise is to test something new there will be a physical component of the game on the ground. Such things as rates of movement and ability to deploy etc. will be tested empirically by having units actually perform the functions.

Wargames are a favored method for training command and staff personnel. During the game the participants learn to calculate, estimate, make decisions, organize cooperation, prepare combat support, prepare documents, and exercise command and control. Most games serve several purposes at once and training will nearly always be one of them.

The Soviets attach two goals to wargaming, teaching principles, techniques and methods for conducting wargames and training the players in the staff procedures and substantive issues contained in the game. In training officers, the different categories
of officers receive different training and consequently different kind of wargames are used. Since in the
Soviet view all wargames have training of the players as one of the basic purposes this is not the main
purpose governing the selection of the form of a particular wargame. Sometimes the specific purpose
of the wargame is not made public and is even concealed from the players.

*What do the Soviets teach about the importance of wargames?*

The Soviets consider wargames so important that officer participants have been promoted or
demoted on the basis of their performance in wargames.

The Soviets conduct much research and development prior to the wargame and incorporate the
results in turn in further development work. The process is continuous as more questions are answered
and they in turn raise other questions. Therefore, wargames are important, but only a part of a larger
system.

*What do the Soviets teach about the basic shortcomings of wargames?*

One of the most difficult aspects of wargames is the creation of the proper psychological
conditions. Actually, it is impossible to duplicate wartime conditions of danger and fear in a wargame.
One cannot address questions on morale, aggressiveness, spirit and determination and their role in
combat outcome by use of wargames. Thus, the results of wargames and CPX type exercises will always
not be optimal with respect to the factors that during war always create difficulties and cause
performance which is less effective. Everything is more difficult in real war.

The umpires must watch closely and judge how realistic is the play. For one thing in wartime the
time to make decisions and plan is shorter. The Soviets have formulas to relate the expected outcomes
in real world situations to the models (theory, history, background, nomograms, etc.) used in games.
When they come up with norms for the real world they are much more conservative and “worst case”
or pessimistic in outcomes.

*What levels of wargames do the Soviets play and who is responsible for developing them?*

In Soviet training three levels are distinguished, tactical, operational and strategic. A specific
wargame might have implications for all three, but normally it does not. The strategic level game
studies the doctrine side of war, and major issues of industry, the economy, strategic planning etc.
Study of the organization of troops, structure of arms and services, locations of units, preparation of
the theater of war and similar subjects are done at the operational level. Weapons systems
effectiveness, equipment, tactical issues, firepower, and technical subjects are studied at the tactical
level. For wargaming the tactical level includes units up to regiment. The operational level starts from
division, even though the division is actually the largest tactical unit. Staff training begins at division
level. This apparent anomaly is due to the Soviet wargaming method in which games and exercises are
prepared by the unit at one level above the unit engaging in the game. Games in which there is a
combat exercise with actual firing however are prepared by a headquarters two levels above. Therefor
a division level wargame is prepared by the Army headquarters or by Front or Military District. Thus the
criteria of the game and training aims for a division game are of operational
significance. A division in wartime conducts tactical missions, but in peacetime it is of operational significance.

Based on actual use of Soviet style wargames in Afghanistan or training about Soviet style wargames, what are some actual or theoretical implications or lessons learned from wargames?

Some of the analytical subjects for which the Soviets draw implications or lessons from the use of wargames include the following:

- organization of units (TOE). One wargame in Afghanistan revealed that a division was found to be unable to cover the defensive line assigned to it. As a result its table of organization was changed to provide it with the necessary forces. Another wargame resulted in the movement of the peacetime location of an armored brigade after the game revealed that it was needed in the new area.

- training. The Soviet advisors changed Afghan army training programs after the coup of 1978. They increased tactical training and added time for training in mountain and night operations as a result of deficiencies noted in wargames.

- preparation of theaters of war. Wargames can reveal logistics shortage, inadequacies in infrastructure, requirements for new roads and railroads, necessity to redistribute the industrial base, adjustments needed in the commercial economy, and other problems necessitating further preparation of the theater of war.

- development or readjustment of strategic concepts. A wargame can reveal that the current strategy, or doctrine of war is erroneous or inadequate. If a strategic concept cannot be supported within the given time in a wargame an alternative must be found. Further wargaming may disclose what new means or changes in the situation will be required.

What might the preparation for a Soviet style one week long wargame look like?

Wargame preparation would include the following requirements.

The following documents must be prepared during preparation for the game:

- Directive for the game
- operational appraisal of the theater
- calendar plan for conduct of the game
- annexes to the directive covering the organization of the teams and the umpire and control groups
- databases on the armed forces on both sides including order of battle and table of organization
- databases on the equipment on both sides including their tactical-technical characteristics
- tables of the norms for tactical and operational activity to be used during the game
- the concept of the operation shown on a map and in text
- the initial situation to be given the players shown on a map and in written annexes
- the specific information for the various staff functions that will be played during the game such as:
  o operations
  o reconnaissance
o artillery
o engineer
o air defense
o air
o logistics
o signal

➢ a plan for the physical setup of each team
➢ an administrative plan.

The preparing group must decide what components of combat are to be studied at what level of detail.

The wargame preparation team must prepare a directive for the operation itself which describes the main points that will be taken up in each situation. There should be at least three situations to allow for development of a combat scenario. The team must prepare the general outline of the content of the post-game general and special critiques.

For a game lasting one week, which is about the minimum that is of value, the preparation team requires at least three weeks time. The preparation team should consist of at least three fully professional experts, a secretary and a junior researcher/helper.

If the wargame is to depict a Front staff and its subordinate armies, the Red and Blue player teams should consist of the following: sixteen players for the Front headquarters, and five for each army. The umpire team should consist of six or seven experts for the Front headquarters and one or two for each army. The control team should have ten or twelve persons.

Training for the umpires and controllers would require two days at least. They should be provided with written material, instructions, which would require several days to prepare. The players should be given at least one day but preferably two days of preliminary lectures and seminars on the nature of the Front, staff procedures, use of combat arms and background for the scenario.

**What might take place during the conduct of a one week long Soviet style wargame?**

One week is the minimum time for conduct of a wargame at the theater or Front level. A sample schedule of activities is as follows:

*First day* - 2 hours - the game players receive initial situation information. This includes a review of a strategic assessment and political views. The players representing each of the staff positions become familiar with the initial situation and prepare their maps. Players read the written scenario.

After two hours the players receive the combat directive for the operation issued by the higher headquarters. The directive includes the instruction that the decision should be presented to the representative of the VGK after 6 hours. They spend the rest of the day on the decision process for the first situation.

*Second day* - The morning begins with the Red team presentation of their decision to
the control group. This includes the presentations of the Red team staff and can take up to 4 hours. The rest of the day the Red team prepares their plan for the operation.

After the Red team presentation the Blue team presents their decision to the control group. They then complete their plan for the first phase.

Third day - Morning - The umpires develop their assessment of the outcome of the battle indicated by the clash of the battle plans of the two teams. The controller team assesses these decisions and decides the outcome. Then the controllers create the new situation, which is an outgrowth of the first situation with time advanced by the desired amount (usually several days).

After noon the control group gives the new operational time and new situation to the two player teams. The teams begin their decision process.

Fourth day - Both sides prepare their new decisions and present them in like manner to their work on the second day. Meanwhile the control team is preparing its critique.

Fifth day - The morning session is devoted to a general critique of the exercise. The afternoon is devoted to specialized critiques of technical parts of the game.

What is a summary of some of the highlights of a Soviet style wargame?

The purpose for conducting a Soviet style wargame is to demonstrate Soviet planning, research, and gaming techniques in action. It is to illustrate Soviet style analysis techniques of the subject used in the game. In addition it will provide some insight into the likely content of the analysis Soviet gamers might derive from a similar game on the same topic.

The Soviet attach two goals to wargaming, teaching principles, techniques and methods for conducting wargames and training the players in the staff procedures and substantive issues contained in the game. In training different categories of officers receive different training and consequently different kind of wargames are used. Since in the Soviet view all wargames have training of the players as one of the basic purposes this is not the main purpose governing the selection of the form of a particular wargame. Sometimes the specific purpose of the wargame is not made public and is even concealed from the players.

In Soviet training three levels are distinguished, tactical, operational and strategic. A specific wargame might have implications for all three, but normally it does not. The strategic level game studies the doctrine side of war, and major issues of industry, the economy, strategic planning etc. Study of the organization of troops, structure of arms and services, locations of units, preparation of the theater of war and similar subjects are done at the operational level. Weapons systems effectiveness, equipment, tactical issues, firepower, and technical subjects are studied at the tactical level. For wargaming the tactical level includes units up to regiment. The operational level starts from division, even though the division is actually the largest tactical unit. Staff training begins at division level. This apparent anomaly is due to the Soviet wargaming method in which games and exercises are prepared by the unit at the level one above the unit engaging in the game. Combat exercises with firing however are prepared by a headquarters two levels above. Therefore a division level wargame is prepared by the army headquarters or by Front or military district. Thus the criteria of the game and
training aims for a division game are of operational significance. A division in wartime conducts tactical missions, but in peacetime it is of operational significance.

Soviet wargaming generally includes detailed analysis of the area or region in which the game is set. For this purpose, if the area is accessible, they will study it on the ground and if not they will use maps and reference material. They prepare the documents which work out the conduct of the game ahead of time.

The Soviet terminology for wargaming was changed to reflect a more accurate description of the process being used. The new term is Staff training exercise. This is because training is always a central feature and purpose of all activities. The staff training exercise is frequently supplemented by actual field exercises using a part of the troops depicted on paper. The Soviet theory is that theory must be closely related to practice. Especially when the purpose of the exercise is to test something new there will be a physical component of the game on the ground. Such things as rates of movement and ability to deploy etc. will be tested empirically by having units actually perform the functions.

The staff training exercise is done by phases in the combat scenario. For each phase of battle the central activity is to reach a decision which is worked out in detail. Teaching officers how to make good decisions is the central issue for Soviet training. Examination of the decisions made by a commander and staff in a game situation is a central activity of the experimental process. This is done not only in the sense of evaluating the decision as part of training the players, but also from the point of view of learning about all the aspects of combat from an examination of what decisions were possible and what were the results of the decisions taken. From the decision a plan is created. The decision and plan are then evaluated by the umpires and control in relation to the decision and plan of the opposing force. The results are incorporated in the new situation which is provided to the player teams. The new situation will be for a new, subsequent time. The time interval between scenario phases is described to the players in order for them to understand what has happened in the battle. The length of the interval will vary depending on the purposes of the game.

The umpires weigh the decisions of both sides against each other in the light of the standard norms. They do quite a lot of mathematical calculation and application of formulas, nomograms and tables in reaching their decisions on the outcome of each engagement. Wargames in Afghanistan did not employ computers for calculation or accounting purposes in the 1970s. The norms take into account many largely unquantifiable factors such as unit training, morale, leadership, etc. However the Soviet concept is that nothing comes from chance. Consequently they do not use random numbers or Monte Carlo techniques to decide on the outcome of battles or engagements.

The umpire must summarize the outcome of the particular battle situation and then use his imagination as well as his tables and norms to plot out what transpires from the given situation to the next. There are umpires from the various technical services as well as the combat branches. For instance, the engineer umpire will decide if game units can or cannot actually move at the rates the players order due to technical road conditions, obstacles etc. This technique puts a premium on umpire imagination, something that is in short supply. Furthermore, the umpires themselves are working under the supervision of the control team, which has its own ideas and preconceptions about the course of the battle. Frequently umpire imagination is suppressed by control.
requirements. The control cannot let the decisions of the umpires control the course and outcome of the exercise. They will not let the main themes they plan to emphasize rest on umpires. Whatever dynamism the Soviet wargame has comes from the effectiveness of the umpires in creating the situations. This is negatively affected by control group supervision. But if they did let the umpires control the game the control group would lose its control.

**Give a practical example of the use of wargaming to examine an issue.**

An example of the use of a wargame or staff exercise to examine a practical issue is the following:

During WWII Soviet attackers could penetrate a defensive tactical zone of 15 km depth in 24 hours with the existing technology. They could then commit the mobile group early on the second day to deprive the enemy of initiative, exploit tactical success into operational success etc. The question arises “What is needed to accomplish the same mission in the same time in modern conditions, given that the tactical defense zone is 50 -60 km deep and both sides have decisively modernized their technology?” “Can a Soviet division today penetrate the full depth of the tactical defense zone in 24 hours and can the operational maneuver group then be committed on the second morning?” This issue can be examined by a wargame incorporating both field tests conducted by units representing part of the force and staffs representing the commanding headquarters conducting staff exercises. The ZAPAD 81 exercise was such a test. In this instance the umpires did award the attacking division rates of advance of 40 km on the first day and the participating division was able to demonstrate that it could physically cover the distance in the prescribed time.

Of course all wargaming incorporates many assumptions used by umpires to reach decisions on outcomes which cannot be physically tested at the time. This is due to lack of real fighting in a peacetime “battle” or due to limitations of the terrain or due to budgetary limits, etc. Whenever possible all assumptions made and used at one level have been tested empirically at a lower level. Thus the effectiveness of individual weapons is determined on firing ranges etc. This effectiveness is then an assumption in a unit level game. The physical capability of the unit to perform tasks is tested at the small unit level. This ability is then an assumption in higher level wargames.

**What results do players and controllers obtain from participation in wargames?**

Results that the players get from gaming include the following:
1. each person is trained in his role for specific jobs
2. players learn how to prepare combat documents
3. players learn about the area of operations of the game
4. players become familiar with the type of coordination needed in combat
5. players learn the capabilities of units in combat and operations

Results that controllers and umpires get from gaming:

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1 Editor note: Not known if this is a misnumbering or list item 5 has been redacted.
1. Controllers also learn about the capabilities of units
2. Control learns more about the area of operations
3. Control learns many unexpected things about the entire context of the game due to the innovations the players may incorporate into their plans.

**What are the advantages and disadvantages of wargaming and staff training exercises?**

*Advantages of staff training exercises.*

The Soviet technique of focusing on discrete decisions separated by time intervals during which the battle proceeds in the umpire’s minds, but not in front of the players, prevents the players from micro-managing or thinking at lower or tactical levels. They are forced to think at the operational level and to concern themselves with the larger scale events, activities and decisions. The attribute the Soviet instructors seek to instill in players is foresight and the ability to plan quickly on the basis of a thorough analysis of all the relevant factors which will bear on the situation throughout the entire course of the activity. The commander and staff at each echelon are experienced in the actual practical fulfillment of missions at the lower levels. Therefore when they make plans and decisions they know the standards for achieving the lower level missions. The Front commander knows how long it takes for a battalion to do something and how quickly an enemy can respond to something else.

For instance, a Front has an immediate and a subsequent mission. It plans to accomplish the immediate mission with its first echelon armies. The Front will not change this plan due to minor developments during a day. It is not likely to change the plan more than once or twice in the entire course of the operation of 12 - 15 days. Therefore the umpires can create the entire situation occurring at the lower level without reference to the Front level players.

*Disadvantages of Soviet style staff training exercises.*

The Soviet technique in wargaming deals with an established situation. The scenarios and situations chosen for study and for use as the basis of decision training are very much prototypes of standard situations that the Soviets find important. When control writes the description of the problem they think of typical situations such as the repelling of the enemy counterattack, the commitment of the second echelon, river Crossings, airborne landings etc. These are really set piece battles. Furthermore the solutions to these established problems are so routinized that they tend to become Stereotypes as well. For instance, at the regimental level the standard drill is to pin the enemy down from the front and launch an envelopment with one battalion.

When the staff officers write their clarification of the mission, concept of the operation and decision they make it strictly according to the book. The scope is very narrow and generally not at all original.
IV. Duties of key wargame participants

Controllers

Chief Controller. The chief controller is the overall supervisor of the wargame. He is responsible for the game following the guidance of the higher commander to achieve the objectives and aims specified in the directive. He reports to the higher echelon about the outcome of the game. He defines the general policy and the main points to be examined in the game. He makes sure that for each assigned task the control team and players create actual activity in the game that will give practical dimensions to the theories being examined. The chief controller approves the directive which establishes the game and approves the concept of the game. He reviews each new situation drafted by the control staff. He personally conducts the general critique and puts his own input into the specific critiques.

Chief of Staff of control staff and First Deputy Chief Controller. He is the most active person in the game. He supervises the control staff and the umpires, organizes coordination between them and makes the final assessment on all decisions reached by the two player teams (sides). He approves the new situation created by the control staff. He personally writes the game directive and the initial situation for the game. He also prepares most of the text of the general critique. He is assisted by the chief of operations of the control staff. He assists with the preparation of the game materials. He personally participates in the study of the game area. He issues instructions on the method of work of the control staff and umpires.

Deputy Chief Controllers for Red and Blue. They keep the chief controller informed of the latest situation for the side they represent and supervise the implementation of points made by the chief controller. They work closely with the chief of staff to meet the chief controller’s, concerns about the points being tested by Red and Blue. They supervise the conduct of any supplementary field exercises or firing exercises and such other activities (like river crossings) which may be conducted as part of the overall game and coordinate these with the conduct of the game itself.

Control Staff. The staff is divided into the normal military functional areas. They prepare the necessary materials that generate an action on the part of the players. They assist with the decisions of the players which move the scenario toward a new situation. They prepare or specify for use the norms, models, requirements, constraints, etc. that will be applied in the assessment of each player team decision. The staff prepares all materials for the game beforehand and writes each new situation and directive on the basis of the previous decisions. They also instruct the umpires on their tasks and feed the necessary information to the umpires for dissemination to the player teams. They instruct the umpires about what information they should give the players about the situation and the “intelligence” information on the other side. They create the system used in the game to ask for and provide this information. The staff records on a map all information given by the umpires to the players and takes this into consideration while assessing
the player decisions. The staff prepares the place of work for players, umpires and itself and insures that all necessary administrative and technical support for the entire game has been requested and is being provided.

**Umpires**

The umpires work together with the player teams not only by watching their performance in order to feed information to control on the developing game situation to enable control to write the future situation and prepare their critiques, but also to insure a certain amount of dynamism in the player actions. This is a critical aspect of the umpire’s duties and the one which turns a static “staff study” into a dynamic, interactive game. The umpires report on the side deliberations and thought processes used by the player teams. They not only assess the actions taken by the players, but also evaluate the effectiveness of these actions in accordance with the official theory, norms, models etc. to help the control staff in the conduct of the wargame. The umpires also may be asked to play the role of higher or lower echelons as required to provide realistic input for the player team’s decisions. The umpires are representatives of the control staff and there is a close link between them. The essential difference of their function from the rest of control is that they watch what the players do while the control staff evaluates what the players do.

**Players**

The players perform all the normal command and staff functions and duties according to the position they occupy.
V. Use of norms and models in the assessment process

The wargame consists of a series of player team decisions connected by the assessment and development of a new situation by the control staff. The player team presents its decision and answers control questions. During this process may issues are solved. The discussion is focused on the objectives aimed at by both sides in terms of space and time. These objectives are weighed by the control team. Given the established norms, are they achievable and if so is it possible that the force might do more in the given time and space? Or if not, how far beyond the force’s capability have the teams gone in their plans.

For example, in an army attack one side has decided on an immediate mission of 200 km and a subsequent mission of 400 km. These are beyond the norms in time and space, but the team has allowed 7 days to achieve these, which is also beyond the norm. It might be achievable in space. The next question might be how many enemy does the team aim at destroying in this time? Then the control team must evaluate the enemy’s position and plans. What is the depth of its defense and its number of forces in the given sectors? The control team gets down to specifics and does a correlation of forces and means analysis on the projected encounter to establish a rate of advance for the average of the engagement. Then it comes to the main attack sector and repeats the correlation analysis to get the rate of advance for the first day in that sector. The supporting attack is studied in like manner. Then the logistics experts on the team evaluate the capability of the forces to execute these missions from a logistics point of view. Can the player team support its operational missions with the logistics it has planned? Each expert such as the engineer, artillery, signal, transportation and Quartermaster gives his evaluation and suggests the effects of his specialty on the overall outcome.

The control team also examines the enemy side to see where the attack is going and what the density and depth of the defense is. They decide on how long the defense can hold its position in the given layout of battalions etc. They check out the various support means provided by the enemy’s plans.

In its final assessment the control team gives the number of casualties taken on both sides and the distances moved. This is done for the first day, the second day and each day covered in the initial game situation. Depending on the nature of the game this situation may last one or several combat days. The control team then creates a new situation developed for the specified number of days interval. This provides new locations and force strengths for both sides. It is better for realism and for the players to keep the intervals short, but in large scale games this is not always feasible.

In developing the new situation the control team is guided by the priority to move the game according to the desired objectives, not just to suit the purposes of the players. In other words, if the player decisions lead logically to one projected outcome it might be necessary to introduce something new or to make some other changes to bring the development of the game scenario back on the desired track.

In a one-sided game the control has actual control of everything. This makes one-sided games more useful for certain purposes. In two-sided games the players have a larger element of control. It is more necessary to exert tactful guidance to get the players to do what the controllers want.
[Editor note: Page 15 is blank in the PDF of the photocopy. Not known if the page content is missing or has been redacted.]
Asymmetries

The Soviet system itself is so different from the western system that all activities within it tend to be different in form and content even when they seem to serve the same general functional purposes.

The Soviet system is one of super-centralized control. This is reflected in wargaming to the extent that, for instance, umpires tend to be not as liberal and self-directed as in the west. The Soviets believe that one should organize the relationship between practice and research and development on the basis of a theory or at least a projected theory. They develop a set of assumptions on the basis of this theory and these form the basis for a given wargame. One cannot go beyond the given framework in the game. They seek to avoid “adventurism” and “subjectiveism”. For instance in a given wargame they might seek to test the capabilities of the strategic rocket forces to reach their 1st level of combat readiness within a given time norm in a war without a warning period.

Another difference is that in the west the military does not control and govern the national economy and industry, therefore it must follow the lead of industrial advances and ask how the military might take advantage or use the new developments of technology. In the Soviet system industry is organized and directed for military purposes. The creativity within industry is focused on the possible military uses of technology first of all. This places the role of wargaming in a different relationship in the research and development process.

What is projected in theory is the result of military expert’s assessments. Industry is subordinate to the Party and the military projects are driven by the Party’s technology and science department, which has the power to direct the allocation of resources to investigate new developments.

One cannot have liberal umpires in such a system. The play must conform to very narrow topics. In the west one wargame can be broader and can include hundreds of situations. The Soviets prefer to conduct a wargame only on a few situations of narrower scope, but they are doing these games constantly at various levels and for many specific topics. This tends to make up for the lack of more generalized games.

The Soviets always play a game phase by phase for a few specific aims and objectives and they analyze these and then test them again and again.

They pay more attention to analytical and math models. They work cautiously on theory and make sure the theory is based on facts. For them facts include the laws and experiences or models. The Soviet practice is not random and the initiative of commanders should not be in opposition to theory. If the commander does take the initiative then he had better find a theory to back up his actions. In making official decisions the Soviet spend more time in gaming the situation out from many angles and testing the possible outcomes.

Because of the different system the role of wargames has a different place and role and meaning. Wargames are different in flavor and technique used on the game.
When one changes commanders in the West one feels a major change in the organization due to the influence of the personalities of the two commanders. There is not so much difference in the East since all follow the same doctrine and set of rules and each person can make only a marginal difference. The standard procedures govern everyone. Each commander learns by the process of doing the drills over and over until they are all quite uniform in outlook and approach. The established rules govern even down to the smallest detail.

[Editor Note: Pages 18 -- 20 are the “Notes to the View Graphs of the “Soviet Wargames” Briefing”. These have been moved to the end of this document and attached to the reproductions of the Briefing View Graphs on pages 34 -- 47. The next page is page 21 in the original document and is numbered as such.]
APPENDIX

This appendix contains summaries of several Soviet articles which appeared in the classified journal Military Thought on wargaming or modeling of combat operations. They are listed with the author’s name.2

Stuchenko

The article on the 50th anniversary of Frunze Academy by Colonel Stuchenko mentions wargames in connection with the general topic of scientific research conducted at the academies. It points to the use of field exercises during the period just prior to WWII and says these were used in conjunction with the experiences of the wars in Spain and Mongolia and Finland to develop new theories. The article discusses the role of the academies in developing and promulgating new tactical doctrine. The article indicates that 1954 was a year which marked a major shift because the Soviet army and navy that year began concentrating on combat operations conducted under conditions involving the use of nuclear weapons by both sides. Among the particular topics on which they focused attention in their scientific research were the following: the massive use of nuclear weapons in combat operations, methods for protecting the troops from the effects of these weapons, the increased speed of operations, rapidly changing conditions during battles and complications in battle organization and troop control resulting from these weapons.

The article points out that departments are striving during each exercise and especially during command-staff exercises and military games to instill in the students such qualities as independence, persistence, initiative and efficiency. It mentions that the academy sends teachers and students on temporary duty to the military districts where they participate in troop and command-staff exercises. The military districts furnish the academy with summaries of their most instructive exercises. “The results of scientific studies, in addition to being used in the academic process, are also used beyond the walls of the academy. They eventually find their way into the regulations and instructions of the Soviet Army.”

Postovalov

One of the most important articles is that by Colonel Postovalov, “Modeling the Combat Operations of the Ground Forces” in Military Thought of March 1969. The author provides a comprehensive discussion of the problems of modeling combat operations in peacetime for use in analysis.

Each theoretical principle should receive practical verification, which is the highest criterion of truth. In other words test things in actual real world situations.

Local wars are not able to supply full data for analysis for various reasons including that their special conditions are not relevant to future world war.

During peacetime the combat properties of new weapons are tested at proving grounds and in tests in experimental and troop exercises and maneuvers as well as in combat training exercises.

2 Editor note: Selected translations of articles and editions of Voennaya Mysl (Military Thought) are available via the FOIA ERR (Electronic Reading Room) page of the CIA website at https://www.cia.gov/library/readingroom/
Methods of the application of weapons (tactics) are studied at experimental and troop exercises and command exercises as well as wargames. Verifying the accuracy of the estimates about weapons can be relatively objective. But verifying the accuracy of the ideas about application means (tactics) is not so easy nor good enough at present. During maneuvers the opposing sides do not use their weapons, hence there are no casualties nor the danger of casualties, hence the psychological element is missing and this distorts the exercise. For this reason we must use the experience of past wars. We can create a theory of the use of weapons from past wars. But verifying data in peacetime poses many problems. There is a gap between theory and practice. We constantly try to get theory and practice together. To this end we try to make exercises and maneuvers as realistic as possible. One way is to master the art of modeling. There are several books on the subject. Anureyev’s and Tartarchenko’s books are recommended.

Physical models reproduce the object under study. Field exercises are physical models of combat. However, like all models, they are incomplete. Field exercises with troops permit the fullest verification of certain aspects of combat:

1. movement and deployment times and characteristics.
2. the use of equipment on the terrain.
3. combat support.
4. the organization of troop control.
5. the preparation of troops and staff for conducting modern combat.

A shortcoming of physical models of battle is their unwieldiness. It is difficult to play out all the battle.

Mathematical models make it possible to study more processes. One can study more results for a given input. Normally a complete model is too expensive and difficult so incomplete models are used.

The advantages of a mathematical model are as follows;

1. it can run in a short time
2. many variants of combat operations can be tested
3. it can eliminate some subjectivity in evaluating results.

The difficulties with math models are as follows;

1. it is difficult or impossible to quantify many key factors.
2. the factors are too numerous.
3. the results of actual combat depend on complex combinations of all factors in a given time and space.

4. the number of combinations is nearly limitless.

For these reasons creating a “victory algorithm” is beyond our present capability.

One shortcoming of models is that they are based on subjective assumptions and restrictions which prevent really objective results. Models have a value as a beginning but must not be used to draw too far ranging conclusions. There is a danger because the subjective elements are actually just shifted from one level to a higher one. The result is that this creates an illusion that we have acquired a solid, objective conclusion when we have not. The problem results still depend on the validity of the initial data and the accuracy of the computations.

The use of partial mathematical models is valid. They can be used:

1. to determine the quantitative and qualitative composition of weapons for destroying specific targets.

2. for selection of optimal methods of using specific weapons and equipment.

3. to project the zone of contamination from nuclear or chemical weapons etc.

These small models are helpful. Models are important to solve specific problems because they may help in the future in creating general models. We must be careful and use a gradual approach.

The next task is creating mathematical methods for creating objective, scientific foundations for command, combat decisions. It is necessary to find the most expedient methods for the rapid quantified evaluation of the factors which can be submitted for such evaluation. The commander must continue to do all the other necessary activities for decisions.

Mathematical models are developed for separate process such as:

1. organization of work of commander and staff in the planning process.

2. securing continuous troop control

3. determining the degree of importance of enemy targets and their destruction sequence.

4. the solution of problems of optimal use of manpower and equipment to destroy ground and air targets.

5. optimization of use of equipment in combat support role.

But a general mathematical model is still something for the future.

We can prepare the way by perfecting the physical models in use. That is the field exercises, maneuvers, and wargames. We can free them from irrelevant conditions.
and make the maximum use of various calculations for solving specific problems that come up in the course of such exercises.

After the elaboration and verification of particular models of battle and operations we will be able to join them as units in a general model.

This will require specialists in the art of war and mathematics. For this we need more training of officers.

What is needed in an operational model?

What are the possibilities for improving methods in experimental wargames? The aim of these is modeling of battle.

First one proceeds from a realistic evaluation of the possibilities and the nature of combined arms battle and from the laws that condition attainment of success and from the methods of troop control. Battle models should correctly and completely reflect real actions.

Uses of battle models. They are used to determine:

1. the optimal number of troops.
2. the quantity of weapons and equipment
3. the properties of weapons
4. the tactical and technical requirements to solve a battle problem.
5. to find the most feasible method to apply forces.
6. in selection of the optimal troop organization structure.

During battle the commander makes many decisions and considers many factors in a changing and complex relationship. Many factors act contrary to the commander’s will. He has incomplete and false situation data. He lacks data on major problems.

The execution of missions is achieved by conducting combat operations in specified time spans in a sequence of the solution of intermediate problems. The troop control process amounts to a repeated gathering of data and revision of earlier estimates and decisions as well as making of new decisions. It includes also sending orders, verifying, and organizing support. The point is that the battle model (wargame or exercise) should permit the reproduction of the entire process, ie the intermediate tasks on both sides.

The first point in importance is the quantity and quality of weapons because the execution of each mission requires a certain minimum means and manpower. The shortages or lack of the minimum cannot be made up for by skill or use of surprise or moral superiority.
Having said that however, the second point is the importance of the art of employing forces. Even with sufficient forces there is no guarantee of victory. A more important condition for victory than overall superiority is the ability to use concealment in the preparation phase and surprise in the attack. To defeat the enemy also requires sufficient reserves to maintain and increase the momentum of attack to make it inevitable. Also the attacker can succeed if the defender spends more time in maneuver to close breaches than the attacker needs to put his 2nd echelon into action.

In nuclear war as well, the absence of initial superiority can be made up for by surprise attack. Therefore skill plays a major role, more so than in the past.

The battle model (wargame or exercise) therefore must consider not only quantity and quality of men and means but also the skill in using them. It must show the commander and staff art. For this reason mathematical models of battle without incorporating actions of commander and staff won’t do. Yet doing this is extremely difficult and subjective.

In addition to skill in use of men and means the model must make it possible to consider the following:

1. the use of intelligence potentials on both sides.
2. the results of neighboring combat
3. the level of training of the commander
4. the organizational ability of the commander
5. flexibility of troop control
6. training and morale of troops
7. the realistic potential for combat and combat service support.

Sometimes people say it is enough to have battle models of elementary subunit scale combat (at battalion or company level). The idea is these are building blocs and one can then model large scale combat by adding these blocs together. They presume it is easy to transition to large units. This is not correct. First, the building blocs are not identical. Small unit commanders deal with individuals, but formation commanders deal with units. Second, new weapons not found in small units appear in the larger units, therefore the combat potential of larger units is greater than the sum of the small units.

In nuclear war models the front and army nuclear weapons are the key and they must be addressed first of all.

To check many matters of military theory one can use a battle model, a two-sided wargame in which teams of highly trained officers make decisions on initial situations. Then on this basis the control team computes casualties on both sides and establishes the changes in the situation. Then for the new situation the game teams make new decisions and this process continues until one side gains a victory. The length of the intervals for the sequences of the situations is less in nuclear war than in conventional wargames. It is determined on the basis of the scale of combat and nature
of specific tasks being played. During the exercise it is possible to make fuller use of mathematical methods and to model problems. It is important to exclude from the wargame the influence of subjective factors such as the mistakes of individual players, preconceptions on the conclusions and the methods used by the two sides. The actions of the forces should correspond to the tasks they are to perform and the situation etc. It is important to have objective evaluations of the decisions. The results of the execution of these decisions should be determined by the guidance (control) group, which is made up of experienced officers. These officers act as umpires, analytic computation group and modelers of the parts of battle. The guidance staff is often larger than the playing teams.

An important condition for success of a wargame for research purposes is proper preparation and verification of the methods for solving individual problems during the game. Mathematical models can be used for individual processes. Also used are formulas, standards, nomograms and tables, etc. It must be clear what information goes to whom and when. The time taken by the guidance group for evaluation of each move is subtracted from the total. (This comment shows the interest in calculating the decision time as part of the game.) In evaluating decisions the investigators consider not only casualties but also other actions. They also evaluate the realistic probability the troops could carry out the orders issued. Much care is taken in determining the factors being used. It is very dangerous to underestimate the enemy being modeled. If the proper factors for the enemy are unknown or not being considered then it is best to use identical factors for both sides, i.e. effectively to eliminate them from the game.

If the game team could make several different choices in a decision situation then it is best to check through each variant to see where it leads. This takes extensive time and labor. To obtain best overall results it is best to play out several applications of the battle and synthesize the results. Wargaming is a useful approach for modeling combat from the unit level to the formation level. The results of modeling can be employed not only in the interests of achieving research goals but also to reach optimal solutions to a specific battle. If time is short, then only work out those variants which are most acceptable on the basis of preliminary evaluations.

Models give only an approximate picture because it is impossible to predict all consequences of a decision.

Problems and difficulties. How can one assess the skill of commanders and staff, initiative, readiness to sacrifice, panic and other such factors? There is no criteria or way to evaluate these. In addition, random occurrence plays a role. It is in the nature of warfare.

A correct determination of the criterion for tasks is important for determining the end result. One criterion in three parts:

1. elimination of enemy force capability to fight; that is over 50% losses in manpower and equipment in 24 hours or 70% loss over several days.
2. occupation of specified line or area

3. retention of friendly troop combat capability; that is less than 30% losses in 24 hours or less than 60% losses over several days.

Nonfulfillment of any one of these requirements may reflect on the overall task. This task fulfillment criterion is not an absolute. There can be deviations on the basis of high or low troop morale.

The described methods for wargaming are not new. They have been applied in the past and are now being applied in field study exercises at the military academies, high level staffs and scientific research institutes.

The end results of these exercises are still doubtful. For future improvement the following are needed:

1. high qualification level of officers participating in the opposing forces and the assessment teams.
2. full objectivity in evaluating actions.
3. allocation of time realistically.
4. sufficiently reduced intervals between episodes.
5. more extensive use of mathematics in coming to the decisions.

**Kuz’min**

The article by Colonel Kuz’min, “The experience of Scientific research work in academies” in Military Thought of August 1967 confirms that scientific research work is a major task of higher military schools. However the article deals exclusively with research on military sociological issues and does not mention the use of wargames in this work.

**Tarakanov**

The article by Tarakanov on “Questions on the Methodology of Mathematical Simulation of Troop Operations” in Military Thought for Oct 1973 contains some interesting comments. In the main it is written in a very jargon filled style, but it does indicate something of the theory of modeling which links theoretical models of the mathematical type with physical models of the wargame type. The author gives several applications of models;

1. investigation of and revealing of new laws and principles of armed conflict.
2. checking and refining the basic theoretical tenets and concepts of combat.
3. developing and improving the forms and methods of waging combat operations.

He points out the complexity of combat and remarks that until recently it was thought too difficult to simulate mathematically. He says that the main reason

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3 Editor note: Not known if this is a misnumbering or list item 4 has been redacted.
development of mathematical models was delayed was “the insufficient attention given to questions of developing the methodology of mathematical simulation of operations.”

Tarakanov points out that the “absence of possibilities to observe real combat operations has led to the fact that at the present time knowledge about troop operations, that is, about the possible content of the processes of combat operations, about the main laws, principles and the essence of armed combat, about the forms and methods of conducting operations under various conditions, and about the actual characteristics of weapons and equipment can be obtained only indirectly, by means of analysis, reflection and deductions, in other words, theoretically.”

Local wars do not provide an adequate basis for analysis because of their special conditions which do not provide sufficient ideas about possible operations in the main theaters of war. The experience of past wars also cannot be transferred directly into modern combat since the scientific and technical revolution has created a radical change in weapons characteristics and the forms and methods of waging war. However, these phenomena do serve as a basis for theoretical generalizations. The author lists the following:

1. the experience of past and present local wars.
2. the known and conjectured characteristics of weapons.
3. the results of simulating combat operations based on physical models such as military games, command-staff exercises and troop training exercises.
4. mathematical models
5. previously revealed laws and principles of armed combat which, however, may require reformulation under the new conditions.

“A feature of military science is the impossibility of practical verification in peacetime of its tenets and concepts,” which means there is “an absence of a fundamental objective criterion of the truth of a theory.” (This is because to a Marxist the only fundamental objective criterion is physical, i.e., materialistic, phenomena.) Therefore only models can be used to check the theory and study the properties and laws of future combat. These models are of two forms, physical and mathematical. “The mathematical simulations of modern operations can be built essentially on theoretical notions of the essence and laws of armed conflict.” But empirical knowledge of combat should also be considered. There is an interaction between theory, simulation and the original of an operation. It is represented in the following form. “The model is built with the help of theory, the model perfects the theory, and the theoretical knowledge and results of simulation are transferred to the original.”

The author goes on at length to describe the process for developing theory and how to relate it to models. “To build a model of an operation it is necessary to formalize a meaningful theory of operations.” (This is something US model builders ignore, but it is the quest of the Military conflict Institute).

“The base point in formalizing a meaningful military theory is that of determining the parameters of the studied process.” “In a formal examination an operation may be represented as the opposition of two systems of armed forces.”
Dmitriyev

The article by Major Dmitriyev, “Modelling in Military Science Research” in Military Thought for Aug 1965 contains much valuable information. He notes the rapidly increasing use of mathematical models and computers. He writes that they need an overall, methodological analysis of modelling, a determination of the place and role of modelling as a method which can be widely used in military affairs. He proposes to discuss the concepts of models, the classification of models and the clarification of the objective prerequisites for modelling, the nature of the knowledge obtained and the place of modelling among other methods of obtaining knowledge.

He insists that the definition of a model includes an indication as to the function of the model, its place and role in the process of acquiring knowledge. The model is not merely something: which resembles the original. Combat actions are not models unless they are actually replacing combat actions as part of a cognitive process making possible new information to be obtained on the concrete combat processes. There is not yet a generally accepted classification of models. He proposes some classifications. The basis can be 1. the content and nature of the information being reproduced, 2. the form in which this information is presented. On the second basis there are two classifications, real and imaginary. Real models in turn can be 1. natural, full scale representations and 2. artificial models created specially for research.

Thus past combat actions can be used as natural models of combat actions. Artificial models can be technical installations or complex systems. Model games are included in the second category and include troop exercises and maneuvers, command and staff exercises, games on maps, etc.

The author gives a diagram showing the relationships of various types of models (figure 7). From his discussion it is possible to understand the Soviet view of the role of gaming and other simulations. “Military research makes widespread use of all types of modelling, while training draws mainly on game models, trainers, demonstration models, and the main role in the field of control of troops is played by the symbolic, particularly mathematical, models accomplished with electronic computers in combination with devices for graphically describing the situation.”

The investigator must solve problems concerned with

1. optimization of the processes under study, including a determination of the very best characteristics of weapons and combat equipment, determination of the most effective methods of combat and selection of control functions that will make it possible to carry out missions in the best way, or

2. problems involving forecasting, a description of the possible course and results of events based on the selected plan of action.

The first type answers the question “What must be done to obtain the results?”

The second type answers the question “What will the results be if something is done?”
A third type of question in research, which can also be answered by use of models, is “Why is this happening in this way?”

The author presents a diagram showing the relation of models such as games to the processes of armed struggle and to military theory. Understanding this we can get a better understanding of the role the Soviets see for models in their analytical processes. The author gives some excellent cautionary comments on the proper and improper role of models and the inherent dangers in their use.

Avesyenko

The article by Lt General Avesyenko, “The Question of the Methodology of Conducting Test War Games at Engineer Academies” in Dec. 1968 Military Thought is an excellent source of information. The author focuses on the problems faced by a technical engineering academy when it is required to conduct a wargame. The basic problem is the conflict between the requirement to prepare and conduct a full game in which the combined arms combat is represented correctly to provide an authentic scenario and the requirement to study specific technical support problems which arise in the course of planning and combat. The academy staffs are not able to do both at once. “Test war games conducted at military higher educational institutes are of great value in developing military science and resolving many practical tasks confronting our armed forces. These test games enable us to develop improved methods for conducting different types of troop operations, under the complicated conditions of a changing operational, tactical or strategic situation, in a theater of military operations, while under constant harassment by the enemy with his weapons of mass destruction. They further aid in solving military-technical problems as a whole and also important particular problems, isolating methods for ensuring the efficient use of the branches of the armed services and the arms of services in modern operations and also in making recommendations as regards organizational staffing and other specific problems. A test game offers an opportunity for developing and defining more precisely the operational-technical requirements of weapons, as well as checking various norms.”

“The military academies and particularly various engineering academies of the armed forces are systematically and continuously searching for the best organizational forms and methods for conducting test war games, established to achieve certain goals.”

There are three variations for organizing and conducting test war games.

First, studies undertaken by a special group from the staff of operational formations and units created specifically for the period that the game was to last. In this method the special group plans the combat operations and organizes troops use during the operation, while the departments and offices of the chiefs of the arms of service plan and organize the support operations. Planning the operational problems is the most responsible part of this. The main attention of the leadership of the war game was focused on making the combined-arms decision and planning the operation. The limited time available and the limited number of participants that a military engineering academy can provide for the game do not allow sufficient time to study specialized problems. The majority of the time is spent on operational problems rather than technical engineering problems. This method did not adequately consider the specifics of test games from the point of view of the engineering academies.
The directorates and staffs of operational formations are tasked during command and staff exercises with coordinating the work of staffs and searching for more efficient methods for directing troops combat operations. The engineering academies are tasked primarily with studying specific problems concerned with supporting modern operations.

A comparatively short test wargame lasts 8 - 10 days. During this questions concerning the planning and conducting of operations are worked out. This does not allow for a careful study of individual and specialized problems.

The second method for organizing games was adopted after thoroughly studying the experience of other educational institutes. This one is not limited to several days, but extends over several months. In principle it permits carrying out all tasks, but in actual practice as a result of the great daily burden borne by the teachers in their regular work the goal was still not achieved. There were problems with organizing the planning and difficulties in keeping the staff aware of the current game scenario situation.

A third method was tried. In this they increased the size of the test group in order to give the participants time to complete test tasks. In this variant two methods were used. One way was to separate the groups studying the technical questions from the combined arms staffs running the wargame. The special study groups reported directly to the game directors. The independence of the test groups from the combined arms staffs led to friction and failure of the staffs to adopt the recommendations of the special groups. Another way was tried. In this the chiefs of the special departments were assigned official positions on the operational staffs which conducted the games. These chiefs then controlled the special study groups. This organization encouraged more efficient joint work.

The author is still convinced that more work is needed on developing better organizational forms for conducting wargames. Since the purpose of the test game from the technical academy point of view is the test of technical issues, some way has to be found to create valid general combat scenarios without burdening the limited academy technical staff with this responsibility. He proposes a solution in which several academies would jointly conduct a game in which each could participate according to its own specialized area of interest.

“The experience of conducting test games at military academies has underscored their great value in further developing military science and resolving vital military theoretical problems.”

Mernov

The article by Mernov, Bogomolov and Suglobov, “Military Practice - The basis and criterion for truth in Military Science” in November 1968 Military Thought provides information on the other side of the model - practice equation.

The authors seek to stress the Marxist concept of the unity of theory and practice. It is only actual military practice that can serve as the basis for perceiving the phenomena of war and be the criteria of the truth of military theory. The authors discuss the various forms of military practice. They note that actual combat is the most important form. They also mention that all the activities that are involved in preparing
for war are also part of actual practice. But military theory can only be verified during actual war. They discuss the limitations of peacetime military activity as a surrogate for actual wartime activity when it comes to serving as a validation for theory. “Peacetime practice is organized and conducted on the basis of the recommendations of military theory, with the extensive application of scientific experimentation and with consideration of those changes which will take place in wartime in relation to the method of initiating the war.” “New theoretical principles in the area of military art in turn are swiftly given a practical test in the training process of several large units, while those which prove valid are distributed to all units in the form of directives, orders and various types of instructions.”

( Colonels Jalali and Wardak made this very same point.)

The authors emphasize that military practice interacts with its theoretical interpretation. “Actual practice creates for scientific research an object of cognition in the form of actually existing military phenomena, processes and events.”

“During the course of military practice commanders develop the ability to synthesize the phenomena of wargame, to predict their changes. The better military cadres know military affairs and the better mastery they have of the techniques of dialectical thought, the more effectively this development proceeds. The most important prerequisites for scientific forecasting in problems of war are a high level of general and technical military training of military cadres, particularly in the area of military art, knowledge of past battle experience, and the ability to apply it to conditions changing in the process of development of combat operations.”

Constantly changing technology must be continually studied for its military scientific implications. New forms of organization and methods of conducting combat operations are developed and new military theories are formulated to provide the theoretical basis. The importance of practice as the basis for theory dictates the importance the Soviets place on experimentation. “The role of experiment has shown particular growth under modern conditions, where the revolution in the military field has advanced before military science a number of complex problems.” “Verification of the truth of various concepts and their conformity with reality takes place in the process of practical activity.” “The conclusion that scientific views can be fully verified only in a major war with a powerful adversary in no way denies the fact that in peace-time combat troop and command-staff field exercises and maneuvers are a basic and effective form of verifying the correctness of the theoretical conclusions of military science.” “In the aggregate the various types of field exercises and maneuvers as well as proving-ground weapons testing conducted in peacetime enable military cadres to verify with a certain degree of accuracy elaborated military theoretical views and recommendations, to reject obsolete and perfect new tenets of military science and practice. Critically utilizing everything valuable and progressive accumulated by past war experience, Soviet military theory, elaborated on the basis of employing new weapons, is constantly verified and perfected at exercises and maneuvers, bearing in mind the results of proving ground tests on new weapons and combat equipment.”

“Test multistage and two sided experimental exercises are of great importance in development and verification of the theoretical principles of military science. To conduct such exercises in addition to a staff of umpires scientific research groups are being established for verifying training exercise results. They draw conclusions and generalizations and make suggestions on various points of military science. These
exercises are conducted on the basis of many variants, with various objectives. The most important points of the field manuals and regulations are subjected to painstaking verification at such exercises.”

“Troop exercises and maneuvers are also used for verification and development of points of military theory.” “Of exceptional importance in verifying the theoretical Propositions of Soviet military science, particularly relating to the organization of troop control, are command-staff and command games, which offer the Opportunity to verify, introduce precision and to develop military theoretical views on the nature, methods and forms of military operations, on utilization of various branches and arms, on methods of troop control, organization of unit coordination, etc.” “A positive aspect of this type of exercise is the fact that its conduct involves less consumption of materials than do full troop exercises.” “A certain degree of conventionality is inherent in all field exercises, maneuvers and war games without exception, since a real enemy is not acting against our troops and the games participants do not fully feel that physical and morale psychological stress which can occur in modern combat.” “The problem of extensive use of methods of mathematical study of operations has become extremely pertinent.”

“Thus under peacetime conditions the most important means of verifying the conclusions of military science are primarily field exercises, maneuvers and wargames, experiments and proving ground testing.”
SOVIET WARGAMES BRIEFING

View Graph 1: Soviet Wargames

1. Theory – Role and place of wargames in military science
2. Uses and types
3. Structure and contents of wargames
4. General and specific tasks and responsibilities of participants
5. Preparation and conduct of a wargame

Notes: The general outline of the content of the presentation. This is a report on work in progress in which we are attempting to describe the role and place of wargaming in Soviet Military Science. It is based on discussions with two graduates of Soviet higher military academies who had over 20 years experience each working with Soviet officers. They participated in Soviet style wargames in many different roles. The presentation also contains information extracted from a small number of articles in the Soviet journal “Military Thought”. These articles are available as an appendix to the report.

View Graph 2: Soviet military theory

According to Soviet theory combat is a two-sided, dynamic process which takes place in a specifically defined time and place. It has a set of inputs and outputs. The role of the commander is to control the process toward achieving the desired goals. For this he uses the troop control organs and processes. The combat process is modeled in one or more of various ways using a mix of mathematical models and physical models. The role of the wargame is to focus on the interaction of the commander and staff with this combat process. The attention is on the decision making and how it is influenced and in turn influences the other components such as technology, training, organization, etc.
View Graph 3: Bases for theoretical generalizations

- Experience of past and present local wars
- Known and conjectured characteristics of weapons
- Results of simulating combat based physical models such as military games, command-staff exercises and troop training exercises
- Mathematical models
- Previously revealed laws and principles of armed combat which may require reformulation under new conditions

Relationship of theory and practice — According to Soviet views, theory and practice proceed in parallel in a dialectical mode. Theory must be based on practice and practice must be based on theory. As the real world, ie actual practice changes there will be required adjustments to theory. But these adjustments are also forward looking so that new theory may actually refer to an hypothetical future practice. The Soviet commander must be able at any time to justify his actions by reference to the appropriate theory. The process requires constant testing and validation of theory by practice. Since the only actual practice in war is war and this cannot be undertaken merely to justify theory surrogates (ie models) must be used for practice. The factors which form the basis for theory are in the material world, above all technology. Marshal Ogarkov in his book on defending the fatherland describes this process in detail. Soviet concept is that quantitative changes in new technology only become qualitative changes when the technology is properly assimilated and used according to new theories.

View Graph 4: The place of wargames in the R&D process (1)

This and the next chart show the central place of wargaming in this process. Initial concepts about changes are generated in a variety of ways and filter through analytical processes until they are tested in wargames. In the Soviet system wargaming is so pervasive that it may be said to exist everywhere and nowhere, that is wargaming is an integral part of virtually all decision processes but it does not exist as a separate activity in its own right.
**View Graph 5: The place of wargames in the R&D process (2)**

![Diagram showing the place of wargames in the R&D process]

**View Graph 6: Application of models and wargames**

1. Investigation of new laws and principles of armed conflict
2. Check and refine basic theoretical tenets and concepts of combat
3. Develop and improve forms and methods of waging combat
4. Implicit or explicit training of participants
5. Evaluation and validation of existing plans
6. Implicit evaluation of participants

This table shows some of the roles for models and wargames in the Soviet system. It illustrates the unity of theory and practice in the Soviet system. It is used to refine and develop new theories and in the training process by which the new theories are learned and applied. In training the Soviet officers are learning how to apply theory in practice.
View Graph 7: Soviet chart on the classification of models by Major Dmitriev

Translation

1 - Military research models; 2 - Substantive; 3 - Imaginary; 4 - Natural (phenomena-types); 5 - Artificial; 6 - Descriptive-logic; 7 - Logic-mathematics; 8 - Symbolic; 9 - Models-games; 10 - Technical; 11 - Physical; 12 - Mathematical; 13 - Troop exercises and maneuvers; 14 - Command and staff exercises; 15 - Map games; 16 - Geometrically similar; 17 - Physically similar; 18 - Physical diagram-analog; 19 - Analog computer; 20 - Digital computer; 21 - Schematic qualitative description; 22 - Graphic representation; 23 - Mathematical description
Translation

A – Models-games (exercises, maneuvers, command and staff exercises [KShU], map games); B – Processes and means of armed struggle; C – Imaginary-descriptive-logic and logic-mathematics models; D – Military theory; E – Models accomplished with the use of computers.

The legend for the chart contains several faulty translations typical of US translators. In particular the word “imaginary” actually means “conceptual” and “substantive” means “physical or material” (i.e. real according to a materialist). The criteria for classification is the content and nature of the information depicted in the model and the form of presentation. Models by content are stochastic or deterministic and by form are physical or conceptual. The chart shows that actual combat is a natural model of itself in that it is a full scale representation of reality. Various exercises are artificial models in that they resemble the natural but at reduced scale. Such artificial models may be technical or complex systems. Math models may be conceptual i.e. symbolic such as maps or logical such as descriptive equations or they may be technical such as the formulas for electrical or thermodynamic processes.
**View Graph 8: Physical models**

- Physical models reproduce the object being studied
- Field exercises are physical models of combat
- All models are incomplete
- Field exercises with troops permit verification of certain aspects of combat
  1. Movement and deployment times and characteristics
  2. Use of equipment on specific terrain
  3. Combat support issues
  4. Organization of troop control
  5. Preparation of troops and staff for modern combat

**View Graph 9: Uses for mathematical models as decision aids**

- Organization of command and staff work during planning
- Secure continuity of troop control
- Determine degree of importance of targets
- Solve problem of optimal use of men and material
- Optimize use of combat support equipment and men mathematical models

In training exercises and wargames the commander and staff will use the models designed for use in real combat

**View Graph 10: Advantages and disadvantages of mathematical models**

<table>
<thead>
<tr>
<th>Advantages</th>
<th>Disadvantages</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Short time to run</td>
<td>1. Difficult or impossible to quantify many factors</td>
</tr>
<tr>
<td>2. Many variants of combat can be tested</td>
<td>2. Factors are too numerous</td>
</tr>
<tr>
<td>3. Eliminate some subjectivity in evaluations</td>
<td>3. Results of real combat depend on complex combinations of all factors in a given time and space</td>
</tr>
<tr>
<td>4. Nearly limitless number of combinations</td>
<td>4. Nearly limitless number of combinations</td>
</tr>
</tbody>
</table>

Math models provide a scientific dimension to decision making. When intuition is not enough (and the Soviets hate to rely on intuition) one is not sure what to do so math models give a convenient starting point and a psychological sense of assurance to the Soviet officer.
View Graph 11: Requirements for combat models

The battle model (wargame or exercise) must consider not only quantity and quality of men and means but also the skill in using them. It must show the commander and staff art. For this reason mathematical models of battle without incorporating actions of commander and staff are insufficient. Yet doing the is extremely difficult and subjective.

In addition to skill in use of men and means, the model must make it possible to consider the following:

1. The use of intelligence potentials on both sides.
2. The results of neighboring combat
3. The level of training of the commander
4. The organizational ability of the commander
5. Flexibility of troop control
6. Training and morale of troops
7. The realistic potential for combat and combat service support

Players must be trained to know the system including the enemy system. They must know how the enemy does his thing. For a proper game players must be interactive. Soviet commanders are younger and less experienced than western commanders. But they receive more help from their higher headquarters.

View Graph 12: Most important uses of combat models in wargames

To determine:

1. Optimal number of troops
2. Optimal quantity of weapons and equipment
3. Properties of weapons
4. Tactical/technical requirements for battle solution
5. Most feasible method to apply forces (tactics, OpArt)
6. Optimal troop organizational structure

View Graph 13: Soviet views on the shortcomings of models

- Models give only approximate picture (physical, math, etc.)
- Cannot predict all consequences of a decision
- Cannot assess well skill, initiative, sacrifice, panic, etc.
- Random occurrence also plays a role in combat (not modeled)
View Graph 14: Purposes for wargames

1. Research and development
2. Investigate new laws and principles of armed conflict
3. Check and refine basic theoretical tenets and concepts of combat
4. Develop and improve forms and methods of waging combat
5. Develop new strategic concepts
6. Development of equipment
7. Changes in TOE and OB
8. Refine and test actual war plans
9. Training of command and staff
10. Implicit evaluation of participants
11. Changes in training programs.

This is a summary of the roles shown in the charts in 3 and 4.

View Graph 15: Wargame types

<table>
<thead>
<tr>
<th>Level</th>
<th>Echelons</th>
<th>Sides</th>
<th>Means</th>
</tr>
</thead>
<tbody>
<tr>
<td>Strategic</td>
<td>One</td>
<td>One</td>
<td>Supplement with Troops</td>
</tr>
<tr>
<td>Operational</td>
<td>Two</td>
<td>Two</td>
<td></td>
</tr>
<tr>
<td>Tactical</td>
<td>Three</td>
<td></td>
<td>Live firing</td>
</tr>
</tbody>
</table>

View Graph 16: Three variations for organizing and conducting test wargames

1. Special teams from staff or operational formations and units created specifically for game period
2. Teams assigned to conduct game part-time in addition to regular duties
3. Combination of special study groups on technical questions with large combined arms teams on operational questions

This list is from a Soviet article describing three methods for organizing the wargame teams and the advantages and problems associated with each. Soviet wargames have two main concerns, to fulfill the objectives of the game and to defend themselves from inspectors.
View Graph 17: Structure and content of wargames

1. The initial tasks
2. Aims and objectives
3. Initial tactical/operational (strategic) situation
4. The dynamism of making decisions for the initial situation
5. Weighing the decisions of opposing sides to develop further situations by applying norms when appropriate and practical experience on non-quantifiable matters
6. Repetition of steps 4 and 5 as required
7. General assessment and special evaluation of activities during game
8. Lessons learned
9. Tasks to be assigned for further work

The initial tasks are the tasks of the game itself as set forth in the directive (not the tasks within the game). These might be testing of mobilization times, movement capabilities, plans, organizations etc. The aims and objectives are the detailed aspects that are being examined such as roles in nuclear or conventional war. The initial situation for both sides is presented in a dynamic and interactive way between the umpires and players in which the players must formulate an intelligence plan in order to acquire further information.
The chief controller is the boss but he is responsible for everything to the higher commander who directed the organization of the game. The chief of staff does most of the work. The deputy chiefs for red and blue are the main liaison with any field exercises which may accompany the staff game. The control staff is divided functionally in the normal way. In addition to their functional duties the controllers assess the game decisions of the player teams and develop the new scenario for the next phase. The umpires work with the player teams as they make their decisions. They assist with the evaluation and critique. The players perform the normal command and staff functions. For exercises below division the Blue side is played by regular Soviet units which use their own Soviet tactics. For Army and above the Blue side is played by intelligence officers who are knowledgeable about NATO and who use NATO doctrine.
**View Graph 19: Steps to develop a wargame**

1. Write directive
2. Establish control group, umpires and teams
3. Prepare calendar plan
4. Conduct area study
5. Develop tables and databases
6. Prepare bill of materials
7. Write concept of operation
8. Develop initial situation
9. Prepare player procedures
10. Prepare place to conduct game
11. Specify role of umpires
12. Determine time phases
13. Plan methods for drawing conclusions
14. Plan procedures for critiques
15. Plan preparation of final report

The table lists the steps taken during the preparation of a wargame. The content of these is described in detail in the written report.

**Figure 20: Required documents**

<table>
<thead>
<tr>
<th>Main Document List</th>
<th>Required Documents</th>
</tr>
</thead>
<tbody>
<tr>
<td>Concept of operation</td>
<td>Directive for the game</td>
</tr>
<tr>
<td>● A graphic and written text of initial situation and development</td>
<td>Operational appraisal of the theater</td>
</tr>
<tr>
<td>● Training aims, questions, phases, time</td>
<td>Calendar plan for preparation of the game</td>
</tr>
<tr>
<td>● Teams</td>
<td>Directive annexes on game organization</td>
</tr>
<tr>
<td>General initial situation</td>
<td>Databases on armed forces of both sides</td>
</tr>
<tr>
<td>● A map and written text</td>
<td>Databases on equipment of both sides</td>
</tr>
<tr>
<td>Initial situation for each arm</td>
<td>Tables of norms for tactical and operational levels</td>
</tr>
<tr>
<td>Table of casualties and losses and current status</td>
<td>Concept of the operation shown on map and in text</td>
</tr>
<tr>
<td>Communications plan</td>
<td>Plan of conduct of game</td>
</tr>
<tr>
<td>Plan of location for teams</td>
<td>Initial situation given to players</td>
</tr>
<tr>
<td>Security plan</td>
<td>Directive from higher HQs with annexes</td>
</tr>
<tr>
<td>Administrative plan</td>
<td>Specific information for staff functions</td>
</tr>
<tr>
<td>Directive</td>
<td>Plan for team physical setup</td>
</tr>
<tr>
<td>● The operational orders to the sides with a new plan for each phase</td>
<td>Administrative plan</td>
</tr>
</tbody>
</table>
| Annexes and tables | }
**Figure 21: Calendar plan for the preparation of a warplan**

<table>
<thead>
<tr>
<th>Item #</th>
<th>Date</th>
<th>Measures</th>
<th>Who Conducts</th>
<th>Where</th>
<th>Who Controls</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>2.16-2.17</td>
<td>Staff gathers and prepares for work and receives instructions on the planning.</td>
<td>Chief of Staff</td>
<td>Working places (HQs 7 Army)</td>
<td>Chief controller</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>2.18-2.20</td>
<td>Studying the maps and tasks and preparing the graphic part of the plan</td>
<td>All Staff</td>
<td>Work places</td>
<td>Chief of Staff</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>2.21</td>
<td>Reporting to the Chief Controller and the assistant chief controller on the preparation of the combat situation (Problem)</td>
<td>Chief of Staff and assistant chief controllers of arms and services</td>
<td>Work places</td>
<td>Chief controller</td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>2.22-2.26</td>
<td>Terrain evaluation and area study</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

This is a sample of the calendar plan prepared by the control staff depicting the activities that will take place during the planning and preparation for the wargame and identifying the responsible parties.

**Figure 22: Plan for the conduct of the exercise**

<table>
<thead>
<tr>
<th>Real</th>
<th>Time Operational</th>
<th>Red Training Questions</th>
<th>Conduct of Team</th>
<th>Blue Training Questions</th>
<th>Conduct of Team</th>
<th>Control Team Tasks</th>
<th>Umpire Tasks</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
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<td></td>
<td></td>
</tr>
</tbody>
</table>
**Figure 23: Schedule for conduct of a wargame**

<table>
<thead>
<tr>
<th>First day</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>- Initial instructions (including political and military background)</td>
<td></td>
</tr>
<tr>
<td>- Combat directive</td>
<td></td>
</tr>
<tr>
<td>- Decision process</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Second day</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>- Presentation of red decision</td>
<td></td>
</tr>
<tr>
<td>- Presentation of blue decision</td>
<td></td>
</tr>
<tr>
<td>- Preparation of initial plans</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Third day</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>- Umpire assessment and decisions</td>
<td></td>
</tr>
<tr>
<td>- Controller assessment and decisions</td>
<td></td>
</tr>
<tr>
<td>- Situation outcome and new situation</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Fourth day</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>- Both sides prepare new decisions</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Fifth day</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>- Critique</td>
<td></td>
</tr>
</tbody>
</table>

This outline shows the phases of the exercise. The procedure is to establish a scenario which describes a combat situation. The two sides reach command decisions and issue orders to their forces. These orders are used by the control group as the basis for force movement and any combat which ensues. The controllers evaluate the decisions on both sides and develop a new situation at some subsequent time interval. After several iterations the game concludes and critiques of the players and their decisions are made.

**Figure 24: Wargame results**

<table>
<thead>
<tr>
<th>Player results</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Each person is trained for his role in specific jobs</td>
<td></td>
</tr>
<tr>
<td>2. Learn how to prepare combat documents</td>
<td></td>
</tr>
<tr>
<td>3. Learn about the area of game operations</td>
<td></td>
</tr>
<tr>
<td>4. Become familiar with the type of coordination required</td>
<td></td>
</tr>
<tr>
<td>5. Learn the capabilities of units in combat</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Controller and umpire results</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Controllers also learn about unit capabilities</td>
<td></td>
</tr>
<tr>
<td>2. Learn about the area of operations</td>
<td></td>
</tr>
<tr>
<td>3. Learn unexpected things about the game context</td>
<td></td>
</tr>
</tbody>
</table>

Despite the fact that they are in control of the scenario and the rules of the game, the controllers also learn a great deal about the subjects included in the exercise.
**Figure 25: Soviet views on shortcomings of wargames**

- Absence of proper psychological conditions
- Deficiencies in realism of play

**Figure 26: Soviet recommendations for required improvements**

1. Higher level of qualifications of participating officers, especially for opposing forces and assessment teams.
2. Full objectivity in evaluating actions
3. Realistic allocation of time
4. Sufficiently reduced intervals between episodes
5. More extensive use of mathematics in planning decision process