The Dalig and Vadan Exercise: Teaching Students about Strategy and the Challenges of Friction and Fog

Victor Asal  
University at Albany SUNY

Lewis Griffith  
Josef Korbel School-University of Denver

And

Marcus Schulzke  
University at Albany SUNY

For classes which contain a discussion of strategy, war, political violence, terrorism, insurgency, peace operations, or ethno-nationalist conflict to name a few, students must have an effective, foundational understanding of the complexities of using military force. To that end, we have developed an operational “battlefield” exercise, the Dalig–Vadan Exercise (DVE), which allows an entire class of students to get a sense of the dynamics and complexities of command and execution of competing strategies without any military background, any particular emphasis on time, place, or context, and de-emphasizing the consequences of violence. Anchored on Clausewitz’s friction and fog, the DVE provides students with a first-person encounter with decision making in a dynamic, multiparty, informational-limited, and time-sensitive environment that can be related to a wide range of courses and course material in international relations and related fields.

Keywords: strategy, political violence, simulation/exercise, Clausewitz

The question is almost inevitable. In any discussion of a military effort that did not achieve its objectives, someone asks why the political and military leadership in question “did not see that coming?” In itself, the question can be answered with reference to Moltke the Elder’s observation that “no plan survives contact with the enemy” (Barnett 1965/2000:35). Yet, classes which center on strategy, war, political violence, terrorism, insurgency, peace operations, or ethno-nationalist conflict require students to have an effective, foundational understanding of the complexities of military activity. Thankfully, the vast majority of our students—even today when there are more combat veterans in class than there have been in decades—have no combat experience and those who do rarely served in operational planning, assessment, or command. True, there are games, both board and computer, that one can turn to, but these are almost always at the macro-strategic or micro-tactical level, require some specific background
knowledge or skills prior to play, and are hard to use with an entire class without significant costs.

To that end, we have developed an operational “battlefield” exercise, the Dalig–Vadan Exercise (DVE), which allows an entire class of students to get a sense of the dynamics and complexities of command and execution of competing strategies without any military background, any particular emphasis on time, place, or context, and de-emphasizing the consequences of violence. In the real world, strategic decisions are made in a dynamic, multiparty, informationally-limited, and time-sensitive environment. If the strategic decision involves contestation or even violence, one can add risk, stress, exertion, and the presence of an active and reactive adversary into the mix. For those who teach strategy or political violence, particularly from a sociological, historical, political, or public policy perspective, capturing these realities is critical.

The DVE has been developed to give an entire class, regardless of background, an effective, manageable, and educationally sound experience with decision making under dynamic and contested conditions. The DVE is specifically designed to simulate the forces Clausewitz identifies as “friction” and “fog.” Friction refers to the tendency for unexpected events and operational challenges to erode a force’s effectiveness, disrupt plans, and hinder communication. Fog is a specific type of friction that has to do with the incompleteness and inaccuracy of information. Friction and fog are extremely difficult to reproduce in games and simulations, which tend to be designed with rules that impose order on the activities they simulate. However, the DVE makes these forces a central part of the simulation, thereby providing students with a more engaging experience of how friction and fog affect real-world military operations than students would gain from other instructional techniques.

**Educational Foundation**

The first key to successfully integrating the Dalig–Vadan Exercise into a course is to make sure that the activity is anchored in a conceptual framework which the students can understand and assess what they encounter in the simulation. To that end, the DVE is explicitly designed to use Carl Von Clausewitz’s conceptions of fog and friction from *On War*. There is no question that *On War* as a whole can be a challenging book and potentially more than many would want to engage in its entirety. But we do not use Clausewitz here as a whole or as a philosophical or ontological foundation: We only rely on *On War* for a number of commonly used concepts in fog and friction that are easily understood. While Clausewitz himself did not lay out these concepts as cleanly as the commonly referenced phrase “fog, friction, and chance” implies, he did ground the concepts of fog and friction in an accessible and meaningful conceptual framework that allows students, regardless of their backgrounds, to think seriously about the realities of making “battlefield” decisions and the challenges of executing complex operations.

The other advantage of using Clausewitz’s conceptualizations of fog and friction is that the concepts translate very well beyond military discussions. One need not be attempting to explain Napoleon’s military genius to grasp the fact that all complex interactive systems, such as public or foreign policy creation and execution, are subject to the interactive effects, delays, and misinterpretations that make up Clausewitz’s friction. In addition, the study of any political process in which the quantity and quality of the information available to the decision maker is at issue will benefit from an exploration of Clausewitz’s fog. Examples of fog and friction abound from nonviolent activities and can be used in class discussion as a way of connecting the specific lesson to broader research interests. For example, those interested in rational choice or other process
models can use the example of the extent to which games change when costs and payoffs are uncertain and information is incomplete to demonstrate the concepts. And while not all will agree with Beyerschen that Clausewitz’s *On War* is an excellent example of nonlinear theory with broad political science implications, any political assessment where information is incomplete and interactive and feedback effects are likely can benefit from a clear understanding of the implications of fog and friction (Beyerchen 2007).

The DVE provides the vehicle to bring these concepts to life. The exercise helps students understand what effects fog and friction can have on decisions made in complex, interactive environments. The exercise is a model of combat that replicates the most basic forms of movement and engagement to show that even in a relatively simple and completely nonviolent engagement, fog and friction can disrupt plans in a multitude of ways.

**Fog and Friction Defined**

The fact that the *On War* we study today is both a translation and a compilation of an unfinished work means that there is no shortage of debate regarding exactly what Clausewitz means at any given point.¹ And while not nearly as debated as Clausewitz’s centers of gravity or the trinity, there is some debate in the literature on what exactly fog and friction imply and whether they are distinct concepts. Strachan and Herberg-Roth, for example, equate the two, seeing them as different names for the general uncertainty of the battlefield (Strachan and Herberg-Roth 2007:2). But most read Clausewitz to place the concept of friction at the center of his discussion of what “distinguishes real war from war on paper” (Clausewitz 1984:119), with fog, and chance as well (Waldman 2010), as particular elements of friction.

Clausewitz uses mechanical friction, the intrinsic, omnipresent rubbing of parts against each other in any complex machine as his model for friction in war (Echevarria 2007:93). An army in the field, a government, etc., is a complex system made up of numerous parts doing an array of defined tasks that in the end are to combine into successful implementation of the plan and achievement of the goal. But each of these individual tasks can be delayed, misapplied, or even fail in unpredictable ways due to an interaction of incompetence, misunderstanding, and/or unforeseen circumstances. “This tremendous friction, which cannot, as in mechanics, be reduced to a few points, is everywhere in contact with chance, and brings about effects that cannot be measured, just because they are largely due to chance” (Clausewitz 1984:120). Each of these points of friction then creates the opportunity for additional aggregate effects on the system as a whole as they interact over time with each other with further unpredictable consequences. Clausewitz describes the effect this way:

> fog prevents the enemy from being seen in time, a gun from firing when it should, a report from reaching the commanding officer. Rain can prevent a battalion from arriving, make another late by keeping it not three but 8 hours on the march, ruin a cavalry charge by bogging the horses in the mud, etc. (p. 120)

Friction is generated for Clausewitz by the nature of war as an active, dangerous, and stressful environment in which the participants are physically and mentally taxed to complete tasks as efficiently as possible while operating with incomplete or even conflicting information. The specific character of friction may change with new technologies and contexts, but despite the regular claims that new observation and communications technologies can eliminate friction,

¹Among Clausewitz readers, a fierce debate rages as to what translation is the best representation of the original. For our purposes here, we used the most common and thus commonly read Howard and Paret.
they only serve to alter the potential friction points (Lonsdale 2004; Smith 2004). There are examples of types of military friction, however, as Smith points out, it may be misleading to try to apply any single kind or causes of friction to any given event, as the problem of friction tends to build on itself, causing one event to produce other mishaps (Smith 2004:77). Therefore, simulations need not reproduce friction in a rigid, formulaic way, nor do they need to explore every type of friction, as long as they provide students with engagement as to how friction arises and what effects it can have.

Clausewitz’s fog refers to the challenge of missing or ambiguous information in war, that is, the fog of war. As we saw above, Clausewitz in places used fog literally as a description for the thick smoke that would soon form over the battlefield in the black powder age, preventing the commander from fully viewing the situation. But he also used fog to represent the haze that clouds the decision makers’ minds as they attempt to make rational decisions while being, “bombed by reports both true and false; by errors arising from fear or negligence or hastiness; by disobedience born of right or wrong interpretations, of ill will, of a proper or mistaken sense of duty, of laziness, or of exhaustion; and by accidents that nobody could have foreseen” (Clausewitz 1984:193). The fog of war is uncertainty about the enemy’s intentions, strength, disposition, and movement. It is also uncertainty about one’s own forces when communications networks break down and units become disorganized, that is, when friction generates a lack of information. More than the past two decades, fog has become a familiar concept among war gamers with many digital war games imposing a fog of war that prevents players from seeing enemy movements.

But Clausewitz’s fog is more than simply hidden enemy forces. Fog refers to the whole of the intelligence challenge; how to assess both the available and the missing information being provided to a decision maker in such a way as to be able to make good decisions about the future so as to arrive at one’s desired outcome. As this information challenge is a particularly telling aspect of friction, and one that each and every student will wrestle with as a future decision maker, fog has its own value in an effort to simulate the complexities generated by exertion, interaction, stress, time, and unforeseen events for the student of politics. The result, then, is that any effort to improve student experience with the implications of fog and friction is likely to be a fundamental lesson regardless of their interests or background.

While he would argue friction, and thus fog, are unavoidable, Clausewitz also emphasized that strong leadership is a critical way of limiting their adverse effects. Successful military leadership for Clausewitz included an awareness of and ability to react to its impacts of friction and fog while maintaining focus on the overarching military effort and objectives via a high-quality, highly motivated staff and a shared understanding with subordinates. In addition, good leaders might be able to use friction to their advantage by forcing their enemies into situations that made friction more likely and more troublesome (Moran 2007:95). To that end, how students, particularly those in the commander role, elect to conduct planning, communication, and command will have an immediate impact on the fog and friction that their team and the other team encounter.

**Simulating Conflict and Uncertainty**

The Dalig–Vadan Exercise is designed to simulate the experience of contending against friction and fog, thereby teaching students about these concepts and the methods of overcoming them in practice. Although these forces can be explained through traditional pedagogical techniques, such as lectures or readings, such techniques do not give students direct experience of these forces. Rather, more passive instructional methods tend to explain these concepts in
fairy abstract ways. This abstraction can be a challenge when teaching students about any subject, but it is especially problematic when it comes to friction and fog, as Clausewitz describes these as problems that arise because of the difference between theoretical abstractions and real-world applications. Simulations are not only able to supply first-hand experience that can make abstract concepts easier for students to understand and remember (Chasek 2005; Asal and Blake 2006; Shellman and Turan 2006) but are also uniquely suited for capturing the challenges of mediating theory and practice that are inherent in friction and fog.

In addition to providing a more immersive experience than other teaching techniques, the DVE is also designed to encourage student engagement and information retention. First, students tend to learn more from simulations that they can become personally invested in (Lieux 1996; Newmann and Twigg 2000). Generating interest is also important because this helps to overcome the problem that some students may resist participating (Torney-Purta 1996:95; Asal 2005:361). The DVE encourages students to take a personal interest in the simulation by creating a competition between two teams, which can be played out multiple times, allowing teams to adapt and respond to each other’s strategies. As Hess (1999:5) points out, “the competitive nature of many simulations lends an urgency to collaborations that is lacking in more traditional group projects.” Interest in the competition can be further increased if the instructor chooses to offer some extra credit or another prize to the members of the winning team.

Second, simulations are most effective in promoting information retention when they create memorable events that can be used to help students recall key concepts (Jensen 1998). The DVE helps to create memorable experiences that can anchor the abstract concepts of friction and fog in concrete examples. For example, students remember when they were surprised and defeated by an opponent who appeared to be weak or that they were confused when they were unable to communicate with their teammates. These experiences can help students recall how these forces affected the simulation and how they interfered with the students’ own decision-making abilities.

Finally, the DVE is not as rigidly structured as many other pedagogical simulations. Simulations often suffer from a significant weakness when it comes to exploring concepts like friction and fog: They tend to be too heavily rule governed and too tightly ordered to allow problems of friction and fog to occur. As Sasley (2010) points out, simulations can also be used to teach students about complexity, frustration, and even failure, which, though unpleasant, are experiences that are critical for students learning about international politics to understand. The advantage of the DVE is that its rules are designed to ensure that these forces do shape the course of the game. Rather than using rules to ensure that the game is orderly and structured, the rules are meant to create realistic impediments to planning and coordination that are analogous to those that really occur during conflicts. Students invariably find themselves in situations where they are frustrated by inadequate information or when unexpected events force them to revise their plans, which turn out to be instructive experiences while still allowing students to enjoy participating in the simulation.

The authors have played the game with more than 10 classes, which have ranged in size from 20 to 36 students and have included undergraduate and graduate students alike. Our experience using the DVE has shown that it is a highly adaptable exercise that is appropriate for classes at these levels. Most of the students who have participated in the exercise were civilians, though some were veterans with real combat experience and active duty military personnel who also expressed the view that the game was useful theoretically for them. Across the board, student reaction has been positive with many students telling us that they finally got an idea of what Clausewitz was actually talking about. One student,
for example, spoke about how the game underlined for them how friction kept getting in the way of their brilliant plans—again and again.

**Pre-Exercise**

Iterations of DVE tend to take around 15 minutes, which means that several iterations can be played during a single class period. The first iteration may take a few minutes longer than others as students learn the rules. We have found that the exercise works best when students play at least three iterations, as this provides students with a chance to learn how the exercise works and to experiment with various strategies for overcoming the problems of friction and fog. If time permits, students should be given a debriefing immediately after conducting the exercise. However, during short class periods, the DVE can be conducted during one class and the debriefing given at the start of the following class. The events of the game tend to be very memorable because of their competitive nature and can easily be recalled in later classes.

Prior to play, the class should be divided into two teams of equal strength. We designate the teams with the names of fictional opposing states, Dalig and Vadan, in order to distinguish them. Though other names may be substituted for these, it is helpful to characterize the teams as opposing states or militaries, rather than simply calling them “Team 1” and “Team 2,” in order to emphasize that the exercise is meant to reflect elements of real conflicts. Each team should wear some distinctive clothing to clearly distinguish their members. It is important that the signs of team membership are clearly visible as the game moves quickly and some recognizable uniformity helps maintain order. Our experience is that the game works best if the rules are made available and the commanders selected prior to the day of play. Please see the DVE supplemental materials online for a PowerPoints rule book that can be distributed to the students.²

While it can be played in a gym or even a large foyer, the DVE is best played outside. Playing outside allows the game to include varied terrain potentially with obstacles obstructing visibility and movement which can add to the effects of fog and friction. The geography need not even be symmetrical. One team may have the high ground or have more obstacles near its starting point. These variations also help to maintain an element of uncertainty in the game even when played repeatedly (see below). When running the DVE with a large number of players in a smaller space, it may also be helpful to designate a starting line (behind which players are initially deployed) that is further back than the mid-point to prevent the exercise from ending too quickly. Whatever the terrain, there are several elements that must always be present. First, there must be a border in the middle of the field that can designate the teams’ respective territories. Second, each team must have a command post where its commander will be positioned. The command post should be in a central location inside of each team’s territory where it can be protected while still allowing the commander stationed there to coordinate his or her team. Finally, each team should be given two production centers. These should be away from the command post and closer to the mid-field border, but still far enough from the border to give the facilities some protection from the opposing team.

In the pre-exercise planning stage, the commanders must distribute their teams’ points. Points are assigned to each player and used to determine that player’s abilities. Points can be assigned for each player to one or more of the players’ three abilities: movement, attack, and defense. Movement points correspond to the number of steps a player can take each turn (see Exercise Execution for an explanation of turns). The attack and defense points are used to

²Supplemental Materials for the DVE can be found at http://activelearningps.wordpress.com/
resolve combat between opposing players (see Exercise Execution for an explanation of combat). Every player who is deployed on the field must start with a score of one in each of these categories, so even a player who receives no additional points is capable of performing each of these operations. However, no player can have more than nine points total at any time, so only six additional points can be assigned to any individual player. Although teams may discuss the assignment of points, the final decision of how they will be assigned is left to the team’s commander. Once points have been allotted, each player must write their points on a piece of paper, which they retain during play. Until they initiate combat with opponents, players may conceal their points in order to hide their strength. This makes it possible to surprise the opposing team with powerful players or to divert their attention with weak players that act as decoys.

The total number of points each team receives may vary by game and circumstances. Games with more players, for example, will require more points to be allotted. We recommend that the total number of points should generally amount to roughly three points per player. For example, if there are eight players per side, then a total of 24 points should be allotted to each team. The number of points should be low enough that commanders are forced to make decisions about whether they want to design an offensive or defensive force, whether they consider mobility or fighting power more important, and whether it is better to create a mixed force of strong and weak players or one of roughly equal strength players. The configuration they choose will help to determine what strategies are open to that team. The ability to assign points in various ways also means that students may experience the simulation from various power roles, as extremely powerful players that can easily defeat opponents and as fairly weak players that have to avoid combat or cooperate with teammates to survive. This variability in power relationships has been shown to make educational simulations more effective (Baranowski and Weir 2010). Moreover, this variability makes the game extremely flexible. The point system helps to distinguish DVE from role-playing games that require players to take on a set of pre-determined roles, making it open-ended simulation that gives players, and their instructor, a great deal of freedom to determine how they wish to play.

Commanders do not have to assign all points at the beginning of the game or deploy all players. Players may be held in reserve at the team’s command post and deployed via one of the teams non-captured production centers at the start of any future turn. Those players with initial point values begin the DVE either behind the mid-line border or designated start line where the commander places them. More points can be earned during the game by holding at least two production centers.

Each team begins the game in control of the two production centers located in that team’s territory. These are meant to simulate the industrial infrastructure that must be protected during conflicts in order to maintain a fighting capacity. Production centers are stationary points that do not have any players permanently assigned to them. Teams may choose to defend these points or leave them open. However, it is to their advantage to defend them, as the production centers can be used to generate additional points throughout the game. At the end of every third turn, teams controlling at least two production centers receive an additional five points that can be assigned to any players still held in reserve, assigned to players in play that the commander is close enough to communicate with (see below), or used to revive neutralized players who are now effectively in reserve. Production centers are also where reactivated players enter play. Production centers can be captured by the opposing team. Control is determined by the last side to touch the production center. If a team only controls one production center, it loses five points, which either must come from points in reserve or must be subtracted from active players in the field.
Each team must designate one commander who is responsible for developing the team’s plan and coordinating the team’s forces (although other players may assist in these activities by relaying orders or performing delegated leadership roles). Commanders must remain at the command post during play. They may attack and defend like any other player (see below) as long as they do not move their feet to do so. Commanders automatically receive six attack points and six defense points that are not subtracted from the team’s total number of points. Before the game, the commander must assign attack, defense, and movement points to each of the players on the team and during play the commander is responsible for assigning any remaining points or points that are accumulated during play. Aside from the commander, players do not occupy pre-determined roles and are assigned to act as attackers or defenders, or in other capacities, according to the team’s plans.

The game is won when one side either captures the other’s command post by neutralizing the commander or controls all the production centers. Thus, strategies should focus on attacking the opposing command post or attacking production centers. This reflects the difference between real-world war strategies that aim at destroying an opponent’s military forces and those that aim at destroying an opponent’s infrastructure.

**Exercise Execution**

The DVE is played in turns, during which members of both teams move simultaneously. The instructor should call out the turns and continue on to the next turn as soon as all players have moved and all attacks are resolved, although there will need to be a short break every third turn to calculate the addition or subtraction of points from production centers. During each turn, players can move as many steps as they wish, and at any speed they wish, provided they do not exceed their movement number. One movement point counts for one step during a turn and the steps can be in any direction. Players do not have to use all of their movement points. For example, a player with a movement score of five may choose to take anywhere between zero and five steps. Attacks against opposing players can be made at any time during a turn, before or after the maximum number of movements has been reached. Combat begins when a player lightly touches an opponent that they can reach with both feet on the ground. Pushing, jumping, stretching unnaturally, or any violent acts must be avoided. The player who initiates combat (touches first) is the attacker, and the other is the defender. Each player or group of players (see below) should show their point cards to their opponents. The player or group of players with the highest score (attack vs. defense) wins and may continue playing. The eliminated player or group of players is neutralized and returns to base off field to await reintroduction. Neutralized players are effectively now reserves and are allowed to return to the game if they are given points that the team has held in reserve or accumulated over the course of the game. Reserve/neutralized players may rejoin the game during any turn at a production center controlled by their team, but their rejoining the game is their move for that turn and they must wait until the next turn to move or attack, although they can defend.

Players are allowed to attack and defend as groups of up to three players. To do so, they must link with allied players by holding hands or linking arms. Attack or defense scores are then added together whenever teammates enter combat while linked. This allows those players to exceed the maximum number of points that any individual may have. Players may move during the turn to link up and then attack. Players may remain linked to move but when players are linked, they may only take as many steps as the player in the group with the fewest steps allowed or remaining. This is to replicate one of the common problems in
combined operations; different capabilities must coordinate their movements if they wish to attack or defend as a team.

Once the game begins, the commander is responsible for managing any remaining points and may also give orders to team members who are standing nearby. In the standard version of the DVE, no player, even the team commander, can communicate with any other players unless the players are standing within arm’s length. This means that communication is also allowed between players who are moving together and between anyone engaged in resolving an attack. Communication is also allowed between the commander and any reserve/neutralized players who are assumed to be in close proximity behind the command post. Commanders can use messengers, sending players from their location to other players with instructions, but these messengers are players like any other and are limited by their movement points and can be attacked. The only exception to these communications rules is when, due to the loss of a production center, the side is to lose five points and there are not five points in reserve. The commander must then inform a player(s) that they have lost points in movement, attack, or defense, and this can be relayed directly and immediately. Communication is meant to be difficult, as this simulates the challenges of coordinating between units during war. If instructors find that restricted communication makes the game too difficult, they may modify the game by permitting commanders to call out orders to their subordinates. However, we recommend not allowing all players to communicate, as this detracts from the DVE’s capacity to simulate the friction that occurs when coordination between players is disrupted.

**Iterations and Variations**

We find that the best way to maximize the value of the DVE and its ability to teach about the strategic challenges associated with friction, fog, and leadership is to allow the students to play the game a number of times back to back and to add levels of complexity in subsequent iterations. There are a number of possible iterations/variations one can execute. One variation that we often use to magnify the fog of war is the introduction of suicide bombers. Each team is given permission to designate as many of their players as they would like as suicide bombers when they are deployed, either at the beginning of the game or when they are introduced from the pool of reserves. Suicide bombers must be assigned movement and defense points like any other player and may not execute a suicide attack as a form of defense. But when a suicide bomber executes an attack, they only need to have one attack point to execute that attack and the player they attack is neutralized regardless of their defense points. Groups of players are also susceptible to attack from suicide bombers, and one suicide bomber can eliminate everyone linked together with the suicide bomber’s target. However, once the suicide bomber executes their attack, they too are neutralized and must leave the field of play. In addition, suicide bombers may not elect to attack as a normal player, regardless of whether they have more than one attack point or not. Suicide bombers that are neutralized may reenter the game later, according to the normal rules of reviving neutralized players. However, it is at the commander’s discretion whether they should continue to act as suicide bombers once revived.

An additional iteration/variation that highlights the cumulative effects of friction, be it from weather, morale, or communications issues, is to use some form of random criteria to “freeze” a particular player or players for a given turn. Players can defend during such a freeze, but they cannot move or attack. This can be done by announcing at the beginning of a particular turn or turns, randomly or pre-selected by the instructor, that all players with a movement higher than 3 are frozen due to a fuel shortage or that all players with an attack higher than 4...
are reduced to 3 due to a flaw in their weapons systems. The freeze should be announced to all players so that all frozen players are aware of the change. If the players are numbered individually, one might randomly select a number on each side to be frozen. There are a myriad of rationales for these battlefield freezes and instructors should modify this approach to suit their course needs or circumstances.

Questions for Class Discussion

Upon completion of the iterations of the DVE, it is important to allow the students to process what they have learned. We suggest that instructors begin this debriefing with a discussion of Clausewitz and his concepts of “friction” and “fog.” Instructors may use our analysis of these concepts for assistance or they may substitute their own analysis if they have different understandings of what these concepts mean. Additionally, because the simulation is only meant to simulate the myriad difficulties inherent in waging war and not supposed to teach them about specific wars, it is helpful to offer students examples of how fog and friction can affect real military operations. Instructors may use this opportunity to refer to historical conflicts that have been discussed previously in the course in order to build on earlier lessons.

When presenting the debriefing, we recommend that instructors initially avoid explaining how the events of the game represent fog and friction. We think the best approach is to allow students to make this connection themselves after they have learned about these concepts and played the game. We have used two sets of questions, one foundational and one experiential to structure a classroom discussion of the DVE. These are designed to lead students to make the connections between the exercise and Clausewitz’s theory, thereby encouraging them to think critically about their experiences. The experiential questions are best used only after the DVE has been completed and serve to capture the participants’ observations regarding the meaning and implications of fog, friction, and leadership.

The foundational questions used to structure the discussion of how context and perception impacts political—military outcomes are as follows:

- What impact does material superiority have? Why?
- What impact does terrain, weather, or geography have? Why?
- What impact does being on defense have? Why?
- What impact does luck, chance, or the unpredictable have?
- What impact does strategic thinking have? Why?
- What are the implications of different leadership approaches?
- What is the most important of these elements? Why?

Students participating in the DVE can then be asked the experiential questions for discussion. The experiential questions are as follows:

- What did you experience or observe during the simulation that illustrates what we have defined as “friction”? And “fog”?
- What effect did fog have in each of the simulations? Did it interfere with your team’s plans? If so, how? Did it help your team? If so, how?
- What effect did friction have in each of the simulations? Did it interfere with your team’s plans? If so, how? Did it help your team? If so, how?
- How did the effects of fog and friction change as the rules of the simulation were changed? Which rules do you feel were best able to recreate fog and friction in the simulation?
• How much of your team’s success was a result of chance?
• What seemed to be the best ways of overcoming problems caused by friction?
• What seemed to be the best ways of overcoming problems caused by fog?
• What kind(s) of leadership and command structure(s) did your team use? How effective were these?
• How well did the game help you understand fog and friction as opposed to the readings and lectures alone?

These questions are broad to give students the opportunity to formulate their own opinions about how friction and fog affected the exercise. The instructor should focus on explaining these concepts and facilitating their application to the experience of the DVE, but avoid directing the conversation too much. Research on simulations has shown that they are most effective when they encourage students to take the initiative and critically reflect on their experiences (Ellington, Fowlie, and Gordon 1998; Hess 1999). After completing the exercise, students tend to be energetic and interested in learning more about the concepts the exercise is meant to elucidate. They are usually especially interested in discovering why they won or lost, which makes it easy to generate discussion about the problems of friction and fog. However, if the discussion needs more structure, the instructor can also refer back to specific events that occurred during the exercise to ask whether, and how, the events show the effects of friction or fog.

Fog, Friction, and Leadership in the DVE

Fog and friction are present in all iterations/variations of the DVE in at least two ways. First, players are ignorant of the specific capabilities of players on the other team because specific point totals are invisible. Players may be able to judge an opponent’s capabilities by watching how far they move, but it is always possible to hide this capability by moving shorter distances than one is allowed. Attacking and defending capabilities are completely invisible until they are used and even then a complete picture of the attack and defense ratings is only revealed to the specific combatants. This means that some commanders may wish to allocate some of their resources to reconnaissance, just as real militaries do. Detecting an opponent’s strengths and weaknesses can reveal the opposing team’s overall strategy.

Second, friction complicates the interaction between players of the same team. Communications problems between friendly units are endemic to warfare. Even in the age of digital communications, problems arise and lead to uncoordinated movements and mistimed attacks, making coordination a significant challenge. With commanders unable to call out commands, the team must decide whether to dedicate resources to communication. Most militaries employ more personnel in support roles than in combat roles, but in the DVE, most support roles are left out, so it makes sense for teams to devote most of their resources to fighting power. However, communication can only be maintained if there are players who can relay messages between leaders and subordinates. Without these support personnel, every member of the team must follow the original plan as closely as possible or attempt to modify it using personal judgment. Communication problems also demonstrate how planning can mitigate the effects of fog and friction. Teams that have created contingency plans that go into effect if the main attack fails, if they fall out of contact with the commander, or that have effective communications contingencies are in a much stronger position to deal with unexpected events than teams that stake everything on a single plan and/or a single communications effort.
Additionally, the second iteration/variation of the game, which introduces suicide bombers, contributes to both fog and friction. The number of suicide bombers and their location on the battlefield is unknown and cannot be discovered without engaging them in combat. Given the suicide bombers’ power to defeat more powerful opponents, they also create battlefield friction by upsetting plans in a way that no conventional soldiers in the game would be able to achieve.

The third iteration/variation of the exercise goes the furthest in creating friction. In freezing players by specific criteria, friction is reproduced by stopping players on randomly selected turns. Teams often use strategies that revolve around a few powerful and fast moving units seizing key objectives. Some may even devote all their resources to a few players in order to mount a blitzkrieg and defeat the other team early in the game. While this strategy has some merit, friction can upset these plans by immobilizing fast players. Clausewitz would expect just such an outcome as he argued that friction is more of a problem for the attacker who is in motion and thus more susceptible to disorganization and immobility than the defender who can organize a force, prepare ground, and await attack (Sumida 2007:178).

**Conclusion**

In our executions of the DVE, we have found that the exercise is highly effective in provoking strategic thinking, teaching important lessons regarding the relationship of planning and execution as well as simulating the fog, friction, and leadership challenges associated with military execution. Players are surprisingly quick to develop an array of strategies and counter-strategies. For example, during one iteration, a team abandoned one of its production centers in order to reduce its defensive commitments and send more players into the opposing team’s territory. This seemed to be a promising strategy, until the other team exploited the open flank by moving past the unguarded production center and against that team’s commander. In another exercise, a commander devoted most of the team’s points to defense scores and ordered players to move into the opposing team’s territory and to allow themselves to be attacked. This aggressive defensive approach surprised the other team, but they quickly recovered and retaliated by attacking in large groups. These strategies showed that the students had an intuitive understanding of economy of force and the value of deception, but even the best strategies were only temporarily effective, as teams were always quick to discover each other’s intentions and to develop countermeasures.

We have found that almost all participants say that they find the simulation helpful because it makes the concepts of fog and friction more concrete, and we have seen them bring these insights into our classrooms. Students are enthusiastic about having the opportunity to learn through action, even though doing so may have required them to wade through snow, come out on a Saturday morning, or attend an elongated class session. Many found that the game gave them greater insight into the challenges of the battlefield and armed conflict, as they previously had little idea of how much factors like the weather, communications difficulties, and morale could disrupt even relatively simple plans involving a relatively small number of simple units. Finally, most players are surprised at how difficult it is to play against an opposing team actively engaged in uncovering their plans and disrupting them. Even those with a week to prepare for the game failed to anticipate the difficulty of continually adapting their strategies.

Fortunately, very few students of strategy, decision making, or leadership will be “provided” the opportunity to go into battle. The Dalig–Vadan Exercise is designed to capture the fundamentals of the “battlefield” in a measured and self-conscious way that will allow students to focus on the key interactions of
friction and fog and the leadership challenge these realities require. Strategic thought and theory is a wonderful field of study; engagement with the implications of real-time, interactive strategic decision making is absolutely critical to turn engagement with thinking about strategy into understanding. The Dalig–Vadan Exercise is obviously not a complete replication of Clausewitz’s fog and friction. Some kinds of friction are more difficult to reproduce than others, and some may be impossible to create in a classroom simulation. Clausewitz finds that one of the primary sources of friction is fear (Kleemeier 2007:109). This and the true stresses of battle have been difficult to reproduce in even the most sophisticated battlefield simulations (Manton, Wilson, and Braithwaite 2000). Even if it were possible to recreate these in a classroom setting, the educational benefits would be outweighed by the students’ distress. The Clausewitz scholar Herbert-Rothe implies that it may not be possible to reproduce true friction outside of real war, as he argues that it is what separates war from the intellectual activities of planning and war gaming (Herberg-Rothe 2007:81).

But to say that one cannot fully replicate friction is not to say one cannot simulate the effect and thus expose the uninitiated to the concepts and challenges in real time. While it may be impossible to simulate friction in the way it manifests in war, there are grounds for thinking that Clausewitz himself would support attempts to recreate friction in exercises. Clausewitz explained friction with the help of game analogies and was a great supporter of regular, complex, and realistic planning exercises and war games. He compared friction itself to a game of cards, as there is an element of chance that can be managed with skill, leadership, and an ability to read opponents (Beyerchen 2007:53). Clausewitz does not appear to think friction was unintelligible to those who had not seen war and also that games may be the best peacetime analog of war, at least in this respect. Moreover, Clausewitz’s description of friction as something ever present and irreducible to individual moments suggests that it is not something unique to war. John House calls friction an inherent product of any group interaction, something that arises in civilian life just as it does in war (House 2008:81).

References


