COVID-19 and Virtual Wargaming in the Reserve Officer Training Corps:
Deadly Virus Resurrects Aged Tactical-Training Method

by LTC Andrew P. Betson, 2LT Tristan Boomer, 2LT Justin DiCarlo, 2LT Marshall Green and 2LT Adam Messer

The Coronavirus Disease 2019 (COVID-19) pandemic stopped the world in its tracks early in 2020. As unfamiliar terminology such as "social distancing" and "reducing the curve" proliferated everyday life, military leaders faced familiar (and unceasing) training requirements despite the unexpected challenges that arise from a pandemic.

At St. Louis's Army Reserve Officer Training Corps (ROTC) Gateway Battalion, the story was the same. Universities across the city closed in March, and students were sent home, prompting the need for a new solution to fulfill training requirements. Our ROTC program's third-year cadets were expected to be trained (or, at least practiced "P+") in leader and collective tasks for platoon-level tactical operations and in warrior tasks and drills. With unprecedented levels of technology and communication at our fingertips, the cadre and the fourth-year cadet leadership of Gateway Battalion looked to the Prussians of the early 1800s and U.S. Army Reserve units of the 1980s for help. The result succeeded beyond expectations when it came to training our cadets.

Appearing in the early 19th Century, *kriegsspiel* (translated from German as "wargame") served as a tool to test tactical-decision-making for Prussian officers for generations. American officers of the time took note of the game's usefulness after observers reported on actions from the Franco-Prussian War in the 1870s.[1] Iterations of the wargame tool continued in the U.S. Army for another century, usually executed in command-post exercises in the 1970s and '80s using turn-based wargames like the Pegasus free-play manual wargame well known to Cold-Warrior-era Armor officers.[2] Such platforms were considered elemental for battalion training before attending more advanced training at the National Training Center, Fort Irwin, CA.[3]

These models of the past served as a framework for designing a new method to not only test our cadets' ability to plan but also to train them how to handle the fog and friction of the engagement.

The Gateway Battalion's senior class and cadre developed a three-day virtual field-training exercise (VFTX) involving a day of individual-skills refresher training and two days of a series of curated tactical-decision games (TDGs) designed to test our third-year cadets' (junior class) ability to conduct platoon-level operations. This effort demanded much in the planning and preparation phases. We had to create an infrastructure to teach and evaluate the cadets. In other words, we had to design the game. From there, to provide context and tie a common thread between the weekend's events, we designed a convincing and in-depth scenario and enemy situation.

Our plan, called Operation Gateway Archangel, commenced April 16. Until its completion on the afternoon of April 19, we orchestrated the training of almost 100 cadets from all reaches of the United States and adapted to unforeseen difficulties throughout the operation's execution. For both cadre and fourth-year cadets, only months from receiving their commissions, the planning and execution of Gateway Archangel was an important lesson in the utility of agile and adaptive leadership when faced with unprecedented challenges.

Kriegsspiel 4.0

When we first received the news in mid-March 2020 that we could no longer hold our annual FTX training in person at Fort Leonard Wood, MO, we resolved that the junior class and the other classes of cadets deserved a top-notch culminating training event that integrated all the components of military science. Therefore we adopted work already done and leveraged available systems to create the appropriate training/learning environment.

Training Circular (TC) 7-101, **Exercise Design**, provided a valuable guide. We used it to return to the initial planning phase and switched our live training to virtual/gaming.

The COVID crisis and university constraints largely dictated what combination of live, virtual, constructive and gaming training enablers we could achieve. Our best course of action, we predicted, would be to combine and leverage virtual and gaming components for maximum effect.[4] After toying with maximizing virtual training,[5] we found we could adapt the simplest concepts of *kriegsspiel* and its sequels to form our virtual TDG to prepare cadets for summer training.

With an established concept for our virtual game, we faced a few upfront challenges. For one, the entire VFTX and the game needed to run on a familiar digital platform to minimize confusion. We needed a platform for players, trainers and observers/coaches/trainers (O/C/Ts) to communicate with each other communally and privately, and it had to be relatively user friendly. Zoom fit the bill. Cadets knew Zoom, as they had largely used it for on-line classes, particularly as the Gateway ROTC program taught almost exclusively on the platform at the outset of the COVID-19 crisis.

Gateway Battalion decided on the platform early enough to test certain features in the weekly "leadership labs" leading up to the VFTX. We tested a multitude of features, including screen-sharing and breakout rooms, both of which we knew would benefit the game's final product.

Finally, we needed a "common operational picture" for everyone to "see the battlefield." We chose Google Slides on Google Drive because cadets consistently worked with it both inside and outside of ROTC classes. Google Slides provided a means for multiple viewers, either through sharing a screen on Zoom or by watching the slide itself on the Google Drive.

In addition, multiple cadets could manipulate the slides in real time, allowing "pieces" to be moved on imagery of the battlefield. Simultaneously, the O/C/Ts could reveal opposing forces (OPFOR) as appropriate.

Setting exciting stage

Once the game was established and the platform chosen, we identified another significant challenge. With our program's cadets spread across the country, surrounded by distractions within their homes and linked only by a sometimes-tenuous WiFi connection to a Zoom meeting, how could we provide context sufficient to keep our cadets engaged? Answering this question proved to be a great training tool for the senior cadets/soon-to-be lieutenants.

The seniors were recently exposed in their curriculum to the truth that war does not occur in a vacuum and that one should think about war as a tool of statecraft. This education point led us to tackle the challenge in an entertaining way by leveraging the program's YouTube account to set the stage. We spent extra effort to develop a coherent narrative for the battles and their respective OPFOR.

In the final days preceding the VFTX, the senior cadets produced a "Road to War" video that explained why the cadets found themselves in "Atropia." It explained the political context of the war, which could be used by O/C/Ts to explain the proficiency of enemy forces. The senior cadets played the video, which incorporated music and maps, to the training audience during the VFTX's first night – our reception, staging, onward movement and integration phase.[6] This sparked an appropriate level of interest at the outset.

For the purposes of developing the exercise within the context laid out in the video, Fort Leonard Wood's Range Control helped by providing maps and imagery of all their training areas, including a 1:50,000 map of the installation modified to reflect the cities, roads, etc., of Atropia.

The planning phase of Gateway Archangel proved an exercise in teamwork and training in exercise design, involving task/countertask development and orders production for the program's senior cadets.[7] The result was a sequence of four engagements that increased in difficulty and complexity during the course of the VFTX. (See Figure 1.)
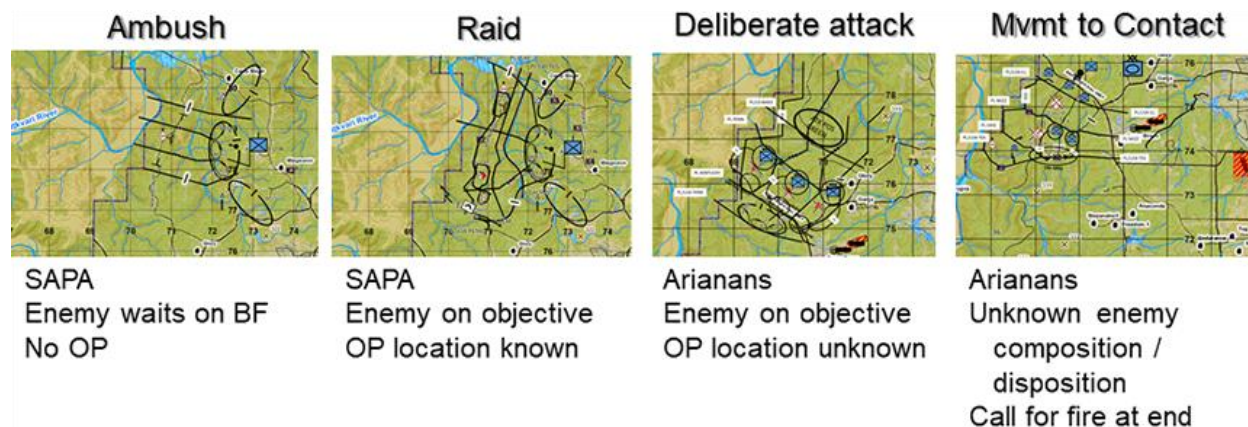
Figure 1. The concept for Gateway Archangel's increasingly difficult regimen. The regimen was linked in logic to the scenario, implementing irregular and regular forces. *(Graphic by LTC Andrew P. Betson)*

We developed the enemy's composition and capabilities using the ***Worldwide Equipment Guide***, which provides organizational charts and equipage for the irregular (South Ariana People's Army, or SAPA) and regular (Arianan army) forces in our exercise.[8] This informed the OPFOR portion of the "white-cell information" document (discussed later) for each engagement. Since there were no human beings available for cadets to see in an observation post (OP) or on an objective, we developed the information beforehand.

For the raid, for instance, the O/C/Ts knew that "[t]he OP is located at MB 713 784 (draw) to the northeast of the objective overlooking creekbed. Two enemy, dressed in SAPA uniforms, both have AK-47s, one has a handheld radio. They chatter and smoke in their position, so if the platoon does an SLLS [stop, look, listen and smell] halt within 200 meters, they will smell and hear them."

After establishing our operational area and the enemy, we linked the missions to a wider narrative related to the "war" and sought ways to make things harder. The friendly Blue Forces (BLUFOR) virtually conducted an ambush on an enemy patrol, followed by a raid on a SAPA weapons cache. Keen cadets recognized that the SAPA elements had among them differently uniformed "advisers," which matched the commander's critical-information requirements in the company's order.

Following completion of the first two missions, Arianan forces invaded Atropia from the west and made a bold thrust into central Atropia. In response, the BLUFOR maneuvered southward into the northern flank of the Arianan front. There, platoons conducted a deliberate attack against an Arianan cavalry troop to seize key positions along a main supply route. As the Arianan attack began to crumble, BLUFOR conducted a movement-to-contact against disintegrated OPFOR in an engagement that culminated in a call-for-fire mission on Arianan armor – securing victory for the American forces.

The believable nature and actions of the enemy, combined with a comprehendible political situation, kept the cadets engaged and thinking critically throughout the VFTX.

Creating virtual gameroom

With the stage set and enemy capabilities, actions and reactions set, the cadre and senior cadets created each battle's four critical components: the company-level operations order (OPORD), operation graphics and intelligence, white-cell information and the battle's "game board." The first two were for the junior-year trainees, while the white-cell document went to the O/C/Ts. The senior cadets hung the game boards in folders named for each junior-cadet pair on the battalion's Google Drive.

The cadre took pains to ensure that the company OPORD presented the juniors with a doctrinally and tactically sound plan to develop their platoon operation in context. Each was designed, with increasing difficulty, to challenge even the best junior cadet as they integrated the components of military science learned over the course of their previous semesters. However, each company order was done on a "Gateway Standard" four-page tactical

OPORD template. This encouraged the junior cadets to understand that any platoon-level plan that cannot be laid out on their four-page laminated template is probably too complicated.

The second component, operational graphics and intelligence, were done in Microsoft PowerPoint and used two resources provided by Fort Leonard Wood's Range Control. The company's operational graphics were overlaid on the Atropia map, while the intelligence documents used Fort Leonard Wood's contour-line-laden maneuver-area imagery. The graphics emphasized the importance of understanding our tactical "language" of control measures and tactical-mission-task symbols, while the imagery revealed expertise (or challenges) in terrain analysis.

Our third component, alluded to in preceding paragraphs, was the white-cell information given to each of the O/C/T teams. Apart from the provided Red picture, it also provided BLUFOR developments. For instance, in our platoon attack, when the junior cadets initiated actions on their objective, the O/C/Ts knew to tell them, "One Arianan fires a grenade that immediately kills two members of your second M240B gun team and wounds badly the third Soldier. The weapon appears to be undamaged." Each BLUFOR situation was designed to test the junior cadets' mastery of the components of military science and their decision-making in the face of friction.

The final required element for each battle was the game board for the TDG. This PowerPoint file included the same imagery mentioned from the Fort Leonard Wood Range Control imagery of their maneuver areas with contour lines (Figure 2). One slide had the entire platoon area of operation, while another zoomed in on the objective area. Both had text boxes on the side where the trainee could type in the movement techniques and formations of their units at echelon.

Finally, it also included icons to identify squads, machineguns, the platoon leader, platoon sergeant, casualty-collection points, support-by-fire lines and more that the trainees could click and drag onto the terrain (Figure 2). Prior to kicking off the battles, our seniors created a game board for each pair of trainees for each battle.
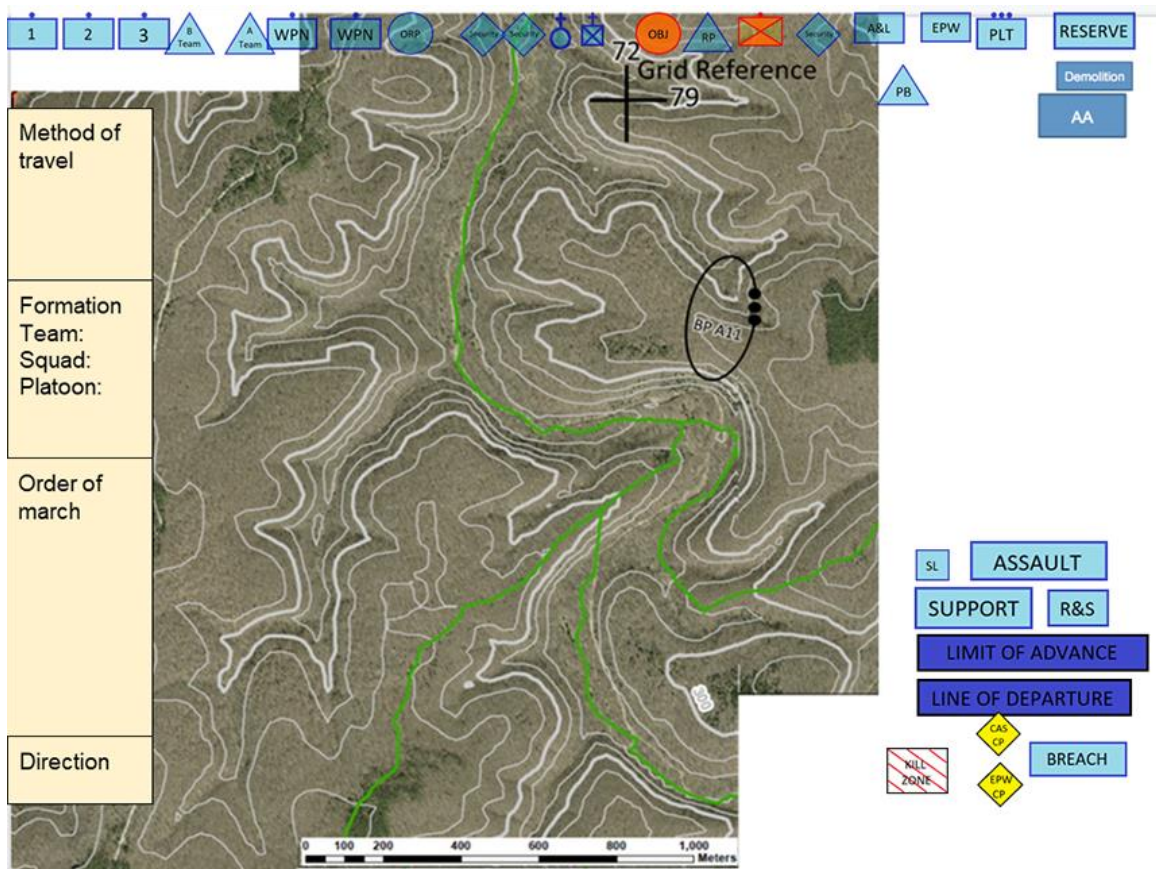

Figure 2. Google Slides and Fort Leonard Wood maps serve as a means for an interactive, virtual battlefield.
(Graphic by LTC Andrew P. Betson)

Each of these components differed little from any other training exercise, but the virtual nature of ours required a deliberate architecture of Zoom rooms for each battle. A key cadet leader hosted the Zoom meeting for each battle, which served as a kind of tactical-operations center (TOC). Once the trainees and trainers arrived in the TOC, the host transferred each into their assigned breakout room. At any time that O/C/Ts needed to discuss the result of a battlefield action, or arbitrate, they could "press pause" on the battle and send the trainees back to the TOC until they were finished and called them back. It should be clear that this required multiple rehearsals, a robust Annex H and cadets who were savvy with the system.

Each breakout room had an O/C/T team made up of at least one cadre member, one senior cadet, the junior-year cadets serving as platoon leaders and platoon sergeants, and all freshmen and sophomore cadets to serve as squad leaders, team leaders and members of squads. The battalion's leadership or distinguished visitors could drop into any of breakout rooms to observe an OPORD briefing or the battle itself.

The rhythm

One hour before their report time, the platoon leadership received the company OPORD, graphics and intelligence (Components I and II). They spent an hour consuming their tasks, planning their own missions and building a terrain board model wherever they were in the country. Meanwhile, the O/C/Ts accessed and studied their white-cell information and conferred about enemy locations and scenarios that might challenge the trainees. Upon being placed in their Zoom breakout room, the platoon leadership briefed their platoon OPORD to both the O/C/Ts and squad leaders using their terrain model kit. When it was time for the battle to begin, the senior cadet in the room shared to all the participants in a chat window the link to the Google Drive folder that contained the game board.

The platoon leader began the game by placing the relevant icons on the map depicting their starting location. They then described everything to be done in the first phase of the battle, including their movement techniques, formation, order-of-march and direction. When appropriate, they spoke as if on the radio to the O/C/Ts as the higher headquarters and to their squad leaders to give instructions.

While the platoon symbols moved along the board, the O/C/Ts continuously analyzed the probability that the BLUFOR or OPFOR would identify the other. We were not literally "rolling dice," though a more developed form of the game could include such probability inclusion. If the BLUFOR encountered the OPFOR, the O/C/Ts referred to the "white cell" information for guidance on casualty information for both sides, or to describe what exactly the BLUFOR saw. Any time the O/C/Ts required further deliberation, the training audience was sent to the TOC.

The trainers and trainees repeated this process through the subsequent phases of the operation, reacting to contact when made and to other scenarios as the O/C/Ts imposed them. Once the platoon approached the objective area, everyone shifted to seeing the objective-area imagery slide, which allowed more detailed discussion of movement and placement of the platoon elements. Actions on the objective were guided by the white-cell information and tested the trainees' knowledge of special-teams activities, knowledge of intelligence requirements and medical-evacuation steps.

Once the O/C/Ts determined the training and learning objectives were met, the battle stopped, and they began a deliberate after-action review (AAR) process. The underclass cadets went to the TOC while the O/C/Ts and senior-cadet observers quickly gathered comments. The AAR allowed cadets to explain rationale in decision-making, thereby letting the O/C/Ts determine whether mistakes represented fundamental misunderstandings of the components of military science or misunderstandings due to the novel nature of the virtual training environment.

Finally, the senior-cadet observers provided comments on each of the leaders, and the cadre members generated "Blue Cards" to help evaluate the trainees' attributes and competencies.

Before the battle

To best prepare the trainees for the TDG on Day Two, we devoted Day One to training and testing individual skills. We wanted to provide a refresher as well as a means of testing for land navigation, tactical combat-casualty care (TCCC), call-for-fire and the size, activity, location, uniform, time, equipment (SALUTE) report. Each of the "round robin" training stations was held in a different Zoom classroom hosted by a primary senior-cadet instructor. The Zoom conference codes and passwords were distributed through Annex H. In each case, after an instruction phase, we integrated different platforms to test the underclass cadets.

Land navigation

After the PowerPoint-based refresher on land navigation, the junior cadets moved to a breakout room, where they received instructions to take a Blackboard-based exam. It was a 60-question exam that included all basic elements of land navigation (for example, identifying terrain features, colors of the map, reading a legend) and progressed into more complicated questions (for instance, intersection, resection, curved road distance).

Due to the COVID-19 quarantine and the situation preceding the VFTX, few cadets had hard copy maps with them. Instead, we adapted the Atropia map. The maps were printer-friendly (maintaining their scale), allowing cadets to print all 17 pages at home and tape them together.

TCCC

The TCCC refresher included a combination of premade videos of caring for casualties and live demonstration. The senior-cadet instructor demonstrated evaluation and treatment of casualties on his roommate, another senior-year cadet from the battalion. Following the demonstration, the instructor reviewed the nine-line medical-evacuation report. The cadets learned when this would be used, how to fill one out, how to call it in to higher headquarters and platoon members' roles.

Each junior-year cadet received an individual evaluation by the senior-cadet instructor presenting a situation using "Army men" toys. The trainee walked the senior-cadet trainer through what they would do in a situation that demanded all the components of TCCC (Figure 3).
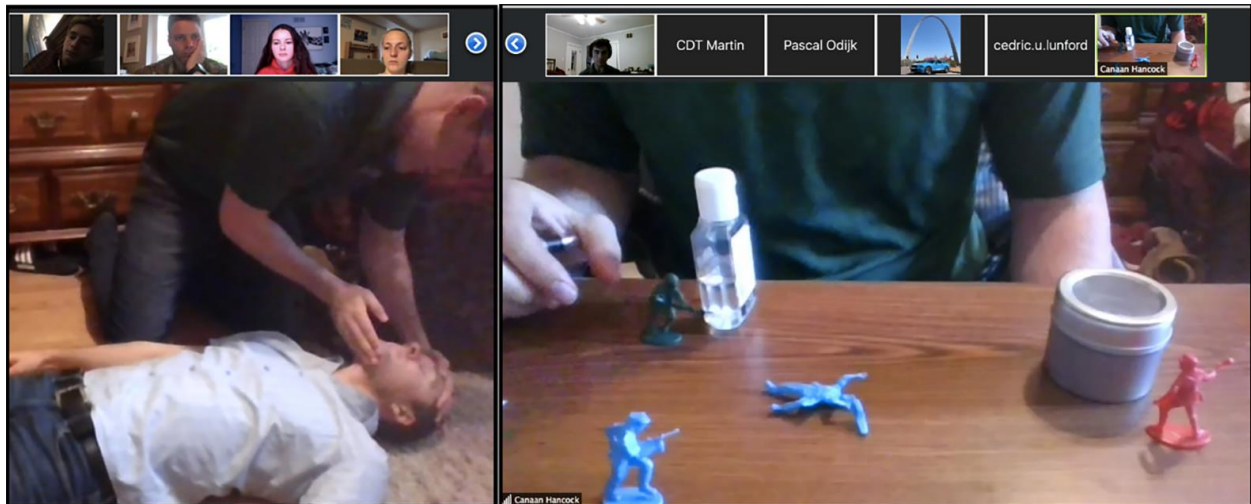

Figure 3. Zoom images of TCCC demonstrations and evaluation "game" with BLUFOR and OPFOR. *(Graphic by LTC Andrew P. Betson)*

SALUTE reports

After a PowerPoint refresher on radio etiquette and the components of SALUTE, the cadets transitioned into a practical exercise. The senior-cadet instructor prepared a slide deck full of photos of military activity with various vehicles, enemies and equipment.

Junior-year trainees received a grid location for their OPs and a distance and azimuth for the photo. This reinforced the importance of map-reading skills by forcing the ability to determine a point on a map. Each cadet wrote their SALUTE reports and were called on to submit them using proper radio etiquette.

Call for fire

The call-for-fire task incorporated the most variety of platforms. The refresher course included a video from the battalion's YouTube account shared by the senior-cadet instructor. The junior cadets then received instructions and a map image from U.S. Army Training and Doctrine Command's Operational Environment Training Support Center's digital Observed-Fire Trainer (OFT), which was available to all cadets through U.S. Army Cadet Command's Blackboard site.

After generating their radio transmission, junior cadets shared their screens with the senior-cadet instructor, which showed the images from the OFT. Cadets being evaluated submitted his/her information for the initial request for fire and watched the simulator for rounds to impact. They then adjusted the fire until they appropriately ended the fire mission. This task would be the last task of the final battle in the wargame, signifying victory for the BLUFOR.

Conclusion

Leadership, like warfare, exists in the realm of uncertainty and is extremely susceptible to fog and friction. The Gateway Battalion's VFTX demonstrated not only the necessity for agile and adaptive leaders in the U.S. Army, but it also emphasized the importance of training regardless of circumstance – thereby sometimes we must fight to train. In our adapted training, as budding new second lieutenants, we learned much about Army leadership. The VFTX, especially the tactical-decision game, revealed the importance of the components of military science – leaders must understand terrain analysis, military symbology, troop-leading procedures, staff functions and relative combat power.

There was never a question that it would have been preferable to train in the mud and woods of Fort Leonard Wood. We learned, however, that meaningful, effective training can be conducted even when standard methods fail.

Cavalry and Armor leaders should consider the TDGs of the past, augmented by technological advancements, as a versatile means to develop tactical skill and improve judgment. They could follow the Gateway Battalion's three efforts resulting from this experience. The cadre and cadets in St. Louis are first, seeking ways to integrate analog TDGs into their labs in future years.

Second, they will pilot a program using the U.S. Army's Virtual Battlefield Simulator 3 (VBS3) to improve our new officers' awareness of virtual-training platforms at the tactical level.

Finally, the Gateway team will use what it learned to retain "*Kriegsspiel* 4.0" as a contingency to face whatever frictions may lay ahead.

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Notes

[1] William Roscoe Livermore, *The American Kriegsspiel: A Game for Practicing the Art of War upon a Topographical Map*, Houghton, Mifflin, 1879. Accessed through Google Books, June 2, 2020.

[2] U.S. Marine Corps MAJ Dominic Nicolosi Jr., "A framework for an interactive, computer-supported, battalion-level wargame," master's thesis, June 1979. Accessed at https://core.ac.uk/download/pdf/36711970.pdf, June 1, 2020.

[3] MAJ Charles R. Steiner Jr. "Thunder in the desert," *ARMOR*, May-June 1982.

[4] Headquarters Department of the Army, TC 7-101, *Exercise Design*, November 2010.

[5] The professor of military science explored the possibility of having all the cadets in the target training audience download a version of the Army's program of record for virtual training, "Virtual Battlefield Simulator." As of this writing, we are on VBS3. However, the proponent could not provide a version of the game that did not require a computer without gaming-quality graphics capability. Due to this lesson, the Gateway Program seeks to pilot a program of instruction that exposes cadets to the system of record as part of the military science curriculum to serve as a potential contingency to such situations in the future.

[6] Gateway Battalion's "Road to War" video can be found at https://www.youtube.com/watch?v=OcvjHzcIaQM&t=15s.

[7] TC 7-101.

[8] *Worldwide Equipment Guide*, accessed at https://odin.tradoc.army.mil/WEG, June 3, 2020.

Acronym Quick-Scan

AAR – after-action review
BF – Blue Forces (Figure 1)
BLUFOR – Blue Forces (friendly forces)
CGSC – Command and General Staff College
COVID-19 – Coronavirus Disease 2019
FTX – field-training exercise
O/C/T – observer/coach/trainer
OFT – Observed-Fire Trainer
OP – observation post
OPFOR – opposing forces
OPORD – operations order
ROTC – Reserve Officer Training Corps
SALUTE – size, activity, location, uniform, time, equipment
SAPA – South Ariana People's Army
TC – training circular
TCCC – tactical combat-casualty care
TDG – tactical-decision game
TOC – tactical-operations center
VBS3 – Virtual Battlefield Simulator 3
VFTX – virtual field-training exercise