

GERMAN WAR GAMING

Milan Vego

A tedious war game is the grave of interest.

GENERAL ALBERT KARL FRIEDRICH WILHELM VON BOGUSLAWSKI (1834–1905)

The Germans invented and developed the modern war game. By the end of the nineteenth century, the German-style *Kriegsspiel* had been adopted in most of the major militaries of the day. In the interwar years (1919–39), the Germans greatly increased the number and diversity of war games, which collectively became one of the main means of educating and training future commanders

and their staffs at all levels. Prior to and during World War II, the Germans proved to be masters of the use of war games throughout the chain of command for rehearsing plans for pending and future operations. In peacetime, they used war games to test the validity of new doctrinal documents and for force planning. Though German methods of organizing and executing war games cannot and should not be blindly followed, yet many aspects of their practice could be successfully applied today. Moreover, the role and importance of war gaming should be greatly enhanced in the present era of smaller forces and shrinking financial resources.

Dr. Milan Vego has been a professor in the Joint Military Operations Department at the U.S. Naval War College, Newport, Rhode Island, since August 1991. A native of Bosnia and Herzegovina, he obtained political asylum in the United States in 1976. Dr. Vego has been an adjunct professor at the Defense Intelligence College (1984–91) and a senior fellow at the Center for Naval Analyses in Alexandria, Virginia (1985–87), and at the former Soviet Army Studies Office, Fort Leavenworth, Kansas (1987–89). He earned a BA (1970) in modern history and an MA in U.S./Latin American history (1973) at the University of Belgrade and his PhD in European history from the George Washington University (1981). He holds a license as a master mariner. Dr. Vego has published eight books, including the textbooks Operational Warfare (2001) and Joint Operational Warfare: Theory and Practice (2008; reprint 2009), and The Battle for Leyte, 1944: Allied and Japanese Plans, Preparations, and Execution, plus numerous articles in professional journals. He published his most recent book, Operational Warfare at Sea: Theory and Practice, in December 2008.

THE ROOTS

The rudiments of war games go back to the Gupta Empire (AD 320–550) in India, where a chesslike game, *chaturanga*, was invented.¹ (Some other sources say that a chesslike game, *xianggi*, originated in China.) In the seventh century AD, *chaturanga* was adopted in Sassanid Persia (AD 224–651) as *chatrang*. After

the Arab conquest of Persia in the seventh century, this game became known in Arabic as *shatranj*. In the ninth century, *shatranj* found its way to Byzantium.² The North African Moors spread a derivative of *shatranj* to the Iberian Peninsula. Around 822 the emir of Córdoba, in Andalusia, was introduced to the game by a Persian Muslim.³ This game became known as *ajedrez* in Spanish, *xadres* in Portuguese, and *zatrikion* in Greek. The game was introduced to Western Europe generally by Muslim merchants; its Arabic name was replaced by the Persian *shāh* (king), or *shah mat* (the king is dead), eventually becoming “check” or “chess” in English. The game spread to Switzerland in 997, the northern part of Christian-dominated Spain in 1008, southern Germany in 1050, and central Italy in 1061. By 1200, the game had been adopted in Britain and Scandinavia.⁴

“Courier chess” was played in Germany at the beginning of the thirteenth century.⁵ It was first mentioned in the great Arthurian romance *Wigalois*, by Wirnt von Gravenberg, in 1202.⁶ Courier chess was described in some detail in a travel account by Kunrat von Ammenhausen in 1337.⁷

In 1616, Duke August II of Brauenschweig-Wolfenbuettel (or Lueneburg, 1579–1666) published under the pseudonym “Gustavus Selenus” *Das Schack-oder Koenig-Spiel* (Chess Game or King’s Game), in which he gave a detailed description of courier chess as taught in schools and played in the small village of Strobeck. In 1644, Christopher Weikmann of Ulm, in Bavaria, invented a modified game of chess, which he explained in his *Neu-erfundenes grosses Koenig-Spiel* (Newly Invented Great King’s Game).⁸ Each player had thirty pieces, and each piece had fourteen different fixed moves, similar to those in modern chess.⁹ Weikmann’s game, called “war” (or “military”) chess, was designed to serve not only as a pastime but also as a means of studying the military and political principles of the time. Weikmann’s game was extremely popular among Germans.¹⁰

A significant development came in 1780, when Dr. Johann Christian Ludwig Helwig, master of pages at the court of the Duke of Brunswick, invented the “King’s Game” (*Koenigspiel*). Helwig’s game used a modified chessboard with 1,666 squares, in various colors, each color representing a certain terrain feature, such as flat ground, mountain, marshes, forests, lakes or ponds, a building, villages, etc. A dotted line divided the chessboard into two camps and marked the frontier between them.¹¹ As in chess, each piece was named for a character common in the political and military world of the day (king or marshal, colonel, captain, lieutenant, chancellors, heralds, knights, couriers, adjutants, bodyguards, halberdiers, and private soldiers).¹² The King’s Game was meant to encourage young noblemen to think about important military questions and to teach them basic elements of military art and science.¹³ Helwig’s game became very popular in Germany and was quickly introduced by the militaries in France, Austria, and Italy.¹⁴

The “New War Game”

Between 1780 and 1824 occurred several significant developments in military gaming. In 1797, Georg Venturini, a military theoretician and tactician from Schleswig, invented the “New War Game” (*Neue Kriegsspiel*).¹⁵ It was based on Helwig’s game but with much more numerous, detailed, and complex rules.¹⁶ A year later Venturini transferred the game from the chessboard to a chart, thereby converting it into something that could be further developed.¹⁷ By 1804 his game had undergone several revisions. Venturini expanded Helwig’s grid system to 3,600 squares, each representing one square mile and colored to indicate the terrain within it. In contrast to other games then in use, Venturini’s used stylized maps and so represented a major change from the rigid chessboard.¹⁸

This advance was made possible by the recent advent of precise maps. In 1727 the Dutch engineer Nicholas Cruquius had drawn the bed of the Merwede River with lines of equal depth (isobaths) at intervals of one fathom; a French geographer, Philippe Buache, had used a similar method, with ten-fathom intervals, in a chart of the English Channel prepared in 1737 and published in 1752. The same technique had thereafter been adapted to the terrain maps.¹⁹

In Venturini’s game, pieces and moves approximated the ordinary marches of troops. The terrain was not fictional but represented actual territory between France and Belgium. A sixty-page rule book governed reinforcements and logistics.²⁰ The playing pieces represented not only infantry and cavalry but also various supporting arms and equipment. Venturini even included restrictions on movement during winter months and incorporated the effects of proper support and provisioning of combat arms.²¹ His game gained popularity in Germany, Austria, and Italy.²²

In 1811 a Prussian counselor at Breslau, Georg Leopold Baron von Reisswitz, devised a war game on a sand table, with terrain modeled to the scale of 1 : 2,373. The game was described in his *Anleitung zu einer mechanischen Vorrichtung um taktische Manoevers sinnlich darzustellen* (Introduction to a Mechanical Gadget to Sensory Depiction of the Tactical Maneuver). Reisswitz’s game had a maximum of ten players on each side, neither side knowing about the moves of the other.²³ Troops were represented by squares of wood on which pasted symbols indicated various branches of service.²⁴ Reisswitz’s game was played in a way similar to previous games, except that the movement of the troops was not restricted to chessboard squares; maneuvering and the marching of columns were much more realistic than before.²⁵ Reisswitz also used a realistic-looking terrain. The game was directed by an umpire, or referee, known as a *Vertrauter* (confidant), with several assistants. The umpire determined the course of the game after evaluating movements and adjudicating decisions made by the players. Limited information was given to each commander regarding the strengths and disposition of the

opposing side, the state of roads, the season of the year, and the supply situation.²⁶ Each player would submit orders to the umpire, who updated the terrain table and told the players only what they would know at that point in an actual situation. The actions in the game progressed until victory could be declared for one side or another. To determine casualties, the umpire consulted complex tables that indicated likely attrition on the basis of characteristics of terrain, firepower, and other factors.²⁷

Reisswitz was fortunate to come in contact with a Prussian officer by the name of von Reiche, who was the captain of cadets at the Berlin garrison. Reiche was responsible for instructing Prince Friedrich and Prince Wilhelm (later king and kaiser, respectively) in the art of fortification. He mentioned Reisswitz's game to the princes, who promptly petitioned for a demonstration for themselves and other invited officials at the castle in Berlin where they lived. Both princes enjoyed the game and told their father, King Friedrich Wilhelm III (1770–1840), about their experience. Witnessing a demonstration himself, the king was fascinated by this new and more accurate representation of war.²⁸

Reisswitz's son, Lieutenant Georg Heinrich Rudolph Johann von Reisswitz, further improved the New War Game, describing the changes in his *Anleitung zur Darstellung militaerischer Manoever mit dem Apparat des Kriegs-spiels* (Instruction for Representation of Military Maneuvers under the Guise of a War Game, 1824).²⁹ Among other things, he replaced the sand table with a large-scale map (1 : 8,000) showing the gradient angles of mountains and valleys.³⁰ For the first time, combat with battalion-sized forces was simulated.³¹ The junior Reisswitz recommended that the number of the players on each side be kept to four. His game was the first to use red and blue color coding for the opposing sides, a system still used today. The game would require at least two umpires, one for conducting the movement of troops and the other for determining the outcomes of attacks and recording losses.³² The umpires were responsible also for devising a realistic and interesting initial situation.³³ They would present a “general idea” or “outline” of the situation (in modern terms, a scenario) to the players indicating the positions of the main body of troops of both sides and giving reasons for players to conduct moves on the board.³⁴ If there was more than a single player on each side, one would be commander in chief and the other the commander of a major part of the force, such as the main body or vanguard. A commander would submit a written plan to the umpire containing the intended maneuver, orders to individual units, orders given to other players, the intended final position of troops, etc.³⁵ Reisswitz quantified the effects of combat, so that results of engagements were precisely calculated rather than debated. Rules covered virtually every contingency of operations of units up to the size of divisions and corps.³⁶

A great novelty in the younger Reisswitz's war game was that it emphasized the importance of general-staff officers.³⁷ General Karl von Mueffling (1775–1851), chief of the general staff (1821–29) in Prussia, exclaimed, "It's not a game at all! It's training for war. I shall recommend it enthusiastically to the whole army."³⁸ He fulfilled that promise: a royal decree directed every regiment in the Prussian army to play the game regularly.³⁹ By the end of the 1820s each Prussian regiment was purchasing with state funds materials for war gaming.⁴⁰ The junior Reisswitz's game was accepted by many Prussian officers, although there were initially many detractors.⁴¹ Mueffling used staff rides, terrain studies, sand tables, and war games for educating staff officers in the assessment of a situation to solve tactical and strategic problems.⁴² Numerous war-gaming clubs sprang up in Germany. In 1828, Helmuth von Moltke, Sr. (1800–91, later a field marshal), joined such a club.⁴³ However, Reisswitz's game was often played in a very mechanical and superficial manner, because of lack of understanding by those who directed them.⁴⁴

The Moltke Era

By the 1850s the *Kriegsspiel* had gained great popularity in the German military and some interest in the militaries of other countries. In the second part of the nineteenth century, logistical and fortification war games were developed in the Prussian (then German) army.⁴⁵ The elder Moltke's tenure as the chief of the general staff (1857–88) saw the start of systematic education and training of future operational commanders through war gaming. Between 1858 and 1881 he personally led annual "exercise rides" (*Uebungsreise*), combining gaming and rigorous on-site investigations, aimed not only to enhance the operational thinking of general-staff officers but also to test and refine operational plans prepared for various contingencies. The rides and games were based on the real political-military situation of the time, enriched by historical excursions, especially valuable to young officers.⁴⁶ War games had a positive impact on the combat preparedness of the Prussian army. For example, General Kraft, Prince zu Hohenlohe-Ingelfingen (1827–92), would write, "The ability to quickly arrive at decisions and the cheerful assumption of responsibility which characterized our [Prussian] officers in the Franco-Prussian War of 1870–71 was in no small measure due to the war games."⁴⁷ After that war, the German style of war gaming was gradually adopted by the Austrian, Russian, British, French, Italian, American, and Japanese militaries.

Until the 1870s, war games were unpopular among the Prussian and German officers themselves. They were cumbersome and time consuming, because of overly complicated rules and adjudication processes, which made the games less interesting for the players. The leading proponents of these "rigid" war games were W. von Tschischwitz, Thilo Wolf von Trotha, and von Neumann.⁴⁸ They

tried to systematize further and improve the rules and further improved methods for calculating losses.⁴⁹ This situation changed—slowly at first, but then radically—with the introduction of the “free war game” (*Freie Kriegsspiel*), in which professional judgment substituted for rules. War games became more popular and were played more often.⁵⁰ The most influential proponents of the free war gaming were Major (later General) Klemens Wilhelm Jacob von Meckel (1842–1905) and Colonel (later General) Julius von Verdy du Vernois (1832–1910). They argued that umpires should render decisions based not on rules but on tactical experience. Meckel in his *Anleitung zum Kriegsspiel* (Instruction to the War Game, 1875) proposed that the director be freed from some rules, though not in assessing the effects of fire.⁵¹ He was not ready to make a complete break with the rigid style of gaming.⁵²

In 1876 Verdy published *Beitrag zum Kriegsspiel* (Contribution to the War Game), borrowing many ideas that Meckel had planned to elaborate on in his projected but unfinished three-volume work.⁵³ Like Meckel, Verdy was concerned that war gaming still faced resistance among German officers. He saw the reason in the difficulty for beginners of handling tables, calculating losses, etc.⁵⁴ The essence of Verdy’s approach, in contrast to that of the junior Reisswitz, was to strengthen the role of umpires by eliminating all written rules.⁵⁵ Verdy wrote that war games should be conducted on the principles Moltke had used to decide outcomes during staff rides.⁵⁶ Moltke had not determined an outcome by a roll of dice but on the basis of his expertise, experience, and judgment. The same should be done, Verdy argued, in a war game.⁵⁷

Verdy’s game required a detailed map (scale 1 : 12,000) and a general map at a much smaller scale (1 : 2,000–3,000), plus blocks, scales, and dividers. The players were divided into two opposing groups, with an umpire and an assistant if necessary in control. The umpire briefed the players (perhaps on the day prior) on the general situation, providing only such information as would readily be available to both sides in actual combat—weather, location, etc. A specific situation was outlined for each of the sides, again with only such information as would normally be possessed by the commander to whose operations it was relevant.⁵⁸ Initial orders and dispositions were then submitted to the umpire by each side.

In the 1870s, the Germans began to differentiate among three types of war game: the “small war game” (*Kleine Kriegsspiel*), “large war game” (*Grosse Kriegsspiel*), and “strategic war game” (*Strategische Kriegsspiel*). A small game was conducted to test the effect of the fire of units, down to the smallest it was possible to evaluate. The forces were limited to four to six companies, one or two cavalry squadrons, and a quarter or a half of a battery.⁵⁹ A large game encompassed the tactical exercise of forces up to an army division. A strategic game was conducted by general-staff and senior officers for operations by army

corps.⁶⁰ The first strategic war game had been conducted in 1848 in Berlin, under the direction of Lieutenant Colonel (later General) Vogel von Falckenstein. The scenario was a war between Prussia and Austria, and the game made an extraordinary impression.⁶¹

In the 1880s, the Germans conducted small games, known as “regimental war games,” simulating the employment of tactical-sized forces at each regimental headquarters once per month and over the winter.⁶² Large war games were conducted chiefly for divisions and the study of their transportation and supply problems, by senior regimental, divisional, and corps staff officers. General-staff officers played strategic war games, encompassing the operations and employment of armies.⁶³

The Schlieffen Era and World War I

During his tenure as the chief of the Great General Staff (1891–1906), Field Marshal Alfred von Schlieffen (1833–1913) extensively used staff rides and war games to educate higher commanders and their staffs and rehearse his war plans. He led sixteen rides to Germany’s western border and fifteen to the eastern. Each ride lasted ten to fourteen days. In these rides two teams of twenty-five to thirty-five general-staff officers each, of all grades, played against each other. The rides were not social excursions but very intense evolutions; the staff officers worked long hours.⁶⁴ All of Schlieffen’s games involved two-front warfare with France and Russia, sometimes also Great Britain. Thus, he assumed that the German army would face a numerically superior enemy.⁶⁵

Schlieffen’s war games were based on the plans being developed for war. The aim was to ensure that senior commanders were thoroughly familiar with Schlieffen’s strategic ideas and that each general-staff officer knew how he judged Germany’s strategic situation. The games also enhanced the ability of each general-staff officer to pursue the common approach once war broke out, whether or not he had intimate knowledge of Germany’s deployment plan.⁶⁶ Schlieffen generally conducted two general-staff rides per year, in June and October. He conducted follow-up tactical-strategic problems on issues identified that he thought needed elaboration. They were played mostly from the perspective of the Red side—that is, Germany’s opponent.⁶⁷

In 1897, Schlieffen started to rehearse his plans for an invasion of France through Belgium. These games ended routinely with the encirclement of the French army. The entire focus was on the operational aspects of the German offensive; in none of them did Schlieffen consider the possible political and economic consequences of an advance through neutral Belgium.⁶⁸ (Some sources claim that he actually recognized the consequences of violation of Belgian and Dutch neutrality but misjudged the British attitude toward these countries.)⁶⁹

The war game conducted in 1905 is the only one for which full documentation survives. The scenario was a war against Russia, France, and Britain. Germany

would await an enemy invasion (Schlieffen assumed that both Russia and France would attack first), thereby avoiding violation of the neutrality of Belgium and the Netherlands, and only then go onto the counteroffensive. Schlieffen envisaged German victory within six weeks.⁷⁰ The German army would defeat Russia first and then shift westward to fight a combined French-British army that by that time would have advanced into Germany through Belgium. (Despite widely held historical views, it seems that Schlieffen doubted Germany's chances of success in a two-front war.)⁷¹

In the 1905 war game, Schlieffen assumed that Belgium and the Netherlands would be neutral but would defend their neutrality; Germany would therefore take a defensive posture on the western front. The scenario considered it possible that in case of violation of their neutrality by Anglo-French forces, Belgium and the Netherlands would side with Germany. German forces consisted of twenty-four army corps plus a number of reserve corps. Germany's ally Austria-Hungary would not enter the war until a sizable part of the Russian army had concentrated on its border. Russia would attack East Prussia with its Niemen and Narva armies. France would concentrate its army along the entire border, from upper Alsace to the North Sea coast. Six British divisions would be deployed on the northern flank of the French army in Flanders. Belgium and the Netherlands would deploy six and four divisions, respectively; the Germans rated their combat value as not very high.⁷² In the game, the course of German operations against Russia was almost identical to what was to happen in World War I, in the battles of Tannenberg and the Masurian Lakes. The Russian side committed mistakes similar to those the Russians were actually to make in August 1914. It was assessed that the Russians were so badly beaten that their armies would present no further threat in the east; by the fortieth day after the start of mobilization, the mass of the German army in the east was available for transport to the west. In the game's scenario, the western allies had in the meantime attacked German forces along the entire front. The main thrust was through Belgium; the bulk of the French active corps was deployed between Luxembourg and Antwerp.⁷³ The Germans now counterattacked, eventually forcing the combined Anglo-French forces to surrender in the area of Liège.⁷⁴

Schlieffen taught officers to fight intelligently and to think for themselves. His staff problems and war games did not have "school solutions." The players were forced to develop their own "possibilities" (courses of action) and make their own decisions against agile enemies. They had to discuss their answers with, and justify them to, Schlieffen and their colleagues. Schlieffen tried to make the training of his staff officers as realistic as possible.⁷⁵ Nevertheless, Schlieffen used general-staff rides and war games to rehearse his own operational ideas, testing how operations would unfold in particular scenarios and how German commanders would react

to enemy actions. Schlieffen also often imposed arbitrary difficulties on his own commanders, while at the same time making situations easier for the enemy.⁷⁶

Schlieffen's successor, General Helmuth von Moltke, Jr. (1848–1916), made great efforts to improve German plans prior to 1914. For example, when he war-gamed the Schlieffen Plan, the results indicated that the two armies on the outside, or far right flank, of the great wheeling movement would run out of ammunition two days before the campaign ended; Moltke therefore organized two motorized ammunition battalions, the first in any army of the day. Yet the Germans did not simulate in their games the diplomatic and political consequences of their actions. Hence, in the event they were to be caught by surprise when their invasion of Belgium caused Belgian civilians to destroy their own railroads and brought the British Empire into the war.⁷⁷

The Germans continued to use war gaming during World War I. For example, the German high command rehearsed the spring offensive (*Kaiserschlacht*—Kaiser's Major Battle) in a game played at the headquarters of the Army Group Crown Prince Rupert. Also, in testing their plan for the final offensive in August 1918 (Operation MICHAEL), they conducted several strategic-level games.⁷⁸ All these games showed that chances of decisive success were slim.⁷⁹

The Interwar Years (1919–1939)

Between 1919 and 1939 the German military, more than any other, used war gaming as the main means for educating and training its officer corps. The reason was that the Versailles Treaty of 1919 put severe restrictions on Germany's forces. Among other things, the size of the new German military, the Reichswehr, was put at a hundred thousand, including four thousand officers. The general staff was formally dissolved, although its main functions survived under different names. Tanks, aircraft, and U-boats were prohibited. These prohibitions stimulated German military leaders—led by General Hans von Seeckt (1866–1936), chief of the Army Command (Chef der Heeresleitung, 1920–26)—to expand greatly the number and types of war games as a main method of combat training.⁸⁰

Seeckt was a firm believer in war of movement (*Bewegungskrieg*). This was his greatest contribution to the development of the Reichswehr and later Wehrmacht. His idea was that the only way to prepare the Reichswehr for a war of movement was to focus on educating officers in theoretical aspects of warfare.⁸¹ War games represented an important part of that education. After the end of Seeckt's tenure, the Reichswehr started to play operational war games.⁸²

In the interwar years German operational plans were tested and rehearsed in a series of war games. The aim was to make commanders at all levels thoroughly familiar with the situation and also with the difficulties they would have to overcome with respect to both enemy and terrain.⁸³ The Germans also used war games to test combat principles. In these games one side used the doctrine and

tactics of the potential enemy. The “friendly” commanders were changed several times, in order to bring the decisions of several persons to bear on principles to be tested.⁸⁴ The Germans often used war games as teaching tools for the study of the past campaigns and operations and also for the testing and improvement of certain doctrine developed and used in the past.⁸⁵ A secondary purpose of a war game was to give higher commanders opportunities to get to know their subordinate officers, observe their fitness under certain situations, and gain impressions of their strong and weak points. It was even thought possible to draw conclusions as to their qualities of mind and character. The dangers, however, of excessively one-sided assessments of fitness or unfitness as manifested during war games were well understood.⁸⁶ In the interwar years the Germans stressed that an officer’s promotion should never be based solely on his detailed visual grasp of a situation on the map or on his polished appearance during a war game, or the like.⁸⁷ The officer’s performance in the field and his character were to be the determining factors.⁸⁸

The Germans believed that war games were the best way for commanders to make known to subordinates their views on various aspects of warfare.⁸⁹ War games were an important means for the “spiritual” preparation for war and for shaping unified tactical and strategic views.⁹⁰ Yet a war game, they held, should never be considered proof of the correctness or incorrectness of operational thinking or of measures taken. Its outcome could be seen only as an example, and only from several such examples would it be possible to draw useful conclusions.⁹¹

In Seeckt’s era the term “war game” (*Kriegsspiel*) was broadened to include not only the traditional war game but also the planning game (*Planspiel*), staff exercise (*Stabsuebung*), exercise ride (*Uebungsreise*), terrain discussion (evaluation) (*Gelaendebesprechung*), command staff exercise (*Rahmuenuebung*), special exercise (*Sonderuebung*), and sand-table exercise (*Sandkastenuuebung*).⁹²

The Germans considered the “war game,” as such, to be two-sided. Such games were conducted from the strategic to tactical levels of command. A war game aimed at educating all officers in the assessment of the situation (that is, the commander’s estimate). The Germans emphasized the importance of concise and logical presentation of ideas, in making decisions and issuing orders based on them.⁹³ Another purpose of a war game was training in techniques and procedures of writing and issuing orders. War games trained commanders at all echelons and tested new methods, as well as certain fundamentals, of combat.⁹⁴ The sides were designated as Blue and Red; in a game involving allies or neutrals, they would be designated by other colors (Yellow, Green, etc.).⁹⁵ War games proper were difficult to organize and play, because of the need to represent faithfully the enemy’s way of thinking, doctrine, and tactical procedures.

“Planning games,” also called “planning exercises” (*Planuebungen*), were generally used for tactical and operational education of the commanders at all

levels.⁹⁶ Specifically, they were designed for education in certain tactical concepts and principles. The planning games were apparently the preferred method of rehearsing plans for pending or future operations. They were played on maps at scales of 1 : 5,000 or larger.⁹⁷ The idea to be tested was given by the director of the game; a specific episode was gamed, so that participants could acquire a picture of the combat situation. The focus was then on decisions for execution of the combat ideas, employment of individual combat means, and coordination. Drafting necessary orders was found most valuable. Planning games were one-sided; the “enemy” side was played by the director.⁹⁸ In that way, it was possible to focus more closely on a given topic.⁹⁹ In the Wehrmacht, planning games were used for training officers and noncommissioned officers (NCOs) in the practical application of doctrinal fundamentals; for the reinforcement of existing states of combat training; for training in making decisions, estimating terrain, and using weapons; and for evaluation of the knowledge, abilities, and character traits of participants. The emphasis was on making decisions and employing forces to carry out an operational idea.¹⁰⁰ Planning games were also used to prepare officers and NCOs to occupy higher positions.¹⁰¹ In troop training, the duration of a planning game was a maximum of two and a half to three hours.¹⁰²

“Staff exercises” were usually single-sided and were used to train participants in the functions of staffs in combat. The exercise simulated as many frictions and interruptions as possible.¹⁰³ “Training rides” had the same purposes as war games and planning games. The difference was that they were conducted for several days and mostly in the field. At the operational level, they were used to explore problems in national defense. At the tactical level they were used for education of the commanders and their staffs in combat with combined armies and logistics.¹⁰⁴ Rides at the operational level often took the form of “operational studies,” especially when they were conducted in the field. They were often two-sided but sometimes one-sided.¹⁰⁵

The “command staff exercise” familiarized commanders and staffs with the command and message system essential to attainment of the objective. Operations staffs and signal troops would take part.¹⁰⁶ The most developed exercises of this type were the “commander’s exercise” (*Fuehreruebung*) and “communications exercise” (*Nachrichtenuerbung*). “Special exercises” were conducted for several purposes. Most often they were used to test suitability of “war organization” (*Kriegsgliederung*), or an order of battle, a new organization in the supply services, the employment of new weapons, or some tactical fundamental.¹⁰⁷ “Sand table exercises” were primarily for training tactical commanders from the battalion level down to the rifle squad.¹⁰⁸

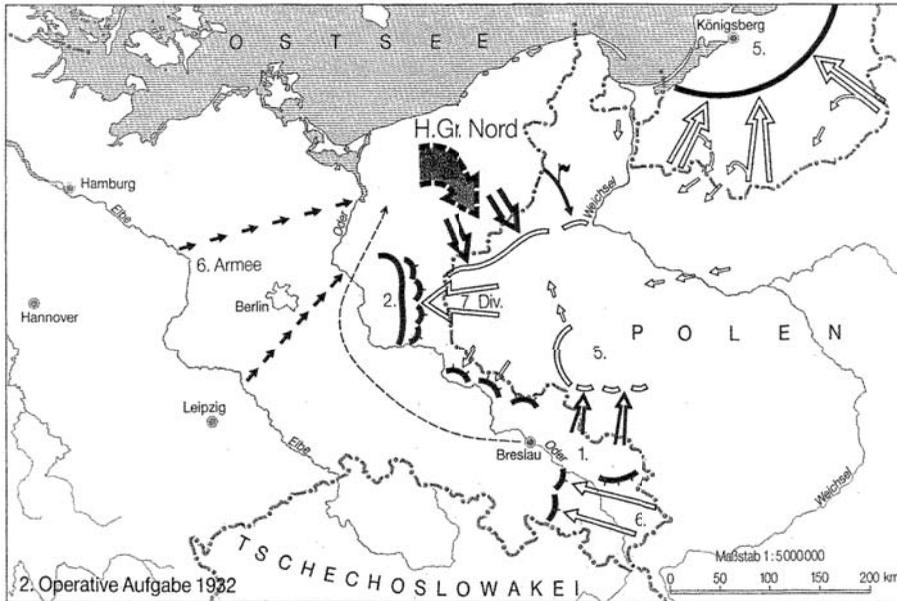
Seeckt also introduced, in lieu of the prohibited Great General Staff rides, “commander’s rides” (*Fuehrerreisen*) for the education of future operational

commanders. Thereby he laid the foundations for the conduct of German major operations and campaigns in World War II.¹⁰⁹ The participants were exclusively generals—group, division, and infantry or artillery commanders.¹¹⁰ Commander's rides included both army and naval officers.¹¹¹ The first was conducted in 1921, to explore national defense in case of sanctions by the Western powers. The following year, the scenario envisaged defense against attack by the Czechoslovak army.¹¹² The commander's rides of 1923 and 1928 explored problems of coastal defense.¹¹³ The chief of the Troop Office (or *Truppenamt*, as the Reichswehr-era general staff was known) conducted annual Troop Office rides (*Truppenamt-reise*), also called "chief's rides" (*Chefreise*); participants were chiefs of staff and specially selected general-staff officers.¹¹⁴ After the general staff was formally reestablished in 1935, general-staff rides (*Generalstabsreisen*) were restored. The Reichswehr formally became the Wehrmacht in October 1935.

In addition to war games, operational thinking was developed by means of "operational missions" (*Operative Aufgaben*). They were not war games in the ordinary sense but written studies on hypothetical problems in the future. They were worked out by the leading general-staff officers in the Reichswehr Ministry; the staffs of group commands, divisions, and the weapons school; and individual officers serving in staff positions. About three hundred officers, from majors to two-star generals, were involved in such studies. Their solutions were evaluated by the Troop Office.¹¹⁵ For example, in the first "operational mission," in 1931, the scenario was that Germany (Blue) would be involved in a war against France (Red) in northern France, while Czechoslovakia (Yellow), with twenty-four to twenty-eight divisions deployed in northern Bohemia, would advance to its border with Saxony. Germany had available twelve divisions and several cavalry units. The Germans would be able to deploy six additional divisions to the western border. The Germans assumed that the Czechoslovak forces, not completely assembled, would cross the border and engage eleven German divisions and one cavalry division from Silesia and, in the area of Glatz (then part of Germany, now in southwestern Poland), attack deep into their flanks. In the north, German forces would feint two attacks but in general would conduct a delaying defense.¹¹⁶

In the first and second "operational missions" of 1932, the scenario envisaged war against Poland (Red). (See map 1.) The first "operational mission" of 1932 was played at the level of the Army Command. The initial situation envisaged that the Poles would deploy several armies to Germany's (Blue) borders, with the main effort in the western part of the province of Posen; their aim was to attack in the direction of Frankfurt/Oder–Berlin. The Germans would use one army in Silesia, in the Oder–Warthe–Bogen area and in East Prussia, two armies in Pomerania, and one advancing to a position from which to attack toward the southeast.¹¹⁷ Three German armies deployed in Silesia would face the Polish

MAP 1



armies. Their task was to secure the province and bind the enemy forces. In the solutions presented by the control team and by some 80 percent of participants, this task evolved into a rapid offensive against one of the Polish armies. The solution of the control team required the greatest concentration of forces, combined with the highest risk, because of the substantial weakening of the forces facing the French.¹¹⁸

In the second “operational mission” of 1932, the participants played the role of the chief of the Army Command. In the scenario, which followed from the first exercise, while the German army in Silesia had achieved partial success, the main attack, launched from Pomerania, had not achieved decisive success. The question was whether, in light of an expected enemy main strike on Berlin, the original German plan of a flank attack from Pomerania remained valid. The solution of a significant number of participants was to shift the weight of the main effort (*Schwerpunkt*) to Silesia. However, after analysis of the chances of success and the operational potentials of the enemy and friendly forces, General Wilhelm Adam, who played the chief of the Troop Office, retained the original decision.¹¹⁹

In the Reichsmarine (1919–35), a special type of the war game was the “commander’s war game” (*Fuehrerkriegsspiel*). Participants were naval officers of the ranks of captain and above. The games were prepared by the sections of the Navy Command (Marinekommandoamt). The director of the game was the commander in chief of the Reichsmarine. Commander’s war games explored strategic and operational problems of naval warfare against the background of a possible

conflict.¹²⁰ The Reichsmarine conducted commander's war games each year from 1923 to 1927. In 1925 the scenario was a war between France and Germany; other states were neutral. Because the postures of Italy and England were doubtful, France did not consider redeploying its Mediterranean forces to the North Sea. The basic idea was that France would not engage German naval forces in the initial phase of war but would attack German imports at sea. The main objectives of the Reichsmarine were to maintain control in the Baltic, protect Germany's sea imports, and interfere with French shipping.¹²¹

In 1927–29, the Reichsmarine apparently focused on commander's rides and its participation in the army maneuver in the fall of each year. In the Reichsmarine's commander's ride of 1928, the focus was on interdependence of warfare on land and at sea. The war game was conducted jointly by the Reichsmarine and the army. The scenario was a war with France and Belgium. The hostilities broke out after several weeks of tension, by which time the German army had mobilized twenty-one divisions and imported war materiel from overseas.¹²²

MAIN PURPOSE

In the interwar years, the Germans differentiated overall between “educational” (*Belehrungspiel*) and “testing” (*Erprobungspiel*) war games. The purpose of the educational war game was to educate officers in the use of doctrinal documents or a higher commander's views on a certain aspect of warfare. The purpose of a testing war game was to explore strategic or tactical thinking or to develop new concepts of troop leadership.¹²³ The war games were conducted on either maps or boards.¹²⁴

Scale

Until the early 1930s, the Germans differentiated between tactical and strategic war games in terms of command echelon and scale. Tactical war games were designed to provide junior commanders with decision-making experience and train them to issue the orders needed to implement their decisions. These games were the simplest to organize and execute. They could be conducted without regard to a war situation in a given theater;¹²⁵ some of these games were one-sided. Operational and strategic games, however, were conducted by the highest echelons. Apparently, “operational” war games as such came into use in the early or mid-1930s, conducted by operational-level commands. A strategic war game was much larger in scope and required greater effort on the part of organizers and participants. They simulated warfare in a single or several theaters. In its simplest form, an educational strategic game was meant to provide strategic education. In a testing strategic game, the aim was to assess operational preparatory work by higher staffs. In the Reichsmarine, such games were prerequisites for the execution of naval maneuvers.¹²⁶

In the same period the Germans conducted several strategic war games. In the 1930s, Field Marshal Werner von Blomberg (1878–1946), minister of war and Commander in Chief of the Armed Forces, organized several high-level games and staff studies to explore “the problems which the military and political situation had created for Germany’s national defense and especially to establish a theoretical basis for the joint actions of the supreme command of the armed forces and high commands of the Army, Navy, and Luftwaffe in all important areas.”¹²⁷

General Ludwig Beck (1880–1944), chief of the Army General Staff, tried in 1938 (but failed) to impress Hitler, by conducting a war game, with the risks of going to war with the Western powers. In June 1938, instead of the annual large general-staff ride, he decided to explore in writing the question whether it was possible to defeat the Czechoslovak army quickly before France seized the Rhineland in the west. He concluded that although the Czechs had formidable defenses, it would be possible to defeat them. The Czechoslovak army could mobilize as many as thirty-eight divisions; the Germans would require about thirty divisions and three weeks to subjugate Czechoslovakia.¹²⁸ Beck also asserted that any attack on Czechoslovakia would certainly lead to the involvement of France and Great Britain and possibly intervention by the United States—a new multifront war that would mean the downfall of the Third Reich.¹²⁹ He concluded that attack on Czechoslovakia in 1938 could only bring “catastrophic results . . . for Germany and for all Europe.” Beck proved to be wrong about catastrophe in the short term.¹³⁰

Beck’s June 1938 study convinced him that Hitler’s assumptions about limited war that year were mistaken; he viewed “as fateful, the military action against Czechoslovakia, planned on the basis of these military premises, and must explicitly disavow any responsibility of the general staff of the Army for such action.”¹³¹ Germany was not strong enough. Hitler responded that the Wehrmacht was an instrument of policy and had only to execute the missions that he gave it, not discuss them. Beck replied in turn that he could not accept orders with which he did not agree.¹³² He resigned on 18 August 1938.

The Reichsmarine conducted several strategic and operational war games in 1929–35. For example, a fleet war game was conducted in March 1931, a strategic war game (*Strategische Kriegsspiel*) in April 1932, a high-command war game (*Kommandoamtskriegsspiel*) in 1933 and 1934, a commander’s war game (*Fuehrerkriegsspiel*) in 1934–35, and a high-command ride (*Kommandoamtsreise*) and strategic war game in 1935. It regularly took part in the army’s fall maneuvers and exercises. After 1935 the newly renamed Kriegsmarine conducted strategic war games in the winter of 1937–38 and 1938–39. It also participated in the Wehrmacht maneuver in Mecklenburg and Pomerania in October 1937. For example, in a Navy High Command (Oberkommando der Marine, or OKM)

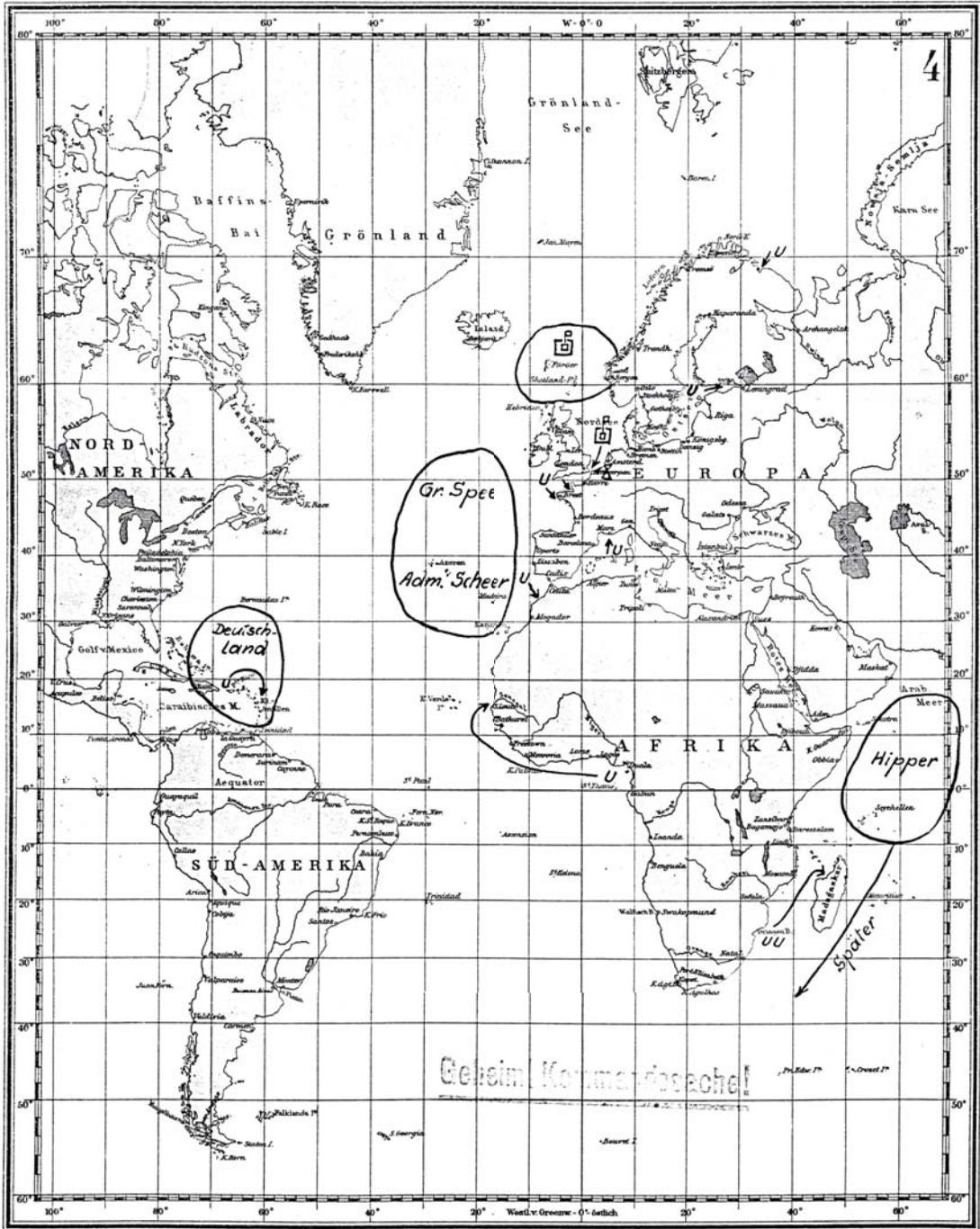
strategic game in the winter of 1937–38, “Kriegsspiel-A,” the aim was to explore possibilities and prospects of a sudden opening of hostilities by Germany, testing operational questions and overall naval warfare, questions of high command and organization, and the operational possibilities of ship types not yet in service.¹³³ Among other things, Kriegsspiel-A elaborated the combat employment of the German battle fleet north of the Shetlands; employment of the “pocket” battleships in the Caribbean (*Deutschland*) and in the eastern part of the central Atlantic (*Graf Spee*, *Admiral Scheer*), and of a heavy cruiser (*Hipper*) in the western part of the Indian Ocean (see map 2); war in the Baltic, and the problem of importing iron ore from Luleå, Sweden; and the employment of the U-boats in the western Mediterranean.¹³⁴

The Fleet Command (Flottenkommando), established in September 1933 with responsibility for all seagoing forces, conducted four distinctive but related operational war games: Kriegsspiel-B, -C, -D, and -E.¹³⁵ Naval operational war games were longer than tactical games and consisted of several smaller, tactical games played over several days.¹³⁶ The purpose of Kriegsspiel-B was to explore the possibilities of operational warfare in the North Sea and the approaches to the Atlantic with France in, first, a defensive posture and later offensive; the operation orders that would be necessary during the transition from peacetime to tension and then to war; and naval command organization in the North Sea.¹³⁷ Kriegsspiel-C examined operational warfare in the Baltic, specifically the offensive posture of the Soviet Union, the effect on the declaration of war of a Bruestort–Oeland mine barrier, and U-boat barriers.¹³⁸

Kriegsspiel-D’s purposes were to examine the employment of U-boats in the Mediterranean and the Atlantic from organizational and technical viewpoints; to explore the possibilities of mining the approaches to French ports in the Atlantic and the Mediterranean; to collect insights about cooperation between U-boats and surface ships in trade warfare; and to test the chances of success of U-boats armed with guns in commerce raiding.¹³⁹ The lessons drawn from Kriegsspiel-D pertained to the employment of U-boats in the Mediterranean to cut off communications between France and its colonies in North Africa and to tie up large French naval forces. The game also suggested that the U-boat commander (B.d.U.), Commodore (later Grand Admiral) Karl Doenitz (1891–1980), should exercise only overall operational command and control, leaving tactical command to the flag officer of the U-boats (*Fuehrer der Unterseeboote*—F.d.U.) in the Mediterranean. The game showed that the local commander would know the situation better and have more secure radio communications.¹⁴⁰

Kriegsspiel-E was designed to test unified command for cruiser warfare in the Atlantic, rehearse cooperation between surface forces and U-boats, explore the

MAP 2



supply and organization of the “Staging Service” (*Etappendienst*—resupply ships) for warfare in the Atlantic, and study the value of a base in Duala, Cameroon, for operations in the Atlantic.¹⁴¹

The tactical war games that made up Kriegsspiel-A (designated F, G, H, and J) were conducted by the Naval Station Commands (*Marinestation*) N[ordsee] (North Sea) and O[stsee] (Baltic). Naval Station Command N conducted Kriegsspiel-F, while Naval Station Command O played Kriegsspiel-G, -H, and -J. Kriegsspiel-F looked at operational warfare in the North Sea in the presence of strong French forces and explored whether a mine barrier could be laid in the North Sea in a timely way and what its effect would be.¹⁴² Kriegsspiel-G examined operational warfare in the Baltic should the Soviet Union open hostilities. It also asked how far the planned mine barrier could be extended and whether it could be laid in the face of strong action by the Soviets. Finally, it explored the defensive and offensive use of mines in the Baltic and what forces would be required in that theater. Kriegsspiel-H was a simulated gunnery duel aimed to test whether the German battleships, with 380 mm (fifteen inch) guns, could engage older and modern battleships successfully.¹⁴³ Kriegsspiel-J explored the tactical details of the intended Bruestort–Oeland mine barrier—its form, gaps, monitoring, necessary material, and again, laying it in the face of various Soviet attacks.¹⁴⁴

The Germans also used operational war games for exploring the combat possibilities of their new panzer and motorized forces. After 1933, the Germans created a number of experimental independent tank battalions and regiments, to explore the potential roles of each and identify problems. General Beck wished also to explore the use of the panzer and motorized units at the operational level. In 1935 he conducted a general-staff ride looking at how a panzer corps might be used; the next year, a general-staff ride explored the employment of a hypothetical panzer army. At the end of 1935 Beck recommended that the three new panzer divisions (established in October 1935) be used as an independent force “in association with other motorized weapons” and for accomplishing “long-range objectives.”¹⁴⁵

Organization

The Germans considered the most important prerequisites for successful war games to be sound organization and thorough preparation. The key people in a game were the director (*Leiter*), the team leaders (*Parteifuehrer*), and their subordinate leaders (*Unterfuehrer*).¹⁴⁶ The director was the most important. In a strategic game, he was responsible for issuing written assignments for all participants, the general situation, simulated forces and their order of battle, the mission of each side, general orders, and regulations for play.¹⁴⁷ Beforehand, the director prepared a “letter game” (*Briefspiel*) to communicate to team leaders his intentions; the letter game served as the basis for the conduct of the game. Ideally, the director issued his orders in writing and then followed up with the verbal

explanations, in order to prevent misunderstanding and duplication of work by team leaders. The director was to maintain during game play a clear picture of the decisions of team leaders, their basis, and the resulting employment of forces.¹⁴⁸ Before the game, when necessary, he issued general and individual orders, and he discussed with the parties individually the details of preparatory work, so that play could begin on the first day.¹⁴⁹

Normally, the director was not selected by seniority or rank but according to his professional fitness. Among the many requirements for the position, the director had to possess a mastery of tactics, knowledge of military or naval history, and combat experience.¹⁵⁰ He had to be imaginative and creative, to make a game lifelike and interesting to the players. He needed a thorough knowledge of command and control.¹⁵¹ The director had to have cool, businesslike judgment and eloquence in describing a situation—the interest of the players could not be engaged by dry lectures.¹⁵² The director needed a good memory and to be able to give players freedom of action and allow the results of their decisions to mature without losing the thread of the game or sight of the object to be attained.

In fact, the Germans considered that the true art of businesslike and beneficial war gaming lay in the personality and actions of the director. He alone had the power to create many-sided and interesting situations in which new decisions had continuously to be made.¹⁵³ He had full responsibility for preparation, execution, and “final discussion” (*Schlussbesprechung*) or postgame critique;¹⁵⁴ accordingly, he exercised complete authority.¹⁵⁵ Preparation of the game required thorough knowledge and understanding of all related areas, possible situations, and their development; its execution required mental agility and close attention; the director needed a good sense of when, where, and how to intervene in the course of the game.¹⁵⁶ He was required to take a realistic view of the game on the basis of the simulated combat situation, for which he needed a thorough knowledge of staff work and a temperament suitable for the specific type of game.¹⁵⁷

One of the main responsibilities of the director was the distribution of roles to the participants. Normally, a team leader (commander of a side in a war game) was selected for his abilities and regardless of rank. A team leader was responsible for his side’s technical execution of the game and its preparatory work.¹⁵⁸

The Germans also paid great attention to the quality of the control teams and participants in the planning games conducted at the highest levels of command. For example, in a planning game conducted by the Reichswehr Ministry in 1927, among five members of the control team were Lieutenant Colonel Wilhelm Adam, who later became a four-star general, and three majors—Wilhelm List, Guenther von Kluge, and Walther von Brauchitsch—who would reach the rank of field marshal. Among fourteen participants in the same planning game were two majors (Erwin von Witzleben and Ewald von Kleist) who became field marshals,

and ten captains, five of whom became field marshals (Ernst Busch, Albert Kesselring, Erich von Manstein, Friedrich von Paulus, and Walter von Reichenau) and five four-star generals (Hans-Juergen von Arnim, Heinz Guderian, Gotthard Heinrici, Eberhard von Mackensen, and Gerhard Matzki). Another participant in the game was Lieutenant Commander Karl Doenitz, later grand admiral and the successor to Hitler.¹⁵⁹ That so many junior officers in a planning game attained high rank in their respective branches is not a coincidence. It implies that their high professional and mental abilities were duly noted by their superiors.

The Germans stressed that the sides in a game should have roughly equal numbers of weapons specialists, distributed without regard to rank. However, the director would take into account the wishes of a team leader. Some officers were kept in reserve; not all participated in a game from its beginning. If too many officers were placed in reserve, the director would assign one or more to assist him in directing the game.¹⁶⁰

Subordinate leaders for each side were assigned only for strategic war games. They were normally selected by the director but in some cases at the discretion of a team leader. Subordinate leaders had a limited role. In educational games, their roles could be changed by the director. The assignment of a large number of subordinate leaders would complicate a game, and that had to be avoided.¹⁶¹

Elements

Arbitrarily, the principal elements in the design of a German war game were the initial situation (scenario), its sections (*Spielabschnitt*), and duration—both as simulated in the scenario and actual time of play. Selection of the “situation” (*Lage*) depended on the game’s purpose. A situation described the groupings of hostile and neutral powers and the events leading up to the opening of hostilities. If hostilities had already started, the course of war on land, at sea, and in the air to date was described.¹⁶² The situation contained everything necessary for a team leader to make combat decisions.¹⁶³ The Germans emphasized that the situation should contain a general part dealing with the original state of affairs and a specific part with such details as organization, the condition and fighting qualities of troops, the logistical status, signals and communications, the air situation, terrain, and weather.¹⁶⁴

The Germans stressed that a war-game situation should be described in such a way as to be full of tension and potential for surprise. Its scope would not exceed what was necessary for clear understanding. The situation had to establish a larger framework for the main topic of the game—an operational framework for a tactical game, a strategic framework for an operational game. It encompassed the situation on the ground, at sea, and in the air, depicted graphically whenever possible to allow easier understanding and clarity and to save time.¹⁶⁵ The

commander of each side was not to be given more information than he would receive in an actual combat situation. The mission and the intent of the higher commander had to be clearly expressed.¹⁶⁶ Finally, the Germans emphasized that a situation should be interesting, that it should contain an element of uncertainty and not follow past patterns: “impossible” situations are not that unusual in war. The missions and orders should be issued in full text and should be phrased with particular care.¹⁶⁷

The scenario of a war game usually projected a situation two or three years in the future; its political, economic, and other nonmilitary aspects served only as background. The Germans repeatedly stressed the need for a simple and succinctly described scenario; otherwise, much of the fascination with the game would be lost.¹⁶⁸ For example, in the Kriegsmarine’s strategic war game of 1937–38, it was emphasized that the political framework had been designed only to allow the game to explore the possibilities of “operational” warfare; it did not represent in any way the view of the German naval high command of what the political situation would be in 1940. Political developments in the course of the game—for example, entry into the war by Italy or Poland or changes in the strategic postures of other states—were meant only to change the initial situation and set up new missions for the players.¹⁶⁹

The Germans warned that it was dangerous to conduct a game based on a historical event. It was possible to reconstruct the original historical situation, but from the very first move by either side everything would change, because the imponderables, such as human psychology and the personalities of the individuals involved, would be very different from what they had been. Hence, unless developments were left to the free play of the opposing sides, the game would be unnatural and uninteresting. Still, examples from military and naval history might be cited to good purpose if the director could elaborate from episodes he had personally witnessed, to illustrate the influence of intangible factors in war.¹⁷⁰

The duration of a war game depended on its purpose and scale. In general, operational and strategic games were longer than tactical ones. In the early 1930s, the Germans believed that a tactical war game should not take longer than three to four hours to play, while higher-level games should last for several days or weeks or even months. The shorter the game, the more critical it was for the players to make quick and sound decisions. If the game was to be intense and maintain the interest of the players, it should not last too long.¹⁷¹ In terms of simulated “game time,” the Germans preferred that a section or phase of a game should not represent a period longer than a week. A game with a longer phase would be complicated to play because it was not transparent to controllers. It would lack the unpredictability caused by shifts in the situation, which often happen in real combat. Hence, it was better to play a game divided into several

shorter phases; the number of examples would be increased and the clarity of the situation enhanced.¹⁷²

Strategic or operational war games had relatively few days of actual play. Most of the time was devoted to “planning studies” (*Planstudien*), or staff studies, and discussions between the directing team and participants of problems revealed during each phase. For example, the Kriegsmarine strategic war game of 1937–38 started on 3 November 1937 and ended on 7 March 1938. The game consisted of three phases. The preparation of the initial situation lasted until 22 December 1937, followed by work on the second situation until 20 January 1938, and on the third until 15 February.¹⁷³ Only six days were devoted to moves by the players, all during an admiral’s staff ride (*Admiralstabsreise*) at Krummhuebel (Karpacz today), in Lower Silesia, from 25 February to 7 March.¹⁷⁴ The actual days of play were 25–26 February (days 1–2), 28 February–1 March (days 3–4), and 3–4 March (days 5–6)—there was no play on 2 March. Preparations for the final discussion were made on 5–6 March, and the final discussion itself took place on the 7th.¹⁷⁵

Execution

The director controlled a war game closely. He asked direct questions and insisted on equally direct, unequivocal, concise, and clear-cut answers. Long-winded or irrelevant expositions were, if necessary, abruptly cut off. The guiding principle was to bring out clearly the most important points of a subject; the director was responsible for consolidating the thoughts of the participants on the essential points;¹⁷⁶ he was not to be driven off the subject when other participants were. When the director spoke, no other person was allowed to speak. His comments started with the side that made the first decision; he would respond to questions in a way that fostered reflection.¹⁷⁷ He was to express his views in a clear and definite manner but without personal acrimony. The idea of training and teaching was to be paramount.¹⁷⁸

The director of the game was responsible for preparing a large number of messages crafted to confront the players during game play with complex situations.¹⁷⁹ The battle picture was constantly updated. The participants were kept informed of the overall situation.¹⁸⁰

Shifts from one phase or episode to the next, and the “time jumps” between them, depended on the situation. In general, the largest “time jump” was made at the beginning of the game, when the opposing sides were the farthest apart; the jumps were progressively smaller as the distances were reduced. The director could order an unscripted time jump during a game after consultation with the team leaders of the opposing sides.¹⁸¹ For each phase, subordinate commanders conducted new assessments of the situation and made appropriate decisions.¹⁸²

One of the director's main responsibilities during the game was to keep a high level of interest among the players. This means that each phase of a war game had to be kept full of uncertainty and drastic developments.¹⁸³ The director influenced the course of the game by issuing reports from friendly forces and intelligence on the enemy that imposed substantial changes in the situation.¹⁸⁴

The director was to play the game in accordance with the decisions of both sides, but he did not know in advance what these decisions would be.¹⁸⁵ He was to allow sufficient freedom of action to the players but not to let the game to degenerate into trivialities. To this end the director could intervene through discussions during a particular point in a game in which he could ask briefly questions, make statements, and give his reasons. The Germans stressed that it was undesirable for a director to interfere with the actions taken or decisions made by players or to criticize or correct them. If the players sensed that they could not make decisions themselves, but only the director, then uncertainty, indecision, and reduced interest and motivation would result.¹⁸⁶ If the team leaders made tactical errors, they were not interfered with; subsequent events would show which measures were correct and which faulty.¹⁸⁷

A game was to be conducted in such a way that it facilitated a free exchange of opinions between the director and the players in conversations that the director stimulated by transmitting his knowledge, in the shape of interesting situations and his ideas on command and control. The director was to help players develop their judgment and their capacity for rapidly arriving at decisions. He was to abstain from tedious written work before the game and from long-winded theoretical discussions in the course of it.¹⁸⁸

The Germans emphasized that warfare is full of uncertainty, that commanders must learn to act in conditions of uncertainty, finding their way through sheer willpower.¹⁸⁹ For this reason the director ensured that players did *not* have all the information they needed to make sound decisions. The commander of each side in a game had to build his picture of the situation independently, not let the director do it. Very often, commanders forgot that neighboring forces were part of the game; this gave directors opportunities to impose unexpected events and thereby influence the game in certain directions.¹⁹⁰

German war games ended with a final discussion lasting perhaps half a day. It was conducted one or two days after the last play day.¹⁹¹ The final session included remarks by the most senior officer present and the director, followed by discussion with the participants. The director's superior stated in his comments whether he considered the plan underlying the game to have been suitable and to correspond to reality, whether the topic for the game had been completely and accurately grasped, and whether the purpose of the game had been achieved.¹⁹²

The written report of the final discussion was typically dozens of pages long. It was written by the director, with the input of the team leaders, and it reflected the level at which the game had been conducted. For example, the final discussion report for Kriegsspiel-B of 1937–38, by the commander of the Fleet Command (Admiral Rolf Carls), was written at the operational level, from a war-at-sea perspective. This document, issued on 12 April 1938, was sixty-eight typewritten pages long. After a short discussion of the game itself, it focused on such operational aspects of war at sea as struggle for sea control, the missions of the Kriegsmarine, the importance of bases overseas and neutrals, and the maritime theater, as well as the most important episodes of Kriegsspiel-B.¹⁹³

The final discussion was not a description of the course of the entire game. The director selected the interesting and instructive moments and commented on decisions made by the team leaders. The director was to take a stand on all important decisions he had made himself and not only to critique those of others but suggest specific solutions.¹⁹⁴ Both praise and criticism were to be given sparingly; any criticism, especially in the oral session, was to be polite and respectful, especially in the presence of junior officers. The director was to state clearly—after pointing out that no military problem has a standard solution, that for most theoretical problems several solutions are perfectly possible, and that his opinion was no sure path to victory—how he would have acted and why. Every criticism was to conclude with a statement as to whether the commander had accomplished his mission. Finally, the exchange of opinions was not to lead to limitless discussion.¹⁹⁵

Normally, after the end of a war game the director ordered written “planning studies” of problems that had been identified during the game and required elaboration. For example, after Kriegsspiel-B the commander of the Scouting Force (*Befehlshaber der Aufklaerungstreitkraefte*, or B.d.A.) was directed to conduct three planning studies. The first, delegated to the flag officer of the Torpedo Boats (*Fuehrer der Torpedoboote*, or F.d.T.), was to assess the protection of German sea communications in the Baltic and the chances of success should Soviet forces go on the offensive. Second, the flag officer of the Minesweepers (*Fuehrer der Minensuchboote*, or F.d.M.) was to assess the possibility of and chances of success in laying the Bruestort–Oeland mine barrier after Soviet attacks on German sea communications and also of laying mine barriers before Soviet forces penetrated into the central Baltic. The third planning study was to explore the employment of the U-boats and S-boats (fast torpedo boats), mine barriers, and aircraft in the Gulf of Finland to damage or eliminate the Soviet fleet, and also the use by German forces of bases in neutral Finland or Estonia.¹⁹⁶ The naval high command directed a study, *The Problem of the North Sea Theater in a German-British Naval War*, about seventy pages long, based on the war game.¹⁹⁷

WAR GAMES, EXERCISES, AND MANEUVERS

Prior to 1939, the Germans routinely used war games to examine plans that would be tested in large-scale exercises and maneuvers. For example, the concept of employing U-boats in groups or screens (popularly called “wolf packs” in the West) had its beginnings in the last few months of World War I. The idea of employing large numbers of U-boats in groups and on the surface was revived during naval war games in the early 1930s. Shortwave radio had now made it possible for the first time for the U-boat command to direct from headquarters on board a ship or ashore the movements and coordinate the attacks of several groups of boats. This concept was first tested in practice during Wehrmacht maneuvers in the fall of 1937. The commander of the U-boats, Commodore Doenitz, controlled his boats deployed in the Baltic via shortwave radio from a submarine tender at Kiel. On the basis of these exercises Doenitz requested that a command ship equipped with the latest communications be built for the command and control of U-boats in case of war.¹⁹⁸

In the winter of 1938–39, during the navy’s strategic war game, Doenitz conducted an operational game to explore the employment of U-boats in the open Atlantic, with special reference to attack in groups, command and control, organization, the location of enemy convoys, and the massing of additional U-boats for final attacks. In this game no restrictions were placed on either side. The officer in charge of the convoys had the entire Atlantic at his disposal and was free to select their courses. Game play suggested that for Commander, U-boats to exercise complete control of the U-boats in a theater and to conduct joint operations from a command post ashore was not feasible. Doenitz then decided that he should direct himself the broad operational and tactical organization of U-boats in their searches for convoys but that the command of actual operations should be delegated to a subordinate in a U-boat positioned at some distance from the enemy and remaining as far as possible on the surface. Doenitz accordingly ordered a certain number of submarines under construction to be fitted with communications needed for that role. Another finding of the game was that given the number of U-boats then available and planned, the Germans could not expect, in a war against merchant ships in the next few years, to do more than inflict a few pinpricks.¹⁹⁹

In May 1939, after further large-scale exercises in the North Sea, U-boats conducted an exercise in group tactics off Cape Finisterre and in the Bay of Biscay. In July 1939 Doenitz (by then promoted to rear admiral) conducted a similar exercise in the Baltic. All these exercises proved to Doenitz that his concept of using U-boats in groups was well-founded. (Nevertheless, the German naval high command continued to believe that in the next war U-boats would be employed individually.)²⁰⁰ Doenitz also used lessons learned from the winter exercise of 1938–39

to argue that a successful war against British maritime trade would require a force of at least three hundred U-boats, mainly of the 517- and 750-ton types.²⁰¹

Rehearsing Operations Plans

In the interwar years the Germans invariably looked for potential problems in operational ideas or plans for pending or future operations by conducting war games, preferably planning games. For example, General Helmuth Felmy (1885–1965), commander of the Luftwaffe's 2nd Air Fleet, conducted on 2 May 1939 a planning game, covering a period of four to five days and based on the then current deployment of his units.²⁰² The main purpose was to explore the possibility of a successful air war against Great Britain. The game was considered so important that it was attended by General Erhard Milch (1892–1972), state secretary for air transport and inspector of the Luftwaffe; Colonel (later General) Hans Jeschonek (1899–1943), the newly appointed chief of the Luftwaffe General Staff; Generals Albert Kesselring (1885–1960) and Hugo Sperrle (1885–1953), commanders of the 1st and 3rd Air Fleets, respectively; and the director of the command section (*Fuehrungsabteilung*) of the Fleet Command and several of his aides.²⁰³

The conclusion drawn by the planning game was that should hostilities be opened in 1939, a quick victory using airpower could not be achieved. (This agreed with a Luftwaffe General Staff study, *Operational Objectives for the Luftwaffe in Case of a War against England in 1939*, of 22 May 1939.)²⁰⁴ The reasons given were insufficient range of the He-111 bombers to attack the ports on the British west coast; a limited ability to attack the British surface fleet; the inadequacy of training for attacks against sea targets and in extended bad weather conditions; the small number of aircraft capable of long-range operations; and the existence of too many potential targets and too large a combat area for the number of aircraft available.²⁰⁵

The Germans assumed that the major part of the Royal Air Force would be deployed to France, for “tactical” and political reasons.²⁰⁶ Nonetheless, the 2nd Air Fleet concluded that the Luftwaffe's efforts against British imports would not have decisive effect. Instead, “terror” attacks on London would be the strongest option; they would have a catastrophic effect on the British capital, although they would also increase British resistance. Luftwaffe attacks on the British Expeditionary Corps could not be expected to have decisive effect, because the embarkation and debarkation ports were beyond effective range. Further, the game suggested, attacks on British fighter aircraft would achieve only small success, because the British had a well-organized air-defense reporting network at sea and on the coast. This, in turn, would increase warning time for enemy fighters and therefore their readiness for action. The game predicted heavy losses for German

aircraft in attacks against enemy fighters, which also would distract from the attacks on “vital” targets.

Attacks on the British defense industry and “shadow” industry appeared to offer the greatest chances for success. Such attacks would have long-term effects. Because of the wide dispersal of the British airspace industry, defense would be difficult, allowing the Luftwaffe to employ the smallest forces.²⁰⁷ Using this analysis, the 2nd Air Fleet proposed to use its deployment areas in northwestern Germany and, avoiding the defense area around London, to carry out “rolling” attacks by its smallest units against the British air industry. Secondary targets would be fuel depots and port installations.²⁰⁸

Another conclusion of the 2nd Air Fleet’s planning game was that the fragmented command structure of the German coastal air defenses would cause considerable friction and reduce the Luftwaffe’s effectiveness. The German navy had responsibility for air defense in the coastal fortified areas, which were also the Luftwaffe’s deployment and logistical support areas. General Felmy proposed the unification of air defenses to achieve a clear chain of command. For him, this was not a matter of service prestige but a pragmatic measure for the protection of the entire Wehrmacht. Specifically, he proposed the establishment of two air-defense divisions in the North Sea area, one between the Ems and Elbe Rivers and the other between the Elbe estuary and the German-Danish border. (Felmy’s proposal was ignored, but efforts were made in April 1939 to enhance coastal air-defense cooperation between the Kriegsmarine and the Luftwaffe.)²⁰⁹

The Luftwaffe General Staff conducted a general-staff ride in June 1939 because of the expected war against Poland. This ride included a planning game several days long. The scenario envisaged that Germany (Blue) would carry out a surprise attack on Poland (Red); Western European powers and Soviet Russia were expected to remain neutral in the conflict, and Poland would not undertake any mobilization. During the general-staff ride, the lead role in air war was assigned to the 1st Air Fleet.²¹⁰ The main mission of the 1st Air Fleet was initially to attack Polish air units on the ground and then prevent the deployment of Polish ground forces with the mass of its forces. The Germans envisaged the employment of the 1st Air Fleet; the 1st, 2nd, and 3rd Air Divisions, with their six attack (*Kampfflugzeug*) aircraft wings and one dive-bomber wing (*Geschwader*); the 7th Air Division, with air transport troops and one paratroop battalion; and the East Prussia Luftwaffe Command, with one attack and one dive-bomber wing.²¹¹

In July 1939 General Franz Halder (1884–1972), the chief (from 1938 to 1942) of the Army General Staff, conducted the last general-staff ride (*Generalstabsreise*) prior to the outbreak of World War II. The purpose was to rehearse the plan for war against Poland. The movements of the Blue party were almost identical

to those that would be actually carried out that September. For example, the surprise mass breakout by the Polish grouping at Poznan on 9 September against General Johannes Albrecht Blaskowitz's Eighth Army was played during the planning game. (In the actual event the attempt failed, because of the energetic action of General Kurt von Briesen's 30th Infantry Division assigned to protect the flank of the Eighth Army.)²¹²

In the German army, deployment instructions (*Aufmarschweisungen*) were drafted by the Army High Command (Oberkommando des Heeres, OKH). Corresponding deployment orders were then issued by lower headquarters to subordinate units.²¹³ Such orders set the initial employment of all forces in a major operation or campaign. In many cases the enemy situation was known in great detail. The campaigns in the west in May 1940 and in Soviet Russia in June 1941 were thoroughly gamed in advance.²¹⁴ In these campaigns, every commander down to the company level was completely familiar with his initial mission, the nature of the forces facing him, and the difficulties that he might encounter.²¹⁵

Prior to the campaign in France and the Low Countries, the Germans used war games and exercises of all types to prepare all officers and even NCOs. The extended waiting period before it began gave ample opportunity to rehearse the plans. For this reason the first days of fighting went without friction and according to plan; almost nowhere was it necessary for the higher command echelon to intervene.²¹⁶ Among other things, problems of troop concentration and initial operations were studied. The Army General Staff conducted a war game for several days between Christmas 1939 and the new year to explore the main thrust through the Ardennes. It was directed by General Carl-Heinrich von Stuelpnagel, the Quartermaster-General I (OQ I) (Operations) and deputy chief of the Army General Staff at Zossen, near Berlin. The Blue force was commanded by an officer of the Army General Staff, Red by the chief of the general staff's Foreign Armies West department (Colonel Ulrich Liss). This game was based on the German operations plans and the enemy situation as known at the time. The Red side's leader was supposed to make decisions from the viewpoint of an enemy commander. The purpose of the game was to raise and discuss controversial problems within a specially selected circle. The war game was conducted with breaks, each new phase starting with a probable situation at a particular time. The lessons learned were evaluated by Stuelpnagel and reported to General Halder.²¹⁷ The war game showed the compelling effectiveness of a thrust through the Ardennes.²¹⁸

An Army General Staff planning game was also played, testing in great detail the possibilities of and the time needed for traversing the Ardennes with panzer units. All available German and the Belgian maps were used, as well as aerial photographs of terrain. The capacities of the roads, secondary routes, and parking

sites had to be entered in small-scale maps in such a way as to give cartographically correct pictures of where columns and individual vehicles were at any time and of security distances and intervals between marching units. Play was based on the use of panzers in peacetime and in Poland. Both the war game and the planning game gave Halder information useful for his final plan of operations. He supplemented that information by personal trips to deployment areas.²¹⁹

The commanders of various corps and divisions conducted their own planning games in preparation for the campaign against France and the Low Countries. For example, General Georg-Hans Reinhardt, commander of XLI Panzer Corps, conducted on 24 April a planning game to rehearse the deployment plan for his corps. This planning game revealed serious flaws in the plan for Panzer Group (Panzergruppe) Kleist (named after its commander general, Ewald von Kleist) (of which XLI Panzer Corps was a part). Reinhardt's corps was to pass General Heinz Guderian's XIX Panzer Corps, so that the two would reach the Meuse River almost simultaneously. This meant that it would be necessary to shift temporarily into a combat sector to the north of that assigned to Panzer Group Kleist; the infantry corps advancing on Guderian's right would have to stop on reaching the Belgian-Luxembourgian border so that Reinhardt's corps could veer out to the right through the corridor that would be developing. Reinhardt believed that such a complicated movement was irresponsible and posed an unjustified risk. Just four days before the start of the offensive Reinhardt was confronted with a disaster: he was now to have only two movement routes, because of changes in the deployment plans.²²⁰

Guderian's corps was assigned the sector of the main weight of effort for the entire Panzer Group Kleist. It was to advance through southern Luxembourg and the southern corner of Belgium, reaching the Meuse River at Sedan. Success would heavily depend on close cooperation with the Stuka dive-bombers commanded by General Wolff von Sutterheim and his superior, the commander of II Fliegerkorps (Air Corps), General Bruno Loerzer. Guderian arranged for a four-hour bombardment by the Stukas prior to and during his crossing of the Meuse. Guderian conducted a planning game, to which he invited airmen, about the pending operation. He also took part in a war game organized by Loerzer.²²¹

After the start of the campaign, on 12 May, Guderian received an order from Kleist to attack across the Meuse the next day at 1600. He protested that order because one of his divisions, the 2nd Panzer, would not be ready to attack with his other two. Kleist refused to change his orders, arranging with General Sperrle, commander of the 3rd Air Fleet, to start mass bombing attacks simultaneously with an artillery barrage. Kleist's order would endanger a meticulously worked-out plan for Luftwaffe support that Guderian had made with Loerzer, of which Kleist

had been unaware. Yet Guderian issued the same order he had prepared during the preparatory planning game, changing only the date and time of attack.²²²

When the battle at Sedan started at 1600 on 13 May, Loerzer's bombers and dive-bombers applied the tactics that had been rehearsed during Guderian's planning game at Koblenz. Strangely, Kleist did not contradict Guderian's decisions.²²³ In fact, during the night on 13 May, Guderian called Loerzer and asked him whether he had received any change of orders prior to that attack at 1600. He learned that Sperrle's order had in fact been issued but was passed too late to the squadrons and that Loerzer quite correctly did not make modifications in the existing plan.²²⁴ Guderian did not receive a single order from his superiors on what to do after crossing the Meuse. He later claimed that he received none until he reached the English Channel at Abbeville on 21 May; in the meantime he issued all orders himself.²²⁵

In the summer of 1940, during the preparations for the planned German invasion of England (Operation Sea Lion, or *SEELOEWE*), General Ernst Busch, commander of the 16th Army, conducted a planning game. The participants included the division commanders, their operations and supply officers, navy and Luftwaffe staff officers, and the commandants of the North Sea ports. The purpose of the planning game was to rehearse the movement of the attack waves from assembly areas to their landing beaches on England's southern coast and the establishment of a lodgment. Among other things, the planning game revealed how small were the capacities of the ports between the Scheldt and Somme Rivers, in comparison to the large number of barges, freighters, and lighters, normally used on rivers, that had been hastily rebuilt for crossing the channel.²²⁶ Field Marshal Walther von Brauchitsch (1881–1948), Commander in Chief of the Army (1938–41), attended troop exercises conducted by the Ninth Army (General Blaskowitz) and the Sixteenth Army in the fall of 1940. General Halder attended war games conducted by the Ninth and Sixteenth Armies in late September and the beginning of October 1940. On the basis of the lessons learned during these war games, Halder issued corresponding orders to both armies for the contemplated invasion of England.²²⁷

One of the early plans for the German invasion of the Soviet Union (code-named *OPERATIONSENTWURF OST*, or Operational Design East) was developed by General Erich Marcks, chief of the staff of the Eighteenth Army in Bromberg, West Prussia, on the instructions of the Supreme Command of the Wehrmacht (Oberkommando der Wehrmacht, or OKW) in July 1940.²²⁸ That plan was further developed by General Friedrich Paulus, Quartermaster-General I and deputy chief of the Army General Staff, in November and December 1940.²²⁹ Paulus was responsible for coordination of all planning for the campaign.²³⁰ Particular attention was given to the distribution of forces and the selection of

operational objectives; these points were rechecked and clarified in a planning game held on 29 November and on 2, 3, and 7 December, at Zossen.²³¹ The strategic objectives of the campaign had been determined by Hitler, while operational objectives had been issued by Halder, as chief of the Army General Staff.

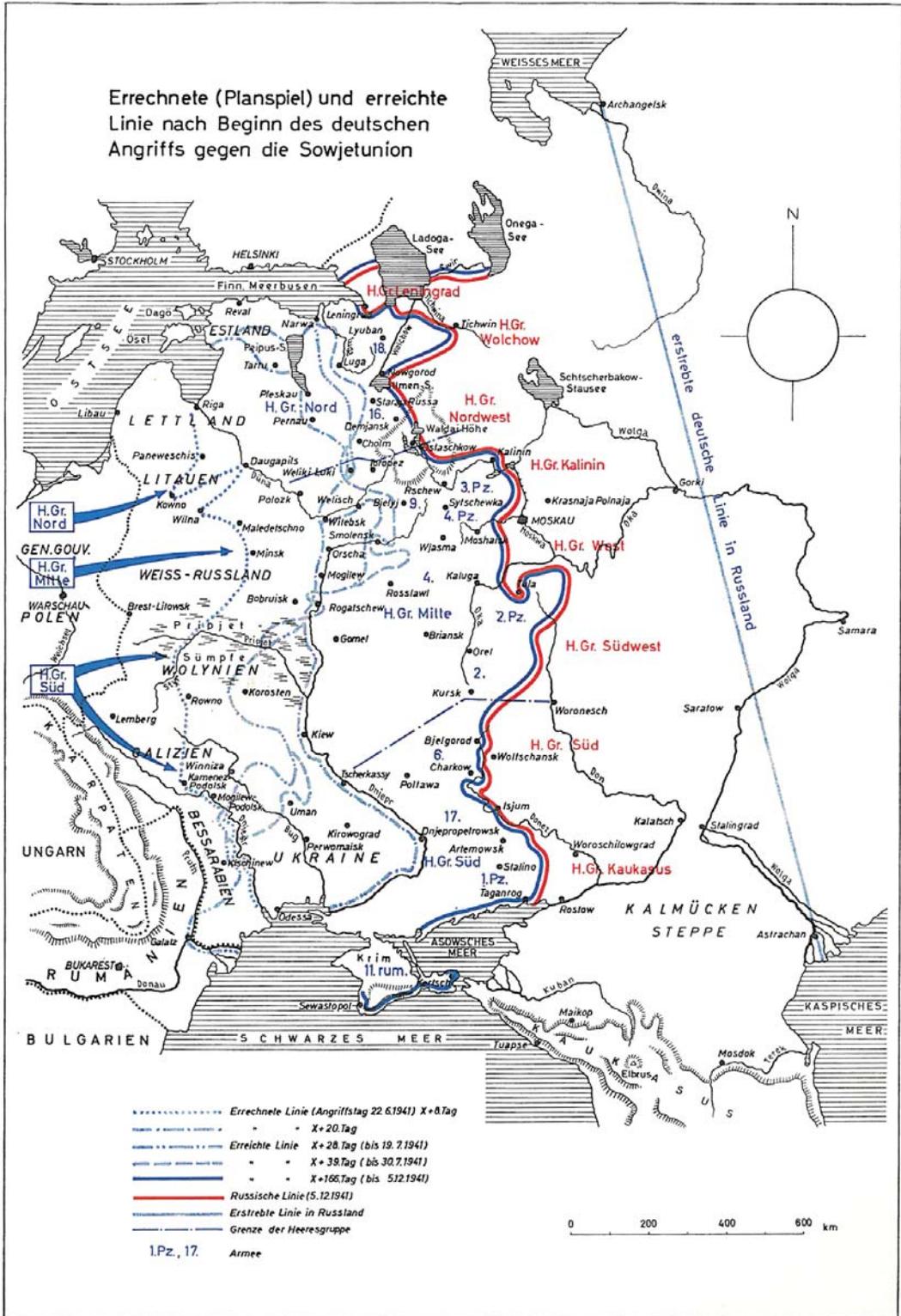
The participants in the planning game were section chiefs of the Army General Staff, several other army officers, and a Luftwaffe general assigned to the OKH. The game's purpose was to rehearse preparations for the operation under consideration; specifically, the questions to be explored were command and control for reaching the Kiev–Minsk line; the employment of Army Group South, which would be advancing from southern Poland and Romania; and the difficulties of operations from Romania.²³² Paulus conducted three related planning games: 29 November and 2 December, the Part I game (Eastern Study)—distribution of Russian forces, Russian fortifications, discussion of the operational “possibilities” after reaching the first operational objectives; 3 December, the Part II game (Eastern Operation, or *Ostoperation*)—border engagements and operations until the Lake Peipus–Minsk–Kiev line; and 7 December, the Part III game—operational possibilities east of that line (see map 3).²³³

On 28 November, the tasks of the three army groups involved were given to their respective chiefs of staff, who independently conducted planning games to assess those tasks. Halder's purpose was to put the preparations for the campaign on a broader footing.²³⁴ Participants were directed to prepare operational drafts by themselves, without the assistance of other army group commanders.²³⁵ The conclusion of all the game phases was that the German forces would prove insufficient if they failed to break Soviet resistance decisively before reaching the Kiev–Minsk–Peipus Lake line.²³⁶

Another conclusion was that the weight of main effort should be the advance from Poland.²³⁷ It was also concluded that large numbers of infantry operating jointly with the 1st and 2nd Panzer Groups would be required to complete the planned encirclement of the Soviet forces in the Minsk area; otherwise panzer forces would not be able to continue their advance.²³⁸ Further, the time Army Group North would require to capture the Baltic states would cause a delay in the advance of its right flank, thereby endangering the left flank of Army Group Center. The most important lesson, however, was that a quick outcome could be achieved only by encircling and capturing the Soviet capital, Moscow. Hence, the main task of Army Groups North and South would be to protect the flanks of Army Group Center.²³⁹ The accomplishment of initial (operational) objectives along the line running from the Dnepr River to the south of Kiev through Rogachev, Orsha, Vitebsk, Velikiye Luki, and Pskov to Pernau (Pärnu) would be a prerequisite for a decisive attack on Moscow. Another lesson was that the German forces would require a three-week pause for buildup of supply lines and

MAP 3

Errechnete (Planspiel) und erreichte Linie nach Beginn des deutschen Angriffs gegen die Sowjetunion



resupply. The offensive could be resumed on the fortieth day after the start of the campaign.²⁴⁰

Paulus conducted another planning game on 13–14 December at Zossen.²⁴¹ The reason for this planning game was the need to elaborate further the planned attack on the Soviet Union on the basis of the OKW instruction of July 1940.²⁴² On 18 December, Hitler directed the OKW to issue Instruction Nr. 21 for the invasion of Soviet Russia, code-named BARBAROSSA. The participants included chiefs of various sections in the Army General Staff, a few other, senior officers, and again a Luftwaffe general.²⁴³ The Red side was played by the Chief of Foreign Armies, East (Lieutenant Colonel Eberhard Kinzel) and his two aides. The main purpose was to work through the theoretical possibilities for initial troop movements, on the basis of written studies.²⁴⁴ This exchange of views would result in draft initial-deployment instructions.²⁴⁵ The participants also examined the options available for continuing operations after successful preliminary engagements.²⁴⁶ The focus was purely on strategic leadership, the current situation, and concealment of the offensive intent; occupation of the rear areas was not discussed.²⁴⁷

During the planning game, cooperation between the armies and panzer armies was addressed, as well as command and control. Issues included cooperation in Army Group South between the forces deployed in Romania (Armies A and B), those in southern Poland (Armies C and D), and the First Panzer Army; the separation line between Army Groups North and Center; the danger to the flank of Army Group North; the regrouping of forces after accomplishment of the first “strategic” (actually operational) objectives on the Dnepr River–Upper Dvina River–Peipus Lake line and the continuation of the offensive; reserves; and Luftwaffe support to the ground forces. The question of cooperation by the Kriegsmarine with other services was not raised.²⁴⁸ In the game the Germans assumed that on day X+20 of the eastern campaign, their forces, after heavy fighting in the border areas of western Ukraine and Belorussia and in the Baltic states, would have accomplished, in terms of space and time, the initial objectives of the campaign plan. The players’ conclusion was that a three-week operational pause for rest and resupply would be necessary before resuming the offensive toward Moscow. The Germans calculated that the Soviets would lose about 50 percent of their strength in the initial battles in the border areas and would be unable to carry out a strategic counterattack.²⁴⁹

The Army General Staff conducted yet another planning game on 17–20 December to explore the massive problems of supplying the German forces in the pending eastern campaign. This game was directed by General Eduard Wagner, Quartermaster-General III (OQ III) (Supply and Transport, Organization and Technology). The Russian campaign would require logistical support and

sustainment for about three million men, 600,000 horses, and 650,000 motor vehicles as far as 435–500 miles from initial deployment areas. The results of the planning game were summarized in a study, *Foundations of Command and Control of Supply in Wide-Ranging Operations in Sparsely Populated Areas*, sent to all frontline major commands in February 1941. Halder and Paulus spoke of the need to produce special winter clothing. However, that could not be done without a corresponding increase in raw-material allocations, and that in turn required Hitler's approval. Halder asked Brauchitsch to present the problem to Hitler. Brauchitsch did so, but Hitler dismissed these concerns, insisting that the campaign would be over before winter.²⁵⁰

On 5 February 1941 Army Group South conducted an operational planning game, dubbed OTTO, for the invasion of the Soviet Union.²⁵¹ The exercise was directed by General Halder; General Georg von Sodenstern, chief of the staff of Army Group South, handled the details.²⁵² Preparation for the game started on 7 January and was completed by the 27th.²⁵³ Among other things, the players predicted the destruction of some 240 Soviet divisions, which would leave only sixty, and that the Soviets would not be able to recover from these losses. (In the actual invasion, the Germans in fact quickly destroyed 248 Soviet divisions, but they then faced not the sixty divisions predicted in the planning game but 220 divisions.)²⁵⁴

On 1 February 1941 the Army General Staff issued deployment instructions to all three army group commanders, who then conducted planning games and developed their operational designs. The final plans of the army groups were prepared by exchanging views with the Army General Staff. A final meeting about the eastern campaign was held on 4 and 5 June at Zossen, where orders from the army-group to the division level were clarified in accordance with the common mission.²⁵⁵

War Games in Combat

The Germans conducted war games during pauses in combat to study problems the actual situation on the front would pose.²⁵⁶ For example, on 2 November 1944, during Operation *WACHT AM RHEIN* (Watch on the Rhine, popularly known in the West as the Battle of the Bulge), Army Group B, under Field Marshal Walther Model (1891–1945), rehearsed defense measures against a possible American attack at the boundary between the German Fifth and the Seventh Armies. The leading commanders and their staff officers assembled at headquarters for the planning game, which had just started when a fairly strong American attack was launched in the Huertgen–Gemuter Forest area. Model immediately ordered that with the exception of the commanders directly affected by the attack, the participants were to continue the game, incorporating reports from the front in the course of play.²⁵⁷ For the next four hours the situation at the front—and in the

planning game—became critical. The 116th Panzer Division (Der Windhund, or Greyhound) had to be placed at the disposal of the threatened army. It happened that its commander, General Siegfried von Waldenburg, who was engaged in the planning game, was receiving a series of game orders to that very effect from Army Group B and the Fifth Panzer Army. In a few minutes Waldenburg issued not simulated orders at the map table but real ones to his operations officer and couriers. His division was alerted and set in motion in the shortest possible time. Pure chance had changed a simple planning game into stern reality.²⁵⁸

In the spring of 1944, General Friedrich Dollmann, commander of the German Seventh Army, had been responsible for the defense of Brittany and Normandy. He decided to conduct a planning game at Rennes on what proved to be the very day of the Allied invasion, 6 June, believing that because of bad weather the attack would not come that day. All his corps and division commanders were at Rennes when the Allies landed. Field Marshal Erwin Rommel, commander of Army Group B, was also absent that day, visiting his wife in Germany. Dollmann sent the 21st Panzer Division to counterattack, but the attempt failed. He then ordered General Fritz Bayerlein's Panzer-Lehr Division toward the front. Bayerlein protested that the movement would be conducted in daylight and his division would be decimated from the air, but he followed orders. As a consequence his division lost five tanks and some 120 other vehicles to Allied aircraft and was not ready to counterattack until 9 June, when it was repulsed by the Allies.²⁵⁹

CLEAR THINKING, SOUND AND RAPID DECISIONS

The modern war game emerged in Germany in the late eighteenth century and the first three decades of the nineteenth. By the end of the nineteenth century, most of the militaries of major European powers, as well as of the United States and Japan, had adopted the German methods. The golden age of the German war gaming came during the era of Hans von Seeckt, when the number and types of games played greatly increased, compared with prior to 1914. The main reason was the severe restrictions placed by the Versailles Treaty on the size and composition of the new Reichswehr. Another reason was the extremely difficult economic and financial situation in Germany in the 1920s.

War gaming greatly contributed to the superb level of professional education and combat training in the Reichswehr and Wehrmacht, to which in the interwar years no other military came even close. The Germans showed that war games could be used effectively and creatively to educate future commanders and their staffs at all levels of command and to train them in estimating situations and in making rapid and sound decisions. War games greatly enhanced the preparation of their officers in all aspects of warfare, at all echelons; games also tested new methods and checked fundamentals of doctrinal documents. The German

experience shows that war games, in combination with the study of military and naval history, have inestimable value for the operational thinking of high commanders and their staffs.

The Germans paid close attention to the preparation and execution of war games. Directors of games were selected by fitness for the position rather than rank. They had to possess not only solid knowledge and understanding of the theoretical and practical aspects of warfare but also strong personalities and characters.

In the war games themselves, the Germans stressed the importance of simplicity and realism in the initial situation. Political aspects of the situation provided only the framework for a game; they were not allowed to dominate it. The Germans emphasized repeatedly the importance of thinking and presenting ideas succinctly and logically. They paid great attention to the thorough preparation of a war game and devoted far more time to discussion and reflection than to the actual play. The Germans also invariably expended considerable effort in writing planning studies on the problems identified during a game. One of the perhaps most important elements of the German way of war gaming, however, was the final discussion, verbal and written—not a mere formality but a thorough analysis of the most important episodes and the lessons learned.

War games were routinely used at all levels of command in rehearsing current and future plans, for which the “planning game” seems to have been the preferred vehicle. In most cases the Germans were able thereby to identify problems that might arise in execution. Another benefit was that all commanders and their staffs became intimately familiar with the situations in the prospective operating areas. This made it much easier to carry out the operation.

The German way of war gaming was the product of the German national character and way of warfare. It cannot be easily transplanted elsewhere, if at all. Yet many aspects of German war gaming in the interwar years could be adopted today. For example, war games should be conducted often and at all command echelons. The diversity of war games should be greatly increased. Game design should emulate the focus on simple and interesting initial situations and on concise and logical presentation of ideas. Lengthy and prolonged game play is less valuable than extensive preparation and discussion. A game should end with thorough analysis of its most important events, reflecting the level of command at which it is conducted. Problems identified during a game should result in written staff studies. Current and future plans should invariably be rehearsed in planning games or map exercises. War games should be also used for force planning.

Much greater emphasis should be placed today and in the future on enhancing the quality of professional education and training, and of war gaming in particular. This is especially critical in an era of shrinking forces and severe budget

restrictions. Resources for war gaming and professional education should be the very last to be cut in the face of national economic difficulties.

NOTES

1. Horst Walther, Robert Prader, and Franz Teszar, "Planuebungen. Eine militaerische Entwicklung und ihre Nutzung im militaerischen und aussermilitaerischen Bereich," *Oesterreichische Militaerische Zeitschrift*, no. 4 (July–August 1993), p. 332.
2. David Schenk, *The Immortal Game: A History of Chess* (New York: Doubleday, 2006), p. 11.
3. *Ibid.*, pp. 46–47.
4. *Ibid.*, pp. 50–51.
5. "The Chess Page," p. 6, *The Tale of Sir Robin*, www.stmoroky.com/chess/chess.htm.
6. Rick Knowlton, "Courier Chess," *Chess Collector* 18, no. 1 (2009), p. 13.
7. *Ibid.*
8. Philipp von Hilgers, "Eine Anleitung zur Anleitung. Das taktische Kriegsspiel 1812–1824," *Board Games Studies* 3 (2000), p. 60.
9. John P. Young, *A Survey of Historical Developments in War Games* (Bethesda, Md.: Operations Research Office, Johns Hopkins Univ., March 1959), p. 7; Walther, Prader, and Teszar, "Planuebungen," p. 332.
10. Young, *Survey of Historical Developments in War Games*, p. 7.
11. *Ibid.*, p. 9.
12. Peter P. Perla, *The Art of Wargaming: A Guide for Professionals and Hobbyists* (Annapolis, Md.: Naval Institute Press, 1990), p. 17.
13. *Ibid.*, p. 18.
14. Young, *Survey of Historical Developments in War Games*, p. 11.
15. The new war game was described in Venturini's *Beschreibung und Regeln eines Neuen Kriegsspiel zum Nutzen und Vergnuegen Besonders Aber zum Gebrauch in Militair-schulen* [Description and Rules of a New War Game for the Benefit and Pleasure but Especially for Use in Military Schools] [1797].
16. Young, *Survey of Historical Developments in War Games*, p. 11.
17. Rudolf Hofmann, *War Games*, MS P-094 (Washington, D.C.: Office of the Chief of Military History, Historical Division, Headquarters, U.S. Army, Europe, 1952), p. x, U.S. Army Military History Institute, Carlisle, Pa.
18. Perla, *Art of Wargaming*, p. 23.
19. *Ibid.*
20. David B. Lee, "War Gaming: Thinking for the Future," *Airpower Journal* (Summer 1990), p. 41.
21. Perla, *Art of Wargaming*, p. 22.
22. *Ibid.*; Deryl S. McCarty, *War Games and Logistics* (Maxwell Air Force Base, Ala.: Air War College, Air Univ., April 1988 pre-cat.), pp. 3–4.
23. Hilgers, "Eine Anleitung zur Anleitung," p. 66.
24. Young, *Survey of Historical Developments in War Games*, p. 15; Perla, *Art of Wargaming*, p. 23.
25. Young, *Survey of Historical Developments in War Games*, pp. 15–16.
26. *Ibid.*, pp. 2–3.
27. Matthew Caffrey, Jr., "Toward a History-Based Doctrine for Wargaming," *Airspace Power Journal* (Fall 2000), p. 2.
28. Perla, *Art of Wargaming*, p. 24.
29. Lee, "War Gaming," p. 42.
30. B[aron] von Reisswitz, *Kriegsspiel: Instructions for the Representation of Military Manoeuvres with the Kriegsspiel Apparatus*, ed. W. E. Leeson (Huddersfield, U.K.: Netherwood Dalton, 1983), p. 1. Originally published as *Anleitung zur Darstellung militaerischer Manoever mit dem Apparat des Kriegs-spiels* (Berlin: Trowtisch and Son, 1824).
31. Walther, Prader, and Teszar, "Planuebungen," p. 333.
32. Reisswitz, *Kriegsspiel*, p. 33.
33. *Ibid.*, p. 31.
34. *Ibid.*, p. 32.

35. Ibid., p. 3.
36. Perla, *Art of Wargaming*, p. 25.
37. Philipp von Hilgers, *Kriegsspiele. Einer Geschichte der Ausnahmezustände und Unberechenbarkeiten* (Munich: Wilhelm Fink Verlag/Paderborn: Ferdinand Schoeningh, 2008), p. 67.
38. Lee, "War Gaming," p. 42; Young, *Survey of Historical Developments in War Games*, p. 17; Hilgers, *Kriegsspiele*, p. 66.
39. McCarty, *War Games and Logistics*, pp. 3–4.
40. Bernhard Berger, "Gespielte Vorbereitung auf den Ersten Weltkrieg. Die operativen Kriegsspiele in Oesterreich-Ungarn," *Oesterreichische Militaerische Zeitschrift*, no. 5 (October–November 2000), p. 595.
41. Perla, *Art of Wargaming*, p. 29.
42. Walter Goerlitz, *Der Deutsche Generalstab. Geschichte und Gestalt 1657–1945* (Frankfurt, a.M.: Verlag der Frankfurter Hefte, 1950), p. 78.
43. Walther, Prader, and Teszar, "Planuebungen," p. 333.
44. Hofmann, *War Games*, p. xi.
45. Walther, Prader, and Teszar, "Planuebungen," p. 333.
46. Goerlitz, *Der Deutsche Generalstab*, p. 124; Wilhelm Meier-Doernberg, "Moltke und die taktische-operative Ausbildung im preussisch-deutschen Heer," in *Generalfeldmarschall von Moltke. Bedeutung und Wirkung*, ed. Roland Foerster (Munich: Oldenbourg Verlag, 1991), p. 46.
47. Friedrich Immanuel, *The Regimental War Game*, trans. Walter Krueger (Kansas City, Kans.: Franklin, 1907), p. 12.
48. W. von Tschischwitz, *Anleitung zum Kriegsspiel* [Introduction to the War Game] (1862); Colonel Thilo Wolf von Trotha, *Anleitung zum Gebrauch des Kriegsspiel-Apparatus zur Darstellung von Gefechtsbildern mit Berücksichtigung der Wirkung der jetzt gebräuchlichen Waffen* [Introduction to the Use of War Game Apparatus for Presentation of the Battle Pictures with Consideration to the Effect of the Common Weapons] (1870); First Lieutenant von Neumann, *Das Regiments-Kriegsspiel. Versuch einer neuen Methode des Detachments-Kriegsspiel* [Regimental War Game: An Attempt of a New Method of the Detachment War Game] (1877).
49. Arthur Scott Mobley, Jr., "Unlocking the Potential of War Games: A Look beyond the Black Box" (Naval Postgraduate School, Monterey, California, February 1988), p. 23.
50. Caffrey, "Toward a History-Based Doctrine for Wargaming," p. 6.
51. Francis J. McHugh, *Fundamentals of War Gaming*, 3rd ed. (Newport, R.I.: Naval War College, March 1966; repr. 2012), p. 34.
52. Mobley, "Unlocking the Potential of War Games," pp. 24–25.
53. Ibid.
54. Perla, *Art of Wargaming*, p. 31.
55. Lee, "War Gaming," p. 43; Hofmann, *War Games*, p. xi; Mobley, "Unlocking the Potential of War Games," p. 24.
56. Perla, *Art of Wargaming*, p. 31.
57. Mobley, "Unlocking the Potential of War Games," p. 25.
58. Ibid.
59. Edmund Edler von Mayer, *Eine Studie Ueber das Kriegsspiel* (Vienna: Verlag des Militaerwissenschaftliche Vereins, 1874), p. 12.
60. Ibid., p. 13.
61. Hofmann, *War Games*, p. xi.
62. McHugh, *Fundamentals of War Gaming*, p. 36.
63. Ibid.
64. Robert T. Foley, ed. and trans., *Alfred von Schlieffen's Military Writings* (London: Frank Cass, 2003), p. 6.
65. Ibid., pp 11–12.
66. Ibid., p. 11.
67. Ibid., p. 108.
68. Berger, "Gespielte Vorbereitung auf den Ersten Weltkrieg," p. 599.
69. Foley, *Alfred von Schlieffen's Military Writings*, p. 119.
70. Ibid.
71. Ibid.
72. Ulrich Liss, "Graf Schlieffen's letztes Kriegsspiel," *Wehrwissenschaftliche Rundschau*, no. 3 (1965), pp. 162–63.
73. Ibid., p. 164.

74. *Ibid.*, p. 165.
75. Foley, *Alfred von Schlieffen's Military Writings*, p. 9.
76. *Ibid.*, p. 11.
77. Caffrey, "Toward a History-Based Doctrine for Wargaming," p. 8.
78. Perla, *Art of Wargaming*, p. 41.
79. Young, *Survey of Historical Developments in War Games*, p. 78.
80. Rudolf Hofmann, *War Games*, p. 12, MS P-094, Studien der Historical Division, Headquarters, United States Army Europe, Foreign Military Studies Branch, 1952, ZA 1/2014, Bundesarchiv-Militaerarchiv, Freiburg im Breisgau, Germany [hereafter BA-MA].
81. Karl-Volker Neugebauer, "Operatives Denken zwischen dem Ersten und Zweiten Weltkrieg," in *Militaergeschichtliche Forschungsamt, Vortraege zur Militaergeschichte*, vol. 9, *Operatives Denken und Handeln in deutschen Streitkraeften im 19. und 20. Jahrhundert* (Herford/Bonn: Verlag E. S. Mittler & Sohn GmbH), pp. 102–103.
82. *Ibid.*, p. 103.
83. McHugh, *Fundamentals of War Gaming*, p. 38.
84. *Ibid.*, p. 37.
85. *Ibid.*, p. 38.
86. Marinekriegsakademie [Naval Academy], *Anleitung fuer Seekriegsspiele* (Berlin: Reichswehrministerium-Marineleitung, 1928), p. 7; Hofmann, *War Games*, pp. 7–8.
87. Lee, "War Gaming," p. 46.
88. Hofmann, *War Games*, p. 8.
89. Hans Zenker, *Einfuehrung in den Admiralstabsdienst* (Hamburg: n.p., January 1924; repr. 1979), p. 12.
90. Marinekriegsakademie, *Anleitung fuer Seekriegsspiele*, p. 7.
91. "Schlussbesprechung des Kriegsspiele-B-des Oberkommando der Kriegsmarine 1937/38 durch den Flottenchef am 12. April 1938," p. 4, PG 344821, roll 2260, Microfilm Publication T1022: Records of the German Navy, 1850–1945, National Archives Collection of Foreign Records Seized, Record Group [hereafter RG] 242, National Archives and Records Administration, College Park, Md. [hereafter NARA]; "Erste Besprechung der Lagebearbeitung beider Parteien (Ausgangslage)," p. 4, RM 20/1099, BA-MA.
92. Hofmann, *War Games*, p. 12, ZA 1/2014, BA-MA.
93. Hofmann, *War Games*, p. 2.
94. Hofmann, *War Games*, pp. 6–7, ZA 1/2014, BA-MA.
95. *Ibid.*, p. 13.
96. Walther, Prader, and Teszar, "Planuebungen," p. 331.
97. Hofmann, *War Games*, p. 22, ZA 1/2014, BA-MA.
98. Hofmann, *War Games*, p. 3.
99. Hofmann, *War Games*, p. 14, ZA 1/2014, BA-MA.
100. Paul Mahlmann, *Die Planuebung. Ein taktisches Lehr- und Lernbuch*, 2nd ed. (Munich: Verlag von E. S. Mittler & Sohn, 1942), p. 9.
101. *Ibid.*, p. 8.
102. *Ibid.*, p. 9.
103. Hofmann, *War Games*, p. 14, ZA 1/2014, BA-MA.
104. *Ibid.*, p. 17.
105. *Ibid.*, p. 15.
106. *Ibid.*, p. 4.
107. *Ibid.*, p. 15.
108. *Ibid.*, p. 5.
109. Erich Vad, "Operative Fuehrung: Grundlagen, Merkmale und Perspektiven," *Oesterreichische Militaerische Zeitschrift*, no. 2 (March–April 1998), p. 130.
110. Neugebauer, "Operatives Denken zwischen dem Ersten und Zweiten Weltkrieg," p. 107.
111. Waldemar Benke, "*Planspiele*" der deutschen Marine—die Fuehrerkriegsspiele der Reichsmarine 1922–1928 (*Annahme-Verlauf-Bewertung*) (Hamburg: Fuehrungsakademie der Bundeswehr, November 1986), p. 4.
112. Goerlitz, *Der Deutsche Generalstab*, p. 329.
113. Benke, "*Planspiele*" der deutschen Marine, p. 4.
114. Neugebauer, "Operatives Denken zwischen dem Ersten und Zweiten Weltkrieg," p. 106.
115. *Ibid.*, pp. 105–106.
116. *Ibid.*, p. 107.

117. Ibid.
118. Ibid.
119. Ibid., pp. 110–11.
120. Benke, “*Planspiele*” der deutschen Marine, p. 4.
121. Ibid., pp. 10–11.
122. Ibid., p. 12.
123. Ibid., p. 4.
124. Marinekriegsakademie, *Anleitung fuer Seekriegsspiele*, p. 8.
125. Ibid.
126. Ibid., p. 9.
127. Perla, *Art of Wargaming*, p. 42.
128. Ernest May, *Strange Victory* (New York: Hill and Wang, 2000), p. 71.
129. Goerlitz, *Der Deutsche Generalstab*, p. 468.
130. Perla, *Art of Wargaming*, p. 43.
131. May, *Strange Victory*, pp. 71–72.
132. Goerlitz, *Der Deutsche Generalstab*, p. 468.
133. Der Oberbefehlshaber der Kriegsmarine (admiral Raeder), “Plan der Kriegsspiele 1937/38,” p. 3, PG 34480, roll 2259, T1022: Records of the German Navy, 1850–1945, RG 242, NARA.
134. Beilage zu 103-9-5, Oberkommando der Kriegsmarine, Kriegsspiel A 1938, Bilder zur Schlussbesprechung, PG 34149, roll 2259, T1022: Records of the German Navy, 1850–1945, RG 242, NARA.
135. Oberbefehlshaber der Kriegsmarine, “Plan der Kriegsspiele 1937/38,” p. 5.
136. “Erste Besprechung der Lagebearbeitung beider Parteien (Ausgangslage),” pp. 5–6.
137. Oberbefehlshaber der Kriegsmarine, “Plan der Kriegsspiele 1937/38,” p. 6.
138. Ibid., pp. 7–8.
139. Ibid., p. 9.
140. Schlussbesprechung Kriegsspiel-D F.d.U. (admiral Doenitz), 1938, 4 April 1938, pp. 21–22, PG 34481, roll 2260, T1022: Records of the German Navy, 1850–1945, RG 242, NARA.
141. Oberbefehlshaber der Kriegsmarine, “Plan der Kriegsspiele 1937/38,” pp. 10–11.
142. Ibid., p. 13.
143. Ibid., pp. 15–16.
144. Ibid., p. 16.
145. Williamson Murray, *Experimental Units: The Historical Record* (Alexandria, Va.: Institute for Defense Analyses, May 2002), p. 14.
146. Friedrich von Cochenhausen, *Anleitung fuer die Anlage und Leitung von Planuebungen und Kriegsspielen mit Beispielen und Aufgaben zur Fuehrerschulung*, 2nd ed. (Berlin: Richard Schroeder Verlag, 1936), p. 5.
147. Marinekriegsakademie, *Anleitung fuer Seekriegsspiele*, p. 22.
148. Ibid., p. 25.
149. Ibid., p. 28.
150. Ibid., p. 9.
151. Hofmann, *War Games*, p. 8.
152. Immanuel, *Regimental War Game*, p. 14.
153. Ibid., p. 20.
154. Walter Mussel and Hubert Wallitschek, *Uebungen und Planspiele* (Hamburg/Berlin: R.v. Decker’s Verlag, G. Schenk, 1965), p. 28.
155. Immanuel, *Regimental War Game*, p. 20.
156. Mussel and Wallitschek, *Uebungen und Planspiele*, p. 28.
157. Hubert Wallitschek, *Planuebung Technik* (Regensburg/Munich/Vienna: Walhalla Pre-toria Verlag, 1967), p. 4.
158. Marinekriegsakademie, *Anleitung fuer Seekriegsspiele*, pp. 10–11.
159. “Durchfuehrung von Uebungen und Uebungsreisen—Allgemeines,” 1927–1928, RH 2/73 Oberkommando des Heeres/Generalstab des Heeres, BA-MA.
160. Marinekriegsakademie, *Anleitung fuer Seekriegsspiele*, pp. 10–11.
161. Ibid., pp. 11–12.
162. Ibid., pp. 22–23.
163. Ibid., p. 23.
164. Hofmann, *War Games*, p. 10.
165. Erich Brandenberger, “Offizierlehrgaenge Berlin, Lehrgang IA, Teil I: Anhaltspunkte fuer die Anlage von Kriegsspielen und Gelaendebesprechungen,” Berlin, October 1932, p. 450, MS P-031a, German General Staff Project Training and Development of

- German General Staff Officers, vol. 30, 1950, ZA 1/1879, BA-MA.
166. Hofmann, *War Games*, p. 9.
167. *Ibid.*, p. 10.
168. *Ibid.*, p. 151.
169. Oberbefehlshaber der Kriegsmarine, "Plan der Kriegsspiel 1937/39," p. 1.
170. Hofmann, *War Games*, p. 11.
171. Brandenberger, "Offizierlehrgaenge Berlin," p. 451.
172. Zenker, *Einfuehrung in den Admiralstabsdienst*, p. 25.
173. Besprechung fuer Amtschef A, p. 5, RM 20/1093, BA-MA.
174. *Ibid.*, p. 4.
175. *Ibid.*, pp. 13–14.
176. Hofmann, *War Games*, p. 156.
177. Brandenberger, "Offizierlehrgaenge Berlin," p. 452.
178. Hofmann, *War Games*, p. 169.
179. Brandenberger, "Offizierlehrgaenge Berlin," p. 454.
180. *Ibid.*
181. *Ibid.*
182. *Ibid.*, p. 453.
183. *Ibid.*, p. 452.
184. *Ibid.*, p. 453.
185. Hofmann, *War Games*, p. 2.
186. Immanuel, *Regimental War Game*, pp. 49–50.
187. *Ibid.*, p. 50.
188. *Ibid.*, p. 19.
189. Brandenberger, "Offizierlehrgaenge Berlin," p. 455.
190. *Ibid.*
191. Zenker, *Einfuehrung in den Admiralstabsdienst*, p. 25.
192. Hofmann, *War Games*, p. 13.
193. "Schlussbesprechung der Kriegsspiele-B-des Oberkommando der Kriegsmarine," pp. 1–68.
194. Brandenberger, "Offizierlehrgaenge Berlin," pp. 466–67.
195. Hofmann, *War Games*, p. 13.
196. OKM—Operatives Kriegsspiel 1937/38, Kiel, 2 June 1938, pp. 1–2, PG 34481, roll 2260, T-1022: Records of the German Navy, 1850–1945, RG 242, NARA.
197. "Der Nordseekriegsschauplatz in einem deutsch-englischen Seekriege. Eine begrenzte Studie nach dem Ergebnis und Material des Flottenkriegsspiels im Winter 1938/39," RM 20/1117, BA-MA.
198. Karl Doenitz, *Memoirs: Ten Years and Twenty Days*, trans. R. H. Stevens (Annapolis, Md.: Naval Institute Press, 1990), p. 32.
199. Perla, *Art of Wargaming*, p. 43.
200. Doenitz, *Memoirs*, pp. 21, 32.
201. Holger H. Herwig, "Innovation Ignored: The Submarine Problem—Germany, Britain and the United States, 1919–1939," in *Military Innovation in the Interwar Period*, ed. Williamson Murray and Allan R. Millet (Cambridge, U.K.: Cambridge Univ. Press, 1998), p. 239.
202. Karl Gundelach, "Gedanken ueber die Fuehrung eines Luftkrieges gegen England bei der Luftflotte 2 in den Jahren 1938/39," *Wehrwissenschaftliche Rundschau*, no. 1 (1960), p. 41.
203. Karl-Heinz Voelker, *Die Deutsche Luftwaffe 1933–1939. Aufbau, Fuehrung und Ruestung der Luftwaffe sowie die Entwicklung der deutschen Luftkriegstheorie* (Stuttgart: Deutsche Verlags-Anstalt, 1967), pp. 161–62.
204. *Ibid.*, p. 41.
205. *Ibid.*, p. 43.
206. Gundelach, "Gedanken ueber die Fuehrung eines Luftkrieges gegen England," p. 43.
207. *Ibid.*
208. *Ibid.*, p. 44.
209. Voelker, *Deutsche Luftwaffe*, p. 162.
210. *Ibid.*, p. 163.
211. *Ibid.*, pp. 163–64.
212. Liss, "Graf Schlieffen's letztes Kriegsspiel," p. 166.
213. Young, *Survey of Historical Developments in War Games*, p. 89.
214. Hofmann, *War Games*, pp. 81–82.
215. Young, *Survey of Historical Developments in War Games*, p. 90.
216. Perla, *Art of Wargaming*, p. 44.

217. Young, *Survey of Historical Developments in War Games*, p. 84.
218. Liss, "Graf Schlieffen's letztes Kriegsspiel," p. 166.
219. Young, *Survey of Historical Developments in War Games*, pp. 84–85.
220. Karl-Heinz Frieser with John T. Greenwood, *The Blitzkrieg Legend: The 1940 Campaign in the West* (Annapolis, Md.: Naval Institute Press, 2005). Previously published as Karl-Heinz Frieser, *Blitzkrieg-Legende. Westfeldzug 1940*, 2nd ed. (Munich: Oldenbourg, 1996), p. 114.
221. Heinz Guderian, *Erinnerungen eines Soldaten* (Stuttgart: Motorbuch Verlag, 1998), p. 87.
222. Heinz Guderian, *Panzer Leader*, trans. Constantine Fitzgibbon (New York: Da Capo, 1996), p. 101.
223. *Ibid.*, p. 102.
224. *Ibid.*, p. 104.
225. Karl-Heinz Frieser, "Der Westfeldzug und die 'Blitzkrieg-Legende,'" in *Ausgewählte Operationen und ihre militärhistorischen Grundlagen*, ed. Hans-Martin Ottmer and Heiger Ostertag (Herford/Bonn: Verlag E. S. Mittler & Sohn GmbH, 1993), p. 395.
226. Hofmann, *War Games*, p. 54.
227. Walter Goerlitz, ed., *Paulus. "Ich stehe hier auf Befehl." Lebensweg des Generalfeldmarschalls Friedrich Paulus* (Frankfurt, a.M.: Verlag fuer Wehrwesen Bernard & Graefe, 1960), p. 102.
228. *Ibid.*, p. 109.
229. Alfred Philippi and Ferdinand Heim, *Der Feldzug gegen Sowjetrußland 1941–1945. Ein operative Ueberblick* (Stuttgart: W. Kohlhammer Verlag, 1962), p. 31.
230. Horst Boog et al., *Das Deutsche Reich und der Zweite Weltkrieg*, vol. 4, *Der Angriff Auf Die Sowjetunion* (Stuttgart: Deutsche Verlag Anstalt, 1983), p. 233.
231. Philippi and Heim, *Feldzug gegen Sowjetrußland*, p. 31.
232. Boog et al., *Das Deutsche Reich und der Zweite Weltkrieg*, pp. 234–35.
233. Hofmann, *War Games*, p. 58; Goerlitz, ed., *Paulus*, p. 109.
234. Philippi and Heim, *Feldzug gegen Sowjetrußland*, p. 31.
235. Hofmann, *War Games*, p. 60.
236. Philippi and Heim, *Feldzug gegen Sowjetrußland*, p. 31.
237. Boog et al., *Das Deutsche Reich und der Zweite Weltkrieg*, p. 234.
238. *Ibid.*, p. 230.
239. *Ibid.*, pp. 234–35; Goerlitz, ed., *Paulus*, p. 121.
240. Boog et al., *Das Deutsche Reich und der Zweite Weltkrieg*, pp. 234–35.
241. Goerlitz, ed., *Paulus*, p. 109.
242. *Ibid.*
243. *Ibid.*, p. 110.
244. Hofmann, *War Games*, p. 61.
245. Goerlitz, ed., *Paulus*, p. 110.
246. Hofmann, *War Games*, p. 61.
247. Goerlitz, ed., *Paulus*, p. 110.
248. *Ibid.*, p. 111.
249. *Ibid.*, p. 122.
250. Philippi and Heim, *Feldzug gegen Sowjetrußland*, p. 31.
251. Philipp von Hilgers, *War Games: A History of War on Paper*, trans. Ross Benjamin (Cambridge, Mass.: MIT Press, 2012), p. 157.
252. Hofmann, *War Games*, p. 37.
253. "Ausbildung der Generalstabsoffiziere," 19 December 1940, pp. 4–5, RH 19 I/70, Heeresgruppe Sued, BA-MA.
254. Caffrey, "Toward a History-Based Doctrine for Wargaming," p. 12.
255. Philippi and Heim, *Feldzug gegen Sowjetrußland*, p. 48.
256. Hofmann, *War Games*, p. 6.
257. *Ibid.*, pp. 19–20.
258. *Ibid.*, p. 20.
259. Samuel W. Mitcham and Gene Mueller, *Hitler's Commanders* (London: Leo Cooper, 1992), p. 129; Richard Brett-Smith, *Hitler's Generals* (London: Osprey, 1976), p. 104.