

“Knowledge Must Become Capability”: Institutional Intellectualism as an Agent for Military Transformation

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If the mind is to emerge unscathed from this relentless struggle with the unforeseen [in war], two qualities are indispensable: first, an intellect that, even in the darkest hour, retains some glimmerings of the inner light which leads to truth; and second, the courage to follow this faint light wherever it may lead.¹

—Carl von Clausewitz

While academics and military professionals have debated the value of intellectual pursuits to the profession of arms in recent years, that dialogue has failed to address the salient issue: the concept of institutional intellectualism and its catalytic role as an agent for transformation. Leading advocates of the military as an intellectual profession have attempted—with varying success—to convince their community that there exists a historic bias against intellectuals (thinkers) in favor of individuals of action (doers). The commonly held opinion that intellectuals provide little of practical value and fail to function effectively as combat leaders serves as the origin of that bias.² These proponents further argue that despite examples to the contrary—including Joshua Chamberlain and George Patton—such individuals succeed “in spite of and not because of official encouragement,” their intellectual talent largely ignored and veiled in the shadow of their battlefield achievements.³ The opinion of Dwight

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Eisenhower, who disdainfully characterized an intellectual as one “who takes more words than are necessary to tell more than he knows,” best represents the traditional military view of intellectualism.⁴

This typical and pervasive bias has compelled current advocates of military intellectualism to caution the uniformed services against rejecting or marginalizing individual thinkers, thereby depriving themselves of “precious intellectual capital” and the innovative capacity required to adapt successfully to the evolutionary character of war.⁵ One cannot dispute the merit of this conclusion; the warning is germane. Nevertheless, the prevailing debate over whether intellectual bias exists remains largely superficial and serves only to obscure the far more important issue of institutional intellectualism.

It is irrelevant that Chamberlain and Patton were gifted intellectuals; as military professionals, their intellect had no influence on doctrine or in catalyzing change, transformation, or a revolution in military affairs. While it is possible for exceptional combat leaders such as Chamberlain and Patton to employ their intellect in solving battlefield challenges, this is far different from the individual who uses his intellect to drive institutional change that results in transformation throughout the organization as a whole. Herein resides the point: only institutionalized military intellectualism can achieve successful transformation or, on rare occasion, revolutionize warfare; conversely, individual intellectualism that remains outside of an institutional context is largely impotent.

One can best define *institutional intellectualism* as system-sponsored critical thinking that focuses intellectual capital to effect transformational change and continual renewal within an organization. First, and of paramount significance, it operates within and as a function of the military system, meaning that institutional intellectualism resides (formally or informally) within the organization’s official structure and that it is capable of influencing mainstream thought and processes. Yet thinkers working within the system will always encounter opposition to change from entrenched elements. This phenomenon offers an interesting paradox: the nature of the military system ideally produces and empowers the traditionalists, while simultaneously affording legitimacy and sanctuary to the intellectual progressives—in turn preventing their marginalization. Second, institutional intellectualism can only exist—and succeed—in an organizational climate that promotes free thinking and a critical exchange of ideas. Not only is such an environment a prerequisite for creating institutional intellectualism, but it is also indis-

pensible for catalyzing change within a system and in overcoming inevitable resistance from ensconced traditionalists.

Third, institutional intellectualism achieves a synergistic effect that focuses intellectual energy in a highly disciplined, organized, and coordinated fashion. As a result, collective ideas are more effectively transformed into reality—and military capability. Moreover, individual efforts within an institutional context contribute to this intellectual synergy rather than remaining disconnected from the process. Lastly, institutional intellectualism is not military orthodoxy. For focused intellectual energy to push the envelope of convention, it must remain dynamic and be periodically infused with fresh perspective. This is best achieved by ensuring the system embraces new intellectual capital, while simultaneously replacing those veteran thinkers whose former ideas or theories now constitute established operating doctrine—or orthodoxy.

Man is a problem-solver. By nature, he applies intellectual energy to overcome current and anticipated challenges. The complex, fluid environment of war demands the institutionalization of this intellectual energy to effect the necessary organizational and doctrinal changes required to influence the nature and alter the character of armed combat. Simply illustrated, institutional intellectualism gives birth to theory and corresponding organizational-doctrinal change. New systems and doctrine in turn act as the primary determinant for successful transformation, and transformation will historically constitute one of two forms: it will be in response to a revolution in military affairs, or it will prove the catalyst for such a revolution itself. Moreover, in contrast to prevailing military beliefs, transformation remains primarily the product of intellectual energy and is rarely born of technology.⁶ Technology is a powerful military tool, but it traditionally remains ineffective until wedded to a doctrinal system on the battlefield. The English longbow⁷ and the tank, for example, failed to catalyze transformational change in the military art simply as a result of their invention; rather, it required the innovative and systematic application of these weapons to realize their full potential.⁸

Two historic case studies illuminate more clearly the role of institutional intellectualism in successful transformation. The first provides an example of a specially constituted team of intellectuals responsible for transforming an entire military organization in response to an adversary's military revolution: the Prussian reforms following catastrophic defeat by Napoleon at Jena-Auerstädt in 1806. The second example demonstrates how individual intellectuals can collectively propel transformation within

an institutional context—and, in this case, also initiate a revolution in military affairs with the creation of the German armor force (*Panzerwaffe*) during the interwar period. Examples from Prussia/Germany are especially relevant given the traditional success that nation's military has enjoyed in fostering a culture embracing intellectualism (thinkers) and tactical-operational excellence (doers) within the same institutional framework.⁹

Prussian Military Reorganization

Following the destruction of the Prussian army at Jena-Auerstädt in 1806, Carl von Clausewitz sardonically observed that “It was not just a case of a style [of warfare] that had outlived its usefulness but the most extreme poverty of imagination to which routine has ever led.”¹⁰ Indeed, the Prussian army had arrived on the field ill prepared for battle against Napoleon. Yet few in the ranks or among the senior leaders realized that the character of war had fundamentally changed until they were overwhelmed by Napoleon's Grand Army. Despite a self-confidence rooted in the military achievements of Frederick the Great, the Prussian army of 1806 was institutionally flawed. The officers, more concerned with status and social affairs than professional matters, were of inconsistent talent and inadequately schooled.

A considerable percentage of soldiers were poorly trained, and many were well over the age of 40, as the Prussian state required up to 30 years of service before granting military exemption. More significantly, the soldiers lacked patriotic and military spirit because their interests were not one with those of the king; the fate of the nation in war had little influence on their day-to-day lives as disenfranchised subjects of the crown. Compounding these moral deficiencies, the Prussian army also suffered from poor administration and equipment; specifically, the troops lacked proper uniforms, and the weapons, field gear, and rations were the worst in Europe. Moreover, the military organization and tactical doctrine employed by the Prussians were obsolete as well.¹¹ In retrospect, given the atrophied state of Prussian arms and the transformational nature of the French military revolution, the decision at Jena-Auerstädt was inevitable.

Acknowledging the need for change, Prussian King Frederick William III convened a military commission in 1807 to investigate the debacle at Jena-Auerstädt and propose reforms to the existing military structure. The king failed to recognize that Prussia's defeat lay beyond the

sole realm of military concerns, but the individuals he appointed to the commission possessed far greater intellectual vision.¹² The principal members were Prime Minister Baron Karl vom Stein, General Gerhard von Scharnhorst, Colonel August von Gneisenau, Major Carl von Grolman, and Major Hermann von Boyen; Clausewitz, as a young captain and administrative assistant to Scharnhorst, also became a de facto participant of some influence.¹³ Stein and Scharnhorst were selected to lead the commission because the prime minister was one of the king's most trusted political advisers, and the general proved one of few senior military leaders who had performed well on the field against Napoleon. Moreover, Scharnhorst had gained universal respect as a military scholar and thinker while serving as director of the highly regarded *Militärische Gesellschaft* (Military Society), the first institution of its kind devoted exclusively to the academic study of war.

Significantly, Scharnhorst chose the remaining members of the commission based on their intellectual contributions to the *Militärische Gesellschaft* and their recent performance in combat; in short, they were the best and brightest the Prussian army had to offer.¹⁴ Despite a diverse range of experience and political influence among the reformers, they shared a common belief that the nature of the problem transcended military organizational deficiencies. Each possessed a keen intellect and a progressive worldview that enabled the commission to discern the need for institutional transformation across a broad societal, political, and military spectrum.¹⁵ Consequently, the reformers recognized the significance of the fundamental shift in relations among government, the people, and military power that had occurred in France. Similar reforms—short of revolution—would have to occur in Prussia to reverse the results of 1806.

The Military Reorganization Commission began by correcting straightforward organizational discrepancies. The army received improved uniforms and equipment, state-of-the-art weapons, and new tactical procedures (authored in part by Clausewitz).¹⁶ Once the means were in place to correct these deficiencies, the commission turned its attention to more difficult challenges. In addressing the pervasive socio-political faults within the army, the commission embarked on a more radical path that led to the creation of a new officer corps, the citizen-soldier, and a revolutionary general staff system. The reformers' guiding objective in pursuing these initiatives was to imbue the Prussian army with "institutionalized military excellence," specifically, "organizational genius . . . led in battle by operational genius."¹⁷ Scharnhorst and his associates believed that to achieve this

transformational goal was to provide the nation with its best insurance against revisiting Jena-Auerstädt.

Prior to overhaul by the reorganization commission, the state had reserved admission to the Prussian officer corps almost exclusively to members of the aristocratic landed gentry, or Junker class. Commissions rested on the basis of political influence and patronage rather than actual merit or military potential. As a result, inconsistent talent, insularism, and professional stagnation had characterized the Prussian officer corps before 1807. Moreover, the Junkers discounted the value of formal education (believing that it made one “soft”—a thinker rather than a doer); as a result, the intellectual capacity of the officer corps remained limited as well.

The reformers transformed the officer corps first by persuading the king to grant eligibility to all elements of society. New officers, whether Junker or commoner, would receive appointment through a universal examination process blind to station or influence. This measure alone served to expand the talent pool from which candidates came, and it proved to be the principal foundation upon which the new Prussian officer corps would rest. Secondly, Scharnhorst, recognizing the value of education, supervised the creation of three military schools to provide basic instruction to all newly commissioned officers prior to assignment with the active force. Compulsory military education was also unprecedented in Prussian military tradition, yet it proved equally successful and ensured standardization of quality while promoting intellectual growth among the new officer corps.¹⁸

In tandem with reforms to the officer corps, the commission also pursued significant transformational objectives in recasting the Prussian soldier. At Jena-Auerstädt, the men in the ranks did not constitute a people's army whose interests were at one with those of the state; in fact, most viewed the war as solely the concern of King Frederick William (and the Junker class), thereby resulting in an alarming popular indifference to the French invasion. Consequently, the average soldier was bereft of esprit de corps or patriotic spirit, and, equating service in the king's army with unjust coercion, he was likely to desert at the first opportunity.¹⁹ The reformers pursued a twofold scheme to transform the Prussian commoner-in-arms into a citizen-soldier. The first part was a system of egalitarian universal conscription that denied exemption to any element of society and mandated a shorter period of obligation. The goal of universal conscription was to ensure that the military “burden . . . was carried on all shoulders” and that service in the Prussian army became “a proud civic

duty . . . that turned the cause of the state into the cause of every man." An additional advantage would be in promoting a new nationalistic spirit in which fealty to the king also encompassed a growing loyalty to the state, or Fatherland.²⁰

Second, and primarily through the work of Stein, the reformers wished to expand markedly the powers of the constitutional element of the government vis-à-vis the king. They hoped this would encourage a feeling of general enfranchisement among the people to combat the pervasive sense of alienation from government resident throughout Prussia. Moreover, included in this initiative was an attempt to transfer control of the army from the king to constitutional civilian authorities.¹¹ While the reorganization commission was extremely successful in implementing universal conscription in 1808, the king rejected initiatives to expand constitutional powers or surrender control of his army.¹² Nevertheless, sufficient measures were in place to transform the existing system and produce Prussia's first citizen-soldiers as the reformers envisioned.

Having successfully addressed basic organizational deficiencies as well as implemented initiatives to transform the officer corps and the Prussian soldier, the commission members created the means to administer, train, and lead this new army with "institutionalized genius"—the general staff system. This measure proved the most unprecedented and intellectually revolutionary of all the reforms in the commission's efforts to counterbalance the French military revolution (as well as Napoleon's genius). Best described as "the intellectual center of the army,"¹³ this new general staff concept transcended traditional European staff organizations responsible primarily for executive clerical and courier functions. The Prussian army meticulously selected, organized, and empowered the best officers—intellectually and professionally—to function collectively "as a single . . . brain" responsible for strategic and operational planning, as well as for the direction of operations once hostilities commenced.²⁴ General staff officers routinely transferred between assignments with field units (where they assisted the unit commander and facilitated coordination with higher echelons) and the Great General Staff (at the War Ministry) to broaden their experience and perspective.

Selection to the general staff was competitive and entailed high standards. A system of examination selected only 150 candidates per year to attend the *Kriegsakademie* (war academy) founded by Scharnhorst in 1810. On graduation, each officer served with the general staff for a 2-year trial period; at the conclusion of this probationary assessment, only three

or four officers received permanent assignment to the general staff.²⁵ In its unprecedented ability to create and promote institutionalized military excellence, this unique general staff system remains the most significant initiative born of the reorganization commission—and its success underlies the fact that every major European army would eventually attempt to emulate it in some form.

The achievements of the reorganization commission provide a convincing example of institutional intellectualism as an agent for military transformation. Working under a mandate from the army commander-in-chief (King Frederick William III), the reformers operated within and as a function of the military system. Moreover, they enjoyed a degree of intellectual freedom and engaged in a critical exchange of ideas that were remarkable for the time. This climate in turn allowed for the synergistic union of Prussia's leading military thinkers; their focused intellectual energy achieved a level of societal, political, and military reform that was truly transformational.

Concerted elements of the Junker class—both civil and military—remained convinced that organizational military reforms alone were sufficient to cure the ills of Jena-Auerstädt and opposed the commission's initiatives.²⁶ These traditionalists attempted at every turn to counter the reformers' efforts at sociopolitical change. Significantly, only within the system can intellectual energy achieve the necessary cohesion and influence to overcome this traditional opposition. Even the extraordinary intellect and vigor of Scharnhorst would have failed had he waged a crusade alone, disconnected from the political and military institutional framework. Furthermore, the commission's work did not constitute military orthodoxy; one of the functions that it envisioned for the general staff system was to prevent organizational stagnation and promote fresh perspectives that would challenge convention well into the future.

One final observation is useful: the factor of time. Even institutional intellectualism takes years and possibly decades to reap the fruit of its transformational seeds. The Prussian reformers put sweeping sociopolitical-military changes in place between 1807 and 1812. As a result, the Prussian army performed significantly better in the campaigns of 1814 and 1815 against Napoleon. Yet the full return on their intellectual labor was not fully realized until the wars of 1866 and 1870, in which the Prussian army defeated Austria and France respectively and established the Prusso-German nation as the greatest power in Europe.

Developing *Panzerwaffe*

In 1933, Adolf Hitler witnessed a rather modest military demonstration that proved to be the harbinger of profound transformation within the German army and that eventually would usher in a revolution in military affairs. This exhibition introduced the militarily ambitious German Chancellor to the basic components of the newly created mechanized arm and included coordinated maneuvers by motorcycle, anti-tank, and armored reconnaissance units in cooperation with a platoon of light tanks. Hitler was so impressed by the demonstration that he announced enthusiastically to the assembled officers and political leaders: "That is what I need! That is what I want to have!" While it is doubtful that Hitler recognized the true military potential of this infant force, he did provide an important institutional impetus to its further development and incorporation in the operational doctrine of the German army.²⁷ It is this doctrinal change that transformed the character of war in 1939.

Unlike the Prussian Military Reorganization Commission, the thinkers most responsible for the creation of the German armor force (*Panzerwaffe*) and its revolutionary application to blitzkrieg had no formal organization. Instead, they achieved transformation through the collective effect of their individual actions, albeit working in an institutional context and within a system that encouraged innovation. The first of these individuals whose achievements warrant discussion is General Hans von Seeckt.

Seeckt, as head of the Army Command Troop Office, served as a clandestine chief of the general staff and led the German army between 1919 and 1926. A progressive thinker who recognized the need for military reform, Seeckt's first initiatives involved purging many traditionalist elements from the officer corps and undertaking a comprehensive analysis of lessons learned from World War I. Not only was he successful in creating "a very different officer corps from that which had existed before World War I, one whose cultural ethos emphasized intellectual as well as tactical and operational excellence," but also his investigation into the causes of Germany's defeat (conducted by over 500 officers working in specialized committees) yielded tangible results and provided the genesis for a new doctrine.²⁸ Army Regulation 487, entitled *Führung und Gefecht der verbundenen Waffen*²⁹ (Leadership and Battle with Combined Arms) and published in 1921/1923, first articulated this doctrine.

Written under Seeckt's supervision, this regulation described in great detail combined arms operations emphasizing offensive action,

speed of maneuver, penetration and exploitation, and decentralized command and control.³⁰ Moreover, Army Regulation 487 devoted an entire section to the use of tanks and other armored vehicles and recognized their potential for massed operations and deep penetration.³¹ While Seeckt initiated several other measures aimed at cultivating the fledgling panzer force, his primary contribution was in creating an intellectual environment that encouraged free thinking and the critical exchange of ideas. Significantly, he enabled key armor theorists and advocates to work within a system that provided institutional legitimacy to their continuing efforts at doctrinal reform.

The leading German armor theorist during the formative years of *Panzerwaffe* was Lieutenant Ernst Volckheim. A tanker during World War I, Volckheim had the opportunity to observe firsthand the success of Allied armor in reversing 4 years of stalemate on the Western Front in 1918. Consequently, following the war, he began a concerted study of mechanized warfare, becoming Germany's leading authority during the 1920s. Volckheim was a prolific writer, authoring over two dozen articles on armored warfare between 1923 and 1927, as well as publishing an autobiographical account of the German tank corps during World War I and a theoretical work on armor technology, tactics, and doctrine that became a standard army text.

Convinced that future operations would entail armored spearheads to effect penetration (with the requirement to destroy enemy armor), Volckheim was the first theorist to discount the value of light tanks in favor of more heavily armored and gunned medium battle tanks. He also stressed the need to maintain a mobile armor reserve, believing this to be the best doctrinal solution for defeating an enemy tank penetration through friendly defenses. Additionally, Volckheim was the first German to advocate equipping all armored vehicles and supporting arms with radio gear, recognizing that wireless communications would enhance command and control functions and greatly increase the tempo of operations.³² The young theorist devoted his considerable intellectual energies to the pursuit of these concepts—all of which were included in subsequent German armored doctrine.

Following World War I, two schools of thought emerged governing the employment of armor in battle. The majority view, advocated by the traditional officer corps of every major military power, recognized the tank as simply another supporting arm for the infantry; the minority school, championed by a small number of independent thinkers, envisioned the

tank as the principal combat arm to be supported instead by the infantry (as well as the other traditional supporting arms).³³ In Germany, the leading intellectual champions for independent armored units were Colonels Werner von Fritsch, Werner von Blomberg, and Ludwig Beck (all destined to be senior leaders in the German army).

During the mid-1920s, these officers advocated the creation of independent mechanized units inherently capable of breaching or enveloping an enemy position and then achieving rapid penetration in depth. In this manner, with armored forces ranging throughout the enemy's vulnerable rear areas, victory would be inevitable, providing the mechanized formations maintained a rapid tempo of operations and retained the initiative. Moreover, they envisioned a totally mechanized force in which the supporting infantry, artillery, reconnaissance, engineer, and staff units would be motorized and capable of keeping pace with the tank formations. As Army Command Troop Office operations chief, Fritsch wrote in 1927 that "armored, quickly moving tanks most probably will become the operationally decisive offensive weapon. From an operational perspective this weapon will be most effective if concentrated in independent units like tank brigades."³⁴ While the Germans possessed no tanks during the 1920s, these officers validated their views concerning the potential for combined arms armor operations by closely observing British maneuvers during this period and reaching their own conclusions:

One can now clarify what will happen with tanks behind the enemy's main line of resistance after a successful breakthrough. Tanks can be used for attacks on the enemy's rear positions, against advancing reserves, as well as against command posts and artillery emplacements. For such tasks, present-day tanks are far more capable than older models.³⁵

Fritsch, Blomberg, and Beck's vision began to be realized in 1928 with the creation of the first independent mechanized battalion with permanently assigned armored car, motorcycle, and mock tank units (actual tanks would be added in 1933). This was accomplished under the direction of two influential armor pioneers in the Inspectorate of Motor Troops: Colonels Oswald Lutz and Alfred von Vollard-Bockelberg. These two officers were also responsible for the design of Germany's first generation of light and medium tanks, as well as for expanding the technical curriculum at the Panzer Troops School to include formalizing training in mechanized warfare doctrine and combined arms tactics.³⁶ Given the conviction and vigor of all these officers in pursuing transformation, it will come as no surprise that Fritsch and Lutz later supervised the creation of the first three

panzer divisions in 1935 as the army's commander-in-chief and commander of panzer troops respectively.³⁷

An observation concerning the contributions of General Heinz Guderian is necessary at this point. While active in the development and expansion of the mature *Panzerwaffe* in the late 1930s as commander of panzer troops, Guderian played little intellectual role in the creation of the armored force and associated doctrine despite subsequent assertions to the contrary (he later claimed authorship for virtually all of the innovations and achievements described in the preceding paragraphs).³⁸ Nevertheless, in 1937, Guderian published a credible overview of German armored warfare doctrine, *Achtung-Panzer!*³⁹ This book reiterated the conviction that "Tanks would only be able to play their full part within the framework of a modern army when they were treated as that army's principal weapon and were supplied with fully motorized supporting arms."⁴⁰ Moreover, Guderian emphasized the need to concentrate the panzer divisions at the "decisive point of action" to maximize their advantage in mobility, firepower, and shock value; conversely, operational dispersion of *Panzerwaffe* would undermine its inherent strengths and negate its decisiveness.⁴¹ As Guderian concluded, "In an attack that is based on a successful tank action the 'architect of victory' is not the infantry but the tanks themselves, for if the tank attack fails then the whole operation is a failure, whereas if the tanks succeed, then victory follows."⁴² The concept of the independent panzer division as described by Guderian in *Achtung-Panzer!*—with its potential for massed action against the enemy's front or flank followed by relentless exploitation in the rear—made the transformation of German operational doctrine possible.

In the wake of the creation of the first three panzer divisions in 1935, Beck (by then a general and Fritsch's chief of staff) initiated a study to determine the feasibility of panzer corps and panzer armies. Subsequent field exercises and operational experience in the occupation of Austria in 1938 prompted the general staff to make ongoing improvements to the organization, training, and tactical procedures of the panzer divisions:

The result was a process of steady incremental improvement and innovation that amounted over the long term to systematic change, but without the risk of following false paths due to the misplaced enthusiasms of reformers or the troglodytic opposition of conservatives.⁴³

During the operation in Austria, the panzer divisions were employed piecemeal with subordinate units attached to infantry corps; the seizure of Czechoslovakia in 1939, however, witnessed the panzer

divisions operating independently, though still under the control of an infantry corps commander. In short order, with procedures and doctrine further refined, the panzer divisions were organized in dedicated armor corps and teamed exclusively with motorized infantry divisions for combat operations against Poland.⁴⁴ As such, by the outbreak of war in September 1939, the intellectual vision begun by Seeckt and Volckheim had been successfully institutionalized within the organizational and operational framework of the army. Transformation was a reality. In a devastating endorsement of the validity of German armored doctrine, the *Panzerwaffe* proved a revolution in military affairs and made possible in 4 weeks in May–June 1940 what had eluded German arms for 4 long years during World War I: the total defeat of France.

The creation of *Panzerwaffe* offers another persuasive example of institutional intellectualism as an agent for military transformation. The collective efforts of several individuals—Seeckt, Volckheim, Fritsch, Blomberg, Beck, Lutz, and Vollard-Bockelberg—achieved organizational and doctrinal change within the system solely as a result of synergistic, focused intellectual energy. Seeckt set the conditions for transformation and sponsored progressive intellectual activity within an environment that encouraged a critical exchange of ideas; moreover, his endorsement assured that contemporary and follow-on reformers remained shielded within the system and never forfeited their institutional legitimacy. Of course they faced inevitable opposition from old school advocates; General Gerd von Rundstedt clearly expressed the opinion of the traditionalists when, at an exercise involving the new tank units, he declared, "All nonsense, all nonsense, my dear Guderian."⁴⁵ Yet the conservative element never seriously impeded the development of *Panzerwaffe* or associated organizational/doctrinal reform because debate remained protected within the system where it could influence mainstream thought and processes. Additionally, the march of intellectual progress never stagnated into premature orthodoxy; the vision was continually renewed by succeeding generations of progressive thinkers who refused to stop short of real transformational success. Consequently, orthodoxy emerged only over time, when blitzkrieg became relegated to the realm of convention.

Two final observations are worth reemphasizing: While the German achievements in France included a significant technological dimension, the revolution in military affairs was not born simply of new tank designs and ubiquitous radios; instead, it resulted from the correct (and decisive) application of technology through a transformational doctrine.

The doctrine was revolutionary, not the tank.⁴⁶ Second, the factor of time is again apparent; it took nearly two decades for the collective intellectual vision of Seeckt, Volckheim, and the other progressive thinkers to mature into actual operational capability—illustrating well that military transformation by its nature is never a timely or efficient process.

Knowledge as a Capability

The catalytic role of the Prussian Military Reorganization Commission and the architects of German armored doctrine in promoting transformation within their respective military organizations is apparent. One can garner several themes from these case studies that are relevant and applicable to current and future efforts by the U.S. Department of Defense (DOD) to embrace transformation.

Intellectualism must work within an institutional context to succeed. Transformation is born of intellectual energy, but as demonstrated here, it can only thrive within an institutional framework and when wedded to the system. Organizational endorsement—as witnessed by King Frederick William III and Seeckt—provides legitimacy and intellectual freedom. The recent creation of the Office of Force Transformation under the direct purview of the Secretary of Defense offers a potential institutional framework for intellectualism to flourish and exercise influence within DOD. Similarly, the U.S. Army Training and Doctrine Command, coupled with U.S. Joint Forces Command responsibility for the creation of joint doctrine, afford additional opportunities for institutional intellectualism to work within and for the system. Unfortunately, these organizations to date have been largely incapable of catalyzing significant and enduring institutional change because they remain culturally divorced from the mainstream of events within the Armed Forces. While the structure is in place, the intellectual capital that it houses is not integrated within the system in the manner achieved by Scharnhorst or Seeckt. Moreover, this structure fails to promote effective innovation, free thought, or a critical exchange of ideas within and throughout the organization as a whole; instead, these endeavors are confined to think tanks within the walls of academia—well outside the organizational and professional mainstream. The Office of Force Transformation eventually may correct these deficiencies; if not, substantive transformation will prove impossible until intellectual endeavor is institutionalized in a way Scharnhorst and Seeckt would recognize.

The best intellectual capital must be assigned to transformation duties. Furthermore, these individuals should be primarily military profes-

sionals with operational experience. Successful transformation requires critical thinkers demonstrating "agility of the mind."⁴⁷ At present, it remains highly questionable whether those organizations responsible for transformation are staffed with the proper intellectual capital. Are the contemporary intellectual peers of Scharnhorst, Clausewitz, and Seeckt in residence at the Office of Force Transformation or elsewhere? They are not. The system resists assigning them to duties presently considered "non-career-enhancing." Additionally, an effort is required to identify and employ young, talented officers as demonstrated by the personnel selections of Scharnhorst and Seeckt; intellectual renewal and avoidance of orthodoxy are only possible when the system empowers critical thinkers such as Clausewitz, Grolman, Boyen, and Volckheim to temper the experience of senior officers and push the envelope of convention. In the absence of our best intellectual capital (of all ranks), transformation will prove a fantasy.

Technological achievement does not constitute transformation. As illustrated in both case studies, transformation is born almost exclusively of organizational, systemic, and/or doctrinal innovation; therefore, while there is frequently a technological component to transformation, technology is incapable of catalyzing transformational change or a revolution in military affairs until it is subordinated to effective ideas. Consequently, there is an intellectual danger in staffing the Office of Force Transformation, U.S. Joint Forces Command, or the training and doctrine community with technocrats rather than critical thinkers. Given the current euphoria surrounding modern military technology, it is logical to assume that technocrats hold great influence within these organizations—and that transformation efforts dominated by technocrats will not succeed regardless of how revolutionary their technological achievements may be.

Transformation takes time. Presently, a misconception pervades all levels of the American military establishment that transformation can be accomplished in short order. The Prussian Military Reorganization Commission required decades for its goals to be realized, while the creation of the *Panzerwaffe* and associated doctrine consumed nearly 20 years in catalyzing less ambitious transformation. The complexity and scope of the transformation process will dictate the time required to achieve the desired end state—but the duration is likely to be measured in years. Therefore, since experience dictates that military reform is a laborious, time-consuming process, it would be logical to conclude that transformation efforts within DOD will not reach maturation in less than several years.

Traditionalists will always oppose transformation because it “requires changing culture and attitude.”⁴⁸ It is human nature to resist change; as such, intellectual efforts to drive transformation will always have to contend with traditional conservative elements supporting the status quo. Nevertheless, this opposition can be overwhelmed by ensuring that the intellectual impetus for transformation remains institutionalized and resides within the system. Therefore, opposition to present efforts at transformation does not pose any real challenge as long as the effort is driven by institutional intellectualism, continues to work within the organization, and retains administration and Secretary of Defense patronage.

Transformation turns intellectual vision into a military capability. Whether current efforts to transform constitute a response to a revolution in military affairs or a revolution itself, the driving force will—and must—remain institutional intellectualism; professional debate on intellectualism in the military must be focused on this salient issue. To do otherwise will lose sight of the most important aspect of intellectualism and its exclusive role as an agent for military transformation. Clausewitz reminds us in *On War* that “knowledge must become capability.”⁴⁹ We must never forget that without institutional intellectualism, this is impossible, and professional stagnation and atrophy will eventually result.

Notes

¹ Carl von Clausewitz, *On War*, ed. and trans. Michael Howard and Peter Paret (Princeton: Princeton University Press, 1989), 102.

² Lloyd J. Matthews, “The Uniformed Intellectual and His Place in American Arms, Part I,” *Army Magazine* 52, no. 7 (July 2002), 18–20.

³ *Ibid.*, 20–23.

⁴ Richard Hofstadter, *Anti-Intellectualism in American Life* (New York: Alfred A. Knopf, 1963), 10.

⁵ Lloyd J. Matthews, “The Uniformed Intellectual and His Place in American Arms, Part II,” *Army Magazine* 52, no. 8 (August 2002), 40.

⁶ Williamson Murray and MacGregor Knox, “The Future Behind Us,” in *The Dynamics of Military Revolution, 1300–2050*, ed. MacGregor Knox and Williamson Murray (Cambridge: Cambridge University Press, 2001), 175–180.

⁷ Clifford J. Rogers, “‘As If a New Sun Had Risen’: England’s Fourteenth-Century RMA,” in *The Dynamics of Military Revolution, 1300–2050*, 18–22.

⁸ Williamson Murray, “May 1940: Contingency and Fragility of the German RMA,” in *The Dynamics of Military Revolution, 1300–2050*, 172–174.

⁹ David E. Johnson, *Fast Tanks and Heavy Bombers* (Ithaca, NY: Cornell University Press, 1998), 8–15.

¹⁰ Jehuda L. Wallach, *The Dogma of the Battle of Annihilation* (Westport, CT: Greenwood Press, 1986), 5.

¹¹ Carl von Clausewitz, *Historical and Political Writings*, ed. and trans. Peter Paret and Daniel Moran (Princeton: Princeton University Press, 1992), 39–42.

¹² Gordon A. Craig, *The Politics of the Prussian Army 1640–1945* (New York: Oxford University Press, 1956), 38–39.

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