Innovation is a complex process that is neither linear nor always apparent. The interactions among intellectual, institutional, and political-economic forces are intricate and obscure. The historical and strategic context within which militaries transform compounds this complexity. Nevertheless, factors such as military culture, technological modernization, doctrinal development, and organizational and tactical innovation have influenced the ability to transform. Indeed, the inextricable confluence of these factors determines the success of transformation.

The period between 1914 and 1945 shows the dynamic nature of military innovation and the difficulty military organizations face in adapting to the changing global strategic environment and evolving threats. This article highlights three case studies from this period and considers both successful and unsuccessful transformational efforts. These studies can clarify current problems and provide possible solutions for the U.S. military’s own transformation.

Primacy of Culture

Military culture is the linchpin that helps determine the ability to transform because it influences how innovation and change are dealt with. Its implications for U.S. military transformation are thus profound. The ability to harness and integrate technological advances with complementary developments in doctrine, organization, and tactics is dependent on the propensity of military culture to accept and experiment with new ideas. Therefore, focusing on developing and shaping a military culture amiable to innovation and continuous change will help create the conditions for current transformation efforts to be effective and successful.

Military culture comprises the attitudes, values, goals, beliefs, and behaviors characteristic of the institution that are rooted in traditions, customs, and practices and influenced by leadership. Every organization has a culture. It is “a persistent, patterned way of thinking about the central tasks of and human relationships within an organization. Culture is to an organization what personality is to an individual.” Culture will dictate how an organization responds to different situational challenges. It also consistently shapes how the military views the environment and adapts to meet current and future challenges.

Some may view organizational behavior as the sum of all individuals’ behaviors within the organization. However, organizational culture will also dictate the behavior of those individuals. As Robert Keohane states, “Institutions do not merely reflect the preferences and power of the units constituting them; the institutions themselves shape those preferences and that power.” In this way, organizations and individuals affect each other’s behaviors. The differences in the military Services—in both the behaviors of the organizations as a whole and the behaviors of the individuals within those organizations—are readily apparent. Each Service develops solutions to problems defined through the lens of its historical and cultural experiences. Moreover, as James Wilson notes, an organization “will be poorly adapted to perform tasks that are not defined as part of that culture.” Therefore, for the military to be fully competent in the tasks of joint (let alone interagency) operations, leaders need to ensure that all the tasks are embraced as part of the organizational culture.
**Military Culture and Transformation**

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The military is based on core missions that standard operating procedures and routine tasks reinforce, providing stability and reducing uncertainty. The military strives for these conditions, so it is natural for it to resist change or adopt technologies that enhance existing missions rather than create new ones, especially if it perceives change as detrimental to core missions. Transformation in the military will take time if only because of the time it takes to change cultures.

**Interwar Germany**

The Germans, from 1914 to 1942, provide an insightful case of the ability of culture to create the conditions for adaptation and innovation. Persevering attempts to learn the lessons of the past at all levels, willingness of leaders to listen to lower ranking officers, and the ability to face the brutal facts can often lead to a coherent doctrine and adoption of innovative technology. The German military leadership after World War I conducted a comprehensive examination of the lessons of the war. Over 400 officers formed at least 57 committees with the guidance to look honestly at what occurred during the war and determine what new problems had arisen. The leadership incorporated the committees’ assessments into Army Regulation 487, “Leadership and Battle with Combined Arms.”

This type of culture provided the impetus to develop new doctrine and to adopt weapons systems such as the tank. Integral to this, the German army tested its doctrine and new technologies throughout the interwar period to ensure continued realistic assessments. After the invasion of Poland in 1939, the army continued its critical self-assessments, which later helped in its invasion of France. As S.J. Lewis observes, “The senior and mid-level officers who so critically observed the army’s performance were the product of a particular military culture.” This occurred even when Adolf
Hitler had forced many senior generals out of the army. Paramount was a military culture that actively incorporated the products of open discussion and honest self-reflection into new tactics and organizations, including the reorganization of motorized divisions.

**Interwar U.S. Marine Corps**

The U.S. Marine Corps during the interwar period provides another example of military culture creating the conditions for change. The Corps was able to change its mission fundamentally from that of a naval infantry organization to the leading Service in amphibious assault operations, which required a more coordinated combined arms approach. While the Japanese and British dealt with similar amphibious warfare issues, the United States had a single Service that was willing to adopt the requirement as its mission. A vision of the Marine Corps’ future, which senior leadership communicated throughout the Corps and which its members adopted and shared, provided the direction and purpose to focus creative efforts.

Thus, the Marine Corps’ culture, initially driven by the leadership of Generals John Lejeune and John Russell, accepted a new mission. This change helped distinguish the Marine Corps from the Army and save it from possible institutional extinction during the Great Depression. Fear of demise was a powerful motivator in driving the Corps to develop new doctrine (*Tentative Manual for Landing Operations*) and an organizational structure that facilitated amphibious assaults (the Fleet Marine Force).

More fundamental, however, was a culture that allowed junior officers to help develop doctrine that became the foundation of the Service’s mission. This culture facilitated open debate on lessons learned through study and experimentation of amphibious assault operations and allowed the Corps to develop a relevant doctrine and organizational structure. The free flow of information and ideas, and the seriousness in examining and applying them at all levels, allowed the organization to adopt relevant technologies suited to their needs, such as amphibious warfare ships. While the British and Japanese faced similar obstacles and developed their own amphibious warfare doctrine and tactics, they were not as successful as the U.S. Marine Corps. As Millett states, “There must be a foundation in institutional commitment, and a major organizational embrace of a new mission.” The right type of military culture allowed the Marines to embrace their new mission.

**Lessons Learned**

These case studies highlight enduring themes. First, transformation and innovation are the results of a continuous, deliberate process of learning and adapting. While the use of the tank in blitzkrieg seemed a dramatic departure from past doctrine to many outside Germany, the Germans had been refining their doctrine and experimenting in armored warfare for many years prior to 1940. Thus, it was an evolutionary change. However, once the Germans started to forgo continuous reassessment and rely primarily on technologies such as newer tanks without adapting tactics and doctrine to emerging challenges, they were defeated.

An implication for current transformation is that we should not view it as something that will occur suddenly, leaving no time for preparation. The naval and amphibious assaults in the Atlantic and Pacific during World War II illustrate an iterative and cyclic process of change in developing improvements and counterimprovements by all sides. It requires a constant effort that reassesses doctrine, tactics, and organizational structure to meet changes in the operational environment.

Another theme of successful change is that innovations in tactics, doctrine, organizations, and training must develop along with technological modernization for change to be enduring. Technology can drive change. However, there will have to be corresponding changes in other factors to make it truly transformational. The French use of the tank altered some of their methods, but did not fundamentally refashion other factors such as doctrine. As a result, enduring change was elusive.

Doctrine should serve as a framework to provide insights into the circumstances forces may face. It will mitigate uncertainty but not eliminate it. Doctrine cannot anticipate the evolving chaotic and asymmetric operational environment militaries will engage in; therefore, it should not be prescriptive. However, it can help create the conditions for success. The ability to develop plans that can match
the context of a specific environment will rely on a flexible doctrine that can adapt. Therefore, doctrine must evolve with the changing requirements of the operational environment to ensure an organization remains relevant and viable.

Organizational redesign is critical to matching changing requirements, but many leaders will be tempted to move only the organizational chart boxes. Reorganization without an overarching strategy will likely produce little effect. Instead of rearranging boxes, realignment and design and management of processes and the way organizational members interact, process, and share information to produce outcomes will create adaptability.16 Realignment must take a systems approach. Leaders must understand the complexity of all the factors that create the organizational context within which change will take place. Any change to the structure must address the organization’s core deliverables and the capabilities to deliver them. Therefore, any innovation or change that does not account for core deliverables is unnecessary. In developing its amphibious doctrine and reorganizing its force structure, the Marine Corps showed how doctrine and organizational change could succeed in maintaining a relevant organization in an evolving strategic environment.

**Toward Real Transformation**

The case studies highlight the vital primacy of military culture in shaping change. While efforts at developing new technologies and doctrine are important, concentrating on those efforts at the expense of developing a military culture comfortable with change can hinder current efforts. The issue becomes how a culture that is receptive to change can be developed and maintained in the first place. Leadership is a key factor in establishing the right culture. In all the case studies, leadership played a critical role in determining whether the culture allowed honest critiques of lessons learned, of assumptions, and of where the future resided for their military organizations. The leadership’s ability to listen and incorporate many of the ideas of this flow of information allowed their militaries to develop and change. As Jim Collins points out, leaders who can create “a climate where the truth is heard and the brutal facts confronted” provide a mechanism for personal and organizational improvement.17

A shared vision provides members direction and purpose. Moreover, a clear vision provides the mechanism for maximized unity of effort. Leaders can foster a disciplined culture that encourages change and innovation by “creating a consistent system with clear constraints, but also [giving] people freedom and responsibility within the framework of that system.”18 Empowering individuals capitalizes on their resourcefulness. It entails underwriting the inevitable mistakes subordinates will make in developing innovative solutions and concepts. Leaders must communicate their desire to learn and adapt to subordinates, and they must encourage them to learn from mistakes without retribution and to continue developing creative ideas. Such efforts will build confidence in subordinates and increase their stake in the organization’s future. Without such loyalty, an organization will not adapt to changes in its environment.

The ability to generate discussion, serious examination of self and the organization, and experimentation and application of new ideas and technologies requires officers to have intellectual rigor and critical thinking. One develops these capacities through an educational system that teaches how to think and not what to think. Diversity in opinions must be encouraged and not simply tolerated.

Unfortunately, the contemporary educational system, especially at the junior levels, has placed “a premium on solving problems at hand rather than constructing a viable philosophy of life.”19 Education also requires students to take upon themselves the responsibility to learn. Roger Nye discusses the need for military professionals to develop their own “inspiration[s] to reach for excellence.”20 This provides the motivation to inquire about the nature of things, to create new and innovative solutions, to adapt to change, and to make the study and practice of critical thinking an integral part of their lives.21 This way of thinking allows an officer corps to anticipate challenges in an operating environment that is likely to change faster than transformational endeavors. The implication is a need to concentrate on the education of officers as much as on technological and conceptual, organizational, and doctrinal innovations.

The symbiotic relationship among factors such as military culture, technological modernization, doctrinal development, and organizational and tactical innovation has influenced the ability to transform. Military culture is the cornerstone around which all other factors build to generate enduring change. It determines whether the organization is able to learn and adapt through critical assessment and experimentation with and application of new ideas and technologies. It provides the flexibility to develop and link innovations in technology to doctrinal, organizational, and tactical improvements. Developing and maintaining an adaptable military culture requires leadership that fosters creative and innovative thought. It requires leaders who encourage individuality and critical thinking within broad parameters bound by discipline. Finally, it requires individuals to adopt the motivation for self-study and self-awareness and to strive for the professional visions they have created for themselves. Thus, it is essential that our current transformation efforts focus on developing the right military culture as much as they do on the other factors.

**NOTES**

1 Field Manual 22–100, Army Leadership: Be, Know, Do (Washington, DC: Headquarters, Department of the Army, August 1999), 3–14.
4 Wilson, 95.
6 Ibid., 31, 34.
7 Ibid., 32.
8 Ibid., 47.
9 Ibid., 37.
10 Ibid.
12 Ibid.
14 Ibid., 75.
15 Ibid., 94.
16 Allison and Zelikow, 265.
18 Ibid., 125.
20 Ibid., 3–4.
21 Ibid., 3–8.