



DESIGN EXTENDING MILITARY RELEVANCE

Colonel Christof Schaefer, German Army

The ultimate and largely ignored task of management is one of creating and breaking paradigms.

—Richard Pascale, 1991

DESIGN IS A U.S. ARMY conception for the practice of strategic and operational art in the 21st century.¹ Design enhances battle command and decision making, and its incorporation into doctrine is the subject of much recent professional dialogue. I wish to contribute to the debate from an ally's perspective, based on insights gained during design experiments at the U.S. Army School for Advanced Military Studies in 2008 and 2009. I pursue three goals here:

- To provide an analysis of the current U.S. Army design debate and introduce the methodology.
- To call for a multinational expansion of the design methodology and to open up a debate in the German armed forces about the doctrinal usefulness of design.
- To propose a logical expansion of design from the operational domain to the domain of the institutional military [institutional domain].²

The “value added” of design to U.S. military doctrine will have mid- to long-term implications for NATO and German doctrine. Early multinational collaboration is necessary to define doctrinal trade-offs and to ensure interoperability.³ These goals should also help to solve a challenge that affects both German and U.S. forces: how to create a comprehensive military culture that enables the military institution to learn and adapt in an era of persistent conflict and uncertainty.

Why Design?

Design initiates change in man-made things; it is a sequence of distinct, predictable, and identifiable activities.⁴ In the current U.S. Army debate, “design is a [way] to think critically and creatively, and it enables a commander to create understanding about a unique situation and, on that basis, to visualize and describe how to generate change.”⁵ Design thus addresses the need for deep appreciation of the contemporary operational environment that pushes operational art down to even the battalion level. Guidance provided by political and higher military authority may be insufficient to frame complex situations. Where political, social, economic, and ideological boundaries are blurred, particularly in Joint and coalition operations, such guidance could even do more harm than good.⁶

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PHOTO: Deutsche Presse Agentur (German Press Agency) photo showing a patrol from Provincial Reconstruction Team Feyzabad in Badakhshan province, spring 2007.

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Design aims to overcome the deficiencies of industrial-age tools for operational art and planning that—like one author expresses—“have been nearly impotent for making any sense of the Iraq and Afghanistan missions.”⁷ Design will complement the traditional forms of military planning, the Military Decision Making Process (MDMP) and the Joint Operations Planning Process (JOPP), which can have reductionist, simplifying, and mechanical effects inappropriate for war’s political and moral dimension. Design enables the blend of military art and science in a creative way in order to harvest the corporate genius of an organization in an effort to manage and solve the complex problems that confront today’s military practitioners.

Design thus builds on intellectual and academic rigor and emphasizes cognitive skills. Design thereby aims to achieve shared understanding among superiors, key subordinates, partners, and allies based on varied viewpoints. Stakeholders learn about the different interpretations of a situation and where they can use their collective intelligence to manage it.⁸ Critical thinking undergirds design as a precondition for self-initiated learning to achieve an evolved understanding of the relevance of military operations. This evolution reflects a group approach to organizational learning and management over time. Design in the military will stimulate a cultural change and will be a significant paradigm shift from the power model of military leadership and bureaucratic compartmentalization. Design recognizes that no one perspective is sufficient in a complex environment, so design propagates a model of emphasizing servant leadership and social integration. This paradigm shift is the necessary condition for the military to succeed with design. Design means to take responsibility for a moral imperative that results from awareness of the complex social fabric of the 21st century security environment.

Design Expansion— Background and Arguments

The release of an issue paper called *Design* (pre-decisional draft) in March 2009 has elevated an academic debate in the U.S. Army Training and Doctrine Command (TRADOC) to the doctrinal level.⁹ In addition to the issue paper, recently published articles in *Military Review* and *Joint Force Quarterly* have taken the discussion to the wider Army. Also, the U.S. *Capstone Concept for Joint Operations* and the recent speech given by the German chief of defense to the German Parliamentary Society on Armed Forces Transformation suggest a multinational and logical expansion of design.¹⁰

Taking on the multinational aspect, the German Army released the latest version of the *Heeresdienstvorschrift 100/100 Truppenführung* (the equivalent to Field Manual [FM] 3-0) in 2007. Moreover, the chief of defense directed the production of a Joint doctrine equivalent to Joint Publication (JP) 3-0 “*Einsatz- und Operationsführung der Bundeswehr*” (Mission and Operations Command), Centralized Armed Forces Regulation 1/01, the missing link between German service doctrine and NATO allied Joint publications.¹¹ The question is whether design culturally fits into, and is useful for, German operational doctrine given the fact that U.S.-German military cooperation requires interoperability and so doctrinal harmonization.

Further contributions of the German and U.S. chiefs suggest the logical expansion of design into the institutional military. The German and the U.S. military must cope with a similar set of challenges: the need for a more flexible and adaptive military, renewal of the institutional mind in a complex dynamic period, and avoiding becoming bogged down in minutiae. The order of the day is to optimize institutional Army functions in the context of rapid change and undetermined future missions. Developing an active stance for shaping joint and inter-agency interaction and creating effective processes for planning and cooperation is essential in an era of finite and shrinking national strategic resources.

In the operational domain, design can add value to German doctrine in spite of contextual and cultural disparities in German and U.S. approaches to planning. From an institutional domain perspective, limiting design to operational affairs does not fully exploit its potential as a driver for cultural change,

learning, and adaptation. Design will alleviate the pressure that a bureaucratic hierarchy imposes on organizational responsiveness. Such responsiveness is a precondition for relevance in today's and the future's complex environments. The method of design encourages the ability to work with a deeper understanding of the environment and to make the whole organization more adaptive.

U.S. Army Design

Analysis of the U.S. Army design concept from a German standpoint must consider the discussion of "design" in U.S. joint doctrine and developments in NATO and German armed forces, and recognize the effects-based approach to operations. In the context of operational art, the word "design" has been in U.S. doctrine since the publication of Field Manual (FM) 100-5. Joint doctrine also recognized "operational design" as the practical extension of operational art in 2005 and 2006.¹² However, U.S. Joint doctrine implies an effects-based approach to operations based on a deductive "systems perspective" of the environment (systems of systems approach and operational net assessment).¹³ NATO has fully embraced this approach, and its impact has reached German Army doctrine.¹⁴ In the meantime, the U.S. Joint community has partially questioned its suitability for operational art in complex situations. Its "hard systems" approach rests on the simplifying mechanistic understanding that reality consists of a fabric of predictable and static causal chains.¹⁵ From an ally's view, there is currently a competitive relationship between design and effects-based operations that will influence the discussion in both NATO and in the German armed forces. This is a by-product of effects-based operations' theoretical underpinnings in behaviorist cause-effect approaches to the political and moral dimension of war. In contrast, design's theoretical bedrock is a cognitive approach to dealing with emergences in chaos and rejects the possibility of accurately projecting cause-effect relationships in the political and moral dimensions.

U.S. Army Design Development

Up to now, U.S. doctrinal development left open what design might entail. In 2004, U.S. Army Training and Doctrine Command began to assimilate the experiences of the Iraq war, outcomes of the

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capstone war game Unified Quest, and a series of high-level seminars and experiments with the concept of "systemic operational design" to inquire about the practical application of design in military operations. The idea was to develop a strategy for action in the absence of clear guidance in a discourse between higher headquarters and the design group.¹⁶ The Training and Doctrine Command directed the Army Capabilities and Integration Center, supported by Combined Arms Center and the Army War College, to execute the inquiry. The inquiry resulted in TRADOC Pamphlet 525-5-500, *Commander's Appreciation and Campaign Design*, released in 2008.¹⁷ The pamphlet was a springboard for further development of the design idea in the Army, the Joint community, civilian government agencies, and multinational partners. It built on the ideas of Joint doctrine in application to a holistic understanding of the operational environment. However, it recognizes the importance of design as a precursor to planning and its potential to synthesize the expertise and insights developed within a functionally constrained staff. The School of Advanced Military Studies has been contributing significantly to this endeavor since 2005 by providing the test ground and research environment to harmonize theory with practice.

In close cooperation with the school, the Combined Arms Doctrine Directorate has begun to address the intellectual aspects of design more specifically in the latest versions of U.S. Army FM 3-0, *Operations*; FM 3-24, *Counterinsurgency*; FM 3-07, *Stabilization Operations*; and FM 5-0, *The Operations Process (Draft)*.¹⁸ In 2008, the Training and Doctrine Command produced a design issue paper to provide a more comprehensive account of this approach formulated in U.S. doctrine.¹⁹

U.S. Army Design Deductions

Three issues are important for the design debate among U.S. forces and the multinational expansion of design. First, in spite of different design approaches, methodologies, and philosophies of the

various stakeholders, FM 5-0 will contain the most recent thinking on “why design,” “design fundamentals,” “design methodology,” and the “design-plan interface” and be the document to which a potential design debate in the alliance should refer.

Second, the doctrinal U.S. Army debate must resolve the common misconception conflating design with existing planning tools (i.e., MDMP and the JOPP), and design’s relationship to those tools as a precursor or companion. In the author’s view, design should be a closely connected, parallel but separate and complementary activity that creates a deeper understanding of problems, which in turn improves decision making and tactical planning efforts.

Third, the debate must clarify whether design exclusively informs campaigning at the operational level of war, or whether a complex reality suggests that campaigns are the business of lower levels too. Limiting design seems artificial, and current U.S. Army design conforms to the latter statement. However, FM 3-0 attributes “operational art” exclusively to the operational level.²⁰ Even so, U.S. Army design takes into account the Iraq war, which has seen operational art at the battalion level.

Today’s tactical level commanders simultaneously confront both operational art and tactics because of the problems a counterinsurgency campaign unveils. The unlimited number of solutions, the absence of indisputable rules for optimization, and the reliance on subjective value judgment and creativity are all qualities of operational art.²¹ These qualities justify the argument that operational art cannot be bound to the operational level of war. The debate will have to clarify whether the term “level” should be replaced by “functions” of strategy, operational art, and tactics without restriction to unit size. A multinational expansion of design needs to consider this development because NATO follows current U.S. doctrine, and German doctrine follows FM 3-0 and JP 3-0. These facts trumpet a need for a discussion in NATO and the German armed forces on their future doctrinal development.

A Design Methodology

A sequence of distinct, identifiable, and predictable activities comprise the design methodology developed and proposed by Army Capabilities and Integration Center in the design issue paper. The

methodology represents ideas about change theory, learning organization, and complexity theory, and it unifies them in one approach. Design ideally prepares a commander with systemic understanding of a situation as a precondition for more relevant planning and future decision making. This systemic understanding enables him to be the chief innovator, strategist, and strategic communicator in his area of accountability.²² He decides whether a situation justifies the use of design or not. A litmus test for such justification would be the degree of uniqueness a situation presents, its perceived uncertainty and complexity, and the concomitant need to act.

Design, planning, and execution reflect a layered architecture.²³ They inform each other during a campaign or operation in response to events. Design, at inception, emphasizes an exploratory approach to challenges better suited to innovation than the conventional, functionally based mission analysis.²⁴ The methodology builds on continuous learning through setting, framing, and reframing problems as an interplay between a commander and his design group, selected staff, and external members. Additional internal and external “non-designers” can augment the design group case-by-case and periodically to contribute with subject matter expertise.²⁵

Participants overcome their cultural bias by intentional questioning understanding that might stem from ostensibly irrelevant experiences and previous mental models. Another fundamental is the commander’s active cognitive involvement. An attitude that the design group designs, and the commander either agrees or does not agree with, nullifies advantages of design.

Environmental space. The group first develops and agrees upon the logic behind the guidance in the aims and objectives of the higher commander. The group then frames the operational environment to help understand the context for the design. Through individual research and subsequent collaborative discussion, the group agrees on the current situation and any perceived changes essential to accomplish the commander’s aims and objectives. The design group develops an initial *problem statement* that describes the gap between the current system as derived from the group’s shared understanding and an agreed-upon desired system. With more understanding, the true nature of the problem begins to take shape. To

address the problem successfully, the design team explores the relevant environmental aspects in detail. Choices about boundaries, areas of possible intervention, or areas of exploitation are necessary.

Problem space. The choices noted above help define the *problem frame*. The group develops an operational approach that, along with the problem statement, form the problem space. The politicians' or commander's feedback may lead to a reframing of it based on his evolved understanding of the problem. Without losing sight of the world outside the problem frame, the design team finally makes a decision on how to act to manage the problem based on a direct or indirect approach on elements of both.

Solution space. Once the political echelon or higher commander has approved the problem frames, a commander can define the problem statement and operational approach that link the solution space and design concept. The *design concept* is the product provided to the planners to conduct the Military Decision Making Process and the Joint Operations Planning Process.

Challenges for Design and Recommendations

Four factors can challenge and influence the use of design in contemporary environments: the interplay between design and planning, time, leadership and personnel, and outcome.

Design-plan interplay. The methodology suggests the production of a planning directive as a design-plan interface. Lower command levels possess fewer staff resources for a separation of design and planning. Nevertheless, to avoid quick fixes based on staff default reactions, leadership is necessary to provide the proper orientation while travelling through the spaces of the design methodology and focusing the work.

Time. Creativity and innovation cannot be forced or planned. Design work takes time. A design group achieves mental access to the environmental space only through a difficult process of evaluating many complex social networks. The use of structuring tools can help alleviate time constraints and indecisiveness. Close cooperation between designers and planners, from inception onward can avoid undue pressure imposed by "slow" designing. Hence, the designer and planner interface should be continuous throughout operations.

Leadership and personnel. Proactive leadership is necessary to prevent the design group from using simplifying tools. Impatience, an overemphasis on deadlines, and pushing the group will suffocate creativity; a *laissez-faire* type style, on the other hand, will lead to endless information processing and superfluous talk. Effective leadership, with a clear method to organize design work at the inception, can overcome these problems. Moreover, training for group design work requires a different approach than decision-making training. The social fabric of the design team has immediate influence on the design performance. A group's homogeneity and intellectual capabilities can vary significantly, and affect the challenges a leader faces when attempting to harvest the group's genius. Design requires leaders to guide and structure adaptive work. Leaders must push work back to stakeholders to develop solutions at the lowest levels where understanding of the problem is the best. Hence, design leadership education should entail not only leading design, but also design methods and application.

Outcome. Like JOPP and MDMP as conventional planning techniques, the outcome of design is actionable. Additional and more detailed planning steps follow from the understanding evolved in the design process. Design offers military leaders at all levels of command a deliberate way and a stronger and more relevant basis of knowledge to proceed while trying to avoid tactical missteps with strategic implications. Design's reflective methodology does not provide a so-called "silver bullet" to solve complex problems, but neither does any known traditional process. What design can contribute is an approach to improve nuanced understanding and enhance the final outcome of conventional planning methods by complementing them to ensure better management of complex problems.

Design and German Doctrine

Can design inform the German operational domain? German equivalents of current U.S. JP 3-0

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and FM 3-0 are the ZDv 1/01 and HDv 100/100. ZDv 1/3 (analogous to JP 5-0) is under way.²⁶ NATO membership requires the alignment of German doctrine with allied doctrine, and because of the U.S. role in NATO, German doctrine indirectly aligns with U.S. doctrine. Therefore, German doctrine and U.S. doctrine are largely congruent within the NATO operational-level planning process, the discussion of operational art, and supporting tools.²⁷ However, a change in U.S. doctrine will entail adaptations in NATO and in German doctrine.

German military thought. The culture of German military thought will determine the debate about design in the German armed forces. There is no “design” term separated from planning in German doctrine; “planning” comprises the creative and the mechanistic part of the process. Speed, focus, standardization, taxonomy, openness, and flexibility characterize German military thought, which rejects the checklist thinking Americans have grown used to. “Mission assessment” (*auswertung des auftrages*) is a step in the operations process that anticipates mission analysis. The bedrock of the overall planning process, and the main difference from the Joint and U.S. decision-making processes, is this analysis.²⁸ Here, the commander, the chief of staff, and selected staff personnel frame the problem at hand as the precondition for a focused staff process. “The differences between the [U.S. and German Army] in this respect [approach to decisions] are reflected by their thought-processes and even by their language. A German officer, confronted with some task, would ask: *worauf kommt es eigentlich an?* (What is the core of the problem?) An American [officer]. . . would inquire: what are the problem’s component parts?”²⁹ At first glance, this cultural heritage appears to make design (as a problem setting and framing methodology) in a sense obsolete for a German commander. However, design as articulated in the U.S. Army far exceeds the conventional German mission assessment.

For instance, chapter 5, “Stabilization Operations” and chapter 13, “Manoeuvrist Approach” in HDv 100/100 address complexity, unpredictability, and the “art of troop command” as a creative, cognitive process. Formulas and rules are not applicable.³⁰ As doctrine, they refer to the 21st-century operational environment, recognizing that the prerequisite for feasible effects in a complex

environment is a coherent frame that assesses the network of people, groups, and organizations. This assessment accounts for diverse motives and opposed interests, but current German doctrine does not answer how to do it.

HDv 100/100, paragraph 6002, in fact stresses that the German operational process is suitable for making feasible decisions in a complex and dynamic operational environment, even under time pressure. Irrespective of the favorable heritage of its military thought process, the German Army should be anticipative: there is no contemporary proof that this paragraph could withstand the scrutiny of reality. The differences between current U.S. Army operations using design thinking and German military operations after the fall of the “wall” have caused an experience gap. Closing this gap requires organizational learning based on sound evaluation of foreign developments and the selection and transfer of ideas.

Design in German doctrine. The German armed forces should quickly begin considering the U.S. design methodology in close cooperation with Americans and initiate dialogue within NATO.

Like current U.S. doctrine, German doctrine builds heavily on end states, be they political or military. However, reality looks different: There are “buzzwords with no foundational concepts,” and “the military must deal with the impreciseness,” a German press note recently stated.³¹ In a complex environment, it is necessary that politics stay ambiguous to make room for later policy choices. However, without clear political guidance, there is no clear task with which to start a focused operations process.

The operational process drilled during German officer education appears timely and effective. It may synchronize efforts toward a group product appropriate for problem solving, but it may never solve the right problem because it cannot produce an accurate frame of reference in the environment. Its intellectual economy overemphasizes the importance of experience—a dominant logic of the military culture of seniority. During conditions of ambiguity, or conditions where experience has no purchase, the process must pretend to certainty. It does so largely through the authority of rank and hierarchical level. The system pretends to an objective understanding that does not exist. It thereby



German battalion preparations for a potential noncombatant evacuation operation on the African continent in 2005.

pushes decision making into the comfort zones of past experience that are absolutely irrelevant.³² Effects-based thinking follows this flawed logic.

Military clichés such as “there are no problems, only challenges” or “offer solutions, not problems” often minimize the fact that complexity cannot simply be confronted with will. Reflection and a posture of openness to learning must accompany that will. Military culture is notoriously biased against reflection because, to many, it implies hesitation. Yet without reflection, the obtuse practitioner involves himself in a deliberate oversimplification of mission needs. These conditions best reflect the power model of military leadership common where authority and overwhelming force make up for lack of creativity. Such a mind-set represents bad-faith, because the pressure of convention is overruling reason. In combination with a perceived need for time compression, there is the danger of looking only superficially at a “challenge,” of failing to see any difficulty, or of pretending that there is no real complexity.³³ At this point, the operations process can degenerate to a useless process of self-deception without feedback.

Certainly, the foremost intellectual challenges in today’s stabilization and counterinsurgency operations are complex situations requiring reflective deliberation about evolving conditions. One must endeavor to identify core issues from the bottom-up and identify, how they relate, how to act on them to further mission needs, and how to communi-

cate them to the political echelon.³⁴ This exercise describes the ultimate *raison d’être* of design.

In the long term, incorporating design is a necessary condition for updating German doctrine. Germany too needs to meet the requirements of stabilization operations, counterinsurgency, and major combat operations. Design presents a proven vehicle for improving military relevance and effectiveness.

“Mission assessment”

could be the place to anchor design in the German operations process. Commander-led, the mission assessment step could reshape the process from solution focus to collective, creative, and critical inquiry as the precondition for fully understanding operational problems. More relevant planning would result.

On the strategic level, incorporating design in German doctrine will help develop a better culture of learning. It will empower military leaders to enter a more proactive, self-confident discourse with the political echelon, founded on a more comprehensive and relevant knowledge base, to clarify ambiguous guidance or to inform strategy.

Recommendations for an Institutional Military Design

The institutional domain is the foundation of operational forces. In an era of persistent military operations, the institutional domain deals with the preparation for war in shaping the product that a political or military leader uses to achieve national objectives.³⁵ The product’s value defines its relevance and hence determines budgetary policies. Recognizing that militaries should be open systems that cannot evade national realities, the challenges require self-initiated and evolutionary adaptation across military institutions. Such adaptation is necessary for efficiently using limited funds within a national-level system of competition and for eventual operational effectiveness.

Such transformation is eventually a problem of organizational learning and bureaucratic innovation. Organizational change requires communication of a shared vision, ability to scrutinize paradigms, systemic thinking, and promotion of team learning.³⁶ The principal challenge of innovation is to identify a problem and establish a clear understanding on how to solve it. Therefore, learning and problem solving are tightly intertwined.³⁷ A military organization requires a comprehensive approach to such an undertaking because of its difficult, hierarchical bureaucracy entailing differing cultures. Timeworn bureaucratic principles, compartmentalization of responsibilities, and rigid processes resist change and peacetime innovation in the institutional domain. But the military also possesses a more flexible, task-oriented culture in its operational domain, which constantly adapts to steep learning curves based on urgency-fueled, wartime innovation.³⁸

However, the similarity of the institutional and operational domains could affect their symbiosis. Lack of clear guidance, operating with complex adaptive systems, and an unlimited number of choices characterize both operational and institutional dynamics. Advancing the military's institutional domain (i.e., doing peacetime innovation) translates eventually into operational art because it takes an unstructured problem and gives it form so that further planning can lead to useful action. This suggests that the design's methodology is as suitable for the institutional domain as it is for the operational.

Peacetime innovation by design. Peacetime innovation can occur when both intellectual and organizational (i.e., inertial) components work with and within the given bureaucracy. Design is such an approach: human-centered and comprehensive. It



U.S. Army SGT Lewis Leon pins his jump wings onto a German Airborne Soldier at La Fierre, France, 7 June 2009. Several American and German Soldiers traded jump wings as a sign of enduring friendship as part of the 65th D-Day Anniversary commemoration.

U.S. Army, Ms. Lea Greene

respects the military's political and complex nature and acknowledges its basic governing principles.³⁹

The goal of design in the institutional domain is to develop and pursue a strategy for innovation that simultaneously addresses structure, processes, and culture. It does so by developing visions, communicating those visions, and negotiating them with a political sponsor. In this context, design can enable "telling oneself the truth" and avoiding the kind of deliberate bureaucratic self-deception that leads to strategic ramifications. Effective design leadership, gives notice to stakeholders who eventually are responsible for change. It does not outsource the responsibility for innovation to separated subsystems (e.g., centers for "excellence" or "transformation" or to consultants). The danger of such practices is familiar: it enables judging proposals for change based on old power paradigms.

Design overcomes existing mental models and the fixation on inherited traditional conceptions because it creates a counter concentration through the collective genius of the military organization. Design *prevents organizational myopia*. It collectively, actively redirects self-reflexive behavior to

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the relevant environment, where the real problems are. It breaks up functional and service walls, and it uncovers knowledge hidden in hierarchical stovepipes. Finally, it backs up the institutional leader with relevant knowledge and ability for more substantiated strategic communication.

Institutional design implementation. Joint and interagency design groups representing different stakeholders could be the organizational anchors of the design methodology. Such groups can best capture ideas across functions and link them to *relevant* decision making. On all levels of the institutional hierarchy, design could be an effective methodology for change. However, on the ministerial level and the higher commands and offices, it seems to be mandatory.

Design groups in the institutional domain have to answer five hard questions:

- Where are we now? (vs. Where do we hope to be?)
- Where do we want to go (direction, vision)?
- How do we get there?
- Are we doing the things that we know how to do right (lines of effort)?
- Are we doing the right things?

The heterogeneous structure of such design groups should support commitment to the truth, since it provides the arena for genuine intellectual competition that is a precondition for successful interaction with complex “adjacent” systems. Creative tension between the (military or political) leader and a design group will define the problem as a gap between *how the organization is* and *how it ought to be*.

Institutional design execution. An institutional design group would operate temporarily outside routine work, outside the “everyday” chain of command. Member selection would follow ability and qualification—not rank or functional role considerations (i.e., the officer’s “functional area”). Selecting the best person for the kind of thinking needed would determine the group’s composition. Major tasks of the group would be to achieve a shared understanding about a problem in a specific situation and to develop shared commitment to a possible solution. In a complex social system like the military, consensus among varied functional and service perspectives is virtually unachievable. Broad consensus-based approaches favor common

denominators and generally oppose innovation.⁴⁰ This opposition suggests that shared understanding has to precede consensus-building. Shared understanding will facilitate coherence among the stakeholders before any proposed strategy for problem management is submitted to the service or functional staffs.⁴¹ Since the members of a design group belong to these staffs, the likelihood of achieving an active consensus increases. For interagency products, this aspect of design is especially relevant.

To overcome bureaucratic cultural drawbacks to the largest extent possible, the logic of design would suggest that a group spread itself over more than one hierarchical level. A superior’s position in the hierarchy, and his area of accountability, determines the range of levels and functions he can access while making his choice of design group members. For instance, in a ministerial staff, the director level and above should account for design routines. All civilian and military leaders and staff members can make a request to address a specific issue with the design methodology. They should submit a proposal to their immediate and next higher-level superior who takes the decision. There should be a design custodian or full-time *design nucleus* (two or three staff officers) in each staff that can facilitate the staff-wide application of the methodology. With support of the highest-ranked senior leader, the team acts as a full-time mediator between staff directorates and external influences. In the long term, such a team has the potential to become the change agent in the staff. The team would support the formation of a core design group (six to eight members) when a senior leader decides to use the methodology in a given situation. The participation of additional group members (e.g., members from other services and interagency) would require previous agreement by their respective superiors. To ensure broad acceptance, a design group develops its own procedures, which require the initiator’s and the external superiors’ approval.

Such an approach provides for flexible design group management on a case-by-case basis and a process-like design organization with fluid network structures within the tight fabric of a bureaucratic hierarchy. Such organization would not harm the *logic* of the methodology, but it would enable its *logical fit* into the institutional domain. As in the operational domain, *designing* occurs in workshops,

discourse sessions, and research spin-offs subject to a rigid quality regime and effective leadership that ensures iterative learning.

The institutional domain (e.g., a ministerial staff) can apply a *routine-based* and *incident-driven* version of design. Routine design is about corporate responsiveness, and it pursues the detection of business strategic inflection points and the support of the military leaders to shape their visions. In this context, design serves to reframe the narratives on which present transformation activities build. Routine design is about defining a need faster, more precisely, and better founded to win, for instance, the competition for funds for future operational effectiveness. Besides routine matters, incident-driven design responds to unknown situations unleashed by internal or external events, incidents, or new knowledge in the staff. It builds heavily on the environmental knowledge provided by routine design. The goal of incident-driven design is to achieve effective rather than efficient results and to avoid potentially irrelevant and time consuming actions by a staff.

Challenges to design in the institutional domain. No gain comes without a price. In the institutional domain, the price of design can be the perception of additional time constraints and a loss of influence. However, the institutional domain is in a more favorable position as to the factor of time than the operational one. The abandonment of internally focused, self-reflexive, time-consuming action to favor a more relevant future attentiveness will uncover hidden time resources.

Those hierarchical leaders who have to release a subordinate to a design group they do not lead might feel a loss of influence and control. The military's role culture (with its power model) links position and rank with responsibility and knowledge, and eventually with the capability for creativity. Noncompliance with this paradigm is out of the question, and it thereby filters out any possibility of another heteronomy. However, overcoming this military tendency is a necessary condition for the higher goal of corporate progress. In this regard, design has a flattening function that creates a virtually leaner structure. When rank matters less than ideas, the organization is much more effective, scientifically speaking. Real transformation can

happen that ensures the overall military organization's relevance in the long term.

Military Relevance and Design

The methodology of design, a wartime innovation of the U.S. Army to cope with the operational challenges of 21st-century security environments and a conception for the practice of operational art, will assure the relevance of its doctrine in the coming years. Design should make operational forces capable of innovation without external imposition and lead the way to a true mission-command structure. Design complements existing concepts for operational art and expands the U.S. Joint and interagency community of practice and purpose. Design ideas have the undeniable potential for the U.S. Army to become a strategically thinking institution instead of remaining the tactically orientated force of the past.

In spite of contextual and cultural differences in approaches to military thought and operational problems, design can also inform German doctrine. Even more than the U.S. Army, the German armed forces' thinking is tactically driven. For the long-term relevance of its doctrine and future interoperability, German armed forces should quickly enter the debate about the use of design and carry the debate into NATO.

Design is a driver for cultural change in both the operational and the institutional domains. In the institutional military, design can help spur a rethinking of bureaucratic entanglements. It can also create a systemic "holding environment" in which military bureaucracy can overcome its intrinsically inertial mechanisms against responsiveness.⁴² The capability to think critically—deeply anchored in the military organization—and a supervised innovation that embraces a free flow of creativity while not violating necessary bureaucratic structures will eventually lead to a true learning organization.

If simultaneously applied in the operational and the institutional domain, design can provide for a common operational picture across the military to empower the coherence of processes, practices, and the congruence between speaking and doing. This can lead to rapprochement of both domains and defragmentation of the services, enhancing the military's overall long-term relevance. **MR**

NOTES

1. Operational art is the application of creative imagination by commanders and staffs—supported by their skill, knowledge, and experience. Field Manual (FM) 3-0, *Operations* (Washington, DC, U.S. Government Printing Office [GPO]: 27 February 2008), 6-1; Joint Publication (JP) 3-0, *Joint Operations* (Washington, DC, GPO: 17 September 2006), IV-3.
2. For instance, Department of Defense (DOD), higher commands, military agencies without operational mission.
3. For instance, NATO Effects Based Approach to Operations Handbook, Bi-SC Pre-Doctrinal Handbook, Draft Version 4.0, 8 August 2007, NATO Allied Joint Publications, and U.S. Joint Publications. *Bundesministerium der Verteidigung* (Federal Ministry of Defense [FMOD]). *Heeresdienstvorschrift (HDv) 100/100 (Truppenführung), Einsatz- und Operationsführung der Bundeswehr (EinsOpFüBw)* ZDv 1/01 offen 2. *Mitteilungsentwurf* (2d Draft) 09.07.2007.
4. Bryan Lawson, *How Designers Think*, 4th ed. (Boston: Elsevier, 2006), 33.
5. Headquarters, Department of the Army, issue paper: Army Design Doctrine, *Design* (Washington, DC, 29 March 2009), 1.1.
6. Stefan J. Banach, "Educating by Design, Preparing Leaders for a Complex World," *Military Review* (March-April 2009), 96-104, 97.
7. BG Huba Wass de Czege, USA, retired, "Systemic Operational Design: Learning and Adapting in Complex Missions," *Military Review* (January-February 2009), 2-12.
8. The principle of consensus is a basic governance principle in Western bureaucracies. The principle requires that the basis for decisions is "non-disagreement" to proposals [in essence, this equates to an individual veto power] by the players.
9. Issue paper: *Army Design Doctrine, Design*.
10. Chairman of the Joint Chiefs of Staff, *Capstone Concept for Joint Operations (CCJO)* ver. 3.0 (Washington, DC, GPO: 15 January 2009); Wass de Czege; Stefan J. Banach and Alex Ryan, "The Art of Design, A Design Methodology," *Military Review* (March-April 2009), 96-104, 105-15; Richard M. Swain, "Commander's Business: Learning to Practice Operational Design," *Joint Force Quarterly* (2d Quarter 2009), 61-68; Wolfgang "Schneiderhahn, *Vortrag vor der Deutschen Parlamentarischen Gesellschaft zum Thema "Aktueller Stand und weitere Schritte der Transformation der Bundeswehr"* (Berlin: 23 September 2008).
11. The doctrine, structured along NATO, Allied Joint publications, and U.S. Joint Doctrine, will describe higher command and leadership principles and will deal with the basics of military strategic, operational, and tactical level command in the *Bundeswehr*. Bundesministerium der Verteidigung (FmoD), Chief of Defense. *Weisung zur Erstellung streitkräftegemeinsamer Führungs- und Verfahrensvorschriften für Einsätze der Bundeswehr (FüVVerVorschr)* (Berlin: 10 June 2008); ADM Michael G. Mullen, Chairman of the Joint Chiefs of Staff, "What I Have Learned about the Army," *Joint Forces Quarterly* (1st Quarter 2009), 8-9.
12. JP 5-0, *Joint Operation Planning* (26 December 2006), chap. IV, para. 2; JP 3-0, *Joint Operations* (17 September 2006), chap. IV, para. 3.
13. Systems of systems analysis (SOSA), operational net assessment (ONA) based on political, military, economic, social, infrastructure, information system of systems with nodes and linkages. Operational design elements: e.g., center of gravity, termination, leverage, etc.
14. Bundesministerium der Verteidigung (FmoD), *Heeresdienstvorschrift 100/100 Truppenführung* (Bonn: 2007), 7.
15. Department of Defense, Commander Joint Forces Command, "Memorandum for Joint Forces Command" (Norfolk: 14 August 2008). The following links can make the gap obvious between the simplifying EBAA/SOSA/ONA theory and reality: Tanzania Embassy Bombing Data Set (Carnegie Mellon University CASOS, 2006), <http://www.casos.cs.cmu.edu/computational_tools/datasets/internal/embassy_2006/index2.html>; Kathleen M. Carley, Organizational Risk Analyzer, version. 1.9.5.3.3, (Idem: January 2009), <www.casos.cs.cmu.edu/projects/oral/>. Dataset and program download is necessary (19 March 2009).
16. Discourse is a method to construct strategies of action by deliberately asking and ignoring questions. Groupthink is the antithesis of healthy discourse. Therefore, discourse should be based on candor and free yet mutually respectful competition of opposing ideas beyond a zero-defects command climate that hampers learning. Moaddel Mansoor, "Ideology as Episodic Discourse: The Case of the Iranian Revolution," *American Sociological Review* 57, June 1992, 353-79, 359.
17. Department of the Army Headquarters, Training and Doctrine Command (TRADOC), TRADOC Pamphlet 525-5-500, *The U.S. Army Commander's Appreciation and Campaign Design* (Fort Monroe, VA: 28 January 2008).
18. FM 3-0, *Operations* (Washington DC, GPO: 15 December 2006), 5-3; FM 5-0 (Draft), *The Operations Process* (19 December 2008), app. 1; FM 3-24, *Counterinsurgency* (19 December 2006), chap. 4, 49; FM 3-07, *Stability Operations* (6 October 2008), 4-6.
19. The design team is co-chaired by Commander CAC and Director Army Capabilities and Integration Center. Its core members are Combined Army Doctrine Directorate, Joint and Army Concept Division, Department of Military Strategy, Planning, and Operations. Assisting members are TRADOC centers, operational headquarters, service and joint headquarters, senior service colleges, other government agencies, and multinational doctrine centers.
20. FM 3-0, 1.c. 6-1.
21. Concept Development & Experimentation Directorate, Army Capabilities and Integration Center, U.S. TRADOC, "Commander's Appreciation and Campaign Design Overview Briefing" (2 February 2009).
22. Director School of Advanced Military Studies, COL Stefan J. Banach, 8 April 2009.
23. Issue paper Design, 1-6.
24. Tim Brown, "Design Thinking" *Harvard Business Review* (June 2008), 85-92, 90.
25. There is discussion in literature as to the optimal group size. In the military environment, this decision should be left to the commander's discretion based on experience required, the problem on hand, the degree of creativity needed, time constraints, and outcome.
26. *HDv 100/200 Führungssystem der Landstreitkräfte* (Command System Land Forces) comprises aspects of FM 5-0 too.
27. ZDv 1/01 (Draft), 1.c. B-4 in conjunction with 18 and 53, HDv 100/100, 1.c. 8, 9, 8023, 9005, 9006, 1324, 13242.
28. The step is comparable to commander's understanding and visualization in battle command and task number 1 in mission analysis (analysis of higher command's OPORD). FM 3-0, 5-3.
29. Martin van Creveld, "Fighting Power: German Military Performance, 1914-1945," Art of War Colloquium, paper submitted to the Office of Net Assessment, (Washington, DC: Department of Defense 1980), 189.
30. HDv 100/100, 1.c. 13242, 13240, 13240, 13245, 5008. Synonymic use of the "art of troop command" and the U.S. term "operational art" in German Army doctrine.
31. Daniela Vates, "Stellvertreterstreit der Generale," *Berliner Zeitung* (30 January 2009).
32. David W. Robson, "Cognitive Rigidity: Methods to Overcome It" (Scottish Enterprise Glasgow), <https://analysis.mitre.org/proceedings/Final_Papers_Files/40_Camera_Ready_Paper.pdf> (2 February 2009).
33. Bryan Lawson, *How Designers Think*, 4th ed. (Boston: Elsevier, 2006), 66.
34. Friedrich Döner, *The Logic of Failure* (New York: Metropolitan Books, 1996), 23.
35. Carl von Clausewitz, *Vom Kriege* (Hinterlassenes Werk, Nachdruck) (Bonn: Dümmler Verlag, 1989), 269-78; Will, *Operative Führung*, 1.c. 295. FORSCOM, *Modular Force Command and Control Pamphlet* (18 October 2007), 11.
36. Peter Senge, Art Kleiner, Charlotte Roberts, Richard Ross, Bryan Smith, *The Fifth Discipline Field Book* (New York: Doubleday, 1994), 51, 47, 6.
37. Jeff Conklin, *Dialogue Mapping: Building Shared Understanding of Wicked Problems*, chap. 1 (Wiley: CogNexus Institute, October 2005), <www.uces.csulb.edu/spin/media/ppslide/a_2002_jconklin_jan.ppt> (24 March 2009).
38. Stephen Peter Rosen, *Winning the Next War* (Ithaca, NY: Cornell University Press, 1991).
39. Typical governance principles are the "principle of consensus" and the "principle of writing."
40. Conklin, *Dialogue Mapping*, 1.c. Klaus Krippendorf, *The Semantic Turn—A New Foundation for Design*" (New York: Taylor & Francis CRC, 2006), 19.
41. Anne-Marie Grisogono, Australian Government, Department of Defense, "Coping with Emergence in Complex Adaptive Systems," briefing presented to the School for Advanced Military Studies (Fort Leavenworth: September 2008), 24, 34, 35.
42. Ronald A. Heifetz, *Leadership Without Easy Answers* (Cambridge: The Belknap Press, 1994), 104-105; Idem, Marty Linsky, *Leadership on the Line* (Boston: Harvard Business School Press, 2002), 102-107.