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ARTICLE

Fighting Smart: Living Systems Theory in the US Army's Strategic Thought

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This article analyzes the relationship between living systems theory (LST) and the army's military doctrine in the 1980s. General Donn Starry, Colonel Mike Malone, and Major James Cary worked with James G. Miller, the founder of LST, to make the army more efficient at fighting a Soviet invasion of Western Europe. LST conceptualized that living organisms organized matter and energy and that its components could function because they worked as a part of the whole to adapt to their environment. The article reveals how these officers employed LST as a framework to model a reciprocal relationship between individual agency and collective unity in the army's hierarchical organization. Situating this doctrinal reform in the years after the end of the draft and the mainstreaming of neoclassical economics in the 1980s, it finds that the army officers were using LST to replace Robert McNamara's mechanical strategic paradigm used in the Vietnam War.

Introduction

This article provides an intellectual history of how a group of US Army officers thought about the relationship between individual officers on the battlefield and the synchronized collective whole of the army in military doctrine. How does the army—a collective and hierarchical organization—consider individual agency? The central contention is that living systems theory was a significant undergirding framework for understanding the concept of individual agency in the army's strategic thought and doctrine, specifically in the AirLand Battle Doctrine (ALBD) in the 1980s.

The thinkers in this article that filtered living systems theory into the US Army's doctrine are far from any canon in the history of ideas. General Donn Starry, Colonel Mike Malone, Major Jim Cary, and Brigadier General Huba Wass de Czege took Professor James G. Miller's living systems theory (LST) and adapted it for the army's purposes. In the late 1970s and early 1980s, these officers and several assistants were based at the United States Army Training and Doctrine Command (TRADOC), the army's research center for strategic thought. As a study group, they researched, lectured, and wrote the army's doctrine manuals, articles on strategy and military organization, and officer-teaching curricula. They

attempted to make theories "green"; that is, ready for the army. The studied texts in this article are doctrinal booklets, the AirLand Battle Doctrine (also known as FM 100-5), the Army 86 documents, and research and tactical reports, such as Mike Malone's "X = H" paper and Jim Cary's various research papers on system theory. They formed what the musician Brian Eno might call a "scenius," which is the expression of a group, a place, or a "scene" that has a genius. Intellectual work is not the work of the individual "genius" that so easily captures our imaginations but the work of a collective.[1]

Certainly, Starry curated the space for LST research in the US Army and introduced it into the new military doctrine to make the army more efficient in future wars. The AirLand Battle Doctrine meant the army would fight with smart, forward-thinking officers in a technologically intensive form of warfare where fast-moving machines, accurate and lethal weapons, and real-time communications would create a chaotic future battlefield. LST intellectually supplemented "mission command," a NATO doctrine that created a decentralized command structure that encouraged officers to take the initiative on the battlefield.[2] The research and application of the LST were a way to develop more coherent information processes among army units in chaos. These mid-weight thinkers in the army used LST to help solve the central problem of the US Army: how to fight and win when outnumbered in Europe against the Soviet Union.

For James Miller, "General living systems theory is a conceptual framework within which the biological and social approaches to the study of living things are logically integrated with the physical sciences."[3] In brief, living systems theory covers the entire breadth of living forms in a range of complexity, from a single cell, organ, organism, group, organization, or society to a supranational system. In this hierarchy, each living form is an open system that seeks stability through processing matter and information to adapt to their changing environments. Regardless of how complex a system is, it has twenty components or "subsystems" that generate, action, or organize information, matter, and energy to make it function, adapt, and interact with its environment.[4] It is a conceptual framework to understand the dynamism of living things, specifically in how they relate to their environment with adaptability and manage input, output, and throughput feedback. Despite Miller being a significant figure in developing twentieth-century systems theory and American psychiatry, he is not a central figure

[1]See further Dabney Townsend, "On Genius: The Development of a Philosophical Concept of Genius in Eighteenth-Century Britain," *Journal of the History of Ideas* 80/4 (2019), 555–74; Joyce E. Chaplin and Darrin M. McMahon (eds.), *Genealogies of Genius* (London, 2016).

[2]"Mission command" has a German military provenance in *Auftragstaktik*; see Eitan Shamir, *Transforming Command: The Pursuit of Mission Command in the U.S., British, and Israeli Armies* (Stanford, 2011); Shamir, "The Long and Winding Road: The US Army Managerial Approach to Command and the Adoption of Mission Command (Auftragstaktik)," *Journal of Strategic Studies* 33/5 (2010), 645–72; Antulio J. Echevarria, "Auftragstaktik: In Its Proper Perspective," *Military Review* 66 (1986), 50–56.

[3]James G. Miller, "General Living Systems Theory," in Pierre Pichot, Peter Berner, Richard C. Wolf, and K. Thau (eds.), *Biological Psychiatry, Higher Nervous Activity*, 2 vols. (New York and London, 1985), 1: 673–8, at 673.

[4]Reproducer, Boundary, Ingestor, Distributor, Converter, Producer, Matter–Energy Storage, Extruder, Motor, Supporter, Input Transducer, Internal Transducer, Channel and Net, Timer, Decoder, Associator, Memory, Decider, Encoder, Output Transducer. See James G. Miller and Jessie L. Miller, "Introduction: The Nature of Living Systems," *Behavioral Science* 35/3 (1990), 157–63, at 159.

in the intellectual history of the social sciences.[5] There has yet to be a study on the relationship between Miller, LST, and these army officers.

In general, intellectual history has not engaged in the history of strategic thought.[6] Yet there have been recent interventions in Joseph Mackay's *The Counterinsurgent Imagination* and Patricia Owens's *Economy of Force*, whose investigations of counterinsurgency warfare have brought intellectual history, with a distinctively international-relations flavor, into the realm of war and military doctrine.[7] The intellectual history of Cold War social science has been an important field of study, which has engaged with how science bolstered American and Soviet power and technology in the twentieth century. This field has tended to focus on civilian thinkers and defense intellectuals rather than examine those figures in the military who applied science to their work.[8] In parallel to this, in recent years, intellectual historians have grappled with the various meanings of individualism. These histories have shown that political theorists, medical practitioners, social scientists, and others have defined individualism and the individual in relation to a larger biological system—the state, society, or a social entity—as not simply about singular autonomy.[9] Individuals balanced their passions and actions within a wider social framework that judged what was efficient, acceptable, and tolerable. By synthesizing these literatures, my investigation reveals that individualism in the army became relational; single army units or individual officers were "living" entities because they related to other units and officers as a larger synchronized organism on the battlefield. The ALBD encouraged the individual initiative of officers; it gave confidence to junior and senior officers because it showed them "how to think" (about the problems and chaos of the modern battlefield) rather than "what to think." For TRADOC, future warfare was too chaotic for rote learning.

[5]Joel Isaac, *Working Knowledge: Making the Human Sciences from Parsons to Kuhn* (Cambridge, MA, 2012); Hunter Heyck, *Age of System: Understanding the Development of Modern Social Science* (Baltimore, 2015); G. A. Swanson, "James Grier Miller's Living Systems Theory (LST)," in *James Grier Miller's Living Systems Theory (LST)*, special issue, *Systems Research and Behavioral Science* 23/3 (2006), 263–71.

[6]Joel Isaac, "Strategy as Intellectual History," *Modern Intellectual History* 16/3 (2018), 1007–21.

[7]Joseph MacKay, *The Counterinsurgent Imagination: A New Intellectual History* (Cambridge, 2023); Patricia Owens, *Economy of Force: Counterinsurgency and the Historical Rise of the Social* (Cambridge, 2015).

[8]Antoine Bousquet, "Cyberneticizing the American War Machine: Science and Computer in the Cold War," *Cold War History* 8/1 (2008), 77–102; Mark Solovey and Hamilton Cravens (eds.), *Cold War Social Science: Knowledge Production, Liberal Democracy, and Human Nature* (London, 2012); Nils Gilman, "The Cold War as Intellectual Force Field," *Modern Intellectual History* 13/2 (2014), 507–23; Ron Robin, *The Cold World They Made: The Strategic Legacy of Roberta and Albert Wohlstetter* (Cambridge, MA, 2016); S. M. Amadae, *Prisoners of Reason: Game Theory and Neoliberal Political Economy* (New York, 2016); Eglė Rindzevičiūtė, *The Power of Systems: How Policy Sciences Opened Up the Cold War World* (Ithaca, 2016); Joy Rohde, "Pax Technologica: Computers, International Affairs, and Human Reason in the Cold War," *ISIS* 108/4 (2017), 792–813.

[9]Duncan Kelly, *The Propriety of Liberty: Persons, Passions and Judgment in Modern Political Thought* (Princeton, 2010); Stefanos Geroulanos and Todd Meyers, *The Human Body in the Age of Catastrophe: Brittleness, Integration, Science, and the Great War* (Chicago, 2018); Elesha Coffman, "'I Didn't Say That': Margaret Mead on Nature, Nurture, and Gender in the Nuclear Age," *Modern Intellectual History* 18/1 (2021), 202–22; Dorothy Ross, "Whatever Happened to the Social in American Social Thought? Part 2" *Modern Intellectual History* 19/1 (2022), 268–96.

This article finds that the officers interpreted living systems theory as a general framework for a new intellectual paradigm: maneuver warfare for future wars. This revises some post-Vietnam historiography that centers the "military reform movement" in Congress and strategists William Lind and John Boyd as central figures in the army's doctrinal rejuvenation in the 1970s and 1980s.[10] Why did TRADOC employ LST? This article reads the ALBD and related strategic thought as a contributing argument against Robert McNamara's mechanistic computational and centralized organizational science. For this group of officers, the Vietnam War was not just a defeat in the balance of world power in grand strategic terms. It was the loss of a paradigm of ideas about warfighting. The defeat punctured the deterministic, cybernetic, and attritional warfare strategy that the army employed in the war alongside the personnel who advocated for modernization theory: Robert McNamara, Walt Rostow, and McGeorge Bundy, among others.[11] The historian Gregory Daddis has gone as far as to argue that numerical data became a fog to understanding the war; the army collected so much data that they could not effectively operationalize it to make realistic battle objectives.[12] The officers in this article would agree. At least for this group of Vietnam veterans at TRADOC, the effect of the Vietnam War spurred them to change the ideas that undergirded the army's doctrine.[13]

This internal battle within the army and the national security state over strategic paradigms occurred as external forces on the army changed. The Reagan administration's consolidation of neoclassical economics, reduction in welfare in public policy, and increase in the military budget was the political expression of a modal shift in the American political economy. More broadly, it was in the 1980s that neoliberal thought and figures consolidated intellectual power in many national states in the transatlantic region and many global economic institutions.[14] LST provided a form harnessing individualism and thinking about the delegation of the individual officer on the battlefield as an efficient way of warfare. Importantly, this article shows that LST provided TRADOC with an *American* and *scientific* intellectual force to support the "mission command" doctrine that the US Army and the West German Army were writing for NATO.

[10]Stephen Robinson, *The Blind Strategist: John Boyd and the American Art of War* (East Gosford, NSW, 2021); Michael Hawkins, *Flying Camelot: The F-15, the F-16, and the Weaponization of Fighter Pilot Nostalgia* (Ithaca, 2021); Robert Coram, *Boyd: The Fighter Pilot Who Changed the Art of War* (Boston, 2002); Gary Hart and William Lind, *America Can Win: The Case for Military Reform* (Bethesda, 1986).

[11]Gregory Daddis, *Westmoreland's War: Reassessing American Strategy in Vietnam* (New York, 2013). Michael C. Desch, *Cult of the Irrelevant: The Waning Influence of Social Science on National Security* (Princeton, 2019), 176–204, 192–4; David Milne, *America's Rasputin: Walt Rostow and the Vietnam War* (New York, 2009), 111–12; Andrew Preston, *The War Council: McGeorge Bundy, the NSC, and Vietnam* (Cambridge, MA, 2010).

[12]Gregory Daddis, "The Problem of Metrics: Assessing Progress and Effectiveness in the Vietnam War," *War in History* 19/1 (2012), 73–98; Bousquet, "Cyberneticizing the American War Machine," 96–8.

[13]Jeffrey Long, "The Evolution of U.S. Army Doctrine: From Active Defense to Airland Battle and Beyond" (US Army Command and General Staff College, 1991); James Kitfield, *Prodigal Soldiers: How the Generation of Officers Born of Vietnam Revolutionized the American Style of War* (Dulles, VA, 1997).

[14]Roberto Ventresca, "Neoliberal Thinkers and European Integration in the 1980s and the Early 1990s," *Contemporary European History* 31/1 (2022), 31–47; Gary Gerstle, *The Rise and Fall of the Neoliberal Order: America and the World in the Free Market Era* (New York, 2022); Quinn Slobodian, *Globalists: The End of Empire and the Birth of Neoliberalism* (Cambridge, MA, 2018).

Investigating the history of strategic thought and system theory in the army provides an ideal area to innovate intellectual history through the introduction of "mid-weight thinkers" who worked as a group to research and dispense ideas in collaborative documents. Many of the texts in this article were multiauthored and anonymized through the discursive drafting process that the army's grey literature went through to finalize doctrine. These texts and the mid-weight thinkers who wrote them decenter the notion of the "great thinker" and their canonical text that dominates intellectual history. As this article shows, ideas were applied to the world by figures who would not consider themselves intellectuals. In this case, ideas in grey literature—that is, works that are partially read and often gather dust on the shelves of back offices—can have a significant influence among practitioners of state power. From the vantage point of mid-weight thinkers, the application of ideas looks far more unsentimental and even cloudy. Authorial intention and meaning are contingent on a practical use for an objective. We do not need to guess what the intention of LST was for the thinkers in military doctrine because they were practical-minded about ideas. This story is more about how transplanted ideas "work" in organizations and how thinkers engage with them.

Donn Starry versus the "McNamara regime"

There was not a hurried scramble for ideas after the defeat in the Vietnam War. Starry had long been interested in drawing on and critiquing the practice of scientific thinking to improve the army's battlefield performance. As a postgraduate student at the US Army War College, in 1966, he found the centralized management system wrongheaded: "the military education system must teach principles and develop in its students the ability to reason from principles, objectively, to sound conclusions. Rote thought patterns, ideas set in the concrete of Pentagon clichés, are simply not adequate tools with which to compete in today's dynamic decisionmaking forum."[15] His early critique was of the "Fordist" organizational management, mathematical formulas, and narrow technical understandings of the "military mind" that made the army a centralized, hierarchical organization.[16] Starry was, in effect, beginning to think about reforming the army's organization and doctrine during the Vietnam War and in Robert McNamara's tenure as Defense Secretary, what Starry would later call the "McNamara regime."[17]

In a quiet corner of a cocktail party in late 1977, James Miller pitched LST to Starry and its possible application to the army; in a follow-up letter Miller attached a copy of his book, *Living Systems*, and Starry seized the opportunity.[18] Miller's *Living Systems*, originally published in 1976, with a second edition in 1978,

[15]Donn Starry, "The American Military Profession Today," US Army War College Student Research Paper Class of 1966, in Lewis Sorley (ed.), *Press On!*, vol. 1 (Fort Leavenworth, 2009), 535.

[16]A. Junn Murphy, "Making Managers in the U.S. Military: The Case of the Army Management School, 1945–1970," *Management & Organizational History* 15/2 (2020), 154–68.

[17]Donn Starry, "Military Ethics: Letter to Major William F. Diehl," 5 May 1983, in Lewis Sorley (ed.), *Press On!*, vol. 2 (Fort Leavenworth, 2009), 893.

[18]Correspondence from Donn Starry to James G. Miller Regarding Appreciation, "Living Systems" Book with Attachments in Donn A. Starry Collection; Box 10a, Folder 8, Correspondence Files—Dec. 1977 [Part 2 of 2].

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stretched over a thousand pages and provided the intellectual ammunition for Donn Starry and the TRADOC research group to change the conceptual framework of the army's organization and its strategic thought.[19] The "mission command" system created a decentralized command structure on the battlefield that encouraged officers to operate flexibly and take the initiative to gain victory, even if it meant rattling senior ranks. Starry worked at forts Monroe and Knox in the 1970s and early 1980s, and Knox was roughly an hour and a half's drive from the University of Louisville, where Miller was president. He dispatched Mike Malone and Jim Cary, among others, to Louisville to form the Task Force Delta research group. Starry's role as director was to lobby the army's leadership to understand Miller's academic research and see the possibilities for change. He made his point clear: a smaller army fighting with an efficient organization became a strength in future wars. "I am more and more convinced," Starry claimed in 1978, "that, unless we can somehow explain that idea [Miller's living systems] to the army and sell it to our leadership, we are indeed foredoomed to defeat in the first battles and so in the war."[20] Five years later, he had much the same point; he called for "considerable additional research in the behavior of living systems—cells, organisms, organs, organizations, at all levels, to develop expert systems that behave, in the main, pretty much like the living systems they are designed to emulate."[21] Biological terminology and living systems theory had captured the minds of these officers.

What was the purpose of this interest and effort to research living systems theory? The TRADOC research group, most of whom were veterans of the Vietnam War, had firsthand experience in how the army fought it on an unsound platform. Among the war's chief architects were Robert McNamara and the strategists in the Pentagon who emphasized a deterministic, cybernetic, and numerical model for warfare. McNamara's system theory in the military reached its high point during the 1950s and 1960s when the US Army and Air Force embraced utility analysis.[22] Utility analysis provided a paradigm to measure discrete units and make analysis intelligible through quantification and mathematical rules.[23] This presented warfare through equations and statistics, making it seem objective and neutral, and with accurate information inputs, the army's command could induce the correct outcome (battlefield victory). Similarly, the application of modernization theory by the US military and government in the Vietnam War was the apex of the relationship between academics and the national security state.[24] In truth, McNamara was

[19]James G. Miller, *Living Systems* (New York, 1978); Miller, "Living Systems," *Quarterly Review of Biology* 48/2 (1973), 63–91; Miller, "Living Systems: Basic Concepts," *Behavioral Science* 10/3 (1965), 193–237; Miller, "Living Systems: Cross-level Hypotheses," *Behavioral Science* 10/4 (1965), 380–411.

[20]Donn Starry, "Highly Effective Forces Memorandum for Lieutenant General John R. Thurman and Major General William F. Hixon Jr.," 8 June 1978, in Sorley, *Press On!*, 2: 795.

[21]Donn Starry, "The Role of Knowledge-Based Systems in Command and Control Armed Forces Communications and Electronics Association Kansas City, Missouri, 18 October 1984," in Sorley, *Press On!*, 1: 259.

[22]Antoine Bousquet, *The Scientific Way of Warfare: Order and Chaos on the Battlefields of Modernity* (London, 2009); Thomas Lindemann and Grey Anderson, "Worlds of Datawar," *Political Anthropological Research on International Social Sciences (PARISS)* 4 (2023), 5–22.

[23]Bousquet, *The Scientific Way of Warfare*, 123–37, 154–61; Chris Paparone, "How We Fight: A Critical Exploration of US Military Doctrine," *Organization* 24/4 (2017), 516–33.

[24]Desch, *Cult of the Irrelevant*, 176–204; Milne, *America's Rasputin*.

more of a manager of workflow, budgets, and procurement than a deep thinker of military doctrine.[25] He nevertheless became the foil for Starry to organize his reinvention of the army's doctrine away from these quantified models. His obvious lack of field experience in Vietnam compared to that of Starry, Malone, and Wass de Czege was made starker when his strategy failed to achieve results and risked the army being a significant instrument of US foreign policy in the Cold War.

Starry was clear in his criticism of McNamara and his of methodology on the issue of centralization in the army: "It didn't all start with Robert Strange [McNamara], but don't forget that many of the key players in today's Farce Along the Potomac came down from the Harvard Business School, or from under some related flat rock, with the 'management gang'."[26] Indeed, Malone and Starry were the most brazen in their criticism of "the lore of corporate management," as they called it, in the US Army.[27] Their opposition to the "McNamara regime" was an argument in favor of "mission command," a more decentralized initiative-centric maneuver warfare where officers thought for themselves about how to effect victory on the battlefield. Decentralized command structure and officer initiative on the battlefield became the terminology for these officers to shape the army's organization and integrated individualism in an ultimately collective and hierarchical institution of the state.

In the late 1970s and the 1980s, the US Army looked across the North Atlantic for inspiration. The first TRADOC commander, General William DePuy, who began the development of a decentralized command structure and preparing for a war in Central Europe, drew on German military thought. His Active Defense Doctrine of 1976 was made compatible with the German manual HDv 100/100, *Command and Control in Battle*.[28] Although this doctrine was criticized because it did not go far enough in disseminating maneuver warfare in the army, it was a first draft for American maneuver warfare.[29] Still keen to develop strategy, in 1980 DePuy organized a Braddock, Dunn, and McDonald-funded conference with two former Wehrmacht panzer commanders, Hermann Balck and Friedrich von Mellenthin, whose service on the Eastern Front provided a direct experience of fighting the Soviet Union some thirty years prior.[30] Their lectures and memoirs

[25]Gregory Palmer, *The McNamara Strategy and the Vietnam War: Program Budgeting in the Pentagon, 1960–1968* (Westport, 1978).

[26]Donn Starry, "Centralized Management Letter to John B. Bellinger Jr. Office of the Secretary of Defense," 4 June 1979, in Sorley, *Press On!*, 1: 542.

[27]Donn Starry, "In Pursuit of an Ethic," Sept. 1981, in Sorley, *Press On!*, 2: 889–92; Mike Malone and Donald Penner, "You Can't Run an Army Like a Corporation," in *The Trailwatcher: A Collection of Colonel Mike Malone's Writings* (Army Training and Doctrine Command, 1980), 289–93.

[28]Paul H. Herbert, "Deciding What Has to Be Done: General William E. DePuy and the 1976 Edition of FM 100-5," Leavenworth Paper No. 16 (1988), 61–73; Donn Starry, "New FM 100-5, Letter to General Alexander M. Haig Jr.," 26 July 1976, in Sorley, *Press On!*, 1: 281. See also Starry, "German–American Coordination, Letter to Lieutenant Colonel Samuel D. Wilder," 23 Aug. 1976, in Sorley, *Press On!*, 1: 282.

[29]Herbert, "Deciding What Has to Be Done," 96–8; Donn Starry, "FM 100-5 Defense Philosophy, Letter to Major General George S. Patton," 11 Nov. 1976, in Sorley, *Press On!*, 1: 284; Starry, "Active Defense, Letter to Major General C. P. Benedict," 13 March 1978, in Sorley, *Press On!*, 1: 300; Huba Wass de Czege and Leonard Holder, "The New FM 100-5," *Military Review*, July 1982, 53–70, at 54.

[30]William E. DePuy, "Generals Balck and von Mellenthin on Tactics: Implications for NATO Military Doctrine," Technical Report BDM/W-81-077-TR, McLean, VA, 19 Dec. 1980.

gave the army an understanding of how the Soviet Union fought wars and how to employ cunning tank maneuvers to disrupt the massive Soviet Army that would plow through Central Europe.[31]

A 1981 TRADOC research paper cited Hermann Balck's father, Wilhelm Balck, whose tactical innovations during the First World War meant that armies had to reorganize the grouping and movement of soldiers to achieve battlefield success.[32] Balck's thinking in the 1910s became the genesis of TRADOC's thinking seventy years later. In a 1982 speech at the Army War College, Starry outlines the development of mobile armor warfare. In his story, it began with British Army reformers, whom he describes as "argumentative, assertive, and hardly ever in agreement with one another," and then blossomed into a serious doctrine with the Wehrmacht's chief blitzkrieg advocate, General Heinz Guderian, in the 1930s, who built the early panzer divisions for mobile warfare in Europe.[33] In Guderian, Hermann Balck, and Mellenthin, we find a more mature form of mobile warfare that TRADOC adapted for its doctrine. The American and Bundeswehr participants at the BDM conference and Balck and Mellenthin shared a similar political space in the Cold War. All were fighting an ideological as much as a geopolitical enemy. The dominant concept running through all these German and American officers was the promotion of the decentralization of command against a massive Soviet military force.

Greater decentralization meant that army officers could conduct themselves on the battlefield with the flexibility to act on initiative and in an organic synchronization with one another. When officers on the battlefield channeled their individual initiative in the leadership of army units, they were not breaking away from the other units but acting in synchronization. LST provided a way for the research group to conceive of army units as "systems" that only worked when each member thought for themselves to create better performance. These units had to process information and move in sync with one another on the battlefield. As the ALBD demanded, "The information-gathering system, especially at corps and division levels, should provide the current information as continuously as possible."[34] Miller and living systems theory became the general framework from which TRADOC rethought how army units would organize information.

Optimism about reforming the army characterized the research group. Malone said of LST, "if I could, I would put all my stock and my savings account into general systems theories," because it seemed to solve the army's leadership and information process problems.[35] Having familiarized himself with Miller's *Living*

[31]Friedrich von Mellenthin, *Panzer Battles: A Study of the Employment of Armor in the Second World War* (1982/1955) (Stroud, 2017); Hermann Balck, *Order in Chaos: The Memoirs of General of Panzer Troops Hermann Balck* (Lexington, 2015).

[32]Timothy T. Lupfer, "The Dynamics of Doctrine: The Change in German Tactical Doctrine during the First World War," Leavenworth Paper No. 4 (1981); DePuy, "Generals Balck and von Mellenthin on Tactics."

[33]Donn Starry, "Evolution of Doctrine: The Armored Force Example, 10 June 1982," in Sorley, *Press On!*, 1: 107–12, esp. 108–9.

[34]TRADOC, *FM 100-5 Operations* (Department of the Army, 1986), 1986, 114.

[35]Jim Bryant and Ron Sims, "Military Leadership: A Leader Is a Follower is a Leader," *OE Communique* 5/3 (1981), 38–19, at 39.

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Systems, Starry lobbied to transfer its conceptual framework to the army. In a letter to Edward Meyer, the army's chief of staff, he urged, "Jim Miller and I have talked at length about how we might team up to take advantage of what we've learned and to conduct further research. Not only does the Army need something like this, but so do other military organizations, industry, business, government—perhaps especially government."[36] He even reminded Meyer, "we know about all this [research] in terms of the general theory of living systems, Jim Miller's creation, and the subject of a very large book which I believe I sent you some time ago."[37] The caveat to his work was some specific language that Miller used in the text. Starry highlighted the need to change the academic jargon: "Nor will it serve to use much of Jim Miller's language—concept yes, for his concept of organization as living systems must indeed underlie all we do conceptually; but the language is not right."[38] They ditched and molded the technical terms of the various subsystems to convince others in the army that LST was suitable. Thus, their argument within the army was that LST's conceptual framework was suitable, and they could add generalized biological language that was different from the generalized mechanical language of the "McNamara regime."

The first foray into bringing LST into the army was Billy Burnside's report on tank crews and living systems theory, which argued that "the [LST] framework … should perhaps not spend a great deal of time identifying and distinguishing between all subsystems at these levels, but should rather concentrate upon the most important subsystems in the system and situation under study."[39] Despite concerns of some of specific LST terminology, Cary, Miller, and Ruscoe noted that the living system was understandable to the officer class, but it was conceptually adventurous for them.[40] To remedy this further, a report from the army's Research Institute for the Behavioral and Social Sciences changed the terminology to fit the army's intellectual vernacular and ethos.[41] In sum, the TRADOC research group's literature produced from 1978 to 1983 demonstrated the need for the living systems theory, which could be applied to the army, but James Miller's language had to be converted into more generalized biological terms.

LST was complicated for the army and so communicating its purpose inside the army was paramount. This did falter at times. In an issue of an army research journal, *OE Communique*, Malone mentioned in an interview just as Starry had that getting the language right was essential: "Most of the field Commanders won't listen to Living Systems. If we could get the Leadership/Living Systems community

[36]Donn Starry, "Effectiveness of Army Units Message to General E. C. Meyer Army Chief of Staff," 9 June 1980, in Sorley, *Press On!*, 1: 558.

[37]Ibid.

[38]Starry, "Highly Effective Forces Memorandum," 796.

[39]Billy Burnside, "Tank Crews and Platoons as Living Systems" (Research Institute for the Behavioral and Social Sciences, 1979), 69.

[40]Gordon C. Ruscoe, Robert L. Fell, Kenneth T. Hunt, Steven L. Merker, Lorena R. Peter, James S. Cary, James Grier Miller, Bradford G. Loo, Robert W. Reed, and Mark I. Sturm, "The Application of Living Systems Theory to 41 US Army Battalions" *Behavioral Science* 30/1 (1985), 7–50, at 22b.

[41]Gordon C. Ruscoe and James S. Cary, "Comprehensive Technical Report of the Inquiry into the Application of Living Systems Theory to 41 U. S. Army Battalions Executive Summary" (Research Institute for the Behavioral and Social Sciences, 1984), 37, Figures 3, 4.

together, it would make sense."[42] Interpersonal skills were essential in this theory of organization. Malone even anonymously names Jim Cary on this issue: "The other problem is communication. You talk about having trouble translating—the crew that got data about the Living Systems are researchers and scientists and one Army guy, a Major [Jim Cary], who is a researcher, the best I've ever run into. He doesn't do interpersonal relations at all. It is difficult to understand scientists."[43] In a letter to Cary, Starry remarked that he was poor at communication and "selling" the product of LST to the army but that he should continue because LST was necessary.[44]

The point of introducing general biological terminology and living systems was to signal the move away from machine metaphors that made the army appear as an impersonal series of churning cogs. Malone and Starry's radical thinking was that battalions or divisions operated, moved, and lived to some extent regardless of their external environment because they were "living systems" that existed on the battlefield. Officers within these battalions needed "initiative," a term key from the ALBD, to exercise situational judgment because supreme commanding officers (at HQ away from the front line) could not direct all battalions as if they were cogs in a vast machine on the battlefield. His intentions were clear: the army had to change from the horrors of its defeat in Vietnam. He does not explicitly attack McNamara, but the subtext is clear that he is defending his approach to potential counterarguments: "Are there any 'communication problems?' … Generals in a state of mental dazzle from information overload? Communication channels choked and gagged with garbage and 'statistical reports' of measurable trivia."[45] In resolving these problems in the early 1980s, Starry's research group found that decentralized fighting systems were a more efficient way to organize large armies than a centralized structure fighting in an attritional form of warfare.

LST provided a methodology of organizing the US Army. Starry and Miller pitched the LST as an applied-system theory.[46] This stemmed from how Miller theoretically constructed LST. He considered it a "concrete" system, which individuals or organizations could apply to the real world.[47] It contrasted with Talcott Parsons and other theorists who, according to Miller, adopted abstract systems rather than concrete ones.[48] Abstract system theorists examine relationships between units within systems and simplify their connections through scientific laws.[49] As a result

[42]Bryant and Sims, "Military Leadership," 38.

[43]Ibid., 39.

[44]"Correspondence from Donn A. Starry to James S. Cary Regarding Readiness Command Updates and Proposals with Attachments," Donn A. Starry Collection, Box 27, Folder 6b, Correspondence Files, Feb. 1982.

[45]Mike Malone, "X = H: Task Force Delta Concept Paper," in *The Trailwatcher*, 31–78, at 48.

[46]P. B. Checkland, *Systems Thinking, Systems Practice* (Chichester, 1981); L. S. Merker, "Living Systems Theory: A Framework for Management," *Behavioral Science* 30/4 (1985), 187–94.

[47]James Miller, "A Commentary on 'General Living Systems Theory and Marketing: A Framework for Analysis'," *Journal of Marketing* 45/4 (1981), 38.

[48]James Miller, "Can Systems Theory Generate Testable Hypotheses? From Talcott Parsons to Living Systems Theory," *Systems Research* 3/2 (1986), 63–106, at 73; Talcott Parsons, "Concrete Systems and 'Abstracted' Systems. Reviewed Work: Living Systems by James Grier Miller," *Contemporary Sociology* 8/5 (1979), 696–705.

[49]Miller, "Can Systems Theory Generate Testable Hypotheses?", 73–4.

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of having twenty critical subsystems, lifeforms in LST are complex processes with many kinds of units that manage matter, energy, and information. The relationship between them is complex: "The relationships of concrete systems are spatial, temporal, causal, or results of information transmissions."[50]

This paradigmatic shift came when the draft ended, and the army had to reshape its doctrine to fit a smaller professionalized force. As a policy, mass mobilization and the draft supported the general objectives of the New Deal welfare state and shaped the meaning of citizenship in the US.[51] The end of the draft after Vietnam was a subtle recognition from the national security state that it no longer had the authority to rely on the willingness of poor and working-class men to fight for what it defined as the national interest. Moreover, it was recognized by the American state that public policy had moved beyond the statist welfare model toward an individual-oriented economic system of neoliberalism and toleration of social inequality.[52] The US Army had fully professionalized out of being a military force reliant on draftees to one where soldiers would join to gain skills in mechanics, logistics, or leadership, and then reenter the civilian labor force. The end of the draft and the Reagan administration's strategy of confrontation with the Soviet Union increased the status and role of the new professional army in US foreign policy and society at a time of "hyper-individualism" and modern neoliberalism. LST provided a route for the army's doctrine researchers to connect with the ideas and themes in the general political and cultural discourse of the 1980s.

This internal battle between mechanical and biological system theories demonstrated how the army and TRADOC were intellectual forces in the US national security state. The Vietnam War had significantly dented American society and the state's view of the army's ability to function as an effective institution in the Cold War. For Starry and his colleagues, if the army was going to have this kind of role in the Cold War, it needed to think for itself and not copy ideas from the corporate civilian world as McNamara had done with Ford Motors for the army and air force. This transition across civilian and military organizations is an example of how ideas are social and cultural constructions and that thinkers working within organizations can have radically different interpretations of the same ideas, because ideas *work* at Ford Motors or the US Army only if they provide a practical end to the conditioned objectives of organizations—for example, supporting corporate hierarchy, improving the efficiency in automotive assembly lines, or employing violence on the battlefield. Otherwise, mid-weight thinkers will discard them and find new ideas to achieve these objectives. McNamara's cybernetic warfare *became* inefficient and impractical (even if it was efficient in other organizations) because the army tested the idea in the Vietnam War and lost.

[50]Ibid., 73.

[51]Selective Training and Service Act (1940) and Selective Service Act (1948). See further James T. Sparrow, *Warfare State: World War II Americans and the Age of Big Government* (Oxford, 2011), 5–6, 10.

[52]Aaron Ettinger, "Ending the Draft in America: The Coevolution of Military Manpower and the Capitalist State, 1948–1973," *Critical Military Studies* 4/1 (2018), 1–16.

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The army as a living system

The Military Reform Caucus (MRC), a bipartisan group in Congress, lent impetus to innovating military-strategic ideas after Vietnam. It was an informal grouping with between a hundred and 130 House and Senate members.[53] As Senator Gary Hart, one of its leaders, argued in a *New York Times* op-ed, military reform was greatly needed and should be wide-ranging. It covered the army, air force, and navy; their doctrine and force structure; bureaucratic systems; weapons procurement; officer rank size; and training.[54] Alongside the MRC were John Boyd and William Lind (Hart's colleague), who shared some ideas with TRADOC, but they were more romantically minded mavericks rather than professional officers, and so TRADOC could not simply copy and paste their ideas of individualism into doctrine.

In a 1978 memorandum, Starry stated that William F. Hixon Jr and General John R. Thurman and himself should gather "all the smart heads we can find" and put them to work and pass this memorandum to the staff.[55] As an armored-warfare specialist, Starry directed Billy Burnside to assess LST's "applicability and utility" on tank crews in 1979 under Hixon.[56] Burnside argued that "LST provides a framework for the study of the behavior of living systems, which are defined as concrete open systems having identifiable inputs, throughputs, and outputs in the forms of matter–energy and information."[57] He partially justified this by arguing that health care, industrial, and public-sector employers used LST to reorganize workflow systems. General Motors and Exxon, for instance, applied LST to bring fresh problem-solving abilities to departments.[58] Although LST was still very conceptual for the army, the University of Louisville's battalion research results were "promising."[59] He concluded that it is worthwhile to experiment with LST to understand organizational and informational processes in the army. The language remained a specific problem: "LST is a common-sense approach which will not hinder research, as long as one does not become bogged down in its semantics."[60]

Starry's research direction drove this analytical change in the army. Two main offices produced living systems research: the Systems Science Research Element and the Systems Doctrine Office, which included Task Force Delta with Major Jim Cary and Malone and Miller. Malone was the ideal candidate due to his combat experience and educational history. He had an undergraduate degree in psychology from Vanderbilt University in 1952 and an MSc in social psychology at Purdue University in 1964; Malone studied education, managerial psychology, and leadership education at Columbia, Wichita, and Georgia State, and, most importantly here, general system theory at the University of Louisville in the 1970s when James Miller was lecturing there. Jim Cary was a special assistant at TRADOC for living systems and presented the work at the Pentagon.[61]

[53]Gary Hart, *The Shield and the Cloak: The Security of the Commons* (New York, 2006), 25–6.
[54]Gary Hart, "An Agenda for More Military Reform," *New York Times*, 13 May 1986, A31.
[55]Donn Starry, "Highly Effective Forces," 8 June 1978, in Sorley, *Press On!*, 2: 795–7.
[56]Burnside, "Tank Crews and Platoons as Living Systems," 1.
[57]Ibid., 1.
[58]Ibid., 63.
[59]Ibid., 64.
[60]Ibid., 70.
[61]Starry, "Effectiveness of Army Units Message," 558–9.

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Both offices worked at the University of Louisville and were staffed by TRADOC officers. About fifty to sixty people worked in Task Force Delta across the army, from armor equipment to information science to system science to combat.[62] These offices constructed a general conceptual and linguistic framework for the army's organizational thinking by applying LST and employing some biological features in their texts to demonstrate a change from a mechanical cybernetic system.[63] They were an internal think tank within TRADOC and, to some extent, bypassed the army's bureaucracy on the social sciences and operational research, suggesting that Starry had a skill at lobbying leadership to obtain a degree of autonomy for research.[64] In a letter to Starry, Malone outlined how TF Delta and LST research could boost system-level understanding that lagged behind the huge advances in software (computers) and hardware (weaponry) to define objectives better.[65]

Malone's Task Force Delta and Miller and Cary's Louisville Task Force produced peer-reviewed research on organizational science and management. Miller and Cary's initial research took on six US Army armor battalions, four within the United States and two in the US Army–Europe.[66] Their findings focused on the processes in the army units. They had fifteen conclusions, broadly centered on the argument that, more than previously thought, individuals needed to know how their jobs affected the whole unit.[67] The greater the specialization of the soldier (rank or officer) and the better the information they could get for a job or task, the more effective the unit would be. Battalion commanders ought to do less routine management and give broader overall direction. The analysis showed that effective information distribution made effective fighting units. Some conclusions were straightforward: "The more frequently activities are carried out by components, the more able to carry them out, the greater the unit effectiveness."[68] However, other concluding remarks were more radical: "The traditional hierarchical structure of the US Army often hinders the timely and accurate flow of information through the communications channels."[69]

As head of operations at Task Force Delta, Malone's central research question was, "How can our army establish and maintain control of changing, interdependent systems to maximize force readiness?"[70] What came from this question was his 1980 research paper entitled "X = H."[71] The result was X = H, the three-term

[62]Malone, "X = H: Task Force Delta Concept Paper," 33–4.

[63]Starry "Effectiveness of Army Units Message," 558; Ruscoe *et al.* "The Application of Living Systems Theory to 41 US Army Battalions"; US Army Operational Concepts: The AirLand Battle and Corps 86, TRADOC Pamphlet 525–5, 25 March 1981, esp. 20, 21, 22, 23, 34, 35, 36, 74.

[64]Starry, "Highly Effective Forces Memorandum," 795–7.

[65]"Memorandum from Malone to General Starry Regarding Recon Report: OSD Colloquies on Command Control, with Attachment," D. M. (Mike) Malone Papers, Box 1, Folder 14, Information Resource Management Projects [Part 2 of 2], 1980.

[66]Gordon C. Ruscoe *et al.*, "The Application of Living Systems Theory to 41 US Army Battalions"; Jim Cary, "Memorandum, Subject: Living Systems Research Orientation," USAREUR Research Personnel, 9 June 1980.

[67]Ruscoe *et al.*, "The Application of Living Systems Theory to 41 US Army Battalions," 45–50.

[68]Ibid., 46

[69]Ibid., 50.

[70]Malone, "X = H: Task Force Delta Concept Paper," 35.

[71]Ibid.

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formula that closes the gap between the real and potential readiness of US and Soviet forces. The X is working with people, and H is information; as a word equation or statement, it is matter–energy, organized by information. Malone fleshes this theoretical point to argue that X = H is the factor that can reduce the actual and potential readiness of the US and that this does not come from matter–energy; instead, the task of the army is "to increase the efficiency and effectiveness of how we use the information to organize matter–energy."[72] The way to achieve this objective was to apply a "green" living systems theory to the army because this theory posits that people are the principal actors in the army when seen as a system.[73] He admittedly wrote it with some irreverence, "X = H. This not a smart-ass answer nor an attempt to be cute."[74] His informal style only subtly masks his serious argument about organizational research and transformation in the army. What came from this paper was that, in war, an army's organization and flow of information were vital to winning because future battlefields would be so unpredictable. This was an early attempt at ordering the chaos that awaited the army in Central and Eastern Europe.

Repeatedly in the paper, Malone reminds readers that the army is a living system and that all its constituent parts, divisions, or battalions are subsystems within a bigger whole.[75] His writing style employs analogies, metaphors, and figures of speech to resonate with this paradigmatic shift. For instance, there is an analogy with the billions of neurons in a single human and how the information required to process it in twenty-four hours was similar to how the army had to process information.[76] With a contrived chumminess, Malone puts living systems thinking into the same category as the ingenuity of space travel:

> Guy name of Newton did some lab work, did some measuring, did some calculating, then developed some laws, principles, and formulas. In time, what was once just common sense about apples in October grew up into a technology that was instrumental in helping man break out through the earth's atmosphere and into the vast new frontier of space. What we see here, in this business of information flow, is a similar "growing up" of our intuitive and common sense notions of how to run an organization.[77]

Like the other thinkers, Malone's critique of technology argued that computers were essential for officers to process information, but they were not a special key to unlocking victory in war.[78] He critiqued this unambiguously when he discussed how the army's war planners with mechanical minds are fixated on the "architecture" of the battlefield but were unaware of the "chemistry" between humans and machines.[79] Ergonomics is not just about designing machines to fit a soldier's fibula

[72]Ibid., 35–6.
[73]Ibid., 58.
[74]Ibid., 35.
[75]Ibid., 33, 38, 49, *passim*.
[76]Ibid., 36, 37.
[77]Ibid., 46.
[78]Ibid., 56.
[79]Ibid., 60.

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length or hand size, but affirming their confidence that the machine will thrive under pressure.

In another paper, written with Dr Donald Penner, a social psychologist, they criticized the direct application of civilian management theory in the army; they used a biological/medical metaphor: "Doctors specializing in organ transplants know this lesson well. The receiver system often rejects the transplanted organ, even if the organ appears identical and worked just fine in the donor system."[80] Biology was a pool of terms and figures of speech that could justify their general argument against mechanical terminology.

Malone's 1983 text *Small Unit Leadership* exposed how leaders should behave and lead small groups of soldiers. It covers a range of expectations; Chapter 7, for instance, is a thirty-page "how-to" guide, from managing time to processing information to rewarding individuals to providing counsel. The thread of individual officers or small units relating to a collective whole is evident. He defines "unit" as "a whole composed of *parts put together*, a single thing." He goes on,

> This thing, like you, is alive. Like you, it has muscles—called soldiers. Like you, it has a brain—called the Company CP [command posts]. And like you, it has, linked to that brain, a nervous system that carries the information that controls and coordinates the muscles, and this is called *the leadership* of the unit … How well this thing fights, how well it can deliver steel, depends upon the muscles *and* the nerves … The leadership of the unit, which we have called the nervous system, is what organizes and coordinates the whole complex, deadly lash-up.[81]

Malone's X = H paper and book demonstrate the general ideas from LST that individual systems exist only in relation to other subsystems as a part of a wider synchronized whole.

Within a few years, system theory had become firmly lodged into the knowledge base of senior army researchers. On 8 December 1983, at the Systems Science in the Army Meeting conference, George Klir (a computer scientist and system theorist), James Miller, and Starry presented their work at the day's first plenary session on general systems theory, living systems theory, and their application in the army. Later that day, Starry's deputy, Don Morelli, gave a speech that discussed the challenges and opportunities of the army.[82] General Willam E. DePuy and Malone were in the audience, as were many others from various army departments, such as the Organizational Effectiveness Center, the Army Research Institute, and TRADOC, and from outside the army, such as the Brookings Institute and Vector Research Inc. The main conclusion was: "The outcome of the conference provides an azimuth for research to explore the potential offered by the growing systems science discipline to solve army solve [*sic*]."[83] At the Armed Forces

[80]Mike Malone and Donald Penner, "Thighbones and Bedrock," in *The Trailwatcher*, 284–8, at 284.

[81]Mike Malone, *Small-Unit Leadership: A Commonsense Approach* (New York, 1983), 42–3, original emphasis.

[82]Edgar M. Johnson and T. O. Jacobs, *Perspectives on the Utility of System Science in the Army: System Science in the Army Meeting* [7–9 Dec. 1983] (Research Institute for the Behavioral and Social Science, 1984).

[83]Ibid., vii.

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Communications and Electronics Association in 1984, Starry outlined that LST was a problem-solving device:

> People, in solving problems, use extensive background knowledge about the world's regularities to constrain the solution search. Intelligent behavior, therefore, involves application of a whole lot of background information that, in humans, is taken for granted but, in computers, must be dumped in by the bucketfuls. The human intellect can invoke mathematical theorems, apply rules of thumb, reason by analogy, apply instinct, use intuition, invoke a sixth sense, bet on the outcome, and so on—all of which requires an enormous pool of background knowledge and experience that is almost instinctively used to limit the search for solutions. What is missing, but required, to apply expert systems to the command of forces is a coherent model of what takes place, more often than not, inside living systems as they go about solving problems. So what is called for is considerable additional research in the behavior of living systems—cells, organisms, organs, organizations, at all levels, in order to develop expert systems that behave, in the main, pretty much like the living systems they are designed to emulate.[84]

The authors of the ALBD wove LST into the manual: all armed units, from a company to a division to an army group to the entire army, were a part of "complex organisms whose effective operation depends not merely on the performance of each of its component parts, but also on the smoothness with which these components interact … As with any complex organism, some components are more vital than others to the smooth and reliable operations of the whole."[85]

The 1986 edition of the ALBD conceptualized army commanders as flexible beings on the battlefield: "Operational commanders ensure systems are in place for adequate medical care, expeditious return of minor casualties to duty, and preventive medicine." Additionally, "the command and control system must permit tactical leaders to position themselves wherever the situation calls for their personal presence without depriving them of the ability to respond to opportunities or changing circumstances with the whole force." Furthermore, "Combat service support must be decentralized and readily available to sustain the elements of the main body without interruption."[86]

Smaller doctrinal documents such as FM 17-12 (1977), FM 17-95 (cavalry, 1981), and FM 17-12 (1988, combat tables) show that the latter two doctrinal documents have a concerted effort for the organization of tanks and cavalry to be coordinated and flexible. In FM 17-95, cavalry regiments should maintain organizational integrity in combat; that is, maintain squadrons as subunits within the wider regimental structure and have "centralized planning and decentralized execution."[87] It states that command posts (essentially headquarters) should have a flexible organization so that commanders can coordinate units in combat and

[84]Starry, "The Role of Knowledge-Based Systems in Command and Control," 259.
[85]FM 100-5 *Operations* (1986), "Key Concepts of Operational Design," Appendix B, 179.
[86]Ibid., 13, 22, 114.
[87]FM 17-95 (Cavalry, 1981), [Chapter 3], 7.

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plan future operations; this depends "in large measure on the commander's desires."[88] And "cavalry organizations are integral parts of larger combined arms formations."[89] It frequently considers the cavalry and related units a "system."[90] Optimism prevailed in the report about how LST could solve problems of organization and communication within the army, which, at this time, was only six years out of Vietnam. Many articles in military journals from 1982 onwards discussed maneuver warfare and, very often, the information and organizational science behind it in implicit or explicit ways.[91] What is difficult about this task is that Starry, Malone, and others remade the language of LTS for the army, so it is not easy to discern whether an article's argument or a simple phrase came precisely from LST. Nevertheless, the 1986 edition of the ALBD, written after the research on LST, gave additional weight to the initiative of leaders and units compared to the 1982 edition, with just two initial paragraphs about it.[92] The second edition also seeks greater clarity on the role that flexibility has in offensive combat operations. It has a dedicated definition and is layered with another concept throughout Chapter 6, "Fundamentals of the Offense." As this group's concerted effort applied living systems theory to the army from 1978 to 1986, other armed branches began to use it too.[93] The employment of LST in this report and others set up Army 86 studies analysis of reorganization.[94]

Individual–systems relationships in Army 86 studies

Army 86 was an idea in the woodwork of TRADOC. In the 1970s, General DePuy cautiously initiated a project led by Lieutenant Colonel John Foss to reorganize combat divisions for armor and mechanized infantry. DePuy and Foss's Division 86 instigated smaller tank platoons and improved missile and artillery cover for each maneuver battalion. In 1979, Starry lobbied Walter B. LaBerge, the undersecretary of the army, for the Army Science Board and Defense Science Board to consider "Jim" Miller's "living system theory."[95] He outlined his research question in a letter to LaBerge: "How do we run good outfits? More importantly, how do we teach the officers of the Army to run good outfits?"[96] In Starry's tenure at

[88]Ibid., 7.

[89]Ibid., ii.

[90]Ibid., [Chapter 3], [Chapter 1], 1, 10, [Chapter 3], 8, 18.

[91]Joseph R. Cerami, "Training the 1941 Louisiana Maneuvers," *Military Review*, Oct. 1987, 34–43; William Woolley, "Patton and the Concept of Mechanized Warfare," *Parameters* 15/1 (1985), 71–80.

[92]FM 100-5 *Operations* (1986), 13, 15, 17–18; FM 100-5 *Operations* (1982), Chapter 2, 2–3.

[93]R. Crawford Jr, "An Application of Living Systems Theory to Combat Models," *Naval Postgraduate School* (Defense Technical Information Center, 1981); Donn Starry, "Living Systems" Message to Dr Walter LaBerge Undersecretary of the Army, 6 June 1979, in Sorley, *Press On!*, 1: 543.

[94]Peter R. Lorena and Gordon C. Ruscoe, "A Living Systems Theory Analysis of Army Battalions Impacted by the Battalion Training Management System" (Louisville University of Kentucky Systems Science Institute, 1981); David W. Bessemer, "A Combat Gaming Method for Tank Platoon Leader Training: TRAX I" (ARI Field Unit at Fort Knox, Kentucky Training Research Laboratory, 1985); Gordon C. Ruscoe, "Application of Living System Theory to the Establishment of Process Norms in the United States Army" (TRADOC, 1981).

[95]Donn Starry, "Living Systems: Message to Dr. Walter LaBerge," in Sorley, *Press On!*, 1: 543.

[96]Ibid.

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TRADOC from 1977 to 1981, he deepened the project further and made it more his own. It fundamentally redesigned the contents of the army's units so they could operate in maneuver warfare and as more self-contained units. There were various consistent parts; the heavy division (Division 86), infantry division (ID 86), heavy corps (Corps 86), echelons above corps (EAC 86), and then contingency corps.[97] As the in-house TRADOC historian said at the time, "the aim of the Corps 86 Study was to develop the most combat effective organization for the Army's heavy corps, one that would integrate new and advanced weaponry and equipment, operational concepts, and human resources."[98] These multiauthored documents show how LST was woven into the army's general strategic thought.

Army 86 was for immediate practical use: "the AirLand Concept is not a futuristic dream to remain on the shelf until all new systems are fielded."[99] Additionally, TRADOC developed the "Central Battle Scenario" and Division 86, AirLand Battle 2000, and Army 21. "Each of these documents defined future warfare as high in lethality and high-intensity, sustained operations in the face of multi-echeloned attack, decentralization of forces operating in small high-performing groups, and extreme dispersal of small units on the battlefield having no substantive physical contact with each other."[100] Starry's Division 86 fitted into the wider Army 86 studies project because all army units became interdependent through its design.[101] Armored divisions would include six tank battalions and four mechanized infantry battalions, while mechanized infantry divisions would have five tank and mechanized infantry battalions.[102] In a speech in 1980, Starry remarked that this research on organization was going into "Corps 86 and Echelons Above Corps," which were programs that reshaped how the army could operate from a postindustrial economy and fight in maneuver warfare.[103]

In the foreground of their thought was an interpretation that post-Fordism emphasized individual initiative, that change was constantly occurring in the operational environment, and that small groups could respond flexibly to it. Starry and Meyer, the army's chief of staff, directed the designs for Infantry Division 86 to allow infantry to operate in the world on a contingent basis.[104] "The aim of the Corps 86 Study was to develop the most combat-effective organization for the Army's heavy corps, one that would integrate new and advanced weaponry and equipment, operational concepts, and human resources."[105] Corps had several

[97]Department of the Army Historical Summary: FY 1980 "Force Development, Doctrine, and Training," 23.

[98]John L. Romjue, *A History of Army 86*, vol. 2, *The Development of the Light Division, the Corps, and Echelons above Corps November 1979–December 1980* (TRADOC, 1982), 58.

[99]Conrad Crane, Michael Lynch, Douglas Bell, Jessica Sheets, and Shane Reilly, *The Force Management Challenge: Balancing Modernization and Readiness* (US Army War College, 2020), 4, 28–39.

[100]David H. Marlowe, "New Manning System Field Evaluation: Technical Report No. 1 (Department of Military Psychiatry, 1985), Chs. 3, 8.

[101]Glenn Harned, "The Principles of Tactical, Organization and Their Impact on Force Design in the US Army" (School for Advanced Military Studies, Fort Leavenworth, 1985), 20.

[102]Mike Guardia, *Crusader: General Donn Starry and the Army of His Times* (Pennsylvania, 2018), 149–50.

[103]Donn Starry, "Army of the Future US Army Materiel Development and Readiness Command Executive Seminar Atlanta", 14 Feb. 1980, in Sorley, *Press On!*, 1: 668–72.

[104]Harned, "The Principles of Tactical, Organization," 21–2.

[105]Romjue, *A History of Army 86*, 2: 58.

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divisions within them. For instance, Starry commanded V Corps (stationed near the West German–East German border by the Fulda Gap), which had three divisions, including Starry's former 11th Armored Cavalry. The hierarchy of US army units is thus: corps (consisting of two to five divisions or 40,000 troops); division (three regiments or 15,000 troops); regiment (three to five battalions or 5,000 troops). Starry and his team rewrote the Corps 86 designs so that the corps commander would be a "key warfighter," specifically to direct forces against follow-on enemy forces. Army 86 did not radically alter the numbers within a division. Instead, it changed the composition of units that made up a division. The officers argued that the ALBD and Corps 86 were not a radical way of fighting, but they changed the organization system.[106]

They designed the Army 86 studies to give the various organizations of army units the "Extended Battlefield Concept," a phrase directly from Starry's article "Extending the Battlefield." In this article, he recognized the importance of time on the battlefield.[107] "Fighting the corps battle would require thinking about space, time, and systems."[108] In sum, the Corps 86 reforms gave the US Army the greater ability to operate in the world and manage the tempo of the battle. Romjue summed it up: "the concept for US Army organization [Army 86] at echelons above corps provided for centralized planning and coordination by a theater army headquarters, and decentralized execution by a combination of subordinate, area-oriented and functional organizations."[109] Meyer, the army's chief of staff, approved Division 86 for implementation and Corps 86 as the design for NATO deployment in Central Europe. It meant that each of the army's divisions had 20,000 soldiers. Allied troops would be subsumed within this framework. The plan was that if war broke out in Central Europe, the US Army and NATO allies would fight with Starry's TRADOC ideas.

There were some parallels in Soviet strategic thought at a similar time to TRADOC's innovations. Marshal Nikolai Ogarkov, the chief of the General Staff of the USSR (1977–84), employed the term "military–technical revolution" to demonstrate that advanced computers and communications technology were radically changing organization of armies.[110] They were reacting to the US Army's doctrine. They responded to the Active Defense doctrine with the Operational Maneuver Group (OMG) to strike deep into NATO defensive lines.[111] Starry outlined its operational concepts as "mass, momentum, and continuous land combat."[112] Clearly concerned about this, he directed a staff officer,

[106]US Army Operational Concepts: The AirLand Battle and Corps 86, TRADOC Pamphlet 525-5, 25 March 1981, 2.

[107]Donn Starry, "Extending the Battlefield," *Military Review*, March 1981, 1–49, at 10.

[108]Joseph R. Cerami, "The Corps Artillery in the AirLand Battle: A Study of Synchronization, Change and Challenges" (Fort Leavenworth, 1988), 11.

[109]Romjue, *A History of Army 86*, 2: 112.

[110]Dima P. Adamsky, "Through the Looking Glass: The Soviet Military–Technical Revolution and the American Revolution in Military Affairs," *Journal of Strategic Studies* 31/2 (2008), 257–94, at 264.

[111]Donn Starry, "The Threat and Armor Development General Dynamics Corporation," 23 Sept. 1987, in Sorley, *Press On!*, 1: 120–24.

[112]Donn Starry, "Evolution of US Army Operational Doctrine Swedish National Defense Research Institute," 5 June 1984, 404.

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Lieutenant Colonel David Tamminen, to design a war game to test his concepts against Soviet doctrine.[113]

The ALBD was layered into Army 86—Starry combined the two broad concepts and specifically claimed that this combination would form the basis for a generation of "organizations, systems and equipment" throughout the 1980s and 1990s.[114] The Department of the Army Historical Summary FY 1982 lists the changes of Army 86's Division 86 for heavy divisions as being nine battalions (five tanks and four mechanized infantry) with one reserve battalion. The plan for airborne divisions was nine infantry battalions, a mobile-protected gun battalion, and a cavalry brigade as maneuver units.[115]

LST's influence on the ALBD allowed officers to solve problems more efficiently. As Starry claimed, "it seems to me the user should set his sights on those problems whose solution can save the most in time, manpower, and other scarce resources, and that do not lend themselves to simple-minded accounting procedures for solution."[116] Once again, counting exercises, be it McNamara's quantification models in the 1960s or accounting procedures to improve efficiency, were the target of Starry's lobbying efforts. The army, for him, required a new way of thinking, which LST provided in concept despite the language barriers. If the army's strategic thought would cope with this new idea, then his and others' then-nascent ideas about maneuver warfare and the ALBD would be more acceptable.

The language of doctrine ensured that its readers (principally officers) would understand the general ideas. Starry and generals Glenn K. Otis and Bill Richardson, TRADOC commanders from 1981 to 1986, designed ALBD to be flexible for officers in war. In the Army 86 studies, the Engineer Company (Infantry Brigade 86) study claimed that "rapid and bold offensive action is considered the key to success. Even against a stronger enemy … The division commander, having allotted his commanders their tasks, places greater reliance on their initiative and judgment in the meeting engagement."[117] This was the US Army language to describe *Auftragstaktik* and LST, which is, in effect, officer initiative (with information flows) and decentralized command.[118] These army officers knew that the public sector, health care, and corporations were employing LST to solve problems. For them, the new professional army had to stay relevant in the general milieu of organizational reform despite their initial apprehension about the "lore of corporate management."

The army harnessed the notions of flexibility and initiative in the new post-Fordist political economy through popular literature. There was a personal and intellectual triangle between Starry, Miller, and Alvin Toffler. Starry was friends with both; he invited Toffler to lead seminars for officers in Fort Monroe and explain his theory of the third-wave political economy. Toffler references

[113]Herbert "Deciding What Has to Be Done," 81.

[114]US Army Operational Concepts: The AirLand Battle and Corps 86, TRADOC Pamphlet 525-5, Donn Starry's Foreword.

[115]The Department of the Army Historical Summary FY 1982 (Center of Military History United States Army, 1988), 24–6.

[116]Starry, "The Role of Knowledge-Based Systems in Command and Control," 259–60.

[117]Engineer Company (Infantry Brigade 86), Chapter 2-9.

[118]Shamir, "The Long and Winding Road."

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Miller's research on information science and decision making in his pathbreaking 1970 book *Future Shock*, which popularized Miller's term "information overload."[119] He wrote the foreword for Ilya Prigogine and Isabelle Stengers's *Order Out of Chaos*, expounding how the book was an example of Toffler's emerging "third wave civilization" where instability, chaos, and spontaneous order were dominant features over uniformity and equilibrium in "machine age" science.[120] This intellectual milieu is interlinked at a practical level through the Army 86 redesign and at the conceptual level through the army's strategic thinking about the chaotic future battlefield. Starry said that the army needed to construct a new philosophy and an "ethic for the future."[121] Morelli, in 1981, argued that time was the essential element on the battlefield in maneuver warfare instead of land capture.[122] In researching and writing the ALBD (in 1982 and 1986), Wass de Czege emphasized the officer's initiative in command, channeling entrepreneurial characters of the kind that Drucker saw as resilient and flexible in a changeable political economy.[123]

Corps 86, published in early 1981 during TRADOC's engagement with LST research, argued that the command cell of a division or regiment "will be 100-percent mobile and capable of communicating with other cells and corps combat forces."[124] The words "cell," "cellular," "subcell," and "cells" appear throughout the document to refer to anything from command centers to small fighting teams to brigades who engage the enemy.[125] The commander's group as the "decision making cell will consist of the corps commander and representatives."[126] The document highlights information: "These cells must learn to exploit enemy vulnerabilities by blending the information and expertise available from all source intelligence centers and electronic warfare support elements."[127] The term "system" also exists in the document. It can refer to a system akin to a living system: "To fulfill this aim, the heavy division must have a command control system. The system coordinates maneuver forces, fire support, intelligence, air defense, combat support, combat service support, and USAF offensive air support operations."[128] The research team's general guidelines for Army 86 tried to make units more internally

[119]Alvin Toffler, *Future Shock* (New York, 1970), 314–19. See James Miller, 'Information Input Overload and Psychopathology,' *American Journal of Psychiatry* 116 (1960), 695–704; Nick Levine, "The Nature of the Glut: Information Overload in Postwar America," *History of the Human Sciences* 30/1 (2017), 32–49.

[120]Ilya Prigogine and Isabelle Stengers, *Order Out of Chaos: Man's New Dialogue with Nature* (1984) (London, 2017), xi–xxvi.

[121]Donn Starry, "Profession at the Crossroads," *US Army War College Commentary*, Feb. 1967, 16–24, in *Parameters*, Winter 2018–19, 53–62, 61.

[122]Alvin Toffler and Heidi Toffler, "'Thinking System' Replaces the Destructive Mindless Warrior," *LA Time*s, 6 March 1991, 7.

[123]Huba Wass de Czege, "Challenge the Future: Educating Field Grade Battle Leaders and Staff Officers," *Military Review* 64/3 (1984), 2–13; Wass de Czege, "How to Change an Army," *Military Review* 64/2 (1984), 33–49

[124]*US Army Operational Concept: The AirLand Battle and Corps 86*, TRADOC Pamphlet 525-5, March 1981, 34.

[125]US Army Operational Concepts: The AirLand Battle and Corps 86, TRADOC Pamphlet 525-5, March 1981, 20, 21, 22, 23, 34, 35, 36, 74.

[126]Ibid., 34.

[127]Ibid., 21.

[128]Ibid., 31, Appendix A.

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integrated and to help speed up information flow and distribute it; for example: "Reduce and simplify tactical, technical, and training responsibilities at all echelons."[129] The army dropped the specific terminology of LST but took up general biological terminology and kept the idea of interconnection and flexibility in lifeforms from LST as the basis for their strategic thought.

Conclusion: the value of mid-weight thinkers

Malone started as a private, ended his career as a colonel almost thirty years later, and died in 1995. In a letter of acknowledgment in Malone's collection of papers, Starry remarked that Malone seemed like a contradiction through being an archetypical "man of war" who loved his comrades and a scholar who valued education and ideas—he was a "prototype soldier scholar."[130] The same could be said of Starry, Wass de Czege, and all of TRADOC. All the officers had fought in the Vietnam War and were decorated for it. Afterward, they pursued intellectual careers in the army in Virginia, Kentucky, and Kansas. This career path meant that the protagonists had connections across professions. They formed connections with futurologists, organizational scientists, and management theorists. Today, these soldier–scholar types dominate the Pentagon as the imperial administrative staff of American foreign policy.[131]

The thinkers in this article are not in the canon of the history of ideas, nor do they feature heavily in the histories of strategic thought or US foreign relations. They were "mid-weight thinkers" who used ideas from the the social sciences for practical use. In a message about the failures of technocratic ideas and initiatives to a friend, Starry even called himself a "practical fellow."[132] They were unsentimental about ideas and did not have a single coherent conceptual philosophy; they were not against quantification but rather against the kind that they associated with McNamara and the failures of Vietnam. They were open about how LST did not have the right language for the army and that more generic biological terms and metaphors were needed. LST gave mission command an *American* and a *scientific* imprint. Through their research, they devised a notion of individual agency based on an understanding of synchronization and initiative. In their vision, new army officers could think for themselves in relation to how others were thinking for *themselves*. It was an individual agency in harmony with collective unity. James Miller's living systems theory was the central conceptual structure to achieve this vision.

On a final methodological note, some of the texts in this article, such as the ALBD and Army 86, are multiauthored (and often anonymized) and now exist in the army's grey literature. The general ethos of service to the army and to the United States shaped their intellectual labor because they were not writing in the

[129]Harned, "The Principles of Tactical, Organization and Their Impact on Force Design in the US Army," 19.

[130]Mike Malone, "What Others Say about Mike Malone," in *The Trailwatcher*, 297.

[131]Fred Kaplan, *The Insurgents: David Petraeus and the Plot to Change the American Way of War* (New York, 2013).

[132]Donn Starry, "Technocrat Mentality Letter to Major General Hillman Dickinson" (1978), in Sorley, *Press On!*, 2: 651.

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first instance for themselves to create a persona of a "strategic genius." The magnum opus in this article, the AirLand Battle Doctrine, was a concerted collective effort. For intellectual history, the implicit argument here decenters the great thinker in favor of figures who do not consider themselves primarily intellectuals.

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