Special Operations Research Topics 2022

U.S. Air Force Special Tactics Operators assigned to the 352d Special Operations Wing conduct cold weather operations on 5 March 2020 near Banak Air Station, Norway. The special tactics training included movement to contact, and hasty ambush-based training scenarios. Photo by U.S. Army Staff Sergeant Elizabeth Pena

The *Special Operations Research Topics 2022* publication highlights a wide range of topics collaboratively developed and prioritized by experts throughout the Special Operations Forces (SOF) community. The topics in these pages are intended to guide research projects for Joint Professional Military Education students, JSOU faculty and students, and others writing about special operations during this academic year. This research will provide a better understanding of complex issues and opportunities for growth, and contribute to the evolution of the way SOF leaders think.

Joint Special Operations University
7701 Tampa Point Boulevard
MacDill AFB, FL 33621

https://jsou.libguides.com/jsoupublications

JOINT SPECIAL OPERATIONS
JSOU
UNIVERSITY PRESS

JOINT SPECIAL OPERATIONS UNIVERSITY

Special Operations Research Topics 2022

Joint Special Operations University and the Institute for SOF Strategic Studies (IS3)

The Joint Special Operations University (JSOU) generates, incubates, and propagates (delivers and communicates) ideas, education, and training for expanding and advancing the body of knowledge on joint and combined special operations. JSOU is a 'hybrid organization' that performs a hybrid mission—we are a 'corporate university:' an academic institution serving a professional service enterprise, 'by, with, and through,' the United States Special Operations Command (USSOCOM). As such, we are both a direct reporting unit to the Commander, USSOCOM, on all Combined Joint Special Operations Forces (CJSOF) education and leader development matters, as well as the educational and leader development component of the Command.

The JSOU Mission is that JSOU prepares Special Operations Forces professionals to address strategic and operational challenges, arming them with the ability to think through problems with knowledge and insight. **Our Vision** is to constantly strive to be(come) USSOCOM's "think-do tank," world-class leader in "All Things" CJSOF strategic and operational education, training, and leader development, and the advancement of knowledge on the utility of CJSOF, for the Nation. We pursue this mission and vision through our best-practice teaching & learning, research & analysis (R&A), and engagement & service-outreach operations, activities, and initiatives. We achieve these outcomes-based goals by providing specialized joint professional military education, developing SOF-specific and unique undergraduate, graduate, and post-graduate-level equivalent curriculum, and by fostering special operations-focused R&A and outreach, in support of USSOCOM objectives and United States national and global strategic goals.

JSOU carries forward its R&A roles and responsibilities led by, and through its IS3, where our efforts are guided and informed by the most current U.S. National Security, Defense, and Military Strategies, and the **USSOCOM Mission:** *USSOCOM develops and employs fully capable Special Operations Forces to conduct global special operations and activities as part of the Joint Force to support persistent, networked, and distributed global Combatant Commands operations and campaigns against state and non-state actors, to protect and advance U.S. policies and objectives.*

Joint Special Operations University

Isaiah "Ike" Wilson III, Ph.D., HQE, Colonel, U.S. Army, Ret., *President*

Scott M. Guilbeault, Colonel, U.S. Air Force, *Vice President*

Shannon P. Meade, Ph.D., *Director, Institute for SOF Strategic Studies (IS3)*

Christopher Marsh, Ph.D., Political Science, *Director, Center for Strategic Research*

Lisa Sheldon, B.A., Advertising, *JSOU Press Editor*

Maike Buckingham, M.A., English, *JSOU Press Copy Editor*

Claire Luke, *Part-time Editor and Layout Designer*

IS3 Professors

Peter McCabe, Ph.D., Political Science, Colonel, U.S. Air Force, Ret.

Will Irwin, MMAS, Lieutenant Colonel, U.S. Army, Ret.

David Ellis, Ph.D., International Relations, Comparative Politics

A. Jackson, Ph.D., International Relations

Mark G. Grzegorzewski, Ph.D., Government

Special Operations

Research Topics

2022

On the cover. U.S. Air Force Special Tactics Operators assigned to the 352d Special Operations Wing conduct cold weather operations on 5 March 2020 near Banak Air Station, Norway. The special tactics training included movement to contact, and hasty ambush-based training scenarios. Photo by U.S. Army Staff Sergeant Elizabeth Pena

Back cover. A U.S. Air Force Special Tactics Operator assigned to the 352d Special Operations Wing (SOW) fires an M4 rifle during a live-fire training exercise on 5 March 2020 near Banak Air Station, Norway. The 352d SOW was invited to join Norwegian forces to train together to enhance warfighter capabilities in challenging arctic and mountainous terrain. Photo by U.S. Army Staff Sergeant Elizabeth Pena
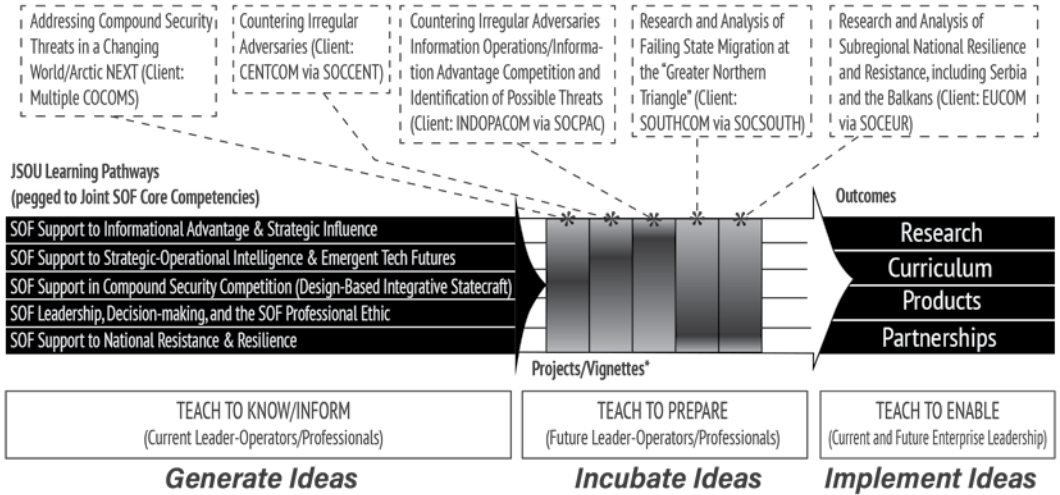
Contents

Foreword

The Joint Special Operations University (JSOU) provides Special Operations Forces (SOF) education for joint, interagency, intergovernmental, and multinational students and educators to develop agile leaders who think differently, critically, and creatively to adapt to the future SOF operating environment. JSOU's mission is to prepare SOF professionals to address strategic and operational challenges, arming them with the ability to think through problems with knowledge, insight, and foresight. This is accomplished through specialized joint professional military education (JPME) and by fostering special operations research—research that will be shaped by the research topics contained within the covers of this publication. In this way, JSOU helps place SOF at an advantage to cognitively outpace competitors in operational and strategic environments, producing an intellectual overmatch strategic-mindedness within the current and future SOF leader-operator, and across the joint SOF Enterprise.

The *Special Operations Research Topics 2022* publication highlights a wide range of topics collaboratively developed and prioritized by experts throughout the SOF community. The topics in these pages are intended to guide research projects for JPME students, JSOU faculty and students, and others writing about special operations during this academic year. This research will illuminate blind spots, provide a better understanding of complex issues and opportunities, and contribute to the evolution of the way SOF leaders think.

This year's publication is unique from previous volumes in a way that will prove "watershed" in joint special operations force education, leader preparation, and leader development with the additional inclusion of JSOU's "Learning Pathways"—five joint SOF common core competency knowledge arenas.

With concurrence from enterprise commanders and command senior enlisted leaders, JSOU has identified five mutually reinforcing learning pathways. These pathways illuminate and advance learning in five identified Joint SOF Common Core Knowledge Competency arenas. The meta-frame uniting these pathways is the focused set of unique capabilities USSOCOM possesses that can be employed to gain irregular warfare asymmetric and

JSOU Learning Pathways in Action

Addressing Compound Security Threats in a Changing World/Arctic NEXT (Client: Multiple COCOMS)

Countering Irregular Adversaries (Client: CENTCOM via SOCCENT)

Countering Irregular Adversaries Information Operations/Information Advantage Competition and Identification of Possible Threats (Client: INDOPACOM via SOCPAC)

Research and Analysis of Failing State Migration at the "Greater Northern Triangle" (Client: SOUTHCOM via SOCSOUTH)

Research and Analysis of Subregional National Resilience and Resistance, including Serbia and the Balkans (Client: EUCOM via SOCEUR)

JSOU Learning Pathways
(pegged to Joint SOF Core Competencies)

- SOF Support to Informational Advantage & Strategic Influence
- SOF Support to Strategic-Operational Intelligence & Emergent Tech Futures
- SOF Support in Compound Security Competition (Design-Based Integrative Statecraft)
- SOF Leadership, Decision-making, and the SOF Professional Ethic
- SOF Support to National Resistance & Resilience

Projects/Vignettes*

Outcomes

- Research
- Curriculum
- Products
- Partnerships

TEACH TO KNOW/INFORM (Current Leader-Operators/Professionals)	TEACH TO PREPARE (Future Leader-Operators/Professionals)	TEACH TO ENABLE (Current and Future Enterprise Leadership)
Generate Ideas	*Incubate Ideas*	*Implement Ideas*

* AFRICOM/SOCAF is anticipated as a future effort encompassing all JSOU Learning Pathways in equal focus, estimated to begin within 12–18 months.

The Joint Special Operations University has created new learning pathways, directly linked to, and supporting, Joint Special Operations Forces core competencies. The pathways are realized via a series of programs (or "vignettes") selected to meet COCOM client priorities, supporting research and analysis, curriculum improvement, tangible products, and enhanced partnerships across the Joint, Interagency, Intragovernmental, Multination and Commercial enterprise.

Research: Applied research on Irregular and Asymmetric Warfare, integrated sciences and complex adaptive systems for models to improve operations planning.

Curriculum: Develop modular materials for the military professional to include using research and analysis, stakeholder engagement, critical thinking, and advanced communication tools in education.

Products: Peer-reviewed publications, the NEXT Navigator—an integrated research, teaching and decision-support tool for SOF Leaders-Operators to work and conduct experimentation across DOD and USG partners, monographs and war games/adaptive exercises and applied scenario testing.

Partnerships: A Joint, Interagency, Intragovernmental, Multination and Commercial and Services scenario-building process to build and enhance trust relationships across key SOF partners, stakeholders, and allies.

Sharpening the Edge of SOF's Advantage: the Next-Generation SOF Professional."

informational advantages over competitors and adversaries across the entire competition continuum, with special focus on gray zone competitions.[1]

The pathways cover a broad array of knowledge including 21st century information advantage, emergent technology that enables and informs at the strategic-operational level, advanced application of resistance and resilience theory, designed-based integrative statecraft, and ethically-sound leadership and decision-making concepts and methodologies. The learners who journey along these pathways will serve as enterprise future experts and thought-leaders whose knowledge competencies will benefit current and future joint, interagency, interorganizational, and multinational cross functional efforts across the spectrum of cooperation, competition-conflict, and war.

Combined, these research topics are organized to support the special operations priorities of the Commander, United States Special Operations Command. This list of topics was generated from recommendations solicited from the USSOCOM headquarters staff, theater special operations commands (TSOCs), component commands, SOF chairs from the war colleges, select research centers and think tanks, as well as from the independent and collective study group-based research of the JSOU professorate. The topic submissions were then reviewed, revised, and ranked at the annual Special Operations Research Topics Workshop. That workshop produced the first draft of this comprehensive list of issues and challenges of concern to the greater SOF community. This publication was reviewed and vetted by USSOCOM headquarters, TSOCs, and component commands prior to publication.

The challenge to, and duty of, the SOF community is to use their intellect to ignite new ideas and lead the way as a catalyst for innovation. These research topics provide a head start on deciding where to focus your research effort. Once your research is complete, send your findings to the JSOU Institute for SOF Strategic Studies via email at jsou_research@socom.mil.

Isaiah "Ike" Wilson III, Ph.D.
President, Joint Special Operations University

Introduction

The Joint Special Operations University (JSOU) publication of *Special Operations Research Topics 2022* represents a list of Special Operations Forces (SOF)-related research topics proposed by and coordinated with the United States Special Operations Command (USSOCOM) headquarters, theater special operations commands, and components. The purpose of this booklet is to recommend research topics so the resulting research can provide insight and recommendations on issues and challenges facing the SOF enterprise.

Section A (priority topics) identifies topics of significant importance that have impacts across the SOF enterprise. These topics have been selected from sections B through G and focus on the USSOCOM Commander's priorities. SOF as a Profession (section B) is described by the JSOU President, Dr. Wilson, as "SOF's utility remaining exquisite, proactive, and on solving problems, and in ways that bring no moral injury to itself or the nation." As the USSOCOM Commander General Clarke posits: "we train staffs for what they need to know, now … we educate leaders for what they need to know and how they need to think, for the future."[2]

Artificial Intelligence and Big Data (section C) are those areas that best support moving SOF in the direction of artificial intelligence and machine learning. This will be accomplished by making the SOF professional (not just the operator) data aware (not data scientists) and knowledgeable of the enabling opportunities data provides.[3] China, Russia, and Strategic Competition (section D) addresses those issues the USSOCOM Commander describes as a reframing of how SOF understand the global system. "For SOF, this requires us to reinforce core competencies in irregular warfare, foreign partner capacity building, clandestine activities, and information operations."[4]

Section E addresses Resistance Movements and Special Operations Support to Resistance. To fulfill its role in strategic competition, SOF must develop and employ optimum special warfare skills to help build partner capacity in resisting and countering subversion and armed aggression by authoritarian states. The U.S. might also choose to support foreign armed resistance or nonviolent civil resistance movements when U.S. interests are

at stake. Such operations will likely require support from the Services and collaboration with joint, interagency, intergovernmental, and multinational partners. The goal of the topics in this section is to challenge researchers to explore ways in which SOF can improve existing capabilities or develop and benefit from new approaches.

Cyberspace: Operations, Espionage, and Influence (section F) is a broad area of study that will be a key component in the global efforts of SOF with a focus on operations, oversight, and management. SOF needs to possess a deterrent capability against indirect, attrition-style competition and conflict that is largely played out in the gray zone. Finally, Other Special Operations Concerns (section G) is a catch-all section that covers those important issues not addressed in the previous sections. SOF is a capability providing certainty against specified and unspecified outcomes that the nation wishes not to occur.

These topics reflect a consensus of the SOF experts who participated in the research topics workshop as being particularly worthwhile in addressing immediate SOF needs and in building future capacity for emerging challenges. Please share this reference with fellow researchers, thesis advisors, and other colleagues and feel free to submit additional topics for consideration in future research topics publications. You may also visit our website (https://jsou.libguides.com/jsoupublications) to see if JSOU has a publication that relates to your area of interest. We encourage you to send us your completed research on these topics.

A Note on the Relevance of Previous Years' Topics Lists

Previous years' research topics lists provide a repository of issues that may continue to have research relevance—especially the prior year's list. Previous editions of these publications (2009 through 2021) are available at: https://jsou.libguides.com/jsoupublications.

A. Priority Topics

Topic Titles (in no particular order)

A1.   Special Operations Forces (SOF) Ethics
A2.   The Promise of Artificial Intelligence (AI)-Assisted
       Decision-Making
A3.   The Utility of SOF in Strategic Competition
A4.   Civil Resistance in the Future Operating Environment
A5.   Influence Operations
A6.   Fixing Special Operation Forces Command and Control (C2)

Topic Descriptions

A1.   Special Operations Forces (SOF) Ethics
Topics area: SOF as a Profession
In the wake of significant public news stories related to ethical failures by special operators and publication of the United States Special Operations Command (USSOCOM) Comprehensive Review, the role that SOF play within the greater context of the American military values is in question. While the Comprehensive Review emphasizes structure and procedural causes for ethical misbehavior in SOF, some scholars argue that the relationship between duty and mission success is more paradoxical given that many SOF formations emphasize use of deception that introduce an ethical "gray area."

Where do similar paradoxes exist in other professions and how might SOF learn from them? How do the traditional roles of ethical teaching (judge advocates and chaplains) resonate with SOF operators and are there untapped options for shaping the ethical narrative and ethical decision-making in SOF? What are the sources of ethical misbehavior? If ethical drift occurs after SOF selection and training, how can USSOCOM prevent it? What are the ethical challenges in SOF operations and are they being properly identified and mitigated? How can SOF measure ethical performance in SOF? How do SOF leaders impact ethical decision-making at the tactical, operational, and strategic levels?

A2. **The Promise of Artificial Intelligence (AI)-Assisted Decision-Making**

Topic area: AI and Big Data

For the SOF enterprise to use AI and Big Data capabilities for strategic effect, it must first begin with a theory of SOF's utility to national security generally, and the military specifically, and then determine how AI and Big Data solutions augment SOF operations. To what extent are the potential values of AI and Big Data capabilities to the SOF enterprise dependent on the value of SOF to the joint force in the future operating environment? What are the theories of special operations in the future operating environment, and how do different AI and Big Data modeling capabilities augment those theories? Are the theories principally rooted in engineering and natural sciences or in the social sciences? What is the state of the art with each application and what are their decision-making limitations? How can AI assist in decision dominance over adversaries and provide greater visibility, understanding, and decision dominance through team-level to access national-level sensor systems and information?

SOF will need improved cognition to digest information produced at high rates of speed by AI and Big Data solutions while keeping the human in the loop as the ultimate decision-making authority. What skills, training, and/or institutional support might become necessary for SOF to make sense of and appropriately employ AI and Big Data produced decision-making recommendations? For which kinds of applications is it appropriate to allow algorithms greater independent decision-making or decision structuring, and for which is it inappropriate? What is the appropriate level of autonomy for processes such as social science modeling, sentiment analysis, disinformation analysis, event forensics, and trend analysis? What are the best practices for crafting good questions so that data science teams can design useful solutions and appropriate decision-making criteria? What AI and Big Data best practices from non-Department of Defense organizations could be incorporated into open-source intelligence analysis and influence production activities as well as operationally focused, open-source research?

Due to years of persistent deployment, SOF have volumes of intelligence, surveillance, and reconnaissance data and video feeds that

could be used to establish routine and abnormal activity, but the available human capital simply cannot process it. Alternatively, SOF are often called upon to quickly mobilize to environments for which there is limited sociocultural intelligence. How might SOF utilize the system of Big Data analytics (owned capability, universities, think tanks, industry) to assist in change detection of available data to compensate for the limited personnel relative to the volumes of collected data? What can longitudinal analysis of topography/human geography over time (20-30 years) contribute to SOF effects at the tactical, operational, and strategic levels? What might applied case studies consist of? What can be learned through different scenarios with practical examples? To what degree can urban environments be mapped and modeled based on AI- and Big Data- driven infrastructure and pattern of life assessments? How does human geography utilize AI and Big Data to generate sociocultural, political, environmental, digital, and energy-oriented analyses of populated spaces?

Although many authoritarian societies now seem to be developing near total control over their populations through a mixture of social media, behavioral economics, and Big Data analytics, flaws always lurk in algorithms. How might authoritarian governments' reliance on AI and Big Data analytics to maintain sociopolitical control introduce vulnerabilities in their systems? Are authoritarian and increasingly totalitarian societies introducing governance risk in their societies by relying on algorithms that focus on certain factors while overlooking others? What can be gleaned about the Chinese and Russian willingness to rely on Big Data analytics and AI in their decision-making processes? Are there case studies that could prove insightful about their use of AI and the possible strengths and weaknesses in their approaches? What evidence about the utility of AI and Big Data in authoritarian governance should be the subject of collection for analysis? What trends are evident in how authoritarian governments employ AI and Big Data? What evidence would falsify the theory that Big Data analysis and AI will enable authoritarian regimes to control their populations more tightly? How might unconventional warfare (UW) principles be employed for environments where authoritarian regimes use Big Data for population control? How might introducing complexity to undermine algorithmic effectiveness complicate

authoritarian regimes' ability to control populations through Big Data and AI analytics? How does the need by some authoritarian regimes to have extensive populations outside the home country undermine the ability of Big Data and AI techniques to control expatriate and emigrant populations?

A3.   The Utility of SOF in Strategic Competition
Topic area: China, Russia, and Strategic Competition
The current posture of the U.S. military is one that is focused on large-scale combat operations and the potential for inter-state rivalry, particularly between the U.S. and its strategic competitors, i.e., Russia and China. While SOF will continue to conduct its primary missions (e.g., foreign internal defense (FID), counterinsurgency (COIN), and counterterrorism), it must also find ways that it can contribute to the fight—perhaps in strategic ways—if great power conflict does erupt. Short of that possibility, SOF can also play a deterrence role or engage in operations below the level of armed conflict. Within the realm of competition, what are SOF activities that could support the overall joint force in the deterrence of large-scale armed conflict and/or escalation of crisis? What are different ways SOF can have utility in strategic competition, and how can they be researched? Can historical case studies of the Cold War-era help shed light on the current situation? Or must researchers use their imaginations to conceive of ways new technologies (including cyber and AI) may be employed both in operations below the level of armed conflict and in inter-state conflict? These and other research approaches can help us understand the role of SOF in strategic competition.

A4.   Civil Resistance in the Future Operating Environment
Topic area: Resistance Movements and Special Operations Support to Resistance
In an increasingly complex, interconnected, and globally scaled infor-mation environment, dispersed individuals, groups, and ideas can challenge the narrative, and hence sovereignty, of the state through virtual means, with little-to-no physical presence or footprint. Social media sensationalized (or fake) news, and other forms of propaganda can impact perceptions, beliefs, attitudes, behaviors, opinions, and

correspondingly, the decisions of the public, as well as government and private officials. Dr. Yaneer Bar Yam, professor and president of the New England Complex Systems Institute stated several years ago that "one of the biggest challenges we face (to the status quo) is the disaggregation of individuals, groups, communities, etc., into a global collective where people assimilate around a common idea or interest irrespective of their physical location, thereby weakening the tie between the citizen and the state, and correspondingly eroding national identity."[5] This could impact SOF core activities in a number of ways, in particular FID, COIN, and UW.

How would these special warfare activities be conducted via virtual means, either in whole or in part? Presumably, the knowledge, skills, and abilities of the SOF soldier would need to change to account for the "language and culture" of the virtual world, not to mention the general scheme of maneuver or mission profile where the skills imparted on the partner or proxy to protect their national interest (FID/COIN) or enable a "war of movement" (UW) would be cyber-centric, and the training, advising, and assisting of those skills could be done physically or virtually, or in hybrid fashion. How can the U.S. Government influence dissident population groups engaged in civil resistance in foreign countries? How can SOF circumvent foreign government internet blockages or firewalls to communicate with dissident or resistance groups? What are the security challenges and risk factors associated with virtual or partially virtual special warfare operations such as FID, COIN, UW, or military information support operations? What are the doctrinal, organization, training, materiel, leadership and education, personnel, facilities, and policy considerations and requirements for SOF to gain a virtual special warfare capability?

A5. **Influence Operations**
Topic area: Cyberspace—Operations, Espionage, and Influence
Given the current and anticipated future demand for information-related operations, actions, and activities, and a corresponding delta in resources to source that requirement, continental U.S. (CONUS)-Based Operational Support (CBOS) must be considered given the ubiquitous nature of information and methods of rapid global

dissemination. How can SOF increase knowledge of information capabilities that are applicable within a theater? How do tactical and operational actions tie into an offensive strategy? How could this be integrated into geographic combatant command and theater special operations command information campaigns? What CBOS capabilities can SOF provide that will complement existing joint force and U.S. Government information capabilities (e.g., Department of State Global Engagement Center, Joint Military Information WebOps Support Engagement Center, etc.)? How important is an active, offensive strategy and accompanying narrative relative to a defensive and/ or reactive approach that pushes a counternarrative to achieve U.S. goals and objectives? How can SOF access denied areas to influence friendly, neutral, and enemy populations and actors? How can SOF achieve expanded capabilities to influence adversary, partner, and neutral actors and groups?

A6.   **Fixing Special Operation Forces Command and Control (C2)**
Topic area: Other Special Operations Concerns
The expanded and sustained use of SOF across the global conflict zones (inside and outside) has challenged traditional SOF approaches to C2. Whereas in the past a joint special operations task force was usually sufficient and was easily aligned within the joint force C2 structure. Today the scope, character, and complicated authorities of operations demand new approaches to C2. This is not a new challenge and has been a major focus for USSOCOM Commanders since 9/11.

What is the appropriate C2 structure for special operations that are designed and conducted for transregional effect? How might C2 structures be designed to maximize decentralized execution while mitigating strategic risk? How might SOF better integrate with the joint battlespace owners to minimize risk, increase integration, and maximize effects? How might new approaches to C2, including CONUS support, reduce the footprint and manning bill for SOF C2? What existing law, policy, and doctrine complicate or enable effective SOF C2? How does USSOCOM generate C2 headquarters now, and how might new models produce more effective and sustainable structures? How can SOF create joint, integrated C2 structures to enable greater information sharing and common understanding

among partners? How can SOF identify multiple, redundant, and often nonstandard C2 architectures? How can SOF create expanded distributed operations globally with fewer personnel forward as well as a flexible headquarters C2?

B. Special Operations Forces (SOF) as a Profession (Ethics and Culture)

Topic Titles (in no particular order)

B1.   SOF as a Separate Service
B2.   SOF and Cross-Generational Leadership
B3.   The Strategic Impacts of Misinformation and Disinformation

Topic Descriptions

B1.   SOF as a Separate Service
In November 2020, the acting Secretary of Defense implemented reforms "elevating Special Operations Forces (SOF) to a level on par with military departments as authorized and directed by Congress."[6] The role that SOF should occupy within the Department of Defense (DOD) remains a function of SOF utility, access to necessary resources for SOF operations, varying operational authorizations across the geographic combatant commands, and law. How should SOF "right size" its relationship with the DOD? How do SOF formations contribute to the overall American defense? What strategic level is most appropriate for SOF? Would SOF as a separate Service offer a greater strategic edge? What is the cost analysis of SOF as a separate Service? What are the strategic options for SOF at the DOD level?

B2.   SOF and Cross-Generational Leadership
Americans 25-years-old and younger make up the greatest percentage of the Armed Forces[7] and SOF are becoming increasingly more representative of the global population. They are more capable with technology, have unique expectations of their leaders, and lead differently. The potential for the youngest generations to positively impact SOF operations across the globe demand consideration. Long-standing leadership styles might no longer serve the best interests of the current military force. Likewise, the leadership styles of the younger generations might serve as an effective guidepost for inspiring leadership in developing countries where SOF are most challenged.

How do Service members 25-years-old or younger respond to traditional military styles to include hierarchical and directive? What leadership styles are best suited for the younger generations? How might older generations understand the needs of the younger generations? What are the leadership responsibilities for older and younger generations? What is the true value of leadership expectations (those 25-years-old or younger) both within SOF formations and when working with partner forces as part of global theater special operations command operations in developing countries? How do SOF teach alternative leadership styles to older generations? What are the strengths and weaknesses of different leadership styles in SOF both for internal and external audiences? What leadership styles are employed by older and younger generations? Where does SOF learn how to lead partner forces? How is partner force leadership distinct from traditional military leadership?

B3. **The Strategic Impacts of Misinformation and Disinformation**
Accurate information is critical to understanding the world to make effective strategic decisions. The rise of misinformation and disinformation, access to sensational, hyperbolic, and exaggerated reporting, through worldwide news sources, social media and artificial intelligence (AI)-driven media adds to the complexity of how the American people, members of the American government, and military leaders see the world. The storming of the U.S. capitol on 6 January 2021, is one example of how incorrect information derived from these sources is used to develop collective identity for the pursuit of collective action, resulting in unusually acute strategic divisiveness for both domestic and international audiences.

How can SOF leaders who engage in information operations formally or informally differentiate between what is and is not real? How can SOF inoculate themselves and the nation from the effects of disinformation created and disseminated for divisive purposes? How can SOF leaders avoid becoming inappropriately biased by this information? How can SOF leaders prevent the negative effects of misinformation and disinformation? What is the impact of social media and the spread of misinformation and disinformation on the American identity? What is the impact of social media and the spread

of misinformation and disinformation on SOF leadership? How has social media and widespread misinformation and disinformation already impacted SOF decision-making? What role can and should SOF play in mitigating the effects of social media and misinformation and disinformation for the American public, for the American political process, and for the strategic SOF mission?

C. Artificial Intelligence (AI) and Big Data

Topic Titles (in no particular order)

C1.   The Limits of AI and Big Data Technology
C2.   Administrative and Logistics Applications of AI and Big Data Techniques
C3.   The Frontiers of AI Visualization and Interfaces
C4.   Educational Innovations for a Data-Savvy SOF Culture
C5.   Structural Innovations for a Data-Savvy SOF Culture

Topic Descriptions

C1.   The Limits of AI and Big Data Technology

The Special Operations Forces (SOF) enterprise is placing a tremendous amount of faith in AI and Big Data approaches to complicated and wicked problems. However, data scientists recognize that the fundamental nature of challenges determine whether AI and Big Data are likely to produce the desired effects. What assumptions currently pervade military culture about AI and Big Data that, from a social science perspective, are inaccurate and counterproductive? What are the differences in AI and Big Data applications depending on whether the challenge is fundamentally an engineering question or a sociopolitical one? What are the limitations of AI and Big Data techniques in irregular warfare as a sociopolitical exercise and, therefore, their appropriate use as tools? What is the impact of limited data on training models and developing reliable tools, especially in sociopolitical applications? What is the impact on generating reliable training data results from needing answers quickly and without prior curation?

Technology components underlying AI and Big Data infrastructure can be easily counterfeited and are hard to trace beyond three or four degrees of final manufacture. Moreover, overreliance on technology can cause key low-technology skills to atrophy without regular use. What cultural and supply chain risks or threats are introduced to SOF if it becomes reliant on AI and Big Data technology? To what vulnerabilities do SOF expose themselves by relying on AI and Big Data capabilities in the field? What are the costs versus benefits that

should inform risk calculations on whether to use AI and Big Data capabilities in forward deployed environments? Would a cultural reliance on technology introduce fragility to SOF by creating a single point of failure an adversary could exploit? How might partner and ally reliance on AI and Big Data technology introduce vulnerabilities affecting U.S. SOF operations?

Algorithms are very susceptible to manipulation through the introduction of poorly curated, inappropriately collected, or purposefully doctored data. What techniques could SOF employ to limit or prevent response bias unconsciously embedded in reporting that could skew results once fed into AI and Big Data analytical models? What techniques should SOF employ to ensure that data feeding AI and Big Data algorithms prevent confirmation bias due to biased reporting from prominent analytical frameworks diplomatic, information, military, and economic/political, military, economic, social, information, and infrastructure/areas, structures, capabilities, organization, people, and events, etc. or from SOF cultural emphasis on certain factors at the expense of other, possibly more important, ones? How might social science methodology be taught to the SOF enterprise to ensure AI and Big Data algorithms are populated with reliable data?

The growing military reliance on AI is undisputed, and many future kinetic, intelligence, surveillance, and reconnaissance, and analytical capabilities will incorporate it into their processes. What evidence exists to support the assumption that AI and Big Data applications will provide SOF an edge in achieving strategic political effect? What evidence exists to the contrary? While conventional and elite kinetic forces might require such advances, is it necessarily accurate to assume the strategic effect of SOF is rooted in this transformation as well? Under which circumstances does AI contribute to tactical action for strategic effect? Under which circumstances is it inapplicable?

Much of the SOF enterprise has internalized find, fix, finish, exploit, analyze, and disseminate as its driving mechanism to deny, degrade, disrupt, or destroy enemy networks. The "counter-" culture is visible in Joint Publications, such as Counterterrorism, Countering Threat Networks, Counterinsurgency, and with other concepts,

such as counter-influence activities. AI and Big Data analytics are often asked to provide faster processing and insight on the volumes of available data in the effort to overwhelm an adversary's ability to reconstitute network capabilities. To what extent is the fascination with AI and Big Data analytics rooted in a counter-network (or "counter" more broadly) culture? Does an initiative-oriented, shaping culture yield the same imperatives or questions? Which current popular questions and capabilities about AI and Big Data are unconsciously rooted in a "counter" culture? Are the assumptions underlying a "counter" orientation sufficient to generate sustainable strategic effect? How might questions and capabilities for AI and Big Data applications be reframed with an initiative-oriented, shaping culture? Which questions and capabilities are useful for both a "counter" and a "shaping" oriented culture? What skills and ways of thinking are useful for each? What impact on data science teams would derive from an initiative-oriented, shaping culture as opposed to a "counter" culture?

If the future operating environment is to become heavily reliant on both AI and Big Data for capabilities and partners and allies for conducting missions, then it stands to reason that both elements have to be synchronized for operational and strategic effect. To what degree are U.S. SOF AI and Big Data capabilities interoperable with partner and allied SOF capabilities (or even U.S. interagency capabilities)? Are U.S. and partner and ally data science teams operating at the same skill levels? Are the data science team techniques and training identical to that is U.S. SOF or in what ways do they differ? Will AI break down the cultural barriers or do different cultures experience AI and Big Data interfaces differently (trust, comfort with visualization, etc.)? What institutional deficiencies might prevent partners and allies from keeping pace with AI and Big Data changes, and what operational impacts might result? What limitations might a divergence on U.S. and partner and ally capabilities present to commanders if they struggle to create a common operating picture? What differences in how U.S. interagency partners utilize AI and Big Data are likely to result in operational challenges? What cultural and institutional adaptations can be generated to compensate for U.S. interagency competencies with AI and Big Data applications? What

does alignment between U.S. SOF and interagency, partners, and allies require from a process perspective? How can SOF leverage AI in joint fires, command and control, logistics, information advantage as well as disrupt adversary AI with data manipulation?

C2. Administrative and Logistics Applications of AI and Big Data Techniques

Although much of the SOF enterprise wants to apply AI and Big Data technology against operational requirements, there is often limited, unstructured, incomplete, disaggregated, or poor data available for algorithmic development and training. Moreover, even when insight can be generated, permissions to operationalize are often not forthcoming. Alternatively, administrative, logistics, and maintenance records are typically complete, structured, and reasonably accessible, which makes them perfectly suited to AI and Big Data analytical techniques with no political risk. What efficiency gains and cost savings might the SOF enterprise experience by applying AI and Big Data analytical techniques against its already structured and accessible databases? What can the SOF enterprise learn from the commercial sector on how to utilize personnel data to improve performance, promotion, or family resilience through AI and Big Data analytics? How might the SOF enterprise adapt AI and Big Data logistics capabilities developed by commercial providers for SOF operations? How might SOF make use of industry-leading maintenance programs to improve fleet reliability and/or project costs for acquisitions? How can SOF leverage AI in logistics and sustain distributed activities in contested environments and denied areas beyond the reach of legacy logistics?

C3. The Frontiers of AI Visualization and Interfaces

AI-based capabilities to process Big Data will undoubtedly be essential for SOF in the future operating environment by presenting processed information in intuitive, easily digestible, and actionable ways. What are the best visualization and interface techniques that allow SOF to leverage AI to distill vast information and succinctly present it or use it to counter the adversary's use of the same capabilities? What are the theory's underlying effects that allow modeling and visualization to work seamlessly? What variables/factors are consequently

dismissed as unimportant in the models/theories, leading to potential blinders? How can SOF personnel become aware of each model's inherent biases and blinders as they change roles and responsibilities and start using preexisting systems? How might visualization and interface technologies alert users to the purposeful choices of what is presented—and more importantly—not presented in AI and Big Data capabilities?

The volumes of data now available to the SOF enterprise outpaces human capacity and expertise to process it all. AI and Big Data analytics are necessary to curate and process the data for meaningful, timely analysis, and decision-making. How can AI be used to mitigate cognitive overload (e.g., sensor feeds, video/photo/document analysis, data mining, or social media)? What kind of training environments will help users of decision-orienting interfaces keep pace with the AI? What will allow the user to develop the muscle memory or anticipate the behavior of AI and compensate for factors left out of the models? How might visualization and interface training modules improve the observe and orient aspects of the observe, orient, decide, and act (OODA) loop by practicing scenarios where the AI returns patterns/results that allow the user to anticipate how to deal with a situation? What best practices might be derived from the cognitive sciences on how to adapt human responses to AI-based compression of time in an OODA loop cycle? How might neural enhancements play into potential solutions? What are the ethical concerns associated with potential neural enhancements? How does adversary research in neural enhancement factor into U.S. decision-making on such issues? Does the compressed news cycle require a similar AI and Big Data OODA loop training response or interface? Does an emphasis on "counter" activity place a different level of emphasis on getting into the OODA loop as opposed to initiative-oriented "shaping" activity?

C4. **Educational Innovations for a Data-Savvy SOF Culture**
Unlike the military, Silicon Valley companies that use data effectively are organized around a data-centric culture. What kinds of concepts need to be taught to SOF to create a data-centric culture, and at which points in a career should such concepts be introduced to personnel? According to what designations might United States

Special Operations Command (USSOCOM) personnel and SOF be divided for educational and training requirements with respect to AI and Big Data based on role and position, for example expert, journeyman, apprentice, or general public? What institutional changes would need to be implemented across the components and headquarters to generate a data-centric culture?

As AI becomes more prevalent in decision-making analytics, humans will need to reflexively and intuitively anticipate systems' decision-making results to keep pace with the information presented to them. What is the ideal education and/or training program to improve human cognition relating to decision-making that improves an individual's response time to AI-based visuals or interfaces, minimizes bias and logical fallacies, and increases one's working memory to make better decisions in a compressed time frame? What is the state of the art in AI interface education and training, and how might SOF incorporate it for the operational force? To what extent is the challenge rooted in knowledge or repetitive experience and practice? What must personnel know about the interface to account for possible bias incorporated into specific AI algorithms? How can SOF flexibly tailor education to the individual and team needs for more creative, unorthodox, appropriate, and effective problem solving? How can USSOCOM influence SOF officer and senior noncommissioned officer career progression for better education, placement, hyper-enabled team management, and language, regional expertise, and culture training/education services?

C5. Structural Innovations for a Data-Savvy SOF Culture

Since most challenges tackled by AI and Big Data capabilities are unique and require subject matter experts (SMEs) to model, data science teams serve as the foundation of the technology. How might the SOF enterprise structure itself to leverage a Big Data "ecosystem" rather than own all the capability? With SMEs and data scientists in short supply, how can the SOF enterprise generate sufficient capability to meet all its requirements? Rather than attempting to acquire independently all the necessary elements of data science teams, might working through a collaborative, federated "ecosystem" serve the needs of SOF? How does integrated campaigning contribute to

creating mutually beneficial outcomes by having other organizations embed their AI and Big Data capabilities within the SOF enterprise or vice versa? In what ways might SOF attain the capability without paying for it, but provide the sending organization tangible benefits from embedding personnel? How might the SOF enterprise build a systems model of "need-to-know" from the requester to the data team to the collector and back to the user/requester such that the educational and training requirements match the use competencies at each stage? In other words, how does the system ensure the appropriate level of education and technical competency at each stage of the process so that the operator does not have to be a data scientist? What are best practices for assessing actual Big Data team needs and then taking inventory of available assets? Is a USSOCOM resident capability different than perhaps a Service requirement? What might USSOCOM learn from the Services in terms of data science personnel management and what gaps might it have to fill on its own? What role might contractors play in the AI and Big Data ecosystem—a primary, secondary, and augmentee capacity? What is beyond the USSOCOM/SOF purview/organic requirement in developing AI and Big Data capability? What is United States Cyber Command's responsibility in this regard and how does USSOCOM work with it to ensure the proper forces are provided? What must SOF own to conduct future operations and what must SOF not attempt to own to avoid diluting its limited resources? What might be the benefits and costs of embedding SOF liaisons or students at universities or in the commercial sector to generate AI and Big Data analytics or a talent recruiting pipeline? To what extent should professional military education institutions cultivate data science talent as part of a larger subject matter expertise and data science ecosystem that could bridge the military-industry divide?

The future operating environment may call for increased AI and Big Data capability requirements for SOF. Effective government (i.e., civilian and uniformed military) data scientists possess a unique skill set that is difficult to obtain and offers lucrative opportunities in the private sector. What best practices on recruitment and retention have been learned over the past five years to cultivate and retain Big Data team members? To balance opportunities for members (e.g.,

promotion, career progression, bonuses) and maintain operational capability, how can the Services and USSOCOM best manage their trained AI and Big Data personnel? What AI and Big Data trend indicators should SOF focus on for a recruitment and retention strategy regarding SOF-competent, AI, and Big Data trained personnel? Is a typical military career sufficient for generating AI and Big Data capable personnel, or does a new concept of recruitment and retention need to be conceived to blend military and industry experience? Is the restoration of a system similar to the Army's former specialist track appropriate? Is a warrant officer track appropriate? What can the Department of Defense and USSOCOM offer AI and Big Data personnel that the private sector cannot? How might SOF encourage greater creativity and innovation among its Big Data personnel to achieve effects and generate job satisfaction and stay in the force? How might Reserve and National Guard Service complement/augment SOF AI and Big Data operational force requirements in nontraditional ways? What skills and knowledge of AI and Big Data are required by SOF operators based on technology trends?

Generating a data-savvy SOF culture will likely require emerging senior leaders on both the officer and enlisted sides to be conceptually fluent in AI and Big Data applications (as opposed to technically fluent), so that they can intuitively man, train, and resource the SOF enterprise without having to consult SMEs on such decisions. If AI and Big Data are to become essential to the SOF enterprise as many people assert, how might the promotion system ensure that senior leaders rise in rank with the intrinsic knowledge of their capabilities and limitations and therefore know how to appropriately resource and employ them? To what extent does the promotion system currently consider the potential requirement for leaders in 2030 to be fluent in Big Data applications? How might the AI and Big Data skill sets be recorded and tracked? To what extent would such tracking be a Service responsibility, and to what extent would USSOCOM have an interest in doing so? How can it be factored into promotion and career progression? How might the SOF enterprise make use of senior level knowledge from the private sector? Might special boards or advisory bodies be necessary for SOF to anticipate and/or stay current with emerging trends? How can synchronizing SOF, cyberspace, space,

and strike forces with the interagency and the joint force enable globally integrated operations?

D. China, Russia, and Strategic Competition

Topic Titles (in no particular order)

D1. Adversary Approaches to Political Warfare and Information Warfare
D2. Strategic Blind Spots in Modern Conflict
D3. Leveraging SOF Capabilities to Mitigate Russian Undersea Warfare
D4. Aligning SOF Support to Target System Analysis in Support of Joint Force Target Development
D5. Human Rights as a Weapons System

Topic Descriptions

D1. Adversary Approaches to Political Warfare and Information Warfare

How do the approaches by Russia and China to modern political warfare, in particular the exploitation of the information environment to manipulate, coerce, and control, potentially provide a model for the U.S. to understand the nature of modern political warfare by our adversaries and counter it? "Mission Command" of national influence campaigns is difficult to operationalize. How do adversaries decide, manage, and coordinate operations or take advantage of emergent opportunities? What is their likely planning cycle for these operations? How far out are they preparing the operational environment? What tools and methods are used to coerce and control populations? What do their virtual networks look like? Can populations be inoculated against the tactics they employ? What impact do these tools and methods have on U.S. influence operations? How can Special Operations Forces (SOF) disrupt malign information and activities through exposure?

D2. Strategic Blind Spots in Modern Conflict

Blind spots, or the inability to see something clearly despite evidence, can be caused by a wide variety of factors, from inherent or learned biases to preconceived notions and "mirror imaging" (seeing ourselves in the "other"). Do SOF possess strategic blind spots in their

mental frame of the environment, the military challenges it faces, and the corresponding approach(es) to mitigate these challenges? Are there useful methods of blind spot analysis that could be utilized to uncover obsolete, incomplete, or incorrect assumptions? What role do historical case studies play in overcoming blind spots? How can the study of lessons learned from recent operations provide valuable insights to help SOF avoid these pitfalls?

D3. Leveraging SOF Capabilities to Mitigate Russian Undersea Warfare

Russia's undersea warfare capabilities are growing at an unprecedented rate. From underwater drones, deep-sea submarines, and deep-sea military operations (including the cutting of submarine cables), Russian undersea warfare capabilities are the least talked about aspect of strategic competition. What capabilities, opportunities, and/or strategies can SOF uniquely leverage to gain advantages against this burgeoning Russian undersea threat? How can these niche capabilities be reinvested into conventional undersea warfare and surface warfare capabilities?

D4. Aligning SOF Support to Target System Analysis in Support of Joint Force Target Development

Target System Analysis is a systemic approach to determine enemy vulnerabilities and exploitable weaknesses. It determines what effects will likely be achieved against target systems and their associated activities. Is the SOF approach to Target Systems Analysis truly unique relative to the broader joint force? What historical examples illuminate SOF-unique approaches to Target System Analysis? Additionally, are current command and control constructs sufficient to align SOF-unique approaches to target development with broader joint force efforts? How can SOF achieve transregional targeting for expanded maneuver?

D5. Human Rights as a Weapons System

The United Nation's Universal Declaration of Human Rights is a milestone document in the advancement of the dignity of the human race. When it comes to U.S. respect for and promotion of universal

human rights, the U.S. is in a radically different position than its strategic competitors, i.e., China and Russia. This may be an area where the U.S. may be able to isolate both nations based on their deplorable human rights records. This could be an area where there is little downside, as these competitors could be labeled pariah states by the international community based on their behavior that goes against global norms, or they alter their behavior to integrate into the global community. If the latter, they would become less threatening to vital U.S. interests. How could SOF utilize human rights as a weapon system against strategic competitors?

E. Resistance Movements and Special Operations Support to Resistance

Topic Titles (in no particular order)

E1.   Unconventional Warfare (UW) Conducted to Provide Results that Appear to be Bad Luck

E2.   Which Resistance Groups Could the Chinese Communist Party (CCP)/Peoples Republic of China (PRC) Use in the Future in Areas Where its Elite Capture Strategy Falls Short or is Repudiated?

E3.   Why do Resistance Movements Succeed and Governments Fail?

Topic Descriptions

E1.   Unconventional Warfare (UW) Conducted to Provide Results that Appear to be Bad Luck

Sabotage is a component of UW that is often overlooked and under-studied. When faced with adversary 5th generation fighter jets and anti-access/area denial capabilities, the Department of Defense typically responds to such threats by pursuing advanced technology solutions. Can Special Operations Forces (SOF) provide alternative and discreet low-cost solutions? One sabotage method used by members of the French resistance during World War II was mixing a fine carborundum powder—a natural abrasive—with lubricating oil. Oil contaminated in such a way caused almost any moving mechanical component to seize up. It was particularly effective in railroad rolling stock, causing wheels to jam while moving at high speed and thereby causing trains to crash. Can SOF, operating through today's resistance movements either virtually or physically, provide asymmetric challenges to our adversaries' advanced capabilities via similar low-cost methods? Examples of methods might include:

- geocaching covert radar beacons to use in a global positioning system-denied environment,
- substitution of contaminated oil or hydraulic fluids into aircraft logistic chains,

- incorrect calibration of aerospace ground equipment and precision measurement equipment laboratory tools for aircraft maintenance,
- "accidental" cutting of fiber optic lines by digging in the wrong location,
- aircraft damaged in training areas unable to be used on front lines,
- creating chain of command "trust" issues via social media or other online activities.

How would SOF work through the interagency and allied or partner nations to gain access and capability and improve our understanding of both friendly and adversary vulnerabilities? What are the doctrine, organization, training, materiel, leadership and education, personnel, facilities, and policy implications in developing this capability?

E2. **Which Resistance Groups Could the Chinese Communist Party (CCP)/Peoples Republic of China (PRC) Use in the Future in Areas Where its Elite Capture Strategy Falls Short or is Repudiated?**

During the Cold War, the People's Republic of China supported numerous resistance groups as a foreign policy tool. In the post-Cold War environment, the PRC and CCP have focused on elite capture strategies to achieve its desired foreign policy goals. As elite capture strategies are exposed and become less useful as an effective strategy to support PRC foreign policy goals, it is possible that China will follow the Russian example and begin to sponsor existing, or foment new dissident movements, or resistance organizations. From a research perspective, USSOCOM and U.S. partners could benefit from the identification of existing resistance groups, nascent insurgent organizations or resistance movements, or disenfranchised populations that the CCP's United Front or People's Liberation Army might target and use in the future.

What foreign irregular armed groups, such as the Wa State Army and other similar organizations in neighboring Burma, have the PRC supported in the past or continue to support? What nonviolent civil resistance movements have the PRC supported in the past? What types of support has the PRC provided to such groups in the past and how effective were they? What non-state organizations does the

CCP United Front have relationships with today? What are the most effective influence methods employed by the United Front? What makes non-state organizations or prominent individuals vulnerable to the influence operations, propaganda dissemination, and perception management activities of the CCP United Front? How can SOF disrupt bonds between regimes and their population with irregular warfare?

E3. **Why Do Resistance Movements Succeed and Governments Fail?**
Research on foreign internal conflict (rebellions, civil wars, insurgencies, and independence movements) conducted at the Strategic Studies Institute of the Army War College over the past five years shows that there are clear, definable, political-military reasons why governments fail in such conflicts. Moreover, research results indicate that these failures can be measured using established principles of political science, resulting in prediction rates for government failure with a remarkably high rate of historical accuracy. The study of these tightly defined political-military conditions are the basis of the Army War College elective course S12232, "A Problem from Hell: Insurgencies and Civil Wars." The research studies the 53 foreign internal conflicts since 1945 in which: (1) more than 1,000 government security forces and rebels combined died in a single year, and (2) the goal of the resistance movement was either complete control of the government of the country, or the establishment of an independent breakaway region.

What are the political-military parameters that lead to the success of resistance movements? What constraints (legal or otherwise) contribute to government failure in such conflicts? What government counterinsurgency approaches, methods, and objectives have proven to be most successful? Which have proven to be least successful or even counterproductive? In what ways could governments be more successful in countering armed resistance or insurgency? In what ways could governments be more successful in countering nonviolent civil resistance?

F. Cyberspace: Operations, Espionage, and Influence

Topic Titles (in no particular order)

F1.   Cyber Support to Tactical Special Operations Forces (SOF) Operations—Tactical Organization

F2.   Prioritizing Cyberspace Capabilities to Support United States Special Operations Command (USSOCOM) Core Activities

Topic Descriptions

F1.   Cyber Support to Tactical Special Operations Forces (SOF) Operations—Tactical Organization

The law of war (and resulting military doctrine and strategy) needs to be reconsidered considering continuing developments in computer network exploitation and offensive operations. The line between operations and espionage has never been less clear. In cyberspace, entering another's systems can both be for the purpose of intelligence gathering and/or to conduct an operation. It all depends on the objective of the adversary. When does intrusion for the purpose of collecting intelligence by cyber means (computer network exploitation) become intrusion to plant malware for the purpose of "preparing the battlefield" for cyberattack? How can SOF organize to best implement cyber operations capabilities, to include at the official development assistance level? Should a SOF cyber capability be engendered organically (through cross-training) and/or SOF Service-like component to support the joint force? Conversely, should Service organizations instead provide specific cyber augmentation and/or develop their own independent methods (toward a joint solution)? What are the risks and opportunities associated with each of these possibilities? How do SOF incentivize cooperative actions within respective authority lanes, yet remain oriented on unified goals? How can SOF integrate fires from space and cyber to offset adversary numerical superiority?

F2. **Prioritizing Cyberspace Capabilities to Support United States Special Operations Command (USSOCOM) Core Activities**

When it comes to America's focus on strategic competition, China and Russia loom large, especially in cyberspace. The United States Cyber Command (USCYBERCOM), SOF cyber elements, and the interagency all have a large part to play in defending the U.S. in cyberspace. To effectively defend the nation, these agencies must coordinate efforts within the context of a larger strategy. Moreover, these agencies must continuously recruit, educate, and retain cyber talent. The U.S. is still working on the right mix of cyber talent in terms of quality, quantity, and effectiveness. Yet, the U.S. is not alone as our strategic competitors wrestle with the same issues. To understand their shortfalls, there needs to be an evaluation of Russia and China regarding their current military cyber talent development and deployment strategies and structures, in terms of quality, quantity, and effectiveness. In the context of USSOCOM's core activities, how should the enterprise prioritize these activities given the high demand, low-density nature of cyberspace forces and challenges associated with developing cyber capabilities? Which core activities require high degrees of cyber competency and which do not? For which core activities should USSOCOM seek unique tactical capability development and which activities are, perhaps, better suited for broader support from USCYBERCOM? How should USSOCOM move forward and prioritize cyberspace operations in their core activities? How can SOF achieve a better understanding of our cyberspace authorities, and those of our allies? How can synchronizing SOF, cyberspace, space, and strike forces with the interagency and the joint force enable globally integrated operations? How can SOF integrate fires from space and cyber to offset adversary numerical superiority?

G. Other Special Operations Concerns

Topic Titles (in no particular order)

G1.   Dissecting Climate Risk to Special Operations Forces (SOF) Missions and Operators
G2.   Counter Drone Operational Art and Practice
G3.   Implications of Megacities for SOF Across the Conflict Continuum.
G4.   Implications of the Arctic for SOF Across the Conflict Continuum.
G5.   SOF and Space

Topic Descriptions

G1.   Dissecting Climate Risk to Special Operations Forces (SOF) Missions and Operators

The 2016 United Nations Paris Climate Agreement demonstrates the seriousness of climate change as a threat to sovereignty and stability across the globe. Changes in climate accelerate and compound existing challenges be they local, regional, or global. The threats of increasing volatile weather patterns, rising sea levels, and dependent increases in human insecurity create conditions ripe for instability, terrorism, and conflict. The U.S. recently rejoining the Agreement demonstrates commitment to the community of nations in the effort to mitigate climate change impacts. To support SOF, research should be conducted on anticipatory analysis and assessments to map known and unknown climate risks across areas of responsibility to identify possible emergences and locations. What strategic geographic areas, sub-regions and population groups are most susceptible to the impact of climate change? What are the specific risks that exacerbate existing conflict zones and where might the impacts of climate foment instability? Which groups might benefit? What can be learned from those regional, subregional, and population groups that are taking preemptive actions to mitigate the impact of climate change? How do these preparations impact the operational environment for Special Operations Forces (SOF)? Will the risks of climate change have any specific impact on the existing special operations command core activities as outlined in Title 10 of the U.S. Code?

G2. Counter Drone Operational Art and Practice

The rapid proliferation of commercial and state of the art drone technology has impacted the character of armed violence be it terrorist, insurgent, or military forces. The global commercial market offers a wide range of technology to individuals and states. The recent 2020 Nagorno-Karabakh conflict demonstrates the potential of high-tech drones to offer significant advantage in conflict that mitigate traditional combat power. Conversely, commercial drones—relatively simple to operate, cheap, and easily acquired in the open market—are being used for offensive and defensive purposes as demonstrated by Islamic State of Iraq and Syria (ISIS) in Syria and Iraq. The continued advancement of, and proliferation of this technology, raises major questions for SOF.

What counter drone strategies have been adopted to increase force protection, deny adversary surveillance, and attack through the employment of drones? Case studies of ISIS' use of drones for offensive and defensive purposes would enable SOF to develop counter-tactics. How and to what degree did the use of drones by the adversary impact existing partner, coalition, and U.S. forces operating models? What old or newly adopted tactics, techniques, and procedures emerged to successfully confront adversary use of drones. How specifically did the use of high technology drones during the recent conflict in the Karabakh region impact intelligence, fires, command and control (C2), and conduct of operations? What if any counter strategies emerged to mitigate the impact from the use of drones? What are the implications for SOF operating across the conflict continuum from low- to high-tech drones? How can SOF integrate fires from unmanned platforms to favorably shift risk? How can SOF increase physical and virtual stand-off to conduct operations and activities against peer and near-peer adversaries?

G3. Implications of Megacities for SOF Across the Conflict Continuum

Unplanned and unorganized growth of urban areas in major cities across the globe is accelerating at a high rate. It is estimated that by 2030 more than 80 percent of the world will live in cities dislocated from sources of food and challenging the capacity for basic services.

Many of these cities are referred to as megacities because of populations of over 10 million, with many cities moving toward a density of 20 million. The rapid littoral urbanization of the global population and growth of megacities in conjunction with climate change and human insecurity create conditions for instability and conflict. The many challenges of planning for and operating in these dense urban and human terrain environments require SOF-related research.

What are the impacts from the convergence of dense populations, complex man-made terrain, and technology on SOF core activities? What are the relevant trends for megacities in likely or existing conflict zones? How might emergent and unorganized micro terrain impact the planning and conduct of operations across the conflict continuum? What challenges do vertical and subterranean terrain pose to SOF operating in cities? What are the challenges and mitigation factors for SOF operating in very dense and diverse populations in urban areas? How does mass surveillance and other technology impact mission performance and what new capabilities are required to overcome challenges of operations in dense urban and human terrain?

G4. Implications of the Arctic for SOF Across the Conflict Continuum

The Arctic is rapidly becoming strategic geography attracting the interests of many nations. The convergence of ecological change, extensive natural resource reserves, open ocean transit routes and a myriad of ancillary issues converge to create conditions for cooperation, competition, and conflict. Research should explore the full range of challenges and opportunities of SOF operating in the Arctic region across the conflict continuum. Moreover, what insights here might also apply to operations in the southern pole?

What role might SOF play as part of the larger joint force in the Arctic? What challenges are consequent to the extreme environmental conditions of the poles on the performance of SOF personnel and equipment? What are the unique challenges and possible mitigations for SOF operating in a sparse electromagnetic signal environment? Do existing operating models remain valid in the context of Arctic conditions? What new operating models and C2 approaches might

enhance the effectiveness of SOF in the Arctic across the conflict continuum? What new capabilities or adaptations to approaches to core activities will enhance mission performance? What are the potential gaps that must be addressed for SOF to realize the objective force identified in *The Operating Concept-2030* that could be applied to Arctic missions in support of the Joint Force? What is the spectrum of potential allies and partners that are best aligned to support SOF in the Arctic to include indigenous populations with propensity to work with SOF?

G5. SOF and Space

The United States Space Force (USSF), officially created on 20 December 2019, is a separate branch of the Armed Forces. It will be "organized, trained, and equipped to provide: freedom of operation in, from, into the space domain; and prompt and sustain space operations."[8] United States Special Operations Command continues to determine where SOF fit into the broader Department of Defense efforts in space. With the advent of USSF as a Service, and the trajectory of the progression of technology in the coming decades, what is the role of SOF in supporting the Space domain? Also, what is the Space domain's role in supporting SOF?

Acronyms

AI	artificial intelligence
C2	command and control
CBOS	CONUS-Based Operational Support
CCP	Chinese Communist Party
COIN	counterinsurgency
CONUS	continental U.S.
USCYBERCOM	United States Cyber Command
DOD	Department of Defense
FID	foreign internal defense
ISIS	Islamic State of Iraq and Syria
JPME	joint professional military education
JSOU	Joint Special Operations University
OODA	observe, orient, decide, and act
PRC	People's Republic of China
SME	subject matter expert
SOF	Special Operations Forces
TSOC	theater special operations command
USSF	United States Space Force
USSOCOM	United States Special Operations Command
UW	unconventional warfare

Endnotes

1. See the 2018 U.S. National Defense Strategy and its 2019 Irregular Warfare Annex for more details.

2. Isiah Wilson, JSOU Next White Papers (1–5), 12 June 20, https://jsouapplication-storage.blob.core.windows.net/specialeventdocument/46/JSOU-NEXT_White%20 Papers_Aug2020.pdf.

3. USSOCOM Commander's Guidance Letter, June 2020.

4. Posture Statement of General Richard D. Clarke, USA, Commander, United States Special Operations Command, Before the 117th Congress, Senate Armed Services Committee, 25 March 2021, https://www.armed-services.senate.gov/imo/media/doc/Clarke_03-25-21.pdf.

5. U.S. Army Special Operations Command, AY21–22 *Priority Research Topics*, 12 January 2021, https://www.soc.mil/SWCS/DOTDP/_pdf/GRAD/USASOC%20 AY21-22%20Priority%20Research%20Topics_(U).pdf.

6. Congressional Research Service, *U.S. Special Operations Forces (SOF): Background and Issues for Congress*, 6 May 2021, https://fas.org/sgp/crs/natsec/RS21048.pdf.

7. According to the Department of Defense, *2018 Demographics: Profile of the military community*, https://download.militaryonesource.mil/12038/MOS/Reports/2018-demographics-report.pdf, nearly half (45.6%) of active duty members are 25 years of age or younger.

8. The United States Space Force, 10 USC 9081, https://www.law.cornell.edu/uscode/text/10/9081.