Cognitive Transformation Through Cyberspace: A Twenty-First Century Postmodern Power Strategy

A Monograph

by

MAJ Ryan S. Hand
US Army

School of Advanced Military Studies
US Army Command and General Staff College
Fort Leavenworth, KS

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Military victory appears to be growing more elusive in the twenty-first century owing to an increasingly contested information environment. Military operations in the contemporary operating environment are subject to a battle of narratives and metanarratives used by adversaries. This friction is best described as tremors on the fault line between modern, the inherently scientific and empirical, and postmodern battlefields where perception, information, and influence gain primacy. Cyberspace offers a medium for bridging this divide. The ubiquity and instantaneity of information and connectedness through the Internet has evolved into a social common through which individuals and groups form identities and exert influence. Postmodern power strategies seek to subvert traditional power structures and have the ability to thrive in a domain that offers equal access to all and, potentially, influence over all. Underpinning this connectedness is a relationship that has formed between the humans and cyberspace which affects self-perception, relationships, and reality construction that must be examined and accounted for in military planning.

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Name of Candidate: MAJ Ryan S. Hand

Monograph Title: Cognitive Transformation Through Cyberspace: A Twenty-First Century Postmodern Power Strategy

Approved by:

_____, Monograph Director
Dr. Alice Butler-Smith, PhD

_____, Seminar Leader
James M. DePolo, COL

_____, Director, School of Advanced Military Studies
James C. Markert, COL

Accepted this 24th day of May 2018 by:

_____, Director, Graduate Degree Programs
Robert F. Baumann, PhD

Abstract

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Military victory appears to be growing more elusive in the twenty-first century owing to an increasingly contested information environment. Military operations in the contemporary operating environment are subject to a battle of narratives and metanarratives used by adversaries. This friction is best described as tremors on the fault line between modern, the inherently scientific and empirical, and postmodern battlefields where perception, information, and influence gain primacy. Cyberspace offers a medium for bridging this divide. The ubiquity and instantaneity of information and connectedness through the Internet has evolved into a social common through which individuals and groups form identities and exert influence. Postmodern power strategies seek to subvert traditional power structures and have the ability to thrive in a domain that offers equal access to all and, potentially, influence over all. Underpinning this connectedness is a relationship that has formed between the humans and cyberspace which affects self-perception, relationships, and reality construction that must be examined and accounted for in military planning.

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Acronyms

ARCYBER	United States Army Cyber Command
CSCB	Cyber Support to Corps and Below
DARPA	Defense Advanced Research Projects Agency
DDoS	Distributed Denial of Service
EU	European Union
EW	Electronic Warfare
FM	Field Manual
ICT	Information and Communication Technology
IO	Information Operations
IRC	Information Related Capability
ISIS	Islamic State of Iraq and Syria
JP	Joint Publication
JTF	Joint Task Force
NATO	North Atlantic Treaty Organization
NGW	New-Generation Warfare
NSS	National Security Strategy
OE	Operational Environment
PO	Psychological Operations
USIA	United States Information Agency

Illustrations

Introduction

> Today, after more than a century of electric technology, we have extended our central nervous system itself in a global embrace, abolishing both space and time as far as our planet is concerned. Rapidly, we approach the final phase of the extensions of man -- the technological simulation of consciousness, when the creative process of knowing will be collectively and corporately extended to the whole of human society.
>
> —Marshall McLuhan, *Understanding Media: The Extensions of Man*, 1964

On October 16, 2006, a thirteen-year-old girl named Megan Meier ended her own life in her home in O'Fallon, Missouri. At a young age, Megan struggled with depression, weight loss, and bullying at school. Having made substantial progress on her weight, the prospect of having her braces removed soon, attending a new school, and playing on the volleyball team, Megan's outlook appeared quite positive. At her request, Megan's parents permitted her to establish a supervised social media account on Myspace. Soon after, a boy named Josh friend requested Megan. Josh had just moved to the area and could empathize with Megan's struggles. Over the period of a month, Josh wrote kind and innocently affectionate messages. This was uncharted and captivating territory for thirteen-year-old Megan which broke the previous cycle of negative self-image and insecurity reinforced by encounters with bullies. Megan became deeply invested, asking her mom to sign her on to Myspace after school to see what messages Josh sent. One day, Josh's affections changed unexpectedly, attacking Megan's treatment of other people, insulting her physical appearance, and ultimately declaring that "the world would be a better place without you." Megan fell into cognitive vertigo. In the confusion, she lashed back at Josh with colorful language that upset her mother, causing a dispute between them. Feeling betrayed, Megan went to her room, where her mother found her twenty minutes later hanging from the closet door frame. Devastated, Megan's parents sought to discover who Josh was and bring him to justice. They later discovered that Josh never existed; another neighborhood woman created the Myspace account and alter ego.[1]

[1] "Megan Meier Foundation | The Story of Megan Meier," accessed December 8, 2017, https://www.meganmeierfoundation.org/megans-story.html.

Media organizations and politicians dissected this case in numerous ways. State and federal governments created laws to address cyberbullying and news agencies sold stories to raise awareness of and stem a seemingly new phenomenon, yet more cases would occur for years to come.[2] All too often, humans wish to make quick and simple sense of what is occurring and seek to rectify the supposed cause. In the process, the public overlooked several interesting and interrelated phenomena. Josh's creator wove a narrative that resonated so deeply with Megan that it compromised her sense of reality, beliefs, and values driving her to catastrophic behavior. This ability to use narrative to influence perception and evoke behavioral response can extend from individuals to entire societal groups. Secondly cyberspace, as a medium through which humans increasingly create extensions of themselves and interact with the world, became a fundamental part of Megan's psychological and social identity. This suggests that cyberspace and social/digital technologies have greater physical and cognitive impacts than previously appreciated.[3] In light of recent nation-state information warfare activities in cyberspace, these two phenomena have serious implications for future military operations.

The cyberspace domain is unique among all other domains of warfare. Unlike the land, air, sea, and space, cyberspace is man-made. US Army Field Manual (FM) 3-12 states that "cyberspace is an extensive and *complex* global network."[4] The US military attributes the complexity of the cyberspace domain to its global scale, unrestricted introduction of new physical technologies, dynamic configuration, and new applications, which fails to fully appreciate the role of cyberspace in a broader operational context and prevents exposure of its full potential.

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[2] David D. Luxton, Jennifer D. June, and Jonathan M. Fairall, "Social Media and Suicide: A Public Health Perspective," *American Journal of Public Health* 102, no. S2 (May, 2012): S195-S200, accessed December 7, 2017, https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3477910/.

[3] Sameer Hinduja and Justin W. Patchin, "Bullying, Cyberbullying, and Suicide," *Archives of Suicide Research* 14, no. 3 (2010): 206-221.

[4] US Department of the Army, Field Manual 3-12, *Cyberspace and Electronic Warfare Operations*, Washington, DC: Government Printing Office, 2017.

This ultimately results in a narrow view on the nature and use of cyberspace in military operations, weakens organizational integration of information related capabilities, and blinds us to the intentions of our adversaries in cyberspace. But how did this problem manifest? Doctrine, as an expression of our understanding of history and the current operating environment, tells us more about ourselves than the things we attempt to describe.

Each military service branch has its own philosophy on the nature of cyberspace and their operational role within it; often based on how cyberspace interacts with or affects the air, land, or sea.[5] In order to alleviate the complexity and vastness of cyberspace, the military followed a natural tendency of applying service specific lexicons, like maneuver or key terrain, as a metaphor for operations in cyberspace to create shared understanding.[6] Anthropologist Richard Robbins explains how "metaphors give a feeling of power and control… [because] if we have a thorough understanding of one system of relations [land operations] …we can use it to comprehend a system of relations we only begin to grasp [cyberspace operations]."[7] In the context of land and cyber operations, the assumption of a thorough understanding of one domain can give a false sense of understanding the other. Military leaders subsequently view cyberspace in familiar ways, such as force capabilities, and targeting of tangible nodes and data as objectives, rather than exploiting its potential for greater influence. They also run the risk of transferring

[5] Thomas E. Ricks, "We need a cyber corps as a 5th service," *Foreign Policy*, March 18, 2015, accessed December 10, 2017, http://foreignpolicy.com/2015/03/18/we-need-a-cyber-corps-as-a-5th-service/.

[6] "Can the Warfare Concept of Maneuver Be Usefully Applied in Cyber Operations," *The Cyber Defense Review*, accessed November 2, 2017, http://cyberdefensereview.army.mil/The-Journal/Article-Display/Article/1136059/can-the-warfare-concept-of-maneuver-be-usefully-applied-in-cyber-operations/; "Operational Graphics for Cyberspace," *National Defense University Press*, accessed November 5, 2017, http://ndupress.ndu.edu/Publications/Article/1130660/operational-graphics-for-cyberspace/.

[7] This webpage no longer exists at the SUNY Plattsburgh site. This book was recovered using the Wayback Machine Internet Archive at archive.org/web/ and the subsequent web address. Richard Robbins, *The Belief Machine*, (1985), 6, accessed October 14, 2017, http://faculty.plattsburgh.edu/richard.robbins/Belief/belief-machine.htm.

assumptions, biases, and shortfalls from one domain and bring with it "a certain pre-existing understanding."[8] Failing to reevaluate the evolving nature of cyberspace with respect to military operations implies that, in creating a concept or strategy for cyberspace, they completely accounted for all important aspects of land operations. One such area, and the focus of this research, is the misunderstood role of narrative in human psychology and sociology, its influence on human perceptions and behavior, and how the cyberspace domain is changing how people encounter reality.

In 1964, Canadian philosopher Marshall McLuhan wrote prophetically on the nature of new media technologies as extensions of humanity. Well before a global Internet came to be, McLuhan observed that "any extension of ourselves," whether through technologies or mediums of communication, "affects the whole psychic and social complex."[9] He delivers a stark warning that society's historical infatuation over content obscures the underlying cognitive, psychological, and sociological effects of the new medium. Most people take this creation for granted. In a sense, the Internet and the resources it makes available become perceived as a natural phenomenon which directly affects the trust freely given to the content delivered through it. Like a frog boiled slowly, experts believe that the informatization of society is changing humanity as newer generations will not know a world without the smartphone, social media, or minute-by-minute news updates and instantaneous information access.[10] In his 1983 book, *Lost Dimension*, philosopher Paul Virilio foretold how the instantaneity of information would gradually supplant the journey for gaining knowledge in a budding digital age.[11] In this way, the ubiquity of

[8] Robbins, *The Belief Machine*, 7.

[9] Marshall McLuhan, *Understanding Media: The Extensions of Man* (New York: McGraw-Hill, 1964), 2.

[10] Kep Kee Loh and Ryota Kanai, "How Has the Internet Reshaped Human Cognition?" *The Neuroscientist* 22, no. 5 (October 2016): 506-520; Dave Chaffey, "Global Social Media Research Summary 2016," *Smart Insights* 8 (2016).

[11] Paul Virilio, *Lost Dimension* (Cambridge: The MIT Press, 1983), 25.

cyberspace presents a new and unique medium for influence of individuals, groups, and societies through narrative.

The history of narrative dates back as far as human existence in the form of storytelling as the primary mechanism for creating, conveying, reflecting, and retaining societal knowledge. In the wake of the information revolution, the use of the cyberspace domain to influence popular perceptions of local, regional, and world events toward revanchist, revisionist, and extremist narratives surged; a theme that military leaders expect to continue into the future.[12] However, observations of media influence in contemporary wars indicate that its effectiveness also depends on how narrative is delivered and the context in which it is received which is a testament to the complex nature of human psychology and societal nuance.[13] Adversaries fomenting these ideologies, in whole or some combination, seek to operate below the threshold of major conflict where the United States is a dominant kinetic force and present an asymmetric informational threat. The use of narrative by adversaries leave military actions in the operational environment open to interpretation and directly impact the perceptions of local, regional, and global audiences; and consequently, the ability to consolidate enduring gains, maintain legitimacy, and win popular support. Narrative is the delivery mechanism for plot and meaning to gain cognitive effects.

Given the unique, dynamic, and symbiotic relationship between humanity and the cyberspace domain, the research question that this monograph seeks to explore is: What unique capability does the cyber domain present to the narrative space and what does it suggest for operational art? Current views on the nature and role of cyberspace in military operations are

[12] US Army Capabilities Integration Center, "The Operational Environment and the Changing Character of Future Warfare," accessed December 7, 2017, http://www.arcic.army.mil/App_Documents/The-Operational-Environment-and-the-Changing-Character-of-Future-Warfare.pdf.

[13] Beth Bailey and Richard H. Immerman, *Understanding the U.S. Wars in Iraq and Afghanistan* (New York: New York University Press, 2015), 220-237; Jonathon Cosgrove, "Context is King," in "Special Operations in a Chaotic World," special issue, *Prism* 6, no. 3 (December 2016).

incomplete and subsequently obscure the full potential of the domain for influence operations. An examination of the connection between the fundamental role of narrative in humans and the effects of cyberspace on humans helps to illuminate future potential and explain recent activities by hybrid threats through information warfare. This monograph seeks to fill the gap created by previous research and perceptions which relegate the military role of the cyberspace domain to a highspeed avenue of approach, extension of operational reach, or additive capability. Subsequent sections build an argument through a multidisciplinary approach and recent historical examples to illustrate the emergent role of the cyberspace domain in the narrative space and to encourage broader discourse among senior leaders and planners on military operations in and through cyberspace.

The next section addresses a complex human psychological and sociological phenomenon and achieves several objectives that form foundational understanding of how adversaries succeed at engaging and influencing populations through narrative using information and communication technologies (ICTs). The section answers the additional supporting questions: what are the origins of narrative and why are they so fundamentally important to understanding human behavior?; what is their role in reality and identity construction?; what are postmodern narrative techniques and how are they used to exploit asymmetry and subvert power structures?; and what is the nature and impact of the evolving relationship between humans and cyberspace? The origins of narrative, meaning, and sense-making draw from the fields of psychology and sociology which form the basis for individual reality and identity construction. These concepts build the case for understanding how and why people use narrative every day to understand their environment and take action. The sociological study of how people create knowledge and share it to self-organize into groups allows the transition into seeing narrative as a larger, more complex, phenomenon and tool for influence. Important to understanding how each of the aforementioned phenomena are exploited by adversaries, an examination of postmodern philosophy and narrative techniques is necessary. Such techniques manipulate language, systems

for knowledge creation, and meaning (semantics) in order to pose an asymmetric threat to existing power structures. Finally, the information revolution, social technologies, and their impact on society draw a direct connection from the digital realm to human cognition which makes us more vulnerable to threats that emerged on the battlefield over the past decade.

The next section illustrates contemporary use of postmodern narrative strategies through cyberspace to influence perceptions and behaviors of domestic and international populations. Modern Russian information warfare benefits from deep historical roots in reflexive control theory and maskirovka which explains the fundamental divergence of US and Russian philosophies on the nature and role of cyberspace in warfare. Contemporary examples of Russian information warfare illustrate a migration of propaganda activities toward cyberspace as part of a broader strategy to shape the operating environment.

The monograph concludes through a synthesis of the concepts presented and suggests that the United States' philosophy on the nature and role of cyberspace is wanting for broader discourse on, and greater attention to, a domain that collapses time and space and is evolving the way humans communicate and interact. The contemporary and anticipated operating environment are highly complex and present new and unique problems across the globe. The remainder of the introduction examines themes of existing military literature on narrative and cyberspace. This helps to highlight a gap in thought over the past decade, then frames the operating environment as a contested narrative space using a theoretical, historical, and doctrinal approach. Finally, an overview of the western philosophical logic of war illustrates why the United States has traditionally overlooked the impact of cyberspace on the intangible aspects of the contemporary battlefield.

Framing the Discourse

Military writing on the narrative space and its importance for use in the modern operating environment is plentiful, but also disjointed. Few have asked why it is so effective at a deep

human and societal level, what techniques are used to construct them, and what impact informatization of society has on making it more effective. Less understood is the symbiotic relationship between humanity and the Internet that is altering human cognitive and societal evolution. This fundamental oversight has led to numerous viewpoints on how cyberspace ought to be leveraged as a domain of warfare while falling short of exploring its impact on the nature of warfare. Research for this monograph required exploration of literature from both the narrative space and of operations in and through cyberspace.

Military scholarship on narrative reinforces the position that its use within the information environment is paramount to enduring success and favorable interpretation of military operations by populations.[14] Others build upon this and accuse the military with using the term in a non-unified manner which leads to disjointed application in the operating environment. Reorienting the military's understanding required asking why narrative is a fundamental function of human beings through an examination and application of narrative theory.[15] Failing to reexamine the fundamental philosophy guiding actions concerning information and cyberspace leads to written works that urge action through professional military education, organizational change, and whole of government synchronization.[16] To date, the US military uses the term narrative in multiple contexts interchangeably as both a tool for commanders to understand, visualize, and describe the operating environment, and as a strategic communications mechanism for linking coherent themes and messages for target audiences.[17] The military's interpretation

[14] Mark C. Neate, "The Battle of the Narrative," Monograph (Fort Leavenworth: US Army Command and General Staff College, 2010).

[15] Gittipong Paruchabutr, "Understanding and Communicating through Narratives," Monograph (Fort Leavenworth: US Army Command and General Staff College, 2012).

[16] Robert D. Payne III, "The Military Application of Narrative: Solving Army Warfighting Challenge #2," Thesis (Fort Leavenworth: US Army Command and General Staff College, 2016).

[17] US Department of the Army, Army Doctrine Publication 3-0, *Operations*, Washington, DC: Government Printing Office, 2016; US Department of the Army, Field Manual 3-13, *Information Operations*, Washington, DC: Government Printing Office, 2017; US Department of Defense, Joint

fails to acknowledge the multi-disciplinary understanding of narrative as the fundamental process through which humans understand reality and its role in human actions within that reality. Research for this monograph contextualizes narrative more appropriately in the realm of storytelling, sense-making, and public diplomacy for shaping and influencing human behavior.

Opinions on the role of cyberspace in the context of military operations and the narrative space are equally diverse. With respect to Information Related Capabilities (IRCs), cyber doctrine describes its role as a highspeed delivery mechanism.[18] Consequently, scholarship from other communities of practice view cyberspace as merely an enabler whose value is attributed to ubiquity and speed of access to populations. This belief illustrates the US military's narrow view of cyberspace as a pathway to target tangible things rather than relationships, and in several cases, promotes the creation of new organizations to solve a problem.[19] Continued tactics to "kill or capture" narrative sources by stopping the message or killing the messenger suggest that the US Army's view on narrative in cyberspace still follows the modernistic, empirical, and scientific warfare paradigm.[20] Such methods fail to directly address or appreciate human cognition as a driver for behavior and the sources of knowledge that motivate action.

Recent reports on operations to counter the Islamic State of Iraq and Syria (ISIS) appear to indicate success in the integration of special operations forces and cyberspace capabilities.

Publication 3-13.2, *Military Information Support Operations*, Washington, DC: Government Printing Office, 2016.

[18] US Department of the Army, Field Manual 3-12, *Cyberspace and Electronic Warfare Operations*, Washington, DC: Government Printing Office, 2017.

[19] Ryan Gladding and Sean McQuade, "Cyber-Enabled Unconventional Warfare: The Convergence of Cyberspace, Social Mobilization, and Special Warfare," Thesis (Monterey: Naval Postgraduate School, 2015); Andrzej V. Kujawski, "Cyberspace Actions in a Counterinsurgency," Thesis (Monterey: Naval Postgraduate School, 2016);

[20] Steven R. Thompson, "Countering the Narrative: Combating the Ideology of Radical Islam," */luce.nt/ A Journal of National Security Studies* (2012), accessed December 7, 2017, http://www.usnwc.edu/Lucent/OpenPdf.aspx?id=130&title=Perspective.

Joint Task Force (JTF) Ares, a US Army Cyber Command (ARCYBER) effort dedicated to counter ISIS operations, proved itself over the past year in a campaign that "provided devastating effects on the adversary."[21] The Commander of the US Special Operations Command, General Raymond Thomas III, went on to state that "we should be conducting operations like this continuously in a campaign," and that "we are trending positively in that direction more every day."[22] Despite such overwhelming successes, the report also appears to indicate that many cyber capabilities targeted command and control, communications, persons of interest, and other tangible assets of the militant group. Such activities and subsequent success continue to reinforce a maturation of a modernistic way of war. Based on the state of conflict in Syria when JTF Ares entered the conflict, its actions were, no doubt, the best use of its time and resources. However, as with warfare in other domains, commanders and staffs must recognize the full potential of cyberspace, and its nature, in order to shape the operational environment (OE) as a part of a broader strategy.

Recent developments by the US Army to field cyberspace and information operations capabilities down to the Brigade Combat Team level are gaining traction.[23] A recent study on cyber support to corps and below (CSCB) formations also appears to be a strong step in the right direction, but risks falling into a siloed paradigm that prevents effective fusion of multiple disciplines.[24] The recent elevation of "information" in doctrine as the seventh joint function,

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[21] Dan Lomothe, "How the Pentagon's cyber offensive against ISIS could shape the future for elite U.S. forces," *The Washington Post*, December 16, 2017, accessed December 18, 2017, https://www.washingtonpost.com/news/checkpoint/wp/2017/12/16/how-the-pentagons-cyber-offensive-against-isis-could-shape-the-future-for-elite-u-s-forces/.

[22] Ibid.

[23] Mark Pomerleau, "Here's how the Army is trying to integrate information operations," *C4ISRNET*, December 15, 2017, accessed December 16, 2017, https://www.c4isrnet.com/c2-comms/2017/12/15/heres-how-the-army-is-trying-to-integrate-information-operations/.

[24] Isaac R. Porche III, Christopher Paul, Chad C. Serena, Colin P. Clark, Erin-Elizabeth Johnson, Drew Herrick, *Tactical Cyber: Building a Strategy for Cyber Support to Corps and Below* (Santa Monica, CA: RAND Corporation, 2017).

shows an increased emphasis on integrating influence activities in joint operations.[25] Taken together with the recently released National Security Strategy's (NSS) reemphasis on "instruments of information statecraft," suggests that the United States' strategic communications deficit is on the rebound, which could help bridge previous narrative and cyberspace gaps.[26] Critically important to exposing this potential involves understanding the relationship between the cognitive dimension of the information environment and the role of cyberspace to influence it.

The Complex Operating Environment: A Contested Narrative Space

> Technology is first and foremost a tool and one that only takes on meaning and purpose within the specific social and cultural formations in which it is deployed.
>
> —Antoine Bousquet, *The Scientific Way of Warfare*

Following the collapse of the Soviet Union in 1991, the world entered a period of unipolarity during which its security became underwritten by the United States.[27] War and conflict in the Persian Gulf in 1991, and the Balkans in 1995 and 1999, reinforced American perception that perfection of the application of military power projection and strategic influence was achievable. This situated the United States' previous war in Vietnam in the category of *anomaly*; what should not happen in war. The numerous narratives to explain failure prevented honest public and military discourse on what happened and why.[28] Thus, the rationale behind later technological advances, such as precision strike and net-centric warfare, acknowledged the importance of *information* but only to further enhance what Antulio Echevarria terms "war's first

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[25] US Department of Defense, Joint Publication 1, *Doctrine for the Armed Forces of the United States Incorporating Change 1* (Washington, DC: Government Printing Office, 2017).

[26] The White House, "National Security Strategy of the United States of America" (December 18, 2017).

[27] Gideon Rose, *How Wars End: Why We Always Fight the Last Battle* (New York: Simon and Schuster Paperbacks, 2010), 281.

[28] John A. Lynn, *Battle: A History of Combat and Culture* (Boulder: Westview Press, 2003), 321-322.

grammar"; essentially, the application of overwhelming military power against the enemy.[29] The simultaneous dismantling and divesting of the US Information Agency (USIA) in 1999, the Cold War proponent for the informational instrument of national power, suggests a period of decreased emphasis on "war's second grammar."[30] This went on display in the tumultuous years following the successful invasions of Afghanistan in 2001 and Iraq in 2003, when the US military found itself in a battle for legitimacy and popular support. The US Army was not yet calibrated to fight a different kind of war; one sensitive to the perceptions of local, regional, and global audiences.[31]

Military theorist Carl von Clausewitz captures this phenomenon in Book One, Chapter One, of *On War*, where he introduces the principle of polarity. Clausewitz asserts that "genuine polarity" is achieved when two belligerents are conducting the same type of war[fare] and pursuing the same object, such that one commander's victory cancels out the other's. War in reality is seldom so simple, and Clausewitz quickly illustrates the diverse and complex nature of warfare in subsequent sections, on the imbalance between diverging types of warfare.[32] Today, both state and non-state adversaries employ methods of warfare and influence to present asymmetric challenges to conventional military forces. Asymmetry acts to deny favorable terms in battle to one's foe. The addition and acknowledgement of asymmetry by the joint defense community in its language over the past decade is a testament to the existence and perception of friction between differing types of warfare.[33]

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[29] Antulio J. Echevarria II, "American Operational Art, 1917-2008," *Evolution of Operational Art*, edited by John Andreas Olsen and Martin Van Creveld (New York: Oxford University Press, 2011), 153-161.

[30] Ibid.

[31] Donald P. Wright, et al., *A Different Kind of War: The United States Army in Operation Enduring Freedom, October 2001-September 2005* (Fort Leavenworth, KS: Combat Studies Institute Press, 2006), 239-242.

[32] Carl von Clausewitz, *On War*, ed. and trans. by Michael Howard and Peter Paret (Princeton, NJ: Princeton University Press), 77.

[33] James N. Mattis, *The JOE 2008 Joint Operating Environment: Challenges and Implications for the Future Joint Force* (United States Joint Forces Command Norfolk VA, 2008); James N. Mattis, *The*

Soldier, author, and veteran of the War on Terror in Afghanistan, Emil Simpson, builds upon the asymmetry in warfare that Clausewitz describes. Simpson posits that in the absence of symmetry, "…what we have are asymmetric interpretive structures, [by which]…sides are now in competition to construct more appealing strategic narratives of what the conflict is about."[34] Subsequently, war as an instrument to achieve a political aim, cannot function without addressing what he calls the "interpretive instability" among external audiences.[35] Especially striking today is the ability for tactical actions to have direct political impacts near and abroad. Narratives assign meaning to tactical actions, and subsequently provide an alternative logic for the violent acts in war to stir enmity, shape perceptions, and create new realities for the regional and international communities. Simpson's observations and theory on how enemies exploit ambiguity in the modern operating environment, further validates the subjective, constructivist emphasis in the social and behavioral sciences over the past several decades, upon which the monograph research rests. In view of a contemporary operating environment which is subject to interpretation through narratives, Simpson asserts that the information revolution and globalization are transforming war.[36]

US military doctrine is the expression of a theoretical understanding of contemporary warfare, informed by historical reflection of past wars and conflicts. Joint Publication (JP) 3-0 describes the anticipated operational environment as uncertain, complex, and rapidly changing.[37]

JOE 2010 Joint Operating Environment (United States Joint Forces Command Norfolk VA, 2010); Kevin D. Scott, *Joint Operating Environment 2035: The Joint Force in a Contested and Disordered World* (Joint Chiefs of Staff Washington United States, 2016).

[34] Emile Simpson, *War from the Ground Up: Twenty-First-Century Combat as Politics* (New York: Oxford University Press, 2012), 10, 36-38.

[35] Ibid., 37.

[36] Ibid., 69-89.

[37] US Department of Defense, Joint Publication 3-0, *Joint Operations* (Washington, DC: Government Printing Office, 2017).

The US Army, as the force proponent for the land domain, attributes much of this complexity and rapid change to human and information factors. Here, globalization, the increasing interaction among people and states through money, ideas, and culture, and the information revolution, the growing economic, social, and technological role of information, take center stage. The place where these two important concepts intersect is in cyberspace. US Army FM 3-0 identifies the overarching threat of revisionist, revanchist, and extremist ideologies, and the increasing speed of human interaction through social technologies, as catalysts to conflict.[38] An important commonality among all ideologies is the use of narrative techniques which aim to shape perceptions of their actions, present an alternative interpretation of reality, and make US kinetic power less relevant. To date, doctrine fails to address the potential for narrative engagement in cyberspace which suggests that US military efforts in cyberspace are currently focused on the scientific, empirical, and objective aspects that may be targeted and exploited.

The problem with how the military views the role and nature of cyberspace in operations gains significance within a larger and broader pattern over centuries of western warfare. Author and lecturer in international relations Antoine Bousquet describes Western civilization's consistent attempt to apply "scientific method and insights to warfare in its totality"; convincing ourselves that, we simply have not *yet* developed the technology or rational thought to discover and understand nature (what is real) and its truths (what it means) fully.[39] A scientific view of warfare seeks objectivity in the quantifiable. Thus, the scientific quest for objective truth and subsequent application toward warfare encounters a natural tension in the realm of human interactivity and action in the operating environment; a notion that Clausewitz expounds upon in

[38] US Department of the Army, Field Manual 3-0, *Operations* (Washington, DC: Government Printing Office, 2017).

[39] Antoine Bousquet, *The Scientific Way of Warfare: Order and Chaos on the Battlefields of Modernity* (New York: Columbia University Press, 2009), 15.

the concepts of friction, chance, and uncertainty.[40] How we interpret and view the world directly impacts how we organize and choose to act, for better or worse.

With regard to cyberspace, the US military views the nature and importance of information through an objectivist ontology and modernist philosophy. Information as a *stateful, stored, and tangible* thing gains primacy over intangible cognitive relationships and effects. This stance places a primacy on targeting and exploitation of data, servers, and nodes in order to gain a battlefield advantage. An appreciation for the use of cyberspace to gain cognitive effects first requires an understanding of the human psychological and sociological role of narrative, and how new technologies are causing humans to evolve how they make sense of the world.

Human Cognition, Narrative, and the Cyber Domain

Sense and Meaning Making Through Narrative

> So, in this forced inaction I looked for the equation between my book-reading and my movements, and spent the intervals of uneasy sleeps and dreams in plucking at the tangle of our present…I began to recall suitable maxims on the conduct of modern scientific war. But they would not fit, and it worried me.
>
> —T. E. Lawrence, *Seven Pillars of Wisdom*

Having fallen ill during raids on Turkish railways and lines of communication near Medina, British Major Thomas Edward Lawrence spent about ten days recuperating. This time afforded him the ability to reflect on what he and the Arab Revolt (1916-1918), which until then had been driven by instinct and intuition, accomplished thus far. One of humanity's most fundamental cognitive functions is to make sense of and understand the environment, life events, relationships, and their identities. It is universal. People draw upon experience, memories, intuition, education, and their five senses as lenses through which they perceive reality and build knowledge. This reality varies from person to person based on their own perception of the environment and interpretation of events. Individual realities are also dynamic and, in many

[40] Clausewitz, *On War***,** 70, 96-97, 119-121, 137.

ways, self-preserving to maintain what psychologist Daniel Kahneman calls "cognitive ease."[41] Put differently, people *want* to make sense of the world in order to reduce the mental stress and strain that an anomaly presents. A person's *intuitive thinking*, Kahneman's System I, attempts to make sense of what is occurring, sometimes to their detriment, by categorizing what they are perceiving based upon patterns from past experiences with minimal effort.[42] It is through effortful thought, Kahneman's System II, that people are able to challenge their intuitions, which may likely be flawed in a new or unfamiliar situation, and gain new insights to solve problems effectively.

Lawrence traces through his knowledge of military theory to examine the means and ends of the current campaign. In essence, he is attempting to fit what has happened (System I intuition) with a known theory of warfare that helps to explain recent outcomes and inform his planning and continued campaign execution. Ultimately, confounded in his attempt, he reflects (engagement of System II) on the problem at hand; the vast open desert as his operating environment, an enemy whose mobility relies upon fixed lines of communication, and a friendly force that is reluctant to engage in decisive battle. Lawrence concludes that, "*thinking* convinced me that our recent practice had been better than our theory."[43] This process of self-reflection and examination of recent events illustrates a human need for sense making and a return to cognitive ease. This may also be explained as the *illusion of understanding*.[44] These are, in essence, stories or narratives,

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[41] Daniel Kahneman's two systems of thinking correspond respectively to what he describes as fast and slow thinking. System I acts and operates automatically requiring little effort but owning responsibility over cognitive functions that provide real-time interpretation and coherence of events and activities as they unfold before us. We rely on System I for quick processing, environmental orientation, and effortless thought. System II is characterized as engaged, effortful, thought which is responsible for complex operations, and helps to better inform our System I, but also biases it. Daniel Kahneman, *Thinking Fast and Slow* (New York: Farrar, Straus, and Giroux, 2011), 59-70.

[42] Ibid.

[43] Thomas Edward Lawrence, *Seven Pillars of Wisdom* (Herefordshire: Wordsworth, 1997), 153.

[44] Kahneman, *Thinking Fast and Slow*, 199-208.

that humans tell themselves to maintain a sense of stable reality which can better train their intuition or create blinding biases. The more compelling the story, the simpler the task of understanding.

But why narratives? How is story telling so fundamental to the human experience? Numerous neuroscientific studies point to connections between narrative, brain function, and human behavioral response. Studies funded by the Defense Advanced Research Projects Agency (DARPA) traced narrative exposure to the synchronization of physiological and behavioral reactions among groups of people.[45] Another series of studies linked compelling narratives to the human body's production of oxytocin and its role in post-narrative effects. Oxytocin has been associated with human empathy and trustworthiness in information we perceive which has "the power to affect our attitudes, beliefs, and behavior."[46] For the purposes of this study, it will suffice to state that scientific study has traced a powerful link between narrative and the fundamental functions of the human brain to store information in memory, establish trust, influence behavior, and create and share knowledge. From a qualitative stand point, narratives enable people to perceive and interpret their environment, understand themselves within in that environment, in the context of time and space, and inform future action (Ref. Figure 1.).[47]

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[45] Paul J. Zak, R. Kurzban, and WT Matzner, "Oxytocin is Associated with Human Trustworthiness," *Hormones and Behavior* 2005, no. 48: 522-527; Bethany K. Bracken, Veronika Alexander, Paul J. Zak, Victoria Romero, and Jorge A. Barraza, "Physiological Synchronization is Associated with Narrative Emotionality and Subsequent Behavioral Response," in *Foundations of Augmented Cognition. Advancing Human Performance and Decision-Making through Adaptive Systems*, ed. Dylan D. Schmorrow and Cali M. Fidopiastis (Berlin: Springer, 2014), 3-13.

[46] Paul J. Zak, "Why Inspiring Stories Make Us React: The Neuroscience of Narrative," *Cerebrum: The Dana Forum on Brain Science* 2015 (February 2015); accessed December 10, 2017, https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4445577/.

[47] H. Porter Abbott, *The Cambridge Introduction to Narrative* (Cambridge: Cambridge University Press, 2008), 1-12; Elinor Ochs and Lisa Capps, "Narrating the Self," *Annual Review of Anthropology* 25, (1996): 19-43.

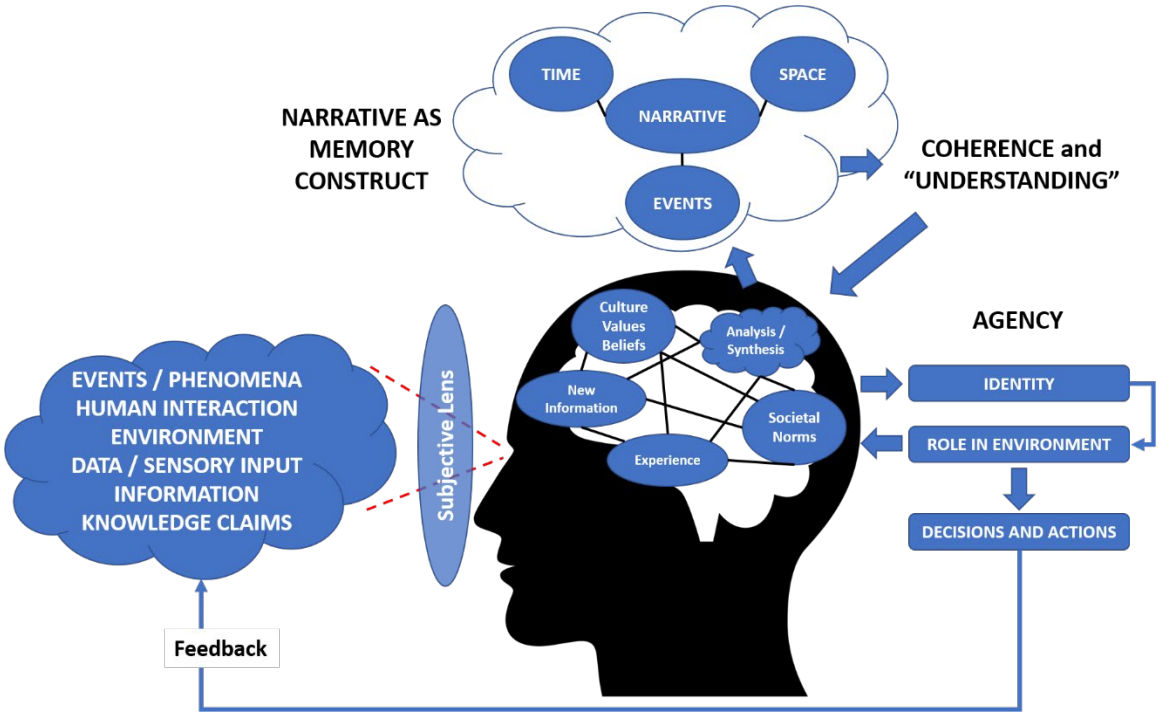

Figure 1. Narrative role in human cognition

Narrative permeates the human experience and plays a fundamental role in the construction of the individual reality. Humans utilize their senses to perceive and process the information, through light, sound, smell, color, and shapes, which the world around them provides. If a person came home from work and smelled smoke upon entering the house, a number of cognitive sense making processes would occur simply based on the information presented. The person may recognize the lack of a sounding smoke alarm, the visible lack of flames burning, the particular burning smell, or the feeling of heat. These are all instantaneous sensory functions. However, the narrative format that the brain uses for memory provide structure, understanding, and meaning to the experience which will vary from person to person. A trained and experienced first responder might quickly classify the type of fire and whether it is actively burning, deduce who might be home at the given time, whether this indicates that a person is in the house, and potentially incapacitated, which necessitates rendering first aid. A definition that captures this sense-making function well is "a motivated, continuous effort to *understand* connections [among people, places, and events] in order to anticipate their trajectory

and act effectively."[48] This definition, with respect to the earlier rudimentary example, illustrates narrative's function in creating stable reality in order to drive decisions within that environment.

The human effort to understand, in order to support decision making, leads logically toward discovering one's role and actions in the environment— a concept known as *agency*. With regard to human psychology, agency manifests in one's ability to plan actions in their environment with forethought, intentionality, and subsequently, react and reflect. The fundamental agentic properties of self-reaction and self-reflection give way to the individual development of personal identity and efficacy.[49] It is no longer just a matter of, "*here* I am" within the environment but "*who* I am," and "*who* am I" in the context of both space and time become important.[50] Not only are humans sense makers, but they are also more importantly, *meaning* makers and, "narrative is the principal way in which our species organizes its understanding of time."[51] Narratives are used to deliver plot which French philosopher Paul Ricoeur asserts as "the intelligible whole that governs a succession of events in any story."[52] As such, the richness of plot relies heavily, through the compression and/or sequencing of events in time, on its temporal complexity.

A person's reflection on the aforementioned questions concerning the self requires progression from seeking understanding toward deriving meaning. The result is the collection and refinement of knowledge. Psychologist Dr. Harlene Anderson asserts unambiguously the role that

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[48] Gary Klein, Brian Moon, and Robert R. Hoffman, "Making Sense of Sense Making 1: Alternative Perspectives," *IEEE Intelligent Systems* 21, no. 4 (2006): 70-73, accessed December 10, 2017. https://pdfs.semanticscholar.org/36c7/7b988d1277a1cda795449719547b522aeae7.pdf.

[49] Albert Bandura, "Toward a Psychology of Human Agency," *Perspectives on Psychological Science* 1, no. 2 (2006): 164–180.

[50] Martin Heidegger, *Being and Time*, translated by Joan Stambaugh (Albany: State University of New York Press, 1996), 24-32.

[51] H. Porter Abbott, *The Cambridge Introduction to Narrative*, 3.

[52] Paul Ricoeur, "Narrative Time," *Critical Inquiry* 7, no. 1 (Autumn 1980): 169-190.

narrative plays in everyday life toward the purpose of self-identity, reality perception, and the attainment of knowledge as follows:

> Narrative is a dynamic process that constitutes both the way that we organize the events and experiences of our lives to make sense of them and the way we participate in creating the things we make sense of, including ourselves. In a narrative view, our descriptions, our vocabularies, and our stories constitute our understanding of human nature and behavior. Our views of human nature and behavior are only a matter of our descriptive vocabularies, our language conversations, and our stories and narratives. Our stories form, inform, and re-form our sources of knowledge, our views of reality.[53]

Anderson's explanation suggests that the collection of knowledge and subsequent view of reality is a cyclical process and constantly reevaluated through a person's own subjective lens to maintain a sense of self-continuity. Humans are naturally social beings. Not only do they tell themselves stories to gain knowledge, make sense, and make meaning, they exchange these ideas, beliefs, and views to validate and promote their own ideologies, religion, politics, etc. The concept of "who am I" and "who I am" becomes "who are we" and "who we are" in a socio-cultural, collective context. Agency then extends toward the discovery of a group's role within a broader community of people.

Narrative Role in Societal Identity and Collective Action

In their seminal work, *The Social Construction of Reality*, Peter Berger and Thomas Luckmann provide an unprecedented and detailed accounting of how realities, identities, and knowledge are created, exchanged, and cemented into collective being through human social exchange. This essential work provides the connective tissue that bridges individual sense-making and self-continuity to the conveyance of collective reality, identity, and continuity to create cultures, ethnicities, and societal history as sources of knowledge.[54] Thus, narrative in

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[53] Harlene Anderson, *Conversation, Language, and Possibilities: A Postmodern Approach to Therapy* (New York: HarperCollins, 1997), 212.

[54] Peter L. Berger and Thomas Luckmann, *The Social Construction of Reality: A Treatise in the Sociology of Knowledge* (Garden City: Anchor Books, 1966), 34-44.

society provides a time-space logic structure for sense-making collectively.[55] French literary theorist Roland Barthes asserted the role of narrative as the ever-present and overarching tool for telling and continuing humanity's story:

> Narrative is present in myth, legend, fable, tale, novella, epic, history, tragedy, drama, comedy, mime, painting, stained glass windows, cinema, comics, news items, conversations. Moreover, under this almost infinite diversity of forms, narrative is present in every age, in everyplace, in every society; it begins with the very history of mankind and there nowhere is nor has been a people without narrative. All classes, all human groups, have their narratives.[56]

Narratives serve as a cohesive framework to explain past and present events or inform society's approach toward future events. Pulitzer Prize winning historian John Lewis Gaddis describes the historian's work as the storyteller, whose purpose is to draw out conclusions as to what occurred in the past in order to chart patterns and anticipate the future; for example, heroic tales to promote bravery or cautionary tales to prevent reckless behavior.[57] Events of the past and present are used to tell a story from a specific perspective and with a specific purpose. For societies, history and identity are nested in master narratives that provide overarching coherence over time, provide structure for plots, and suggest action for the continuity of a society and culture. Subsequently, as new events occur, narrative interpretations are created in order to explain what events mean in the context of the larger master narrative (Ref. Figure 2.).

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[55] Nuran Erol Işik, "The Role of Narrative Methods in Sociology: Stories as a Powerful Tool to Understand Individual and Society," *Journal of Sociological Research* 18, no. 1 (April 2005): 103-125.

[56] Roland Barthes and Lionel Duisit, "An Introduction to the Structural Analysis of Narrative," *New Literary History* 6, no. 2 (Winter 1975): 237-272.

[57] John Lewis Gaddis, *The Landscape of History: How Historians Map the Past* (Oxford: Oxford University Press, 2002), 1-16, 35-50, 91-105.

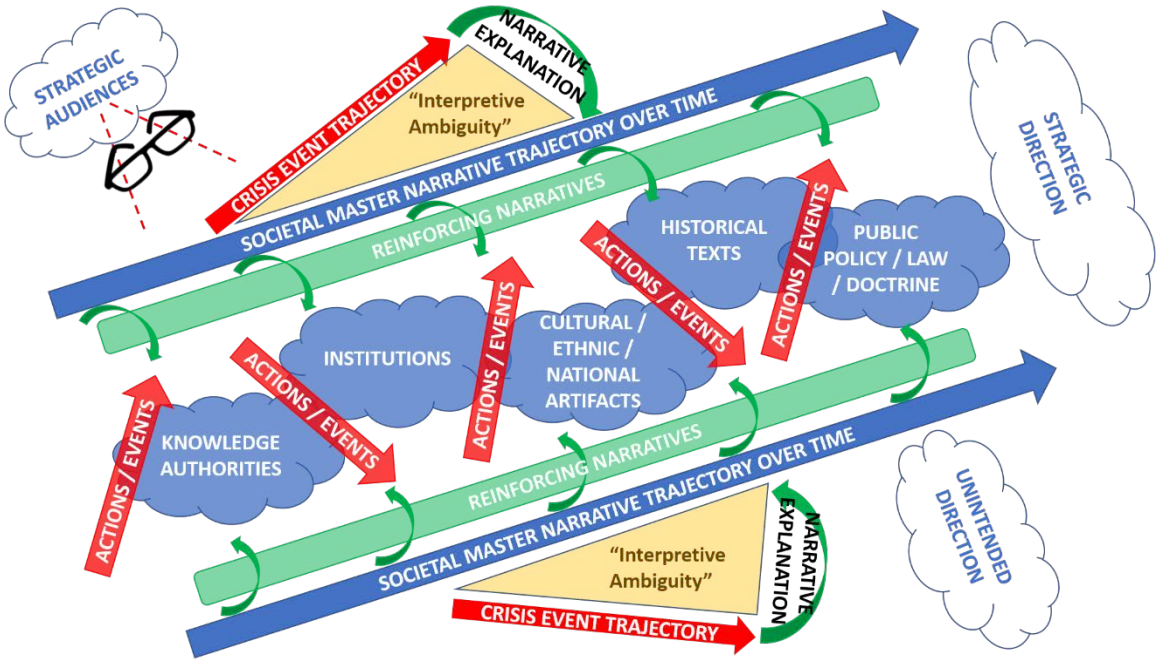

Figure 2. Role of narratives and master narratives in society

The nested nature of narratives and master narratives help to explain the relative strength of one societal identity over another. For a simple example, a person may hold a Kurdish ethnic identity, a Syrian national identity, and a Sunni or Shia Muslim religious identity. Depending on the issue at hand, any one of these identities may become more important or prevalent. Oppression of Turkish or Iraqi Kurds may spark greater cohesion and support of a shared ethnic identity across multiple national boundaries, or an infringement on national sovereignty may bring Syrian national identity to the fore. Collective sense-making and societal identity gain durability through the "redrafting of an emerging story so that it becomes more comprehensive, incorporates more of the observed data [events], and is more resilient in the face of criticism."[58] We tell storied interpretations of world events that conform to cultural, ethnic, or national paradigms and identities in order to inform and direct collective action, maintain order, facilitate

[58] Karl E. Weick, Kathleen M. Sutcliffe, and David Obstfeld, "Organizing and the Process of Sensemaking," *Organizational Science* 16, no. 4 (2005): 409-421.

the continuance of a society's way of life, or chart political directions or roles in global affairs.[59] From a political and military context, governments and militaries express narratives in domestic and foreign policy, press engagements, and doctrine.

Narratives, in their numerous forms, have evolved with communities from images and symbols, to the spoken and written word. Here, language, text, audio, and visual become mutable mediating agents to deliver meaning and plot. Each new communications medium presents a new method of connecting societies and telling stories that influence perceptions of the world and events. Innovations in technology, such as the printing press and the Internet, speed up the rate by which societies interact and imprint ideas and perspectives upon each other. Rapid exchange of culture and ideas, and interconnectivity between societies, are the essence of globalization. Technology, however, is often regarded myopically as an agent for speed and exchange, rather than its impact on how we perceive the world through new narrative forms.

Natural tensions arise internal to a society or nation, and externally between nations and cultures when there is a failure to reconcile fundamental differences. Internal to a group, tensions arise as a result of anomalies experienced and felt by a population that run counter to the narrative expressed by a national, religious, or social authority. Political groups with their own view on US domestic policy will offer an interpretation of actions and events that is consistent with their overarching explanatory narrative. Between groups, nations, and cultures, tensions arise along fault lines where the philosophies of thought diverge, causing political, economic, and in many cases, physical military confrontation. For example, numerous Cold War era conflicts gained greater attention by large powers based on the tensions between the United States' self-perceived global role as opposed to the Soviet-Russian view. Ultimately, it is the most compelling, coherent narrative, deemed legitimate by its target audience, that gains popularity and acceptance because

[59] Francesca Polletta, Pang Ching Bobby Chen, Beth Gharrity Gardner, and Alice Motes, "The Sociology of Storytelling," *Annual Review of Sociology* 37, no. 1 (August 2011): 109–130.

it creates a causal chain of events among actors that makes sense in a larger context. This is a dangerous prospect from a national security perspective as adversaries undermine power structures by delivering alternative interpretations of US diplomatic, economic, and military action. It is through the "all informing process of narrative" that Marxist theorist, Frederic Jameson sought to "restructure the problematics of ideology, of the unconscious and of desire, of representation, of history, and of cultural production."[60] The interpretive power of narrative, "the central function or instance of human kind," serves as a way to convey culture and ideology, and rewrite histories.[61] Objective accounts of world events or battlefield actions matter less than the narrative interpretation reaching strategic audiences.

Ultimately narratives "are the fundamental human device for enabling communities to act collectively."[62] Collective identity builds national, ethnic, and cultural coherence but does not bridge the gap toward political action, social movements, or war on its own. Narrators may take advantage of collective identity by promoting the primacy of a particular emergent property of a target audience. This can be done through cultural, ethnic, religious, or territorial sub-identity in order to encourage collective action.[63] Even worse, mobilization of such movements does not require an existing collective identity, rather a "frame" identity may be crafted and latched upon by groups of people such as recruits of radical ideologies.[64] These facets of the self are under constant development and form the subjective lens through which we perceive and understand the

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[60] Frederic Jameson, *The Political Unconscious: Narrative as a Socially Symbolic Act* (Ithaca: Cornell University Press, 1981), xiii.

[61] Ibid.

[62] Frederick W. Mayer, "Narrative and Collective Action: The Power of Public Stories." *Conference Papers -- American Political Science Association* (2006): 1-43.

[63] Michael Vlahos, *Fighting Identity: Sacred War and World Change* (Westport: Praeger Security International, 2009), 21-45.

[64] Francesca Polletta and James M. Jasper, "Collective Identity and Social Movements," *Annual review of Sociology* 27, no. 1 (2001): 283–305.

world. Adversaries understand this function and seek to undermine the factors that impact perceptions which lead to unintended trajectories of action.

The idea of being exploited by constructed narratives can be uncomfortable. People enjoy having the general sense that they are in control of their environment and that their reality makes sense. Problematically, it is exactly this desire for sense making, cognitive ease, and a search for meaning that make the human brain vulnerable to agenda-driven or adversarial narratives. In essence, these become alternate interpretations of one's environment over time. With respect to revanchist, revisionist, and extremist ideologues, populations become open to influence through rewritten histories, reinterpreted territorial claims or national identities, and warped interpretation of religious practice. This inherently human condition is rooted in philosophically debated questions on how humans validate knowledge. Going forward, research shows how modern and postmodern *epistemologies* offer theoretical frameworks for how we can claim to *know* something.

A National Security Threat: The Postmodern Condition and the Semantic Turn

> Simplifying to the extreme, I define the postmodern as incredulity toward metanarratives.
>
> —Jean Francois Lyotard, *The Postmodern Condition*

> I'm not arguing that it's a good thing that stories are so powerful. We can be misled, and we are. Part of why I try to talk about this is to arm people, in a sense, against stories because people are trying to manipulate us all the time.
>
> —Frederick W. Mayer

The psychological and sociological examination of narrative's role in human cognition and societal self-organization illustrates a remarkable vulnerability that adversaries seek to exploit. Given that the ultimate goal of cognition, on an individual and societal level, is to inform how people act in the environment, various narrative forms serve to provide alternative interpretations of reality that coerce or persuade ethnic, religious, or national groups to action. As such, narrative becomes the mechanism through which power, as a monopoly over legitimate

knowledge, is attained, retained, and exerted. French philosopher Michel Foucault's work on power relations and fields of knowledge recognized this phenomenon and expounded on the inextricable link between the two.[65] Disputed views on knowledge and knowability stem from deeper modern and postmodern philosophical underpinnings. Postmodern power strategies and the human vulnerability to narratives create an environment where traditional power structures are questioned, knowledge authority and power are in constant flux, and reality is highly subjective and mutable toward adversarial agendas.[66]

Modernist philosophical thought operates in the realm of the concrete, empirical, and scientifically replicable. Knowledge is gained through those things which are perceived by the five human senses, and reality is objectively quantifiable and explainable through reason. Power is linked to knowledge whose legitimacy is validated by an authority in a hierarchical sense. For example, the scientific community accepts or rejects what is considered knowable among a cohort of practitioners until new objective proof is presented and inducted. The community of practitioners, such as doctors, lawyers, or politicians, represent knowledge authorities from specific fields, respected and recognized by society. In a modernist society, counter claims to knowledge require validation before they are accepted as true.[67] This philosophy of thought is rooted in the Enlightenment but is slowly becoming less relevant as postmodern thinkers cast doubt on objectivity in knowledge claims, which leaves societies skeptical of political, religious, and historical knowledge authorities.

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[65] Michel Foucault, *Power/Knowledge: Selected Interviews and Other Writings, 1972-1977* (London: Panthon, 1980), 134-145.

[66] Gearóid Tuathail, "The Postmodern Geopolitical Condition: States, Statecraft, and Security at the Millennium," *Annals of the Association of American Geographers* 90, no. 1 (2000): 166-178.

[67] Thomas Kuhn, *The Structure of Scientific Revolutions* (Chicago: The University of Chicago Press, 1962), 52-53.

Postmodernism, in its purest form, calls into question all knowledge that society takes for granted. Traditional knowledge claims by authoritative bodies are able to be rejected, along with much of their associated power. Postmodernism regards nothing as objective and everything as open to interpretation and reinterpretation, essentially refuting the modernist view. Postmodernists view the centralization of control or privilege over knowledge under a single authority as a cause of disparity among people[s]. Thus, as an interpretive philosophy, the use of language, written or verbal, in a calculated fashion can tip the power balance of any given set of "truths" to create new "knowledge."[68] Where modernism sees knowledge as a journey toward objective truths, postmodernism sees a play for plurality in language to challenge knowledge claims and undermine power structures.

Industrial designer Klaus Krippendorff's landmark work, *The Semantic Turn*, supports the idea that "no artifact can be realized within a culture without being meaningful to those who can move it through its various definitions."[69] Essentially, Krippendorff challenges the fundamental assumptions that motivate industries to create products, like cars, and interfaces, ways that we interact with these products. He proposes that design begins at a higher level where we no longer ask, "what kind of car do people want to drive," or, "how do people interact and experience their vehicle," and instead ask, "what does transportation mean to people or society?" No longer are products and interfaces the method for designing potential futures. Rather it becomes the semantics, the meaning, that drives the creation of potential futures and, interestingly, can alter the past. Extended to social issues, such as race or gender, where people now ask what it means to be black, white, male, female, Iraqi, Kurdish, a voter, or a citizen in a

[68] Christopher Butler, *Postmodernism: A Very Short Introduction* (New York: Oxford University Press, 2002), 13-43.

[69] Klaus Krippendorf, *The Semantic Turn: A New Foundation for Design* (CRC Press, 2005), 174.

given society. Postmodern strategy seeks new future trajectories starting with ‘semantics of things’ rather than the ‘things’ themselves.

Postmodern strategies use narrative and language games to inject new meaning (semantics) into an existing body of knowledge (discourse) to diminish its power and alter trajectories of action (Ref. Figure 3.). Foucault states that, “discourse transmits and produces power; it reinforces it, but also undermines and exposes it, renders it fragile and makes it possible to thwart.”[70] This creates an environment of ambiguity for individuals and societies where fact and fiction are indistinguishable. The most compelling interpretation of events become the new reality and buzzwords uttered by politicians are soon on commonly vocalized. Access to a narrative defines power which is expressed and reinforced through symbols, myths, stories, and language whose meaning can be manipulated. This poses an insidious national security threat allowing external adversaries to undermine and influence the natural process that individuals and societies use to self-organize and develop coherent identity.[71] National histories, cultural continuities, or any coherent overarching unifying narrative becomes open to inquiry and dissolution for the purpose of redefinition.

[70] Michel Foucault, *The History of Sexuality: The Will to Knowledge* (London: Penguin, 1998), 100-101.

[71] Paul Cilliers, *Complexity and Postmodernism: Understanding Complex* Systems (London: Routledge, 1998), 104-109.

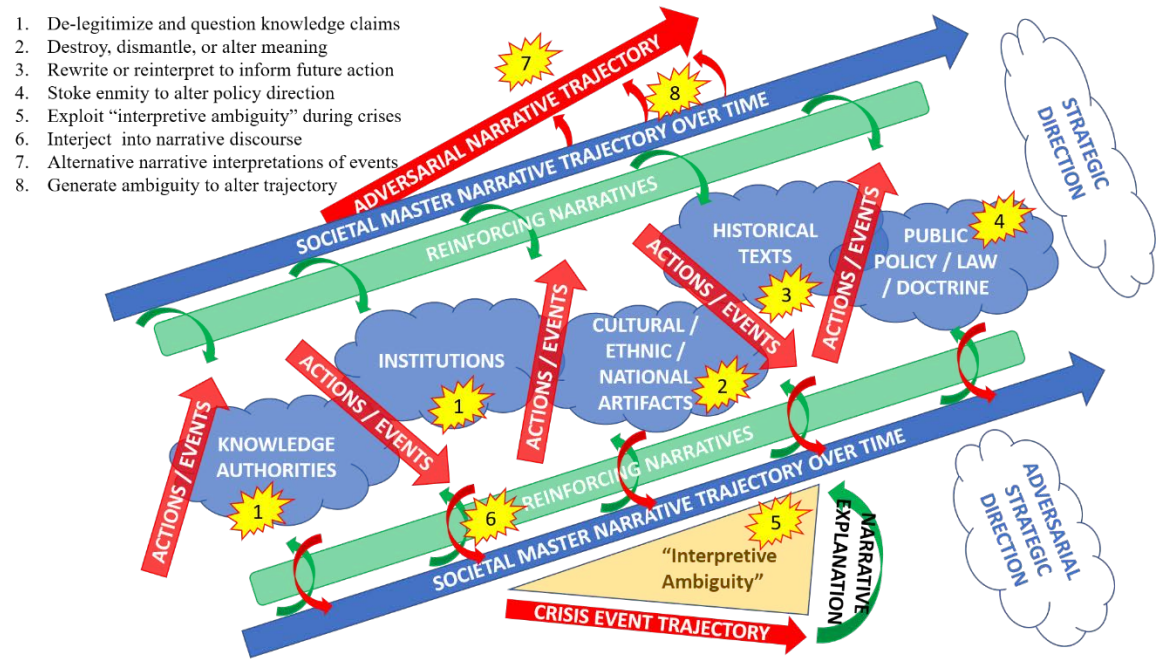

Figure 3. Postmodern narrative strategies

With reference to Figure 3, postmodern strategies attack, disrupt, subvert, and exploit existing knowledge authorities and institutions to undermine their power and ability to make knowledge claims. Artifacts of a society, such as the US Constitution, physical structures, historical relics, or territorial claims are destroyed, dismantled, or reinterpreted to alter their meaning. Because language, both spoken and written, is mutable and redefinable, historical texts may be reinterpreted or even rewritten and packaged for new audiences to alter a learner's paradigm and inform new future action. Unique language such as Diaspora or Holocaust, which have historical, empirical, or cultural significance, are stripped of their specific meaning and replaced to represent a broader "marginalized" group.[72] This serves to diminish the narrative one group and bring others to the fore. This enables adversarial rewriting of the past and disinforms future action. Postmodern strategy's exploitative nature also takes advantage of the natural tendency of events to stoke enmity or new discourse around politically and socially sensitive

[72] Rima Berns-McGown, "Redefining 'Diaspora': The Challenge of Connection and Inclusion," *International Journal* 63, no. 1 (Winter 2007/2008): 3-20.

issues to influence public policy and law. Finally, such strategies seek to generate and exploit the ambiguity present when a crisis occurs by offering alternative interpretations of events as they unfold, in order to change a society's strategic trajectory toward an unintended one. Postmodern warfare then, as a strategy to upend traditional knowledge claims and power structures, is nicely captured as a, "multi-domain, borderless competition dominated by state and non-state actors who possess the ability to manipulate information through narratives that decisively overwhelm or undermine adversaries, focusing on non-combatants for sources of political dissidence."[73]

Postmodern theorist, Jean-Francois Lyotard wrote on the changes in society at the advent of the computer age and the subsequently altered nature of knowledge in *The Postmodern Condition*. In essence postmodernism, or postmodernity, exists rather as a condition within which humans exist, whether or not they are fully aware of it. Lyotard described the rise of *information* as the newest among commodities that would define power structures into the next century. He asserted that the overarching master narratives that legitimized authoritative centers and fields of practice were in decline. More importantly he proposed that, in an information centric society, the process of legitimation, by which acceptability of a statement is established in discourse by an authority, is persistently contested. What exactly made an authority, whether scientific, political, or religious, legitimate and permitted them to make knowledge claims?[74] Even worse, one may ask, what now stops state and non-state actors from influencing vulnerable populations with false knowledge claims? The global ubiquity of Internet access and low barrier to entry, breaks the traditional notion of legitimacy and the moderation of discursive practices.[75] Interpretations of

[73] Larry Kay, "Innovation of Military Thought in the Postmodern Warfare Era," *Small Wars Journal*, February 4, 2017, accessed December 5, 2017, http://smallwarsjournal.com/jrnl/art/innovation-of-military-thought-in-the-postmodern-warfare-era.

[74] Jean-Francois Lyotard, *The Postmodern Condition: A Report on Knowledge* (Manchester: Manchester University Press, 1979), 3-23.

[75] Ibid., 6-8, 27-34.

world events, politics, and military actions may be created, repackaged with new meaning, and distributed across the globe by anyone. When trusted sources of truth and knowledge, such as political or religious figureheads, organizational doctrine, or even a child's parents, come under attack or doubt and uncertainty are introduced, knowledge seekers head into the wilderness to discover alternatives that make sense, provide coherence, and return them to cognitive ease and a sense of purpose. Here, the adversary is there waiting to deliver, and nowhere does this go on display today more fully than in cyberspace.

The Human Journey for Knowledge in the Age of Google

> When a community develops some extension of itself [technology], it tends to allow all other functions to be altered to accommodate that form. Men are suddenly nomadic gatherers of knowledge.
>
> —Marshall McLuhan, *Understanding Media: The Extensions of Man*, 1964

> As we come to rely on computers to mediate our understanding of the world, it is our own intelligence that flattens into artificial intelligence.
>
> —Nicholas Carr, *The Shallows: What the Internet is Doing to Our Brains*

Today, it is in cyberspace that the narrative role in cognition and social collective action, and postmodern power strategies that subvert traditional knowledge authorities in society come to a head. The convergence of these phenomena forms a human condition that leaves persons and societies vulnerable to compelling adversarial stories which are designed to produce desired actions and shape power dynamics. The information revolution within which humanity currently exists breeds "nomadic gatherers of knowledge."[76] Problematically, the increasing rapidity in which information is created online surpasses the human ability to process, analyze, translate, and ultimately make sense and meaning.[77] This prevents humans from engaging in a traditional journey for knowledge and forces them to evolve. Thus, the standard for what constitutes

[76] McLuhan, *Understanding Media: The Extensions of Man*, 390.

[77] Luciano Floridi, *The Fourth Revolution: How the Infosphere is Reshaping Human Reality* (Oxford: Oxford University Press, 2014), 1-23.

legitimate knowledge is eroded significantly which allows pre-packaged, easily digestible information to achieve primacy. New narrative forms continue to adapt to meet the need for rapid processing to facilitate alternative interpretations of reality and provide an impetus to alter behavioral trajectory. The impact of digital technologies and cyberspace on human cognition, identity, and social self-organization further exacerbate the human postmodern condition and influence of adversarial narratives.

The advent and development of the Internet represented a new global medium through which humans evolved their methods of intercommunication and explored new sources of knowledge. The past decade arguably represents the most rapid period of change with increased mobility and the creation of information, of questionable credibility, through social media (Twitter, Facebook, Snap Chat, YouTube, Instagram, etc.) and other communication applications. In January of 2018, global Internet and social media penetration reached 54 percent and 42 percent respectively, far outpacing population growth, year after year, as depicted in Figure 4, suggesting that this problem will continue to become more widespread.[78] Taken together with the global phenomena of urbanization and estimates that future combat will most likely occur near or amongst population centers, this represents an evolution in humanity that must be accounted for in military strategy.[79] Each new communication application or social media platform represents a medium within a medium that, as McLuhan posits, requires a reconsideration and understanding of their psychological and sociological impacts.[80]

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[78] Simon Kemp, "Digital in 2018: World's Internet Users Pass the 4 Billion Mark," *We Are Social*, January 30, 2018, accessed February 8, 2018, https://wearesocial.com/blog/2018/01/global-digital-report-2018.

[79] Scott, *Joint Operating Environment 2035: The Joint Force in a Contested and Disordered World*.

[80] McLuhan, *Understanding Media: The Extensions of Man*, 10-19.

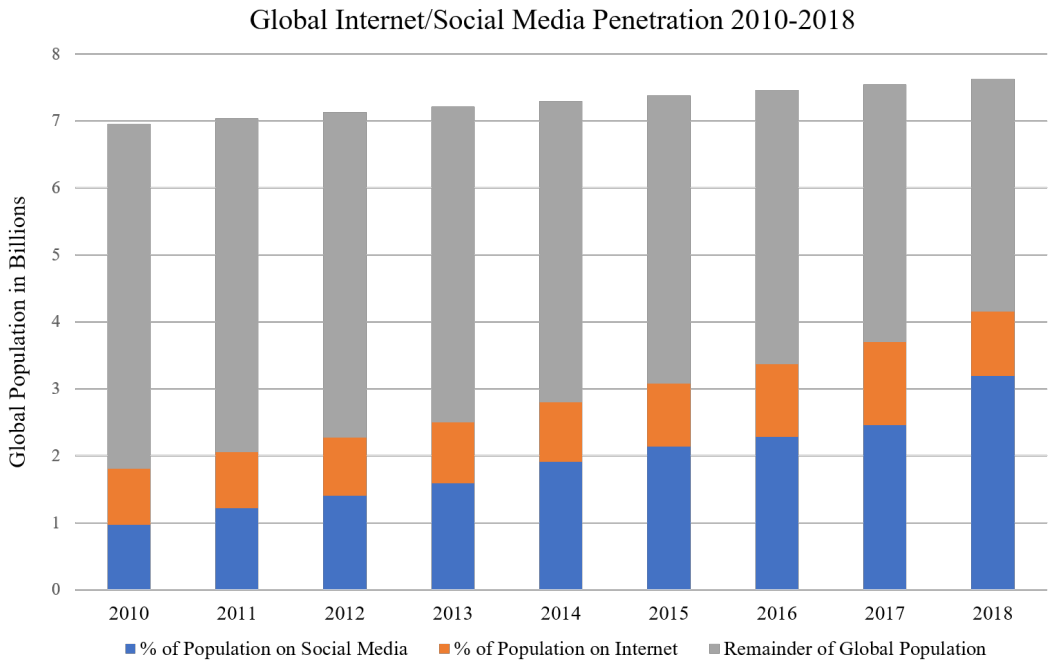

Figure 4. Growth of Internet and social media users as a subset of global population. Data adapted from Internet World Stats, December 31, 2017, accessed January 10, 2018, https://www.internetworldstats.com, and We Are Social, January 30, 2018, accessed February 8, 2018, https://wearesocial.com.

Technologies that alter the ways and forms by which people communicate tend to have the most profound impact upon the conscious mind. This owes to the nature and necessity of working memory as a precursor to syntactic language structures and their connection to other duties of the prefrontal cortex such as decision making and social behavior moderation.[81] Language is "native to our species," but as humans continue to substitute digitized information as an extension of their own memory, the Internet "threatens to make us shallow thinkers."[82] Neuroscientific studies find that the brain structures and cognitive behaviors of digital natives and

[81] Francisco Aboitiz and Ricardo Garcia, "The Evolutionary Origin of the Language Areas in the Human Brain: A Neuroanatomical Perspective," *Brain Research Reviews* 25, no. 3 (December 1997): 381-396.

[82] Nicholas Carr, *The Shallows: What the Internet is Doing to Our Brains* (New York: W. W. Norton and Company, 2010), 51.

digital immigrants, new generations born into and during the transition to the Internet and social media age, are rapidly evolving.[83] Researchers Kep Kee Loh and Dr. Ryota Kanai found that,

> Growing up with Internet technologies, 'Digital Natives' gravitate toward 'shallow' information processing behaviors characterized by rapid attention shifting and reduced deliberations. They engage in increased multitasking behaviors that are linked to increased distractibility and poor executive control abilities. Digital natives also exhibit higher prevalence of Internet-related addictive behaviors that reflect altered reward-processing and self-control mechanisms.[84]

These cognitive changes feed the most basic human desires of acceptance, instant gratification, and to feel unique, which alter how people define themselves and others.[85] Worst of all, this evolution causes people to take online information at face value which has a cumulative effect on thinking and behavior even if the information is initially dismissed as fake, inaccurate, or moderately outrageous.[86] Tailored and repetitive exposure to misinformation on the Internet has the ability to alter individual and societal perceptions of local, regional, and global issues.

The impacts of Internet communication and social media on identity construction is another facet of this condition that continues to be studied over time. How individuals choose to present themselves online, reflect on their created self-image, and subsequently reidentify over time reveals the intense impact of a mutable online identity on one's psychological identity in the real world.[87] In fact, the numerous factors and influences that create complex human identity are shown to be more fully expressed (publicly shared) or suppressed (publicly hidden) online, based

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[83] Kep Kee Loh and Ryota Kanai, "How Has the Internet Reshaped Human Cognition?"

[84] Ibid.

[85] Susan Greenfield, *Mind Change: How Digital Technologies are Leaving Their Mark on Our Brains* (New York: Random House, 2015), 266-267.

[86] David N. Rapp and Jason L.G. Braasch, *Processing Inaccurate Information: Theoretical and Applied Perspectives from Cognitive Science and the Educational Sciences* (Cambridge: MIT Press, 2014), 1-9, 45-64.

[87] Ugur Gunduz, "The Effect of Social Media on Identity Construction," *Mediterranean Journal of Social Sciences* 8, no. 5 (September 2017): 85-92.

more on the trust among a group or social organization than in the physical world.[88] This suggests that facets of a person's online identity, such as political interests, may be selectively targeted and encouraged toward outward physical expression.[89] Social media and ICTs present a balance shift from an internal narrative construction of the self, toward one that is heavily "socially constructed and externally driven."[90]

The earlier section on societal self-organization and identity emphasized the emergence of various sub identities associated with geographically localized or regionalized populations. ICTs and social media expand the human ability to discover persons and groups with common bonds across non-contiguous geography. Not only can geographically dispersed members of a cultural, ethnic, or displaced national group coalesce online, but members of social and political movements (Occupy, Black Lives Matter, #MeToo, etc.) possess the ability to rapidly organize, gather support, and advance their cause. Because an individual may have numerous online personas, depending on the context of the discussion or forum of communication, individuals are able to organize and coalesce around much more fine-grained, emergent commonalities.[91] Furthermore, studies show that even tepid or weak supporters connected to a cause through social media will answer the call to collective action.[92]

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[88] Massimo Durante, "The Online Construction of Personal Identity through Trust and Privacy," *Information* 2, no. 4 (2011): 594-620.

[89] Jessica T. Freezell, "Predicting Online Political Participation: The Importance of Selection Bias and Selective Exposure in the Online Setting," *Political Research Quarterly* 69, no. 3 (2016): 495-509.

[90] Greenfield, *Mind Change: How Digital Technologies are Leaving Their Mark on Our Brains*, 266-267.

[91] Amandha Rohr Lopes, "The Impact of Social Media on Social Movements: The New Opportunity and Mobilizing Structure," *Journal of Political Science Research* (2014).

[92] Keith N. Hampton, "Grieving for a Lost Network: Collective Action in a Wired Suburb," *The Information Society* 19, no. 5 (2003): 417-428.

New narrative forms in the age of the Internet and social media have emerged to meet the public's on-demand, rapid information consumption requirements and enable collective organization structures and actions. From images, video, and audio through YouTube, Snap Chat and Instagram to posts, memes, tweets, and hashtags on Face Book, Twitter and other applications, these new forms present numerous new mediums and social organizing structures through which power and influence are exerted. An interesting example, in an age where the term "fake-news" came into common use, is the finding that two-thirds of Americans claim to obtain their news intake from social media platforms.[93] Year after year, more people rely upon social media and a broader selection of global news outlets, of varying levels of trustworthiness and competing interests, to shape their perceptions of world events and, ultimately, their realities.

Distinguished fellow at the Institute for the Future, Jamais Cascio, asserts that, "the crisis we face about 'truth' and reliable facts is predicated less on the ability to get people to believe the wrong thing as it is on the ability to get people to doubt the right thing."[94] Lyotard's prophetic postmodern condition has come full circle. Not only are the sources of what constitute legitimate knowledge in decline, they are under attack. Respected news agencies even fall into the trap of latching onto viral Internet media in order to be the first to report on air in the main stream only to find that the story wasn't real. The overt acknowledgement of this practice has many names, although terms like "fake news" and "alternative facts" have become more popular, even if jokingly. In this arena, social media hashtags become vehicles for postmodern power strategies to interject new meaning and purpose into political and social discourse to create new strategic

[93] Elisa Shearer and Jeffrey Gottfried, "News Use Across Social Media Platforms 2017," *Pew Research Center's Journalism Project,* September 7, 2017, accessed January 5, 2018, http://www.journalism.org/2017/09/07/news-use-across-social-media-platforms-2017/.

[94] Janna, Anderson, and Lee Rainie, "The Future of Truth and Misinformation Online," *Pew Research Center: Internet, Science & Tech*, October 19, 2017, accessed January 5, 2018, http://www.pewinternet.org/2017/10/19/the-future-of-truth-and-misinformation-online/.

trajectories. When nations engage in this practice, what do we call it and what does the act constitute?

Hacking the Hearts and Minds Through Cyberspace: Russian Information Warfare as Postmodern Power Strategy

> The information space opens wide asymmetrical possibilities for reducing the fighting potential of the enemy.
>
> —Valery Gerasimov, Chief of the General Staff, Russian Federation Armed Forces

Russian activities in cyberspace over the past decade demonstrate a deep appreciation of the accompanying cognitive, psychological, and sociological impacts of narrative and ICTs within the modern operating environment. These activities are consistent with the subjective, interpretive, and pluralistic nature of postmodern power strategies which present an asymmetric threat to the United States and its North Atlantic Treaty Organization (NATO) allies. In particular, cyberspace activities targeting the Russian-speaking near-abroad, eastern European countries as precursors to kinetic operations, and the populations and political systems of the European Union (EU) and the United States suggest the adaptation and experimentation of older Soviet strategies of power and control for the information age.

The Russian government has long understood the value of information as a means of control and coercion, the effects of which are clearly evident in contemporary applications of their new-generation warfare (NGW) concept.[95] Further, the steady evolution of Russian Information Warfare toward a fully integrated cyber, IO, electronic warfare (EW), and psychological operations (PO) capability represents a divergence from that of the United States. This owes to the pervasive nature of reflexive control theory and maskirovka in Soviet and Russian military culture which transcends all levels of war and spans across military, diplomatic,

[95] Dmitry Adamsky, "Cross-Domain Coercion: The Current Russian Art of Strategy," *Proliferation Papers* 54 (November 2015): 1-43.

and government activities.[96] The deep-rooted nature of reflexive control and maskirovka in Russian strategy and operational art help to explain the recent development of postmodern narrative strategies in and through cyberspace.

The Soviet Union began research into reflexive control theory in the early 1960s and consistently progressed its development into a fully operational Russian psychological capability through the late 1990s, designed to disrupt, confuse, divert, and ultimately control an adversary's decision making.[97] Essentially, Russia uses reflexive control to encourage an adversary to voluntarily make decisions advantageous to Russian objectives. They accomplish this through several methods including disinformation, deception, and coercion which requires a deep understanding and tailored exploitation of what Russian military theorist Col. S. Leonenko calls the enemy's psycho-sociological "filter."[98] Leonenko's description of this filter as a set of factors that make up one's subjective information processing lens, is consistent with narrative theory on cognition and reality construction which illustrates the Russian understanding of the cognitive framework described previously in Figure 1.[99] Individuals and collective societies understand the world through their own subjective lens and identity, which drives decision making. Maskirovka is another pervasive concept within Russian military and diplomatic culture that nests within reflexive control theory and provides the specific methods and means employed to distort an adversary's perception of reality.[100] Thus, reflexive control utilizes prepared information,

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[96] Diane Chotikul, *The Soviet Theory of Reflexive Control in Historical and Psychocultural Perspective: A Preliminary Study* (Naval Postgraduate School Monterey CA, 1986), 35-36.

[97] Timothy L. Thomas, "Russia's Reflexive Control Theory and the Military," *Journal of Slavic Military Studies* 17, no. 2 (2004): 237-254.

[98] Ibid. Russian military studies expert Timothy Thomas draws from contemporary Russian military theorists to illustrate the continuity of reflexive control theory into the modern information age.

[99] S. Leonenko, "Refleksivnoe upravlenie protivnikom," (Reflexive Control of the Enemy), *Armeykiy Sbornik* (*Army Collection*), no. 8 (1995): 28.

[100] Roger Beaumont, *Maskirovka: Soviet Camouflage, Concealment, and Deception* (College Station, TX: Center for Strategic Technology, Texas A&M University, 1982), 30.

disinformation, and deception to both influence and craft the inputs to the human cognitive process to alter perceptions and realities toward predictable behaviors; essentially hacking the hearts and minds.[101] Russian reflexive control theory consists of information-technical and information-psychological components, the second being focus of this writing. Russian Ministry of Defense doctrine illustrates adaptation of these components to the information and computer age:

> [Information warfare is] confrontation between two or more states in the information space for damaging the information systems, processes, and resources, which are of critical importance, and other structures, to undermining the political, economic, and social system, and massive brainwashing of the population for destabilizing the society and state, and also forcing the state to make decisions in the interests of the confronting party.[102]

The Russian emphasis on the information-psychological component of reflexive control theory, which predated the creation of its cyberspace force, also helps to explain the philosophical divergence from the United States with regard to employment of cyberspace capabilities.[103] Without exploring this fundamental difference it is impossible to anticipate the character of future conflict in cyberspace.

In the age of mass online media, Russia has taken several steps to enhance its capability to deliver prepared information and propaganda through seemingly legitimate channels to both domestic and international audiences. A RAND study from 2016 examined this process over the past decade concluded that Russia's "firehose of falsehood" model for propaganda is highly

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[101] Timothy L. Thomas, "Psycho Viruses and Reflexive Control: Russian Theories of Information-Psychological War," in *Information at War: From China's Three Warfares to NATO's Narratives*, ed. Peter Pomerantsev (London: Legatum Institute, September 2015), 16-21.

[102] Ministry of Defense of the Russian Federation, *Conceptual Views Regarding the Activities of the Armed Forces of the Russian Federation in Information Space*, (2011), accessed January 22, 2018, http://www.ccdcoe.org/strategies/Russian_Federation_unofficial_translation.pdf.

[103] Timothy L. Thomas, "Dialectical Versus Empirical Thinking: Ten Key Elements of the Russian Understanding of Information Operations," *Journal of Slavic Military Studies* 11, no. 1 (1998): 40-62.

effective and takes advantage of psychological and cognitive vulnerabilities in contemporary audiences.[104] The study describes Russian propaganda as high-volume and multichannel, which refers to the overwhelming saturation of information among numerous media sources to increase credibility and persuasive value of the story. Essentially, the quantity and fashioned diversity of cohesive stories has a qualitative effect.[105] The Russian effort to be the first story on the scene and continuously reinforce the ideas presented seeks to impart small and lasting first impressions on regional and global issues. Finally, the study posits on the Russian's cunning ability to exploit ambiguity over an issue ranging from stretching the truth to outright lying, with little or no commitment to an objective reality. The ability to shift stance on an issue illustrates the value of persuasive explanatory narratives that are plausible and explain reality for audiences. The effectiveness of high-volume, multichannel propaganda that is rapid, continuous, and repetitive, which lacks both commitment to objective reality and consistency follows a postmodern strategy of plurality, narrative persuasion, and thrives on the inhibited human information processing capabilities that Internet information overload exacerbates. These factors make the everyday ingestion of Russian media sources along NATO borders and globally on the Internet a threat to favorable individual and societal reality construction.

Russia's information warfare strategy does not follow a prescriptive template for each engagement and is capable of tailoring its objectives from local or domestic, to regionalized and global foreign audiences with shrewd attention to politics and societal identities.[106] One of the

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[104] Christopher Paul and Miriam Matthews, *The Russian 'Firehose of Falsehood' Propaganda Model: Why it Might Work and Options to Counter it* (Santa Monica, CA: RAND Corporation, 2016).

[105] Ibid.

[106] Valery Gerasimov, "The Value of Science is in Foresight: New Challenges Demand Rethinking the Forms and Methods of Carrying Out Combat Operations," *Voyenno-Promyshlennyy Kuryer Online* (February 26, 2013), translated by Robert Coalson, June 24, 2014, accessed February 12, 2018, http://usacac.army.mil/CAC2/MilitaryReview/Archives/English/MilitaryReview_20160228_art008.pdf.

earliest instances of Russian use of cyberspace to create instability among populations occurred in Tallinn, Estonia in 2007 in response to the relocation of a Soviet-era, Red Army statue. The Russian government decried this as an insult to the Russian ethnic minority inside Estonia and the erasure of past Soviet military sacrifices. In a country that boasted one of the world's most technologically advanced governments, life as many Estonians knew it came to a halt as distributed denial of service (DDoS) attacks and web defacements against Estonian government, communications, and economic targets ensued. The heavy weighting toward Russia's information-technical capabilities in this instance had psychological impacts all of their own. Thousands of demonstrators took to the streets over the inability for the Estonian government to respond which nested perfectly within widespread online anti-west, pro-Russian, disinformation and propaganda that preceded the attacks; all of which were intended to influence a highly information-centric society.[107] The negative press and NATO response of support to Estonia in the wake of the attacks forced the Russians to adapt their methods despite their ability to deny involvement and avoid positive attribution.

The Russian incursions into the Republic of Georgia in 2008, and the Crimean Peninsula in 2013 through 2014 demonstrate progressive steps toward perfecting information control in conjunction with kinetic military operations. This is a significant milestone and illustrates the creation and exploitation of strategic ambiguity in the operating environment by severing a nation's information infrastructure. If strategic audiences neither have access to information nor the ability to provide narrative interpretation of the operating environment, belligerent actors may dominate and shape the sole narrative interpretation of events on the ground. The isolated battlefield information environment afforded Russia greater flexibility in their choice of kinetic activities and ample time to accomplish their objectives without outside interference. While

[107] Michael Connell and Sarah Vogler, *Russia's Approach to Cyber Warfare* (Alexandria, VA: Center for Naval Analyses, 2017).

Russian information-technical operations saw improvements in planning, pre-coordination, and synchronization in Georgia, the information-psychological component progressed toward a contest for control of information flows in parallel with propaganda distribution.[108] Russia, however, fell short of its own objectives in the information war despite making gains in territory as Georgia successfully contested, and perhaps completely countered, the Russian local, regional, and strategic narratives.[109]

Russia took the lessons of the 2008 conflict with Georgia to reform and enhance its information force composition for future engagements in the Russian-speaking near abroad.[110] These forces included EW, PSYOPS, and cyber field forces, wholesale expansion of state media to foreign countries, and the enlistment of journalists, web designers, hackers, and bloggers, later known as "Internet Trolls."[111] The latter categories of forces were used most notably to both flood the information environment to create alternative views of reality, and to isolate the information space from foreign intervention, both before and during combat operations. These forces, as a part of the broad information strategy, made their debut prior to and throughout the invasion and annexation of the Crimean Peninsula. Most interesting, with respect to narrative and postmodern strategy, were the information-psychological objectives that were tailored toward the predominantly ethnic-Russian identified territories. The narratives appealed to historic Russian claims to Ukraine land, the oppression of Russian diaspora, delegitimizing the "artificial" Ukraine

[108] Emilio J. Iasiello, "Russia's Improved Information Operations: From Georgia to Crimea," *US Army War College: Parameters* 47, no. 2 (Summer 2017), 51-63.

[109] Timothy L. Thomas, "Russian Information Warfare Theory: The Consequences of August 2008," in *The Russian Military Today and Tomorrow: Essays in Memory of Mary Fitzgerald*, ed. Stephen J. Blank and Richard Weitz (US Army War College Strategic Studies Institute, 2010), 265-299.

[110] Ibid.

[111] Iasiello, "Russia's Improved Information Operations: From Georgia to Crimea."

government and its western sponsors, and presenting a strong benevolent Russian state.[112] Online mass media methods were employed to flood legitimate news channels, manipulate historical claims, facts, and memory, create interpretive ambiguity of political, diplomatic, and military events, and contest or dominate opposing views through Internet trolling.[113] Russian actions in Crimea demonstrated an integrated, synchronized, whole of government approach in the information environment to achieve its political objectives of a non-NATO Ukraine and reclamation of former Soviet territory. The use of cyberspace to exploit natural political tensions and exacerbate them represents a far more insidious threat to nations globally.

Most recently, Russian efforts to use, pose as, or co-opt cyberspace trolls, hacktivist groups, fake social media accounts, and in several cases thousands of automated machine users known as "bots" to influence other nations' domestic politics has taken center stage.[114] Clausewitz describes politics as the "intercourse of governments and peoples."[115] Essentially, the fundamental process through which differences and tensions are reconciled, with war being a continuation of this activity "with the addition of other means." [116] Applied in a domestic context, politics is the fundamental mechanism through which the people of a nation reconcile tensions amongst their morals, ethics, laws, justice system, national identity, and world view. During the 2016 US presidential election, Russian social media and news outlet activities sought to surreptitiously influence the outcomes of political processes and ultimately caused Americans to

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[112] Michael Kofman, Katya Migacheva, Brian Nichiporuk, Andrew Radin, Olesya Tkacheva, and Jenny Oberholtzer, *Lessons from Russia's Operations in Crimea and Eastern Ukraine* (Santa Monica, CA: RAND Corporation, 2017).

[113] Iasiello, "Russia's Improved Information Operations: From Georgia to Crimea."

[114] US Defense Intelligence Agency, *Russia Military Power: Building a Military to Support Great Power Aspirations* (Homeland Security Digital Library, 2017): 37-41.

[115] Clausewitz, *On War*, 605.

[116] Ibid.

question their validity.[117] False social media accounts, attributed to Russia, posed as activists associated with the Black Lives Matter movement posting racially polarizing content to stoke public enmity and further sow divisiveness.[118] In the wake of the Marjory Stoneman Douglas high school shooting in Parkland, Florida, Russian bots amplified pro-gun hashtags and polarizing pro-gun content to thrust public support toward stricter gun laws.[119] In each of these cases, Russian techniques sought to amplify the naturally occurring tensions and societal enmity in times of crisis or peak political discourse in order to prevent, destabilize, or redirect the United States' process of social reconciliation and political decision making.

Russia's information-psychological operations in cyberspace continue to sharpen through each new iteration into a complex cognitive operational capability. Russian philosophies on information war and cyberspace are informed by and adapted from Soviet reflexive control theory and maskirovka doctrine to deliver narratives that distort reality, exploit interpretive ambiguity, and alter decision making. Efforts to undermine US and international institutions, alter national trajectories, create and exploit interpretive ambiguity, and stoke enmity amongst populations to alter geopolitics make Russian information warfare consonant with postmodern power strategies. This realization should force the United States to carefully reconsider what these actions constitute along the continuum of geopolitical struggle and the broader potential that cyberspace offers national strategy.

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[117] Jonathan Masters, "Russia, Trump, and the 2016 U.S. Election," *Council on Foreign Relations*, February 26, 2018, accessed March 8, 2018, https://www.cfr.org/backgrounder/russia-trump-and-2016-us-election.

[118] Jason Parham, "Russians Posing as Black Activists on Facebook is More Than Fake News," *Wired*, October 18, 2017, accessed February 10, 2018, https://www.wired.com/story/russian-black-activist-facebook-accounts/.

[119] Erin Griffith, "Pro-Gun Russian Bots Flood Twitter After Parkland Shooting," *Wired*, February 15, 2018, accessed March 4, 2018, https://www.wired.com/story/pro-gun-russian-bots-flood-twitter-after-parkland-shooting/.

Conclusion

Cyberspace represents a great deal more than merely computers, networks, nodes, data, and electrons. Marshall McLuhan brilliantly theorized on the psycho-social interplay between humans and the technologies they create; the Internet is causing us to evolve just as we evolve the meaning and utility of the Internet. Today, social media and other communications applications provide adversaries ubiquitous channels through which alternative interpretations of reality are delivered through new narrative forms for the purpose of influence and behavior modification. Indeed, cyberspace is constantly changing which must force operational designers to question how each new application or Internet connected technology alters the landscape with respect to human interaction and the resulting implications for military operations. The research for this monograph aimed at generating broader discourse on the nature and role of cyberspace in military operational art by examining a complex convergence of phenomena that explain current asymmetric threats posed in this domain.

People are sense and meaning making machines. The cognitive process responsible for understanding subsequently produces action within the environment. Narratives provide the time and space construct for human cognition that enables memory retention, forms personal identity, and contextualizes a person's world view and active role within it. As such, the construction of individual reality is highly subjective, mutable, and under constant external influence. The narrative role in individual reality construction extends to form societies, cultures, belief systems, and nations. Narratives and master narratives provide a logic and coherence to groups of people with shared interests which produces a strategic direction for collective action. It is here that political discourse acts as a mediating agent within a society to reconcile tensions over emerging social issues or crises.

Postmodern strategies disrupt and redirect the natural political discourse by generating crises, exploiting interpretive ambiguity that master narratives fail to explain, and attacking the legitimacy of societal institutions to alter strategic trajectories over time. In the age of cyberspace,

postmodern narrative strategies are thriving as the human journey for legitimate knowledge is supplanted by instantaneous access to false information, propaganda, and agenda driven narratives. The trajectory of cyberspace, ICTs, and social media influence are not flattening. Rather, humanity continues to discover new ways to envelope the environment in all things digital which in turn alters our cognitive and societal evolution. The key is to understand how the new technology affects human interaction and society within the context of warfare.

Russian cyberspace activities over the past decade illustrate how a nation's philosophical view concerning the value of information and geopolitical struggle can produce a very different strategy in a new domain. Interestingly, discourse on Chinese economic practices has recently come to the fore as well. China's current position of economic advantage owes to widespread, state-sanctioned intellectual property theft from numerous countries over several years' time and illustrates yet another expression of strategic thought in cyberspace. This represents one phase in a larger game of stratagems which will adapt as new national policy objectives materialize.

The US cyber force faces significant challenges in the defense of the nation against foreign information-psychological threats, and on the offense to shape the OE in support of combat operations. The current organization of the US military's information related capabilities, IO, PSYOPS, and cyber, requires greater integration and legal agility that fully appreciates the objectives that our adversaries seek to achieve. The United States must take these factors into consideration to broaden its national strategy for cyberspace and anticipate the actions of other nations in the domain.

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