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QUANTIFYING HUMAN TERRAIN

by

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June 2008

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13. ABSTRACT (maximum 200 words)

Operational commanders in Iraq and Afghanistan have identified a socio-cultural capabilities gap. Historically, when faced with a non-Western adversary, knowledge of the adversary's asymmetric socio-cultural values has been a key component in achieving conflict resolution. As such, a number of organizations within the U.S. government and civilian sector have undertaken initiatives to quantify what has been termed human terrain. Multiple theories, concepts, and models reside within the confines of social sciences that describe human activities, interactions, and behavior.

One organization in particular has developed methods to quantify human terrain. The organization has been able to responsively fuse a wide array of different sciences, technology, and information systems to provide cohesive products to operational commanders. Utilizing a systems approach, the organization was examined to identify methods and techniques that describe and enumerate geo-spatial, socio-cultural relationships and interactions. The identification of unique system variables is the key element in replicating the organization's capabilities. By reproducing these critical variables other U.S. Government and non-government organizations can leverage the examined organization's methodology and produce similar results for analyzing and quantifying complex, human-centric problems regardless of the actual geographical location of interest.

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QUANTIFYING HUMAN TERRAIN

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ABSTRACT

Within the Department of Defense, commanders in Iraq and Afghanistan have identified a socio-cultural capabilities gap. Historically, when faced with a non-Western adversary, knowledge of the adversary's asymmetric socio-cultural values has been a key component in conflict resolution. As such, a number of organizations within the U.S. government and civilian sector have undertaken initiatives to quantify what has been termed human terrain. Multiple theories, concepts, and models reside within the confines of social sciences that describe human activities, interactions, and behavior. However, with almost endless choices, which one (or combination) provides the greatest near term and enduring utility in defining human terrain?

One organization in particular has developed methods to quantify human terrain. The organization has uniquely been able to responsively fuse a wide array of different sciences, technology, and information systems to provide cohesive products. Utilizing a systems approach, the organization was examined to identify internal attributes, approaches, and integration techniques that describe and enumerate geo-cultural relationships and interactions. The identification of unique system variables is the key element in replicating the organization's capabilities. By reproduction of these critical variables other U.S. Government and non-government organizations can leverage the examined organization's methodology and produce similar results in analyzing and quantifying other complex, human-centric problem sets regardless of the actual geographical location of interest.

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TABLE OF CONTENTS

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LIST OF FIGURES

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I. INTRODUCTION

A. FORWARD

Since September 11, 2001, resurgence in the interest of socio-cultural factors has occurred within the Department of Defense (DoD). Commanders in Iraq and Afghanistan have identified a socio-cultural capabilities and training gap. The importance of understanding socio-cultural aspects of adversaries and indigenous societies has been identified as a requirement for successful counterinsurgency operations. Although the importance of socio-cultural factors is not a new concept, the United States military continues to re-learn this expensive lesson, paid for by the sacrifices of her warriors time and time again.

A fundamental shift is underway within the DoD to incorporate "culture" into planning, training, and education.[1] Unfortunately, because culture has a number of definitions, it is not a stand-alone explanation of, nor a solution to, DoD's socio-cultural capabilities gap. To add to the confusion, the laundry list of culture-ish related terms and descriptions amount to an amalgamation of terms with only the vaguest of implied inter-relationships.

Cultural awareness[2] provides general context to occurrences within a general society or area. Particularly useful at the strategic and operational levels, cultural awareness provides a contextual backdrop that describes the pre-existing socio-cultural undercurrents of an area or a society. It may, however, fall short in providing specific

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[1] U.S. Office of the Secretary of Defense, *Report to Congress on the Implementation of DoD Directive 3000.05 Military Support for Stability*, *Security, Transition and Reconstruction (SSTR) Operations* (Washington, DC, 2007), 18-21.

[2] William D. Wunderle, *Through the Lens of Cultural Awareness: A Primer for US Armed Forces Deploying to Arab and Middle Eastern Countries* (Fort Leavenworth, KS: Combat Studies Institute Press, 2006), 10-11; John Walter Jandora and Institute of Land Warfare (Association of the United States Army), "Military Cultural Awareness from Anthropology to Application," *Landpower Essay: An Institute of Land Warfare Publication* 06, no. 3 (November 2006): 1; Montgomery McFate, "Anthropology and Counterinsurgency: The Strange Story of their Curious Relationship," *Military Review* 85, no. 2 (Mar/Apr 2005): 24-27. As theses three references demonstrate, the term "cultural awareness," like culture, is utilized in a number of different ways to explain concepts but does not have a universal definition.

insight to a particular temporal, geo-spatial region. At the tactical, three-block war[3] level, details of how socio-cultural dynamics play out within a specific area of responsibility is of immense importance. One potential area that addresses the issue of relating socio-cultural context to specific geo-locations is "human terrain."

Historically, when faced with a non-Western adversary, knowledge of the adversary's asymmetric socio-cultural values has been a key component in conflict resolution. As such, a number of organizations within the United States government and civilian sector have undertaken initiatives to quantify human terrain. Multiple theories, concepts, and models reside within the confines of social sciences to describe human activities, interactions, and behavior. With almost endless choices, which one (or combination) provides the greatest near term and enduring utility in defining human terrain?

B.   PURPOSE

This study identifies methods by which DoD and other United States Government organizations can describe and enumerate geo-cultural relationships and interactions regardless of the actual geographical location of interest. Within DoD these relationships are termed "human terrain."

Utilizing a system engineering approach, one organization was examined to answer the following questions:

- How does the organization identify causality between geo-spatial features and socio-cultural traits?

- How does the organization utilize multiple inputs from existing systems to facilitate geo-cultural predictive analysis?

- Can the organization's techniques be applied to other human based, complex problems outside current employment?

- How are non-homogenous data sources utilized to produce standardized results?

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[3] Charles C. Krulak, "The Three Block War: Fighting in Urban Areas," *Vital Speeches of the Day* 64, no. 5 (Dec 15, 1997): 139. Gen Krulak described 21st Century warfare as a "three block war" where humanitarian assistance, peace keeping actions, and conventional military operations all occur within the same day and within the same three city blocks.

- How are *a priori* geo-cultural assumptions validated after observing later occurring effects?

- How are social and classical sciences merged during analysis to provide a useable output?

C.   THESIS RELEVANCE

> What I need to understand is how these societies function. What makes them tick? Who makes the decisions? What is it about their society that's so remarkably different in their values, in the way they think, compared to my values and the way I think in my western, white-man mentality?[4]

> — General Anthony C. Zinni, USMC

The information age has provided a wealth of promising technology which, when integrated, can potentially provide rapid integration, collaboration, analysis, and enhance situational awareness. As commercial technology becomes more readily available to the general populace, the competitive advantage relied upon by the United States military is rapidly decreasing, degrading.

In recent years the utility of social sciences' theories and applications at the tactical and operational levels of war has been recognized as critical to maintaining a military advantage. Being able to apply proven classical sciences' fundamentals in describing specific social or geographic relationships and interdependencies has been extremely challenging. The future of providing timely analysis of complex problem sets relies upon the integration and fusion of qualitative and quantitative sciences.

One organization in particular has developed methods to quantify human terrain. The Human Terrain Quantification Group (HTQG)[5] has been able to responsively fuse a wide array of sciences, technology, and information systems in order to provide cohesive products. Utilizing a systems approach, the HTQG was examined to identify internal

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[4] Joe Strange, Anthony C. Zinni and Marine Corps University, *Capital "W" War: A Case for Strategic Principles of War: (Because Wars are Conflicts of Societies, Not Tactical Exercises Writ Large)* (Quantico, VA: Marine Corps University, 1998), 267.

[5] Due to security reasons, the actual name of the primary group studied in this thesis cannot be associated with the methods and techniques identified in this thesis. Therefore, in an effort to improve the readability of the thesis, the authors will refer to this group as the Human Terrain Quantification Group (HTQG).

attributes, approaches, and integration techniques that describe and enumerate geo-cultural relationships and interactions. The identification of unique system variables is the key element in examining the feasibility of replicating the organization's capabilities. By reproduction of these critical variables other United States Government and non-government organizations can leverage the examined organization's methodology and produce similar results in analyzing and quantifying other complex, human-centric problem sets regardless of the actual geographical location of interest.

D.   THESIS METHODOLOGY/RESEARCH OVERVIEW

It was assumed that the organization had achieved the unique ability to rapidly analyze and fuse all source data into relevant geo-cultural products. It was further assumed this unique capability does not currently exist within any other organization but is highly desired for full or small scale replication. With these assumptions, direct examination of the organization's information analysis and fusion capabilities was conducted.

Literature review directly related to quantifying human terrain was limited due to the narrow scope of the analysis and lack of material regarding the subject. Ultimately, the preponderance of research and data on quantification methods and techniques was gathered via interviews and direct observation. Subject matter experts (SMEs) and members of the organization were interviewed in order to identify the methods by which the HTQG analyzes and displays data.

Literature related to human terrain, in a broader sense, was surprisingly common, though not under the auspices of human terrain. Research into exactly how various communities define human terrain led to unexpected discoveries regarding the term itself and its history. Research into the underlying theories involved in the physical and organizational design of the HTQG revealed benefits garnered from intentional engineering.

The HTQG, as an integrated system, was observed in order to determine overarching integration challenges, techniques, and output options. When viewed as a system, the HTQG becomes not just an organization represented by the common flow

chart of hierarchy, but rather a "set of constituents or elements in active or organized interaction as a bounded entity, such as to achieve a common whole or purpose which transcends that of the constituents in isolation."[6] Ergo, the system (the HTQG) is a set of individual, interdependent parts functioning as a whole and producing an output greater than the sum of the individual elements. The various inputs, outputs, and mechanisms of production present within the system were examined and evaluated for applicability regarding the thesis questions.

Physical requirements for replication of HTQG's capabilities were investigated, including the computer and network hardware and software currently utilized during the analysis process. The social organization of the HTQG was explored, establishing the relationships present internal and external to the organization. Finally, key system components which enable geo-cultural predictive analysis and fusion were identified.

E.   THESIS ORGANIZATION

This thesis is organized as an unclassified thesis with a supporting classified appendix.

Chapter II discusses the historical relevance of socio-cultural attributes and illustrates how the socio-cultural capabilities gap is continually re-identified. Based upon historic examples, a common trend is identified. Human terrain, as a stand alone term, is defined. Furthermore human factors, cultural appreciation, ethnographic intelligence, and cultural intelligence relationships human terrain is delineated. Human terrain, although a widely utilized DoD term, is not a new concept and springs forth from the diverse field known as Human Geography. A discussion of Human Geography, as a precursor to human terrain, is warranted. Finally, the incorporation of specific social theory is discussed in its relationship to geo-location.

Chapter III provides a systems overview of the organization. The system's individual elements are described. Inputs, outputs, process, feedback, and engineered design applications are identified. Due to security concerns regarding specifics of the

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[6] Kenyon B. De Greene, *Sociotechnical Systems: Factors in Analysis, Design, and Management* (Englewood Cliffs, NJ: Prentice-Hall, 1973), 4.

HTQG's processes and procedures, a more thorough and detailed examination of the inner workings of the system can be found in Appendix A.

Chapter IV addresses the analysis of the system. Unique system variables are identified and their importance is examined. These variables are critical in replicating the system's performance and outputs by other organizations. Due to the sensitive nature, the analysis of the system is found entirely within Appendix B.

Chapter V is comprises three major sections. The first section presents the authors' findings with respect to answering the specific thesis questions. The second major section of this chapter addresses observations concerning human terrain in general. These observations are outside the specified scope of the thesis but will have direct impacts upon portability and enumeration of human terrain within the United States government and DoD. Lastly the authors provide recommendations for future human terrain related research.

II.   BACKGROUND

A.   THE IMPORTANCE OF SOCIO-CULTURAL FACTORS

Since September 11, 2001, the United States has been involved in a metaphorical global war upon terrorism with enemies not confined to the established nation states' norms of warfare. Information, influence, and in-depth understanding of socio-cultural attributes are utilized as tools to gain support and conduct terrorist attacks across the globe. Likewise, socio-cultural subtleties and influences exist in specific geographical areas. The importance of ethnic, religious, and familial values resonate deeply in certain areas while other ideals, such as economic status, may be prized more in other geographical areas. Regardless of the location, humans are, by nature, social beings. Social interaction occurs within physical space as well as the specific context of culture. Human interactions, values, and cognitive factors shape the environment just as physical geography influences certain activities. The United States, and specifically her military, has repeatedly identified socio-cultural knowledge as an essential element for conducting successful operations.

1.   Lessons from the Past: The Reoccurring Value of Socio-cultural Factors

Throughout the United States' brief history her military leaders have campaigned against numerous enemies whose behavior, beliefs, and social structures are so drastically different from their own that her leaders find themselves lacking the knowledge to accurately judge their opponents reactions. The lack of knowledge of socio-cultural traits has invariably extended the conflicts and cost numerous lives. The need for such knowledge is a lesson the United States government, as a whole, continually identifies as a necessity and consistently fails to rectify.

In July 1886, General Nelson Miles selected First Lieutenant Charles Gatewood to find and obtain the surrender of Geronimo.[1] Lieutenant Gatewood was chosen for his understanding of Apache socio-cultural traits, including fluency in the Apache language

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[1] Louis Kraft, "Assignment Geronimo," *Wild West* 12, no. 3 (Oct 1999): 36.

and customs. Gatewood had commanded a company of Apache scouts, had been the military commandant of the White Mountain Reservations, and had lived among the Apaches. At the time of his selection by General Miles, he was the only United States Army officer who personally knew each of the Apache warriors who had taken to the field…including Geronimo.[2] Gatewood, with the help of two Apache scouts, located Geronimo. Gatewood's understanding of Apache socio-cultural customs and his personal social ties were invaluable in determining the outcome of the last Apache War.[3] Geronimo surrendered to General Miles on September 4, 1866[4] as a direct result of Lieutenant Gatewood's Apache socio-cultural knowledge and his personal acquaintance with Geronimo.

During the late nineteenth and early twentieth centuries the United States Marine Corps was involved in a number of low intensity conflicts. The Small Wars Manual of 1940 codified the techniques and concepts learned from these conflicts which dealt with counter insurgency and peacekeeping operations. The manual utilizes the term "psychology" in place of what today would be considered socio-cultural knowledge or understanding.[5] A number of socio-cultural fundamentals are thoroughly discussed, focusing upon the tactical motivation behind each concept. Additionally, the manual identifies the enduring importance of the human dimension: "The great importance of psychology in small wars must be appreciated. It is a field of unlimited extent and possibilities, to which much time and study should be devoted."[6]

During World War II anthropologists were extensively utilized by the Office of War Information. Ruth Benedict, Margaret Mead, and others produced a series of publications which attempted to summarize the national character of various nations,

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[2] Louis Kraft, "Gatewood, Apache Courts and Justice," *Wild West* 19, no. 2 (Aug 2006): 46.

[3] Amy Ehrlich and Dee Alexander Brown, *Bury My Heart at Wounded Knee Wounded Knee: An Indian History of the American West*, 1st pbk. ed. (New York: Henry Holt and Co, 1993), 411-412.

[4] U.S. Army Center of Military History, "Named Campaigns - Indian Wars," http://www.history.army.mil/reference/iwcmp.htm (accessed April 1, 2008).

[5] U.S. Marine Corps, *Small Wars Manual* (Washington, DC: Headquarters, United States Marine Corps, 1990), 19-32.

[6] Ibid., 18.

including Burma, Thailand, and Japan.[7] As one example, the United States Office of War commissioned Ruth Benedict to conduct a cultural analysis of Japan in 1944.[8] As an enemy the Japanese were unique because, although industrialized, they did conduct themselves similarly to, nor share the same values of Americans. Benedict identified the asymmetry of values as "a major problem in the nature of the enemy. We had to understand their behavior in order to cope with it."[9] In a relatively short amount of time and without the benefit of directly observing the native society, an academic work was produced that provided an explanation of motivations and rationale of the Japanese. Benedict's work provided a contextual backdrop that was utilized by the United States Government in post hostilities reconstruction.

During Vietnam, the United States was engaged in two separate fights: one conventional and the other irregular. Against conventional forces, the military was unbeatable but it made little difference in undermining the insurgency.[10] The cultural ignorance of the United States at the executive level, as well as in the field, allowed the Viet Cong to operate within the populace. Lack of cultural appreciation hamstrung many efforts, even civil programs designed to assist the rural populace.[11] In 1966, President Johnson created a multi-agency organization called the Civilian Operations and Revolutionary Development Support (CORDS) which was designed to undermine the insurgency by encouraging rural support of the South Vietnamese government.[12] To accomplish this end, CORDS integrated focused intelligence with civil and military operations. CORDS' overall success is still an issue of debate but it was one organization which identified the need for an in-depth understanding of the indigenous society in order

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[7] Thomas Carl Patterson, *A Social History of Anthropology in the United States* (Oxford and New York: Berg, 2001), 94.

[8] Ruth Benedict, *The Chrysanthemum and the Sword: Patterns of Japanese Culture*, 1st Mariner Books ed. (Boston: Houghton Mifflin, 2005), vi.

[9] Ibid., 1.

[10] Loren Baritz, *Backfire: A History of How American Culture Led Us into Vietnam and Made Us Fight the Way We Did* (Baltimore, MD: Johns Hopkins University Press, 1998), 170.

[11] Ibid., 169.

[12] Ibid., 271-272.

to optimize operations and effects.[13] Another example where socio-cultural factors were identified as crucial, underlying elements to success was within the Marine Advisory Unit. Marine Corps Colonel Victor Croizat, who had years of experience in Vietnam as an observer with French as well as working with the Vietnamese Navy and Marines, provided an advisor vision which drastically departed from the norm utilized by others. The Marine Advisory Unit was specifically organized to leverage indigenous perceptions and understanding by ensuring its Marine advisors were fully part of their Vietnamese Marine units. Through total immersion, advisors developed interpersonal trust with their Vietnamese due to shared hardships. As summarized by Croizat, "We'll learn their language, wear their uniforms, completely immerse ourselves in their customs, traditions, and style of fighting. That way we'll gain trust. And we'll really see the fighting as they see it, which is the best way to support and advise them."[14]

In the 1990s, the impact of socio-cultural factors were highlighted in Somalia. During Operation RESTORE HOPE, understanding the socio-cultural realities of the local population and the different warlords operating in the country had significant impact upon operations. Then Major General Antony Zinni, USMC, stated "If you don't understand culture, you make stupid moves."[15] A major lesson identified was the requirement of detailed area studies which encompass socio-cultural factors before deployment. Such knowledge can mitigate the unintended consequences of military actions.[16]

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[13] Jacob Kipp and others, "The Human Terrain System: A CORDS for the 21st Century," *Military Review* 86, no. 5 (September-October 2006): 9.

[14] Anthony C. Zinni and Tony Koltz, *The Battle for Peace a Frontline Vision of America's Power and Purpose* (New York: Palgrave Macmillan, 2006), 17.

[15] Strange, Zinni and Marine Corps University, *Capital "W" War: A Case for Strategic Principles of War: (Because Wars are Conflicts of Societies, Not Tactical Exercises Writ Large)*, 38.

[16] Zinni and Koltz, *The Battle for Peace a Frontline Vision of America's Power and Purpose*, 90 & 102; Strange, Zinni and Marine Corps University, *Capital "W" War: A Case for Strategic Principles of War: (Because Wars are Conflicts of Societies, Not Tactical Exercises Writ Large)*, 267-268; C. Kenneth Allard, National Defense University and Institute for National Strategic Studies, *Somalia Operations: Lessons Learned* (Washington, DC: National Defense University Press, 1995), 66 & 84.

2.   The Enemy of Today: Global Extremists

Extremists, specifically Al Qaeda (AQ), have been described as a social movement.[17] The social backgrounds of AQ members have been evaluated to determine a series or combination of factors that cause an individual to participate in global jihad. A number of different factors were evaluated and the data suggests AQ members are not uneducated, sociopaths, or loners who have been "brain washed" at an early age through religious rhetoric. On the contrary, AQ participants are well educated, have been exposed to an education outside of a strict religious framework, have a vested interest in the future and have made a well-informed decision – although common metrics which gauge a "well-informed decision" by Western standards do not apply. Social bonds are the key ingredients that make a participating jihadist. "Social bonds are the critical element in this process and precede ideological commitment. These bonds facilitate the process of joining the jihad though mutual emotional and social support, development of a common identity, and encouragement to adopt a new faith. All these factors are internal to the group."[18]   Extremists are not the reflection of an isolated phenomenon but the product of "a process and not a single decision."[19]

3.   The Environment of Today: Specific Areas of Operation

In Afghanistan and Iraq, where the United States is facing non-Western enemies as well as non-Western indigenous populations, the importance of socio-cultural factors has been brought to the forefront. Countering insurgencies requires a firm understanding

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[17] Neil J. Smelser and others, *Terrorism: Perspectives from the Behavioral and Social Sciences* (Washington, DC: National Academies Press, 2002), 34-36; U.S. Military Academy and Combating Terrorism Center, *Harmony and Disharmony Exploiting Al-Qa'Ida's Organizational Vulnerabilities* (West Point, NY: Combating Terrorism Center, Dept. of Social Sciences, United States Military Academy, 2006), 17.

[18] Marc Sageman, *Understanding Terror Networks* (Philadelphia: University of Pennsylvania Press, 2004), 135.

[19] Ibid., 74-78 & 91.

of socio-cultural factors existing within these countries.[20]   Although both areas fall under the same United States geographic commander (e.g. CENTCOM), the histories, societies, and identities of the indigenous populations are drastically different.   A widespread understanding of socio-cultural subtleties found within these countries, and even within small areas within the national boundaries, is difficult to achieve.   However, numerous Department of Defense (DoD) programs and initiatives have been instituted to increase socio-cultural awareness and practical application at the tactical and operational levels of war in Iraq and Afghanistan.[21]

4.   Common Trend: Socio-cultural Factors within Asymmetric Entities

Historically, the importance of socio-cultural factors rises to the forefront of United States thought when facing a non-Western society or adversary.   Asymmetric opponents and societies are characterized as having divergent interests, will, values, strategy/tactics, organization, and concept of time which are uniquely different than commonly held Western standards.[22]   Some examples which characterize asymmetric opponents are:

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[20] U.S. Dept. of the Army and Marine Corps, *The U.S. Army/Marine Corps Counterinsurgency Field Manual: U.S. Army Field Manual no. 3-2: Marine Corps Warfighting Publication no. 3-33.5*, University of Chicago Press ed. / foreword by John A. Nagl; with a new introduction by Sarah Sewall ed. (Chicago: University of Chicago Press, 2007), 135, Appendixes A & B; U.S. Marine Corps, *Small Wars Manual*, 19-32; Sheila Miyoshi Jager, U.S. Army War College and Strategic Studies Institute, *On the Uses of Cultural Knowledge* (Carlisle, PA: Strategic Studies Institute, U.S. Army War College, 2007), 1.

[21] U.S. Office of the Secretary of Defense, *Report to Congress on the Implementation of DoD Directive 3000.05 Military Support for Stability, Security, Transition and Reconstruction (SSTR) Operations* (Washington, DC, 2007), 11-20; Center for Advanced Defense Studies Staff, *Cultural Intelligence and the United States Military* (Washington, DC: Center for Advanced Defense Studies, 2006), 2.

22 John Russell, "Asymmetric Warfare" In *The Big Issue: Command and Combat in the Information Age*, ed. David Potts (Washington, DC: Office of the Assistant Secretary of Defense Command and Control Research Program (CCRP), 2003), 261.

Asymmetry of will. *"…some adversaries already perceive a disparity of wills which they can exploit, for example, aversion to casualties and excessive collateral damage, and out sensitivity to domestic and world opinion."*[23]

Asymmetry of strategies and tactics. *"It is therefore likely that our opponents will seek to employ dissimilar strategies and tactics that are designed to avoid Alliance strengths…and exploit weaknesses…Asymmetric opponents may also choose to disregard the concepts of victory and defeat, both of which belong to interstate model of warfare."*[24]

Asymmetry of time. *"An asymmetry of time may occur when one antagonist enters a conflict willing to see it continue for a prolonged period, while their opponent is only able to sustain collective will for a short engagement. In this case, perception is reality, and an adversary may only need to appear willing to engage in a protracted conflict to deter Western intervention."*[25]

An asymmetric opponent utilizes known, or probable, norms of behavior and reaction of the adversary, exploiting seams and gaps. Asymmetric societies present the United States with unique challenges because they do not view Western values as universal. Asymmetric societies, like asymmetric opponents, have their own views, values, traditions, and norms of social interaction. Conceptually, the traits of asymmetric opponents and societies are observable characteristics which, in turn, create observable patterns. Patterns, once identified and verified can be utilized as an enabling tool in determining the validity of courses of action and determining probable reactions of asymmetric societies and opponents.

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23 Russell, "Asymmetric Warfare" In *The Big Issue: Command and Combat in the Information Age*, 248.

24 Ibid., 249.

25 Ibid., 251.

5. Debunking Superiority Biases and Assumptions

The United States and her military have operated under two suppositions which have inhibited the integration of socio-cultural considerations into United States' decisions and actions. These suppositions are: 1) democracy, as manifested in the United States, is the best form of government and 2) United States military maintains a sizable technological advantage over all adversaries. These two items have historically been viewed as inherent truths but, with the advantage of historical perspective become glaring examples of bias and fallacy.

a. *Democracy and Technology*

The founding fathers of the United States established the belief in inalienable rights that were universal to all humans. These values are identified with and treasured by most Western societies: democracy, individual freedom, high standards of living, freedom of religion, access to technology, and a free market economy. The underlying assumption of inalienable rights is all individuals desire these universal rights; those who do not desire them have simply not been exposed to United States' freedoms and opportunities. By valuing United States' freedoms, rights, and way of life over all others, a sense of moral superiority has been facilitated.[26] The United States' form of democracy is not just a way of life; it is the way of life.

The United States has been able to enjoy a large technological lead over her adversaries which, in turn, facilitated a military advantage. The industrial mobilization of World War II and the Cold War's defense industry research provided the United States military with a vast array of technologies which were unattainable by other countries. Atomic weapons, jet aircraft, satellite communications, and the like were the

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[26] Strange, Zinni and Marine Corps University (U.S.), *Capital "W" War: A Case for Strategic Principles of War: (Because Wars are Conflicts of Societies, Not Tactical Exercises Writ Large)*, 267-268; Keir A. Lieber and Robert J. Lieber, "The Bush National Security Strategy," *U.S. Foreign Policy Agenda* 7, no. 4 (2002).

sole domain of super powers.[27] Technological superiority enabled projection of power as well as projection of Western values into foreign lands.

b.   Negation of Assumptions

Rapid commercial advances in the late 20th century led to a proliferation of technology.   As these advancements become more globally available, the technological advantage once enjoyed by the United States military continues to decline. Now many individuals have access to technologies that in previous ages would have been limited exclusively to government use. Technology has enabled rapid transmission and accessibility to information worldwide. Near instantaneous information via interlinked mass communication systems can be sent worldwide in a fraction of a second. The once assumed constant of a large military technological advantage is no longer valid.[28]

The world is comprised of many societies which have developed their own values, norms, and identify. The reality is that others, societies and adversaries alike, do not share Western values. Exhibiting moral superiority by assuming a shared sense of values when operating within an alien society may create hostilities. Furthermore, not understanding an adversary's values or how they subvert a society's socio-cultural values often lead to United States action that cause unintended consequences.[29]   History abounds with examples of nation states and empires that have failed due to miscalculating or underestimating the power of socio-cultural values.

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[27] Colin S. Gray, "The American Way of War: Critique and Implications" In *Rethinking the Principles of War*, ed. Anthony McIvor (Annapolis, MD: Naval Institute Press, 2005), 29-30 & 34; Harlan Ullman, "On War: Enduring Principles or Profound Change?" In *Rethinking the Principles of War*, 84-85.

[28] Robert H. Scales Jr, "Culture-Centric Warfare," *United States Naval Institute Proceedings* 130, no. 10 (Oct 2004), 33; George W. Smith, *Avoiding a Napoleonic Ulcer: Bridging the Gap of Cultural Intelligence (Or, Have We Focused on the Wrong Transformation?)* (Quantico, VA: Marine Corps War College, Marine Corps University, Marine Corps Combat Development Command, 2004), 31-32.

[29] Jager, Army War College (U.S.) and Strategic Studies Institute, *On the Uses of Cultural Knowledge*, 20-21; Anna Simons, "Seeing the Enemy (Or Not)" In *Rethinking the Principles of War*, 324-326 & 332-334; William D. Wunderle, *Through the Lens of Cultural Awareness: A Primer for US Armed Forces Deploying to Arab and Middle Eastern Countries* (Fort Leavenworth, KS: Combat Studies Institute Press, 2006), 44; Robert H. Scales, "The Second Learning Revolution" In *Rethinking the Principles of War*, 41 & 46-47.

c. *Consequences*

The United States' decades long reliance upon technical solutions, as well as the inherent superiority of Western principles, has overshadowed the impact socio-cultural factors have within conflicts.[30] Technology can not negate the strength of human social bonds but has facilitated a wider range of options to how social interaction occurs.[31] Without acknowledging the existence of these assumptions and biases, asymmetric opponents maintain an advantage of understanding the United States better than the United States understands its opponents. However, many initiatives are currently underway which are designed to address socio-cultural factors.

6. **Current Initiatives: Bridging the Socio-cultural Capabilities Gap**

Although socio-cultural specialists, such as linguists and Foreign Affairs Officers, exist within the uniformed services, these individuals are in fairly low quantities across the services. New programs are attempting to address the lack of socio-cultural knowledge present within the uniformed services. Changes in doctrine have highlighted the importance of socio-cultural factors with respect to counterinsurgency operations.[32] At the tactical level, the United States Army has instituted a forward deployed initiative called the Human Terrain System, which provides brigade commanders the capability to navigate the socio-cultural realm with a team of cultural experts.[33] In 2005, the United States Marine Corps created a socio-cultural focused organization called the Center for Advanced Operational Cultural Learning (CAOCL) which focuses upon providing

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[30] Ullman, "On War: Enduring Principles or Profound Change?" In *Rethinking the Principles of War*, 84-85; Smith, *Avoiding a Napoleonic Ulcer: Bridging the Gap of Cultural Intelligence (Or, have we Focused on the Wrong Transformation?)*, 36; Scales, "The Second Learning Revolution" In *Rethinking the Principles of War*, 46-47; Gray, "The American Way of War: Critique and Implications" In *Rethinking the Principles of War*, 27-30; Simons, "Seeing the Enemy (Or Not)" In *Rethinking the Principles of War,* 323.

[31] Noah Shachtman, "How Technology almost Lost the War: In Iraq, the Critical Networks are Social - Not Electronic," *Wired Magazine,* November 27, 2007.

[32] U.S. Dept. of the Army and Marine Corps, *The U.S. Army/Marine Corps Counterinsurgency Field Manual: U.S. Army Field Manual no. 3-24: Marine Corps Warfighting Publication no. 3-33.5*, 419.

[33] Kipp and others, "The Human Terrain System: A CORDS for the 21st Century," 9.

Marines with relevant socio-culture knowledge, regardless of location.[34] Lastly, a number of Defense budget items are specifically focused upon providing socio-cultural tools or products.[35] All of these highlight an increased emphasis upon socio-cultural knowledge and its application at the tactical and operational levels.[36]

7.   The Future: Institutional Change

Although many initiatives are ongoing, the United States Government must institutionally incorporate non-traditional approaches that target the cognitive domain through the in-depth understanding of the human dimension. The utility of such socio-cultural knowledge at all levels of war will serve to strengthen United States' understanding and ability to deal with asymmetric societies while also undermining the freedom of movement enjoyed by extremist religious organizations within those asymmetric societies.[37] Unfortunately a thorough, systematic means of quantifying, maintaining, and understanding asymmetric societies and adversaries are missing from the United States inventory.[38] Without such a system, the United States will continue to rediscover the enduring importance of socio-cultural knowledge in resolving conflicts from the tactical to strategic level. One method in which enduring socio-cultural knowledge can be organized and quantified is through human terrain.

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[34] J. Agg, "Cultural Learning Center to Open in May," US Fed News Service, Including US State News, http://www.marines.mil/units/hqmc/quantico/Pages/2005/Cultural learning center to open in May.aspx (accessed March 18, 2008).

[35] U.S. Office of the Under Secretary of Defense (Comptroller), *Fiscal Year (FY) 2008/FY 2009 Budget Estimates Office of the Secretary of Defense (OSD) RDT&E Descriptive Summaries, Volume 3*, http://www.defenselink.mil/comptroller/defbudget/fy2008/budget_justification/#. Specific human terrain related programs referred to here are Projects P648 and P370.

[36] Jager, Army War College (U.S.) and Strategic Studies Institute, *On the Uses of Cultural Knowledge*, 5.

[37] Ibid. 19-25.

[38] U.S. Office of the Under Secretary of Defense for Policy, *Interim Progress Report on DoD Directive 3000.05 Military Support for Stability, Security, Transition, and Reconstruction (SSTR) Operations* (Washington DC, 2006), 14.

B.   HUMAN TERRAIN: DEFINITION AND CONCEPTUAL RELATIONSHIPS

> There's another expression though that is worth remembering …the idea of what we call the human terrain. The military, let's say back in the 1980s and '90s we talked about the geographic terrain, that we fight over the hills, the forests that we go through. We're in a campaign … which is about a counter-insurgency where **the key terrain is the human terrain**.[39]

> — LTG Karl Eikenberry, USA

> Therefore, one of the most important…objectives is to ensure that operators in the field have knowledge of host populations: social structure (ethnic groups, tribes, elite networks, institutions, organizations and the relationships between them), culture (roles/statuses, social norms and sanctions, beliefs, values, and belief systems), cultural forms (myths, narratives, rituals, symbols), and power and authority relationships. **This information must be appropriately linked to geospatial coordinates and provide a basic map of the human terrain that will improve the operational effectiveness of U.S. forces**.[40]

1.   Defining Human Terrain

The term "human terrain" encompasses a wide variety of concepts and meanings. It came into widespread use following the events of September 11th as a catch all phrase to describe the human dimension of the operational environment, including groups' and individuals' feelings and inclinations. However, as a stand alone term, human terrain has not been officially defined by the DoD. Although its use is widely prevalent, human terrain is currently an imprecise term which is vague and nebulous.

Human terrain implies two specific requirements based upon its name. First, the activity, action, behavior, or trait originates from an individual human or a group of

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[39] LTG Karl Eikenberry, Commanding General, JFC Afghanistan, interview by Renee Motagne, *Morning Edition*, National Public Radio, May 10, 2006 (emphasis added).

[40] U.S. Office of the Under Secretary of Defense for Policy, *Interim Progress Report on DoD Directive 3000.05 Military Support for Stability, Security, Transition, and Reconstruction (SSTR) Operations*, 14 (emphasis added).

humans. Secondly, the trait must be tied to a geographic location. These traits may be an observable action as well as cognitive (examples: identity, motivations, values) or not readily observable (examples: family affiliations, language, education level). Therefore authors' utilize the following definition:

> <u>Human Terrain (noun)</u>: The aggregate of socio-cultural traits present at a specific temporal, geo-spatial point.

2. Human Terrain and Implied Relationships

With a definition, human terrain's relationship to other associated terms can be determined. The relationship can be illustrated from a conceptual, as well as spatial orientation, view point. Human terrain can not exist as a stand alone concept but should be considered in combination with other related, but distinct, concepts. The authors' consider human terrain interconnected to many other socio-cultural terms.

a. *Relationship to Culture*

The term "culture," like human terrain, has a number of different definitions which are related but do not maintain a universal description. At one time, cultural was utilized exclusively to describe human transformation of the environment (e.g. agri-culture, horti-culture) which is comparable to DoD's current definition.[41] Today, culture is more widely utilized as a generic term to differentiate human groups.[42,43,44] Within DoD, culture and its derivatives are utilized as descriptors for

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[41] "A feature of the terrain that has been constructed by man. Included are such items as roads, buildings, and canals; boundary lines; and, in a broad sense, all names and legends on a map." *U.S. Department of Defense Joint Electronic Library*, s.v. "culture," http://www.dtic.mil/doctrine/jel/doddict/data/c/01448.html, (accessed March 31, 2008). This definition is specific to man made terrain found upon the landscape and is not society specific.

[42] Ronald John Johnston, *The Dictionary of Human Geography*, 4th edition ed. (Oxford and Blackwell Publishing Ltd, 2005), 143-145.

certain socio-cultural concepts (e.g., – cultural terrain, culture intelligence, cultural appreciation, culture awareness, cultural knowledge), all of which have implied relationships to human terrain.
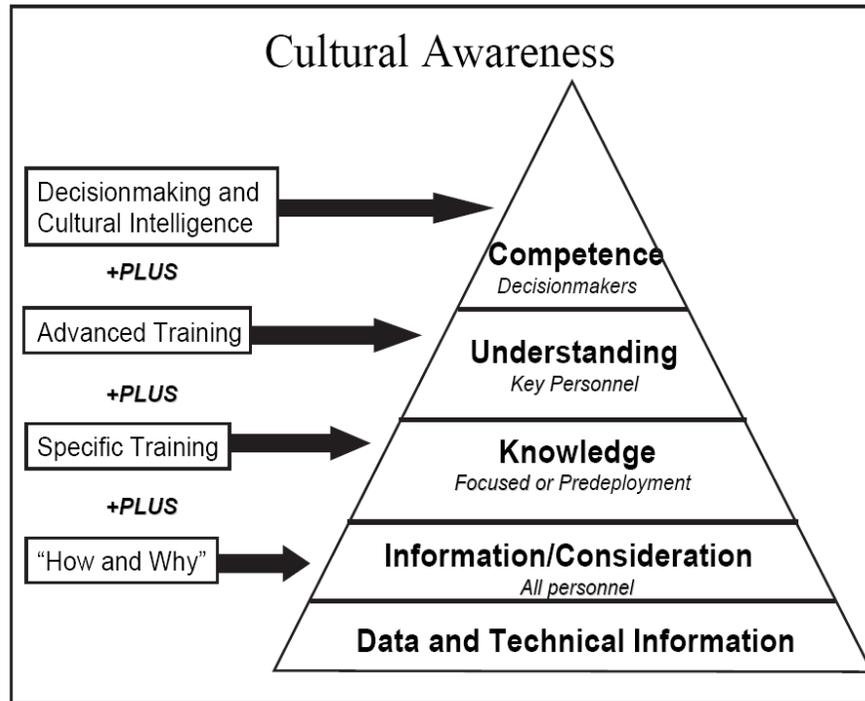
Figure 1.   Cultural Awareness Pyramid[45]

       Cultural awareness can be contextually illustrated as a pyramid where the next higher level can not be attained without building upon the education obtained from lower levels. This contextual view of cultural awareness, shown in Figure 1 shows

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[43] "5a: the integrated pattern of human knowledge, belief, and behavior that depends upon the capacity for learning and transmitting knowledge to succeeding generations b: the customary beliefs, social forms, and material traits of a racial, religious, or social group; also: the characteristic features of everyday existence (as diversions or a way of life) shared by people in a place or time <popular culture> <southern culture> c: the set of shared attitudes, values, goals, and practices that characterizes an institution or organization <a corporate culture focused on the bottom line> d: the set of values, conventions, or social practices associated with a particular field, activity, or societal characteristic <studying the effect of computers on print culture> <changing the culture of materialism will take time — Peggy O'Mara>". *Merriam-Webster Dictionary Online*, s.v. "culture," http://www.merriam-webster.com/dictionary/culture (accessed April 29, 2008).

[44] "A shared set of traditions, belief systems, and behaviors." Wunderle, *Through the Lens of Cultural Awareness: A Primer for US Armed Forces Deploying to Arab and Middle Eastern Countries*, 9.

[45] Ibid., 11.

various levels which contribute to cultural awareness. Although designed as cognitive tool and a means to determine requirements for pre-deployment training, the pyramid's hierarchical approach is directly applicable to human terrain.[46]

b.   Conceptual Relationships

A number of generalized concepts concerning the interdependency and hierarchy of socio-cultural factors exist. Most of these social concepts establish a hierarchy where socio-cultural dynamics are related to an individual's external behaviors and internal thoughts. Often the concepts are graphically depicted as wheels, circles, or icebergs.[47] The utility of these concepts is that they provide a generalized framework for socio-cultural dynamics. When coupled with a geographic orientation, these theories can be utilized in practice to provide a means of examining the socio-cultural dynamics to create cultural awareness and human terrain.

Without cultural awareness, human terrain is void of context and will be limited to the plotting of observed activities or behaviors. Human terrain, when coupled with cultural awareness, culminates in insightful capabilities which have operational applications. In order to provide optimal results, human terrain requires a foundation of cultural awareness.

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[46] Wunderle, *Through the Lens of Cultural Awareness: A Primer for US Armed Forces Deploying to Arab and Middle Eastern Countries*, 9.

[47] Randolph Gangle, "Culture and Warfare: A Marine Perspective," U.S. Air War College, U.S. Air Force, http://www.au.af.mil/au/awc/awcgate/navy/onr_gangle_ceto_culture_warfare_05jul.pdf (accessed May 5, 2008); Howard Culbertson, "Iceberg Analogy of Culture," Southern Nazarene University, http://home.snu.edu/~hculbert/iceberg.htm (accessed May 5, 2008).

Specific in nature

Cultural Terrain is a subset of **human terrain**

Human Terrain

Cultural Intelligence encompasses **human terrain** & **cultural awareness**

Human Factors is related to the higher levels of **cultural awareness**

Cultural Awareness

Cultural Appreciation is synonymous to **cultural awareness**

Generic in nature
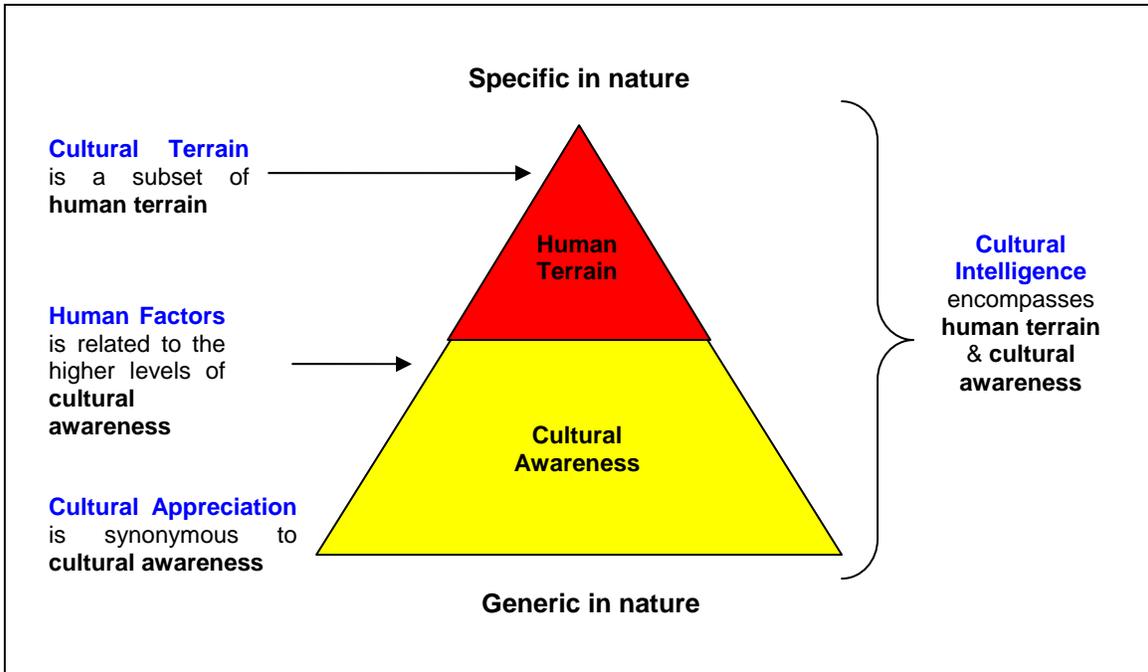
Figure 2.   Conceptual Relationships: human terrain & related terms[48]

In addition to cultural awareness, there are other socio-cultural terms which have an implied relationship to human terrain. Some of these terms are specifically defined while others have been coined to describe an idea. Figure 2 charts the contextual relationships between human terrain and other socio-cultural terms which have been utilized within DoD. When placed into a conceptual association, clear linkages between terms can be established.

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[48] Figure 2 is not all inclusive but represents the majority of terms prevalent within DoD. The conceptual relationship illustrates the interactions and dependencies of terms, regardless of the existence of a formal (e.g. "human factors") or informal (e.g. "cultural terrain") definitions.
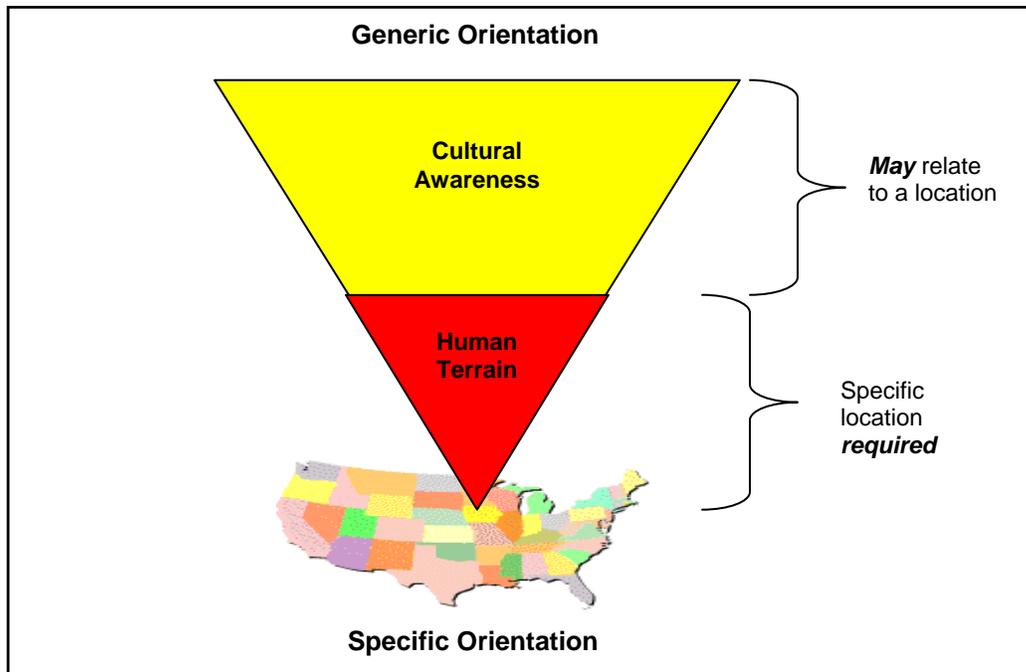
Figure 3.   Spatial Relationships

c.   *Spatial Relationships*

Of primary concern is the operational applicability of socio-cultural dynamics. Figure 2 illustrates how the elements are intertwined and share many of the same characteristics.   However, the spatial orientation of these elements is different.   The spatial relationship of human terrain and cultural awareness is depicted in Figure 3. Cultural awareness and its embedded terms are independent of geo-location although they may be associated with a specific place.   Human terrain, however, is dependant upon geo-location and must be related to a specific geographical location either by coordinates or by a location's unique name.
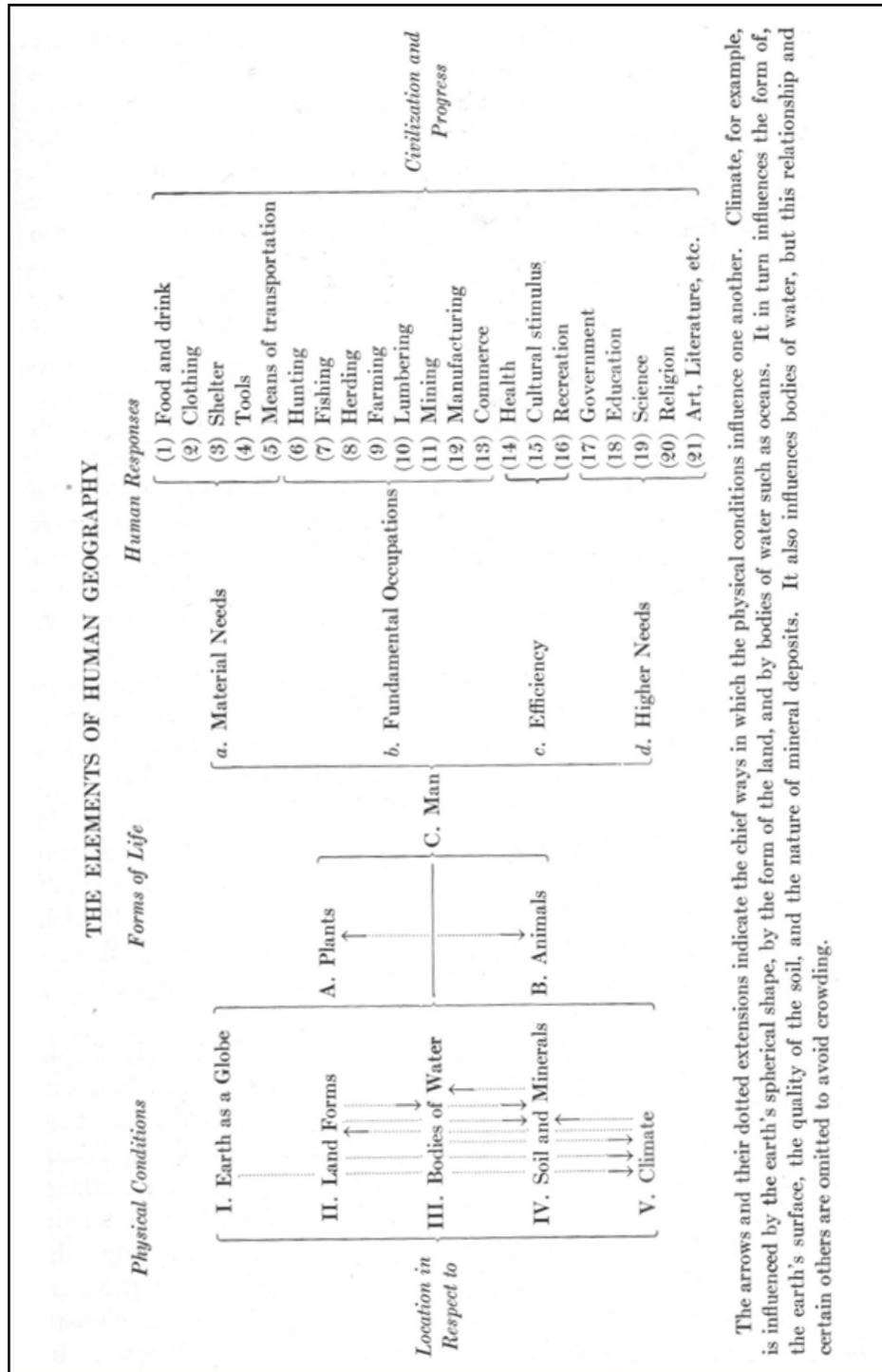
Figure 4.   The Elements of Human Geography[49]

[49] Ellsworth Huntington and Earl B. Shaw, *Principles of Human Geography*, 6th ed., a revision by Earl B. Shaw; cartographic revision by Jameson MacFarland ed. (New York: Wiley, 1951), 7.

C.   THE PRECURSOR TO HUMAN TERRAIN: HUMAN GEOGRAPHY

The idea of human terrain is not a new concept. Human geography, a diverse field of study, includes the many of the cross-domain, multi-disciplinary approaches which are precursors of human terrain. Human geography's roots can be traced back to the late 18th century.[50] Scientists and others began to specifically focus upon humans' interaction with the physical geography Human geography endeavors to "find out not only how all sorts of human conditions are distributed over the earth's surface, but also why they are distributed is that particular fashion."[51] Figure 4 illustrates one example of early 20th century enumeration of human geography.

Early human geography focused upon how the physical landscape of the Earth influenced the reactions of humans and attempted to thoroughly map observables and known quantities to specific geo-locations. As early as the 1920s, delineations between the natural landscape and the cultural landscape were appearing in academic publications.[52] Examples of human geography of this time period are very similar to what can be found within DoD cultural handbooks of today.[53]

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[50] Johnston, *The Dictionary of Human Geography*, 353.

[51] Huntington and Shaw, *Principles of Human Geography*, 3.

[52] Ibid., 11. It is important to realize that "cultural landscape" referred to here was an attempt to describe man's impact upon actual physical geography and how, through human interaction, the natural landscape was changed.

[53] Ibid., 19-48.
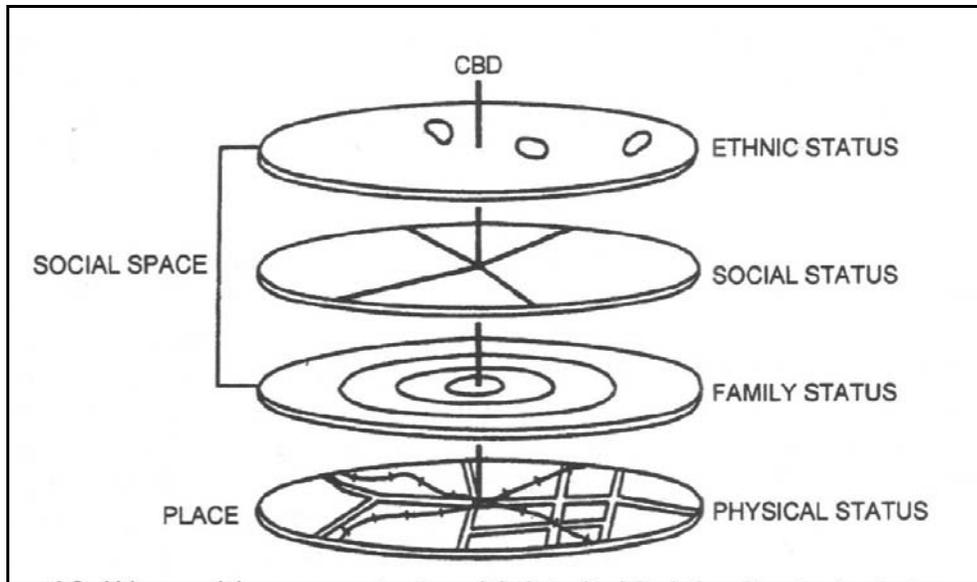
Figure 5.   Social and Cultural Space

In the mid-1950s and early 1960s a change of focus began to occur. Human geography still maintained an interest within the physical realm but also came to accept the importance of the subjective components to human interaction with the physical world. Cities were more than just physical structures; they were defined by the human activities and interactions which take place within their borders. A number of different layers, some physical and some cognitive, were applied to the same geographical location. The subjective components (such as ethnic, social, cultural, economical) served to limit and influence activities within the objective, observable world.[54]   Figure 5 provides an example of human geography where physical location is incorporated with an individual's social space which was drawn from nearly 20 years urban studies.[55] Although the separations of specific layers shown in the figure were deduced from Western urban studies, the ultimate significance is that socio-cultural attributes can be associated to specific geo-locations. In essence the human topology of a specific area can be determined and presented.

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[54] Reginald G. Golledge and R. J. Stimson, *Spatial Behavior: A Geographic Perspective* (New York: Guilford Press, 1997), 2.

[55] Ibid., 139.

Since the 1960s continued research and application has caused human geography to become diverse, interacting with many behavior and social sciences.[56] A number of geographically oriented social theories exist which attempt to explain individual and group interaction within societies. Fundamentally, if individual or group actions are quantified and associated to specific geo-location, predictive patterns begin to appear. Anchor point theory and master status theory are two social theories which are directly tied to geography. Both, in their own way, categorize socio-cultural interaction with respect to geography.
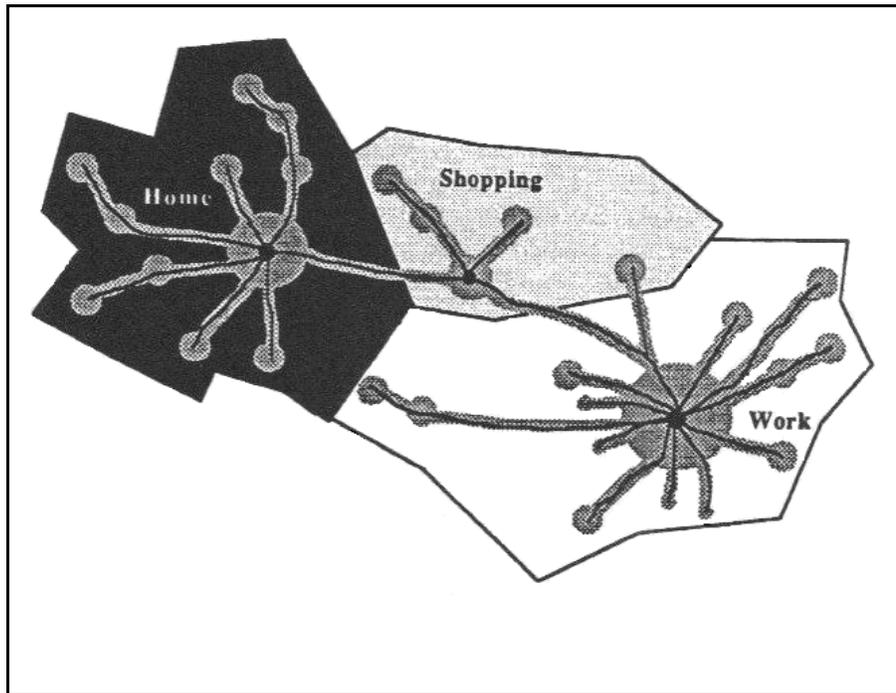
Figure 6.   Anchor Point Theory Model

In anchor point theory a human develops his/her spatial knowledge of the environment and associates certain areas and routes to specific anchor points, or nodes. These anchor points are associated with an activity or location. Routes between the anchor points are developed into a hierarchy order.[57] Figure 6 portrays a graphical

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[56] Golledge and Stimson, *Spatial Behavior: A Geographic Perspective*, 14.

[57] Ibid., 167-168.

example of anchor point theory where home, work, and shopping are primary nodes which define the individual's spatial orientation.[58]

Master status theory addresses how an individual classifies themselves based upon their spatial orientation. Individuals all have a number of different identities. For instance, an individual could simultaneously be a student, a mother, a wife, and a secretary. However, the master status of this individual is dependant upon her spatial orientation. When she is at school, her master status is student. While at work, her master status is secretary. On a play ground with her children, her master status is mother. When she is out for diner with her husband, her master status is wife. Although the woman can be characterized in a number of different ways and all simultaneously, her master status is primarily based upon her geo-location.[59]

Both of these social science theories relate behavior to specific locations and are found as applications of human geography. If patterns of behavior and their underlying meanings can be deciphered, predictive analysis can be conducted with greater confidence in future events. As a result, human geography encompasses a number sub-disciplines widely utilized today. Many law enforcement agencies utilize human geography as a means of understanding and mapping the interaction of crime, society, and location.[60] Human geography has been applied to describe and quantify man's impact upon the environment in narrowly focused areas as well as larger regional views.[61] Census data is another example of human geography where social and economic status is tied directly to location.[62] By associating geo-coordinates with human interaction or traits, information holds specific meaning vice a general, macro view. Application of human geography enables specific traits or behaviors to be mapped and

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[58] Golledge and Stimson, *Spatial Behavior: A Geographic Perspective*, 165.

[59] Everett Cherrington Hughes, "Dilemmas and Contradictions of Status," *The American Journal of Sociology* 50, no. 5 (March 1945): 357; *The Concise Oxford Dictionary of Sociology*, comp. Gordon Marshall and Diane L. Barthel (Oxford and New York: Oxford University Press, 1994), s.v. "master status."

[60] Johnston, *The Dictionary of Human Geography*, 120-122.

[61] Ibid., 31 & 218.

[62] Ibid., 31 & 297-298.

also provides insight to geographical patterns of behavior.[63]   Applied techniques of human geography have military applicability. Socio-cultural factors, which are related to specific geo-locations, are operational relevance because they reduce assumptions by providing a spatially oriented context that can be utilized by a commander during planning and execution.

D.   MAPPING THE SOCIAL DIMENSION: SYSTEMATIC APPROACH FOR QUANTITATIVE ANALYSIS OF HUMAN TERRAIN

> U.S. forces need to be better prepared to operate in new battlefields where knowing the local cultural, societal, religious, ethnic, tribal, and other related dimensions is essential. The goals for this critical capability are to better understand how individuals, groups, societies, and nations behave, including adversaries, allies, others, and even the United States itself. This understanding can then be used to improve the performance of U.S. forces (individuals, as well as small and large units) and to understand and shape behaviors of adversaries, allies, and others in pre-, intra-, and post-conflict situations.[64]

The applicability of human geography has been utilized extensively within the Western world. Law enforcement, governments, politicians, and consumer corporations have, in essence, utilized human terrain.[65] Unfortunately, DoD institutional recognition of the importance of human terrain as well as its application has lagged far behind that employed within the civilian and domestic sectors.

The ability to map human terrain, although laborious, is not impossible. Through the application of tested social theories, such as anchor point and master status theory, patterns and profiles of groups and individuals can appear. These patterns, when associated to a specific geo-location begin to provide a mosaic of human interactions and values within a certain area. Like the traditional physical terrain, the impact of human activities shapes the operational environment. As history has shown, without *a priori*

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[63] Johnston, *The Dictionary of Human Geography*, 30.

[64] U.S. Office of the Under Secretary of Defense For Acquisition, Technology, and Logistics, *Defense Science Board 2006 Summer Study on 21st Century Strategic Technology Vectors* (Washington, DC: Office of the Under Secretary of Defense for Acquisition, Technology, and Logistics, 2006-2007), 7.

[65] Johnston, *The Dictionary of Human Geography,* 120-122, 416-420, and 636-637; Golledge and Stimson, *Spatial Behavior: A Geographic Perspective*, 358-363.

identification or understanding of these factors, military actions can potentially produce unintended, undesirable second and third order effects.

The military benefit of mapping human terrain is self-evident. Countless historical examples exist where in-depth understanding of human terrain was the crucial difference between success and failure. Human terrain has a direct impact upon planning and traditional operations. Human terrain can indicate which courses of action will most likely produce positive or counter-productive effects. Within the non-lethal realm, information operations, civil affairs, public affairs, and psychological operations all attempt to communicate with an audience. Human terrain can provide insight to specific values, identities, or concerns within a geo-graphical location which can be influenced through non-lethal methods.

A graphical representation of socio-cultural factors, tied to a specific geo-location, holds explicit spatial meaning, especially to an individual utilizing the information on the ground. Pre-identifying the asymmetric socio-cultural aspects specific to an operational area may determine if a planned military action will be welcomed with cheers or bullets. Although this is of utmost importance to deployed military personnel, human terrain is applicable to <u>any organization</u> which will be operating in an asymmetric society.
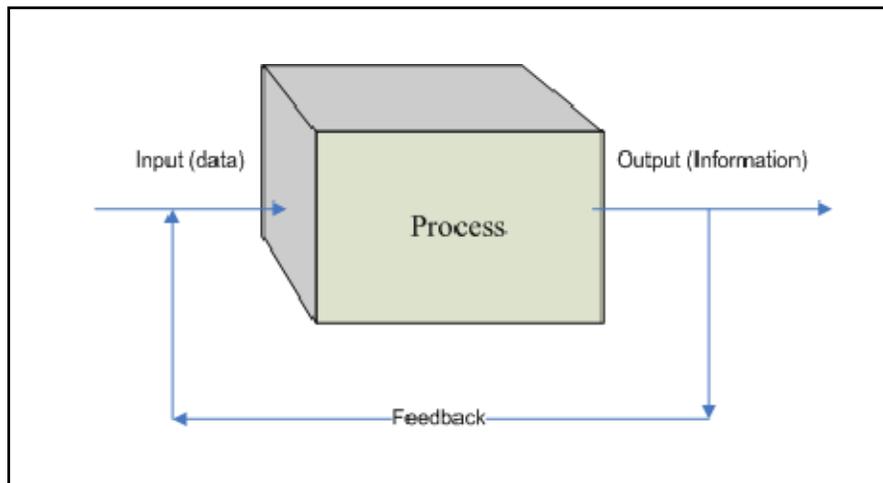
Figure 7.   System Model

Many organizations are currently exploring different approaches to describing the human terrain. In the following chapters, the HTQG is described and examined. The

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overarching goal of this analysis is the identification of portable quantitative measurement techniques, which can be applied by other DoD and United States Government organizations, in order to describe and enumerate geo-cultural relationships and interactions regardless of the actual geographical location of interest. A basic system engineering approach was utilized as the HTQG was viewed as a system (see Figure 7). After an overview of the entire system, enumeration of human terrain is examined. Analysis of the system identified unique variables which, if ignored, have the potential to prevent replication of the HTQG's capabilities.

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III. SYSTEM DESCRIPTION

A. OVERVIEW

1. Organization as a System

The HTQG works for a Combatant Commander whose success in the operational environment is largely influenced by the human terrain in theater. By analyzing the influences upon human beings, both from a geographic stand point and from a socio-cultural standpoint, further insight into the actions of a specific human, or group of humans, can theoretically be deduced. Through a thorough analysis of the various levels of human terrain (listed in the classified Appendix A) and consolidating academic knowledge, from Subject Matter Experts, PhDs, and numerous other sources, a graphic representation of the human terrain is produced. Upon this representation, intelligence data is overlaid and analyzed to provide insight as to how the human terrain is influencing the intelligence data. This analysis of the interaction between intelligence data and Human terrain is the final, deliverable product provided by the HTQG. The HTQG consists of analysts, Technologists, and some administrative personnel consolidated into cells, each specializing in a geographic area.

B. TECHNOLOGY

1. Workstation and Network Hardware

The HTQG's communication architecture requires no proprietary hardware. The network and server hardware is commercial off the shelf and is not so advanced that non-governmental groups would not be able to obtain similar hardware.[1] The HTQG's current network possesses about 70 terabytes of network storage[2], but this is easily expandable or reduced as needed.

The primary requirement driving the available network storage is the database replication that is desired on-site. In the case of this HTQG, many of the intelligence

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[1] HTQG, interview with authors, Washington, DC, February 21, 2008.

[2] Ibid.

databases the analysts have access to are browsed remotely but when data is required for producing a product, the data is replicated on-site for ease of future access and speed. All final products are stored on the network because so many products are repeatedly updated and utilized to feed into newer products.

The network is backed-up, automatically, on a regular schedule, which also increases the network storage required. The back up process is integral to the system, as a loss of such large amounts of data and previously developed products would negatively impact the HTQG's ability to produce a product in a timely matter. In addition to the backup schedule, redundancy is achieved via a RAID 5 system of mass storage.

The analysts' workstations are blade computers located in the server room. Due to the physical location of the computers and the desks of the analysts, the graphics capabilities of the analysts are limited by the fact the graphics are computed remotely and then sent via the network to each desktop. Since the desktops each contain two 19" displays and the imagery analysts each have a 30" display, the high-resolution graphics required for analysis are slowed by the remote computation of the graphics. Beyond the fact the computers are blade computers and not physically located at the analysts' desks, there is nothing unique about the blade computers' capabilities.

2.   Software

Software utilized by the HTQG analysts is a blend of commercial, government, and proprietary software. The proprietary software is used when commercial or government solutions do not exist and are written in-house by the Technologists to perform specific functions desired by the analysts. iBase, Analyst Notebook, Google Earth, ArcGIS, Signature Mapper, Boolean Manifold Query, MetaCarta, Pathfinder, and InfoWorkSpace are a few examples of commercial or government software titles utilized by the analysts. The Technologists have created a number of tools, such as DocGeo, iBase Search, Sentence Finder, and various query tools for use by the analysts.

3.   Technologists

The technical support personnel, Technologists, who support the analysts are niche technology experts and have a varied skill set.   They possess the skills to competently manage a Research and Development network, code snippets and scripts to customize software, and conduct "conventional" technical support.

It is significant to note the HTQG's network's designation as a Research and Development network.[3] This designation allows the HTQG and its Technologists a great deal more freedom to modify the network and its associated software to meet the specific needs of the analysts. The Technologists have the means to customize analysis tools to meet individual demands of the analysts, create new tools as needed, and incorporate the tools into the network.   Changes to the network and software do not require a conventional security vetting process, thereby allowing the Technologists to update the network with innovative and unique solutions to problems encountered by the analysts.

The HTQG's workforce is arrayed in such a manner as to promote the exchange of ideas, encourage independent thought and pursuance of individual methods in support of the cell's assigned task. The Technologists are an integral part of this alignment, and the cell's themselves are a portion of the technical support team.[4]

The unique environment the HTQG operates in does requires the ability to customize the analysts' tools and software. The Technologists' abilities to code quickly in order to customize the tools required by the analysts are critical to the HTQG's success in meeting its production requirements in a very dynamic and uncertain environment. Extreme Programming Theory most closely describes the process by which the HTQG analysts receive their customized tools from the technical support team.[5]

Extreme Programming is a method of software engineering adhering to certain values and following a set of practices.   According to the theory, if these values are adhered to, and the practices followed, better quality software is produced and the

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[3] HTQG, interview with authors, Washington, DC, February 21, 2008.

[4] HTQG, interview with authors, Washington, DC and Reston, VA, February 21 & 23, 2008.

[5] HTQG, interview with authors, Washington, DC and Reston, VA, February 21 & 23, 2008.

development process is more responsive to customer needs. Two of the values prescribed by Extreme Programming are communication and feedback. At HTQG the programmers, the Technologists, and their customers, the rest of the organization have frequent communication regarding the analysts' needs and the Technologists regularly seek feedback regarding the code they have produced.   Extreme Programming presumes feedback is most useful if done rapidly and frequently[6] and highlights the relationship between action and feedback has upon learning and making changes to the code. For this reason, the Technologists and analysts work together very closely in order to ensure communication and feedback is optimized.

By design, Extreme Programming is intended for teams of programmers numbering 12 or less, though several teams may form a larger group.[7] This small size is ideal for HTQG, which has 3 personnel on the technical support team. Customers with dynamic problem domains and whose system functionality changes frequently find the flexibility inherent in Extreme Programming beneficial. This flexibility and ability to adapt to dynamic demands is exactly what is required by the HTQG analysts when they discover a tool being used for analysis lacks certain functionality, or a new method of utilizing the intelligence data requires new scripts for gleaning relevant data from the reports.

A more detailed description of the skill sets of the Technologists and their interaction with the cells is located in Appendix A.

The success of the Technologists relies upon their ability to effectively communicate with their customers, the analysts. In order to properly scope the problems to be overcome, the analysts must be able to communicate effectively not only between themselves, but with the Technologists as well. The entire organization of HTQG is designed to support, and even encourage, a free flow of communication between all aspects of the HTQG.

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[6] David Astels, Granville Miller and M. M. Novak, *A Practical Guide to eXtreme Programming* (Upper Saddle River, NJ: Prentice Hall PTR, 2002), 14.

[7] Ibid., 198.

C.   HTQG: A SOCIOTECHNICAL SYSTEM

Sociotechnical systems perceive every organization as made up of people (the social system) and tools, techniques and knowledge (the technical system) working in harmony to produce goods or services valued by a customer (the system's external environment).[8] Sociotechnical systems are open systems, requiring interaction with their environment. HTQG requires interaction with its external environment including tasking from its customer and feedback from the customer on the utility of its products.

The cellular structure of the HTQG's workforce parallels the Sociotechnical theory of viewing an organization as an open and living system engaged in active transactions with its environment.[9] The analysts and their associated support are grouped into cells, each specializing in a geographical area. Each cell is fully capable of producing a product for their customer. This capability is required in order to reap the main psychological effects of grouping, which are achieved only when the cell members are related by their task performance and interdependence.[10] In order to achieve success the cell members must function as a single, cohesive unit. In following a Sociotechnical design, each cell is essentially a self-directing autonomous group.[11]

Each cell working on a product does have a leader and the HTQG does have a minimal management group (see Appendix A); however the cell leader is more a figurative position than an authoritarian one. The cell leaders make it possible for the HTQG Director to quickly access updates and status reports from each cell, and pass information to a single member of each cell knowing the information will then be disseminated to the rest of the cell. The position of cell leader generally rotates with each product, further enforcing the idea that the cell leader is not hierarchically positioned above other cell members.

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[8] William A. Pasmore, *Designing Effective Organizations: The Sociotechnical Systems Perspective* (New York: Wiley, 1988), 1.

[9] William A. Pasmore and John J. Sherwood, *Sociotechnical Systems: A Sourcebook* (La Jolla, CA: University Associates, 1978), 4.

[10] Ibid., 5.

[11] Ibid., 4; HTQG, interview with authors, Washington, DC, February 21, 2008.

1. Structural Design

The HTQG employs a dedicated structure of structural design. In a dedicated structure all the assets required to perform a function are available to the customer. There is no sharing of assets and no prioritizing of demands because the customer has its own dedicated structure to employ to meet its requirements. Although a dedicated structure does require more overhead, such as personnel, space, and resources than a leveraged structure,[12] it ensures the HTQG's customer always has the skill sets required for their analysis at their disposal. Each cell is a standalone structure, dedicated to a specific geo-location. This cellular mission focus develops a level of expertise in that geographic area. The cells' members become more familiar with all aspects of the human terrain of the location and the geographic influences upon the humans in the area by virtue of working on that area day in and day out. The dedicated cellular structure also encourages learning across the cell members' areas of expertise. Being a member of a dedicated cell means the analysts are working with the same cell members for an extended period of time. They begin to know each cell member's strengths and weaknesses, and more importantly how each member thinks. This familiarity with their "teammates" actually enhances the functionality of the team as a whole.

The HTQG currently works for a single customer. They receive their tasking from the customer and provide their products directly to that single customer. The middle hierarchy is only two steps; the HTQG's customer liaises with the HTQG's Director, who then tasks one of his cells with generating a product to meet the customer's needs. This short tasking chain limits the filtering and dilution of products flowing up the chain and tasks flowing down the chain. The HTQG is aligned so as to take advantage of this short chain.

The HTQG is not aligned in a vertical, hierarchical organizational structure. Rather, it is a much more horizontal alignment designed to leverage the strengths of each cell member, encourage a free exchange of ideas, and allow pursuit of individual methods. The flat structure, illustrated in Appendix A, is flexible, decentralized and has

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[12] LTC Brian P. Sweeney, U.S. Army, interview with authors, Monterey, CA, April 3, 2008.

few work boundaries, thereby encouraging initiative.[13] Encouraging initiative is essential for the HTQG to be able to provide products in a timely manner in an operational environment that is not stable. A decentralized communication model that fosters free thought and encourages initiative is designed into the physical layout of HTQG's workspaces.

2.   Organizational Communication

There are several theories on Organizational Communication. The style of Organizational Communication utilized by an organization, be it a circle, a chain, a wheel, or an "All-Channel" network[14], largely depends upon the hierarchical structure of the organization. The military utilizes the chain method, as in Chain-of-Command, a style of communication in which information flows along a rigid and distinct path in the chain. The HTQG's communication model more closely resembles the "All-Channel" method, which encourages a free flow of communication and inherently encourages all members of the organization to become involved in making group decisions.
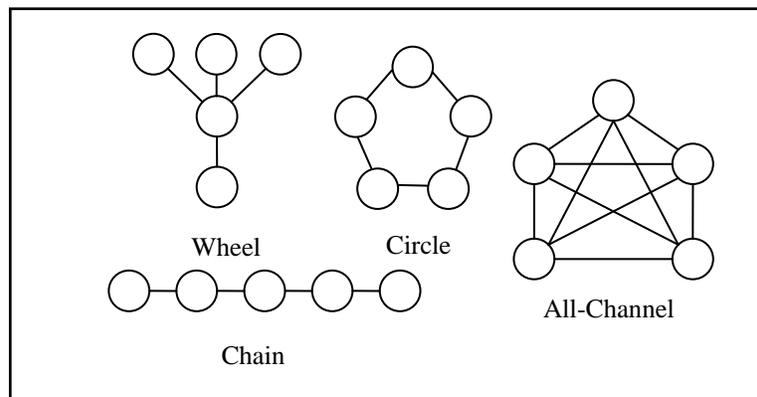
Figure 8.   Communication Networks [15]

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[13] Brian Lehaney, *Beyond Knowledge Management* (Hershey, PA: Idea Group Pub., an imprint of Idea Group, 2004), 33.

[14] Harold Guetzkow, "Differentiation of Roles in Task-Oriented Groups" In *Group Dynamics, Research and Theory*, eds. Dorwin Cartwright and Alvin Frederick Zander, 3d ed. (New York: Harper & Row, 1968), 513.

[15] Alex Bavelas, "Communication Patterns in Task-Oriented Groups," *The Journal of the Acoustical Society of America* 22, no. 6 (November 1950): 726. Figure is derived from Bavelas' communication networks.

In an organization so dependent upon interaction between groups and communication, the layout of the workspace has a significant impact upon the success of such interactions. Rivalries or conflicts between groups meant to be collaborating are often maintained by little or no contact between members.[16] Removing the barriers that prevent this interaction, including obstacles that impede movement between people or groups can encourage flow and reduce these kinds of conflicts. Designing workspaces with slack, to be used for impromptu meetings and informal interactions, aids in encouraging interaction and communication.[17]

Various floor layouts have advantages depending upon the desired communication methods and levels of interaction desired by the workforce. A bus layout is ideal for an environment where communication between members is not desired, or is minimal. This type of layout is commonly seen as a series of cubicles aligned along a center "backbone". Call centers often utilize this layout so each phone handler has a private, albeit very small, space to handle calls in. Cross talk between members is minimized by the physical barriers present between them.

A bridge layout, such as in a classroom, is most useful when communication is flowing from a single member and toward a single member, such as the teacher. Even if there is communication between peers, it is predominantly with a member only one link away, such as the neighbor on either side. The physical relationship of the peers also means communication is largely limited to only one peer at a time. Both the bus layout and the bridge layout were excluded due to the restrictions they inherently place upon communication, within and between cells.

The physical layout of the HTQG's workspace supports an open, "All-Channel" communication model. Curved desks are arrayed such that each cell member works facing, or sitting beside, other cell members, as a single unit. There are no cubicles; the entire floorspace is open. The cells' tables are then arrayed such that between each set of

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[16] Fritz Steele and Stephen Jenks, *The Feel of the Work Place: Understanding and Improving Organization Climate* (Reading, Mass: Addison-Wesley Pub. Co, 1977), 126.

[17] Ibid., 117.

table there is a common area for the cells to interact. Interaction between cell members and between cells is encouraged. A position exists between each cell to act as a liaison between cells. The layout of the floorspace was intentional. Although the cells are focused on their own specific geographic areas, and the analysts are highly specialized, interaction between them is fostered through the design of the workspace. Interaction between different cells and different analysts prevents the stagnation of their personal growth and provides different stimuli during the course of their work. The floor layout at HTQG is designed to encourage free interaction and visibility while providing a stimulus to group cohesion and interpersonal competence.[18]
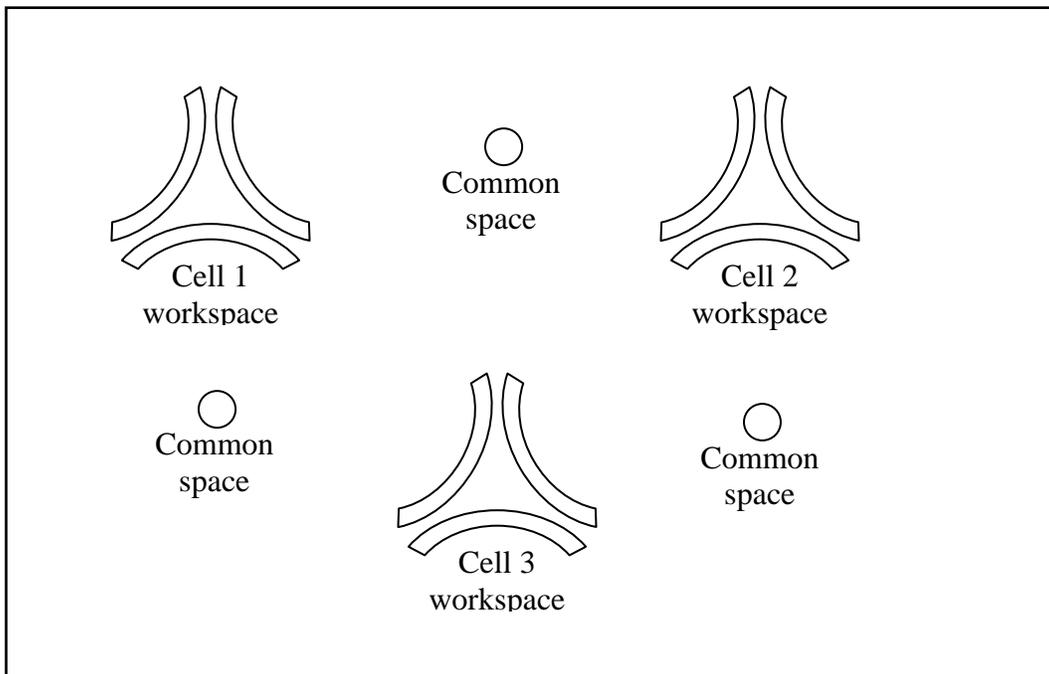
Figure 9.   Floor Layout at HTQG

This layout facilitates a "Combined Arms" approach to intelligence analysis. Although the HTQG is broken into cells, the cells are not necessarily working independently of each other. The cells have the ability to swarm together to work as a single, larger unit on a project if the demands of the project require more manpower or expertise than one cell can deliver.

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[18] Steele and Jenks, *The Feel of the Work Place: Understanding and Improving Organization Climate*, 120.

D. INPUT REQUIREMENTS

1. Tasking

The nature of the work the HTQG's single customer conducts is directly supported by the analysis the HTQG provides. The fact the HTQG receives tasking from a single entity is not important in and of itself. However, were the HTQG's methods and techniques to be applied to other complex problems the single tasking entity is critical to the success of the analysis. The HTQG's dedicated structure requires that the cells present in the HTQG, and the HTQG itself, only report to one master. As soon as each cell or the HTQG reports to more than one master the structure becomes leveraged, and an entirely different problem set emerges.

2. Intelligence

HTQG collects intelligence data from the numerous resources described in Appendix A. The data is culled from the various intelligence databases via a dedicated computer network. The hardware for this network is described in Chapter II, Section A, subsection 1, but can be summarized as a conventional TCP/IP computer network. As previously mentioned, HTQG does not generate any intelligence data, it analyses data collected by other entities. Without access to these external databases the HTQG could not function.

The HTQG also collects data from non-intelligence sources for input into the analysis. These sources involve everything from published studies on sociology and anthropology to census data from historical records and the opinions of academics with experience in the geographic area being analyzed. Not all the intelligence gathered for a project is classified, a great deal of the information on human terrain is open-source. However, the open-source intelligence is not necessarily correct. Much of the census data is from decades ago and therefore not necessarily accurate today.

As with all intelligence, classified and unclassified, the data must be vetted and if possible cross-referenced. The validity of the final product is directly related to how accurate the data utilized to produce it was. The more sources that can cross-reference a point of human terrain, the better the fidelity becomes of that point. This cross-

referencing is also vetted through the analysts' talents. Their knowledge of the sources affects how much credence is given to a report from that source, and highly reliable sources produce high fidelity products.

E.   METHODOLOGY AND TECHNIQUES

Although the methods and techniques utilized in the analysis process are not classified, they are non-descript without examples. Inclusion of any examples mandates classification of this section, therefore this entire section may be found in Appendix A.

F.   OUTPUTS: GEO-SPATIAL SOCIO-CULTURAL PRODUCTS

The HTQG generates a graphical representation of the geo-spatial, socio-cultural map for the area designated by their tasking entity. The graphical representation is not a complete map of all socio-cultural items in the geographic region bounded by the map; rather the maps are tailored toward the desired intelligence analysis. The various layers utilized in generating the map determine what aspects of Human terrain are visible. Depending upon the tasking, certain layers available to the cell during analysis may be hidden to make the product easier to interpret, but are critical to accurate depiction of the Human terrain in the region.

For example, if routes of travel are being analyzed in the United States, it would be critical to know where the stop lights are located. However, the vast number of stoplights in a small area, say the size of Manhattan, may make the final product completely unreadable if every stoplight were depicted. In such an instance, the location of the stoplights is necessary for an accurate analysis, but is hidden from view on the final product so as to not make the map unrecognizable.

The graphical representation of the Human terrain on the map can best be described as "hot spots". Areas of the map are shaded according to the likelihood of a geographical area to positively correlate to the hypothesis being analyzed. This is more easily described via an illustration of a "hot spot" map.
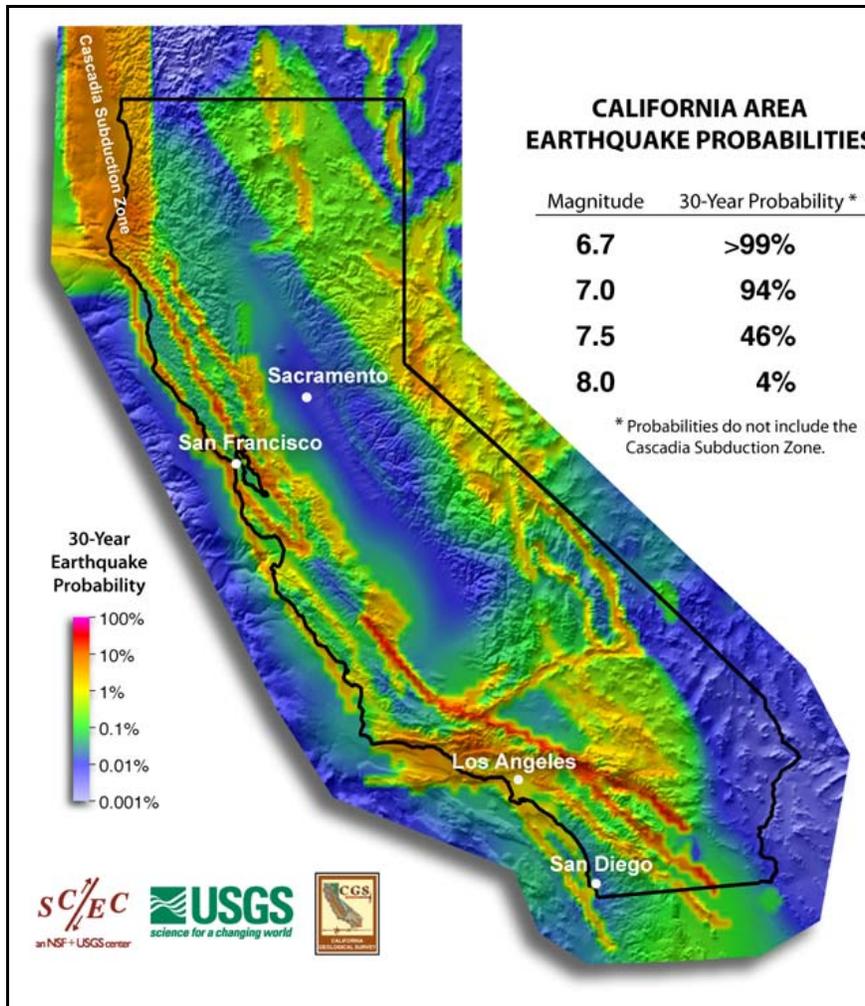
Figure 10.   Probabilities of Earthquakes [19]

If Figure 10 were a product of the HTQG, the analysis may have been to analyze how the geographic terrain influences the likelihood of future earthquakes. In this example, higher likelihood areas are redder, and less likely areas are bluer. The orange and red are considered "hot spots" for a future large earthquake. The HTQG's products function in much the same way, they provide a graphical representation of Human terrain in the area of concern. Specific examples of HTQG products may be found in the Appendix A.

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[19] The colors on this California map represent the UCERF probabilities of having a nearby earthquake rupture (within 3 or 4 miles) of magnitude 6.7 or larger in the next 30 years. As shown in the table, the chance of having such an event somewhere in California exceeds 99%. The 30-year probability of an even more powerful quake of magnitude 7.5 or larger is about 46%
[http://www.scec.org/core/public/sceccontext.php/3935/13661] accessed 14 April, 2008

In order to determine what makes HTQG's methods and techniques unique, each component of the system must be considered with respect to the system as a whole. Many components are commonly found outside HTQG, and can therefore be discounted as not unique. The variables that remain are the unique system variables and can then be analyzed for how they interact with other variables and contribute to the success of the system. These unique variables are what must be accounted for if an organization is to duplicate HTQG's methods and techniques for quantifying human terrain.

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IV. ANALYSIS: WHAT MAKES IT WORK

A. DISCLAIMER

The HTQG has succeeded in providing unique geo-spatial, socio-cultural. Several items are critical for successful analysis of human terrain. Although none of the individual methods or techniques are classified, the sequence of their application is sensitive and all examples are classified. The following is a brief, unclassified summation of the system analysis. The full, detailed systems analysis is found in the classified Appendix B.

B. SYSTEM ANALYSIS OVERVIEW

The following analysis identifies variables which facilitate fusion, analysis, and production of products incorporating human terrain. At the conclusion of this chapter, the critical system variables required for portability and replication of capabilities are identified.

1. Definitions Utilized in Analysis

The authors utilized the following definitions in the classification of system variables:

Unique System Variables: components or items which exist within HTQG that, if not replicated, will impact the duplication of HTQG-like outputs.

Critical System Variable: a sub-set of unique system variables which exist within HTQG that, if not replicated, will prevent the duplication of HTQG-like outputs.

C. DISREGARDED COMPONENTS

Analysis of the system revealed components which were not unique to the system. These components are readily available to other organizations. Therefore, a number of items were filtered from the analysis as being unremarkable and not singular. Appendix B explicitly identifies these components.

D.   UNIQUE SYSTEM VARIABLES

Successful portability of HTQG capabilities to other sites or within other organizations will hinge upon the replication of unique system variables (USVs). A replicating organization which ignores or only superficially considers USVs will have difficulty in duplication. The systems analysis identified dependency where one USV spawned or facilitated the creation of others. Appendix B identifies specific USVs relationships and dependencies but, due to the nature of the analysis, they have been omitted from Chapter IV.

E.   CRITICAL SYSTEM VARIABLES

A subset of USVs are the critical system variables (CSVs). Due to the synergetic nature of HTQG, a prioritized list which reflects a variable's rank or value within the overall system is not possible. HTQG's unique ability stems from the integrated combination of all these CSVs. An organization that selectively implements CSVs, vice employing them collectively as an interdependent group, will not replicate the desired capabilities. The authors identified the following as CSVs:

1.   Organization: Dedicated, Horizontal Structure

The challenge of enumerating human terrain, in and of itself, is a complex problem. Complex, uncertain tasks require flexible, responsive organizations with well developed communications. A dedicated organizational structure, combined with internal horizontal orientation, will be best suited to provide the desired results when facing a complex, humanistic problem. The dedicated structure ensures concentration on meeting the customer's needs. A positive command environment coupled with internal horizontal organization will facilitate free flow of ideas and innovative solutions.

2.   Specific Geographical Focus

A narrow geographic focus provides the greatest fidelity in human terrain. While a general overview of a country or society may provide useful context it does not provide the granularity desired at the tactical level. By narrowing the geographic area, individuals can concentrate their efforts upon the socio-cultural undercurrents which exist within that

specific space. The understanding and analysis of human terrain, especially at the micro level, is not a skill which can be moved between different geographic locations because the socio-cultural context will be lost. Human terrain, due to the socio-cultural depth and breadth resident within an area or region, requires personnel dedicated to a specific region for long term duration.

3.   Continuity

Detailed, comprehensive human terrain analysis requires individuals who are in tune with socio-cultural aspects of their area. Seemingly trivial, insignificant items may take on a significantly different view when filtered through a specific socio-cultural lens. This ability is not achievable within an organization which has a high turn over rate or fails to reward superior performance. Continuity and its byproduct of knowledge preservation are requirements for mission accomplishment.

4.   Access to Data

Human terrain incorporates items and indicators which are not found within solely within the confines of the intelligence reports and community. In fact, data sources come from a wealth of repositories. In most cases the issue is not if the data exists but WHERE does it exist and HOW access is gained. Coordination to facilitate the flow of data may be required to ensure data availability. Of course, this only addresses the issue of digital documents and not the ability to access hardcopy source documents which may exist in certain archives. Digitally, however, HTQG is able to access a number of different data bases and sources through pre-access coordination with the owning agencies.

F.   DETAILED ANALYSIS

Chapter IV only contains the unclassified highlights of Appendix B which are imperative for understanding the conclusions and recommendations presented in Chapter V. Although it is possible to obtain a general appreciation for the importance of dependencies and interactions within the system, the details provided in Appendix B will greatly enhance the ability of an organization to duplicate HTQG's capabilities.

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V. CONCLUSIONS AND RECOMMENDATIONS

A. ANSWERS TO THESIS QUESTIONS

Although several initial assumptions were found to be false, the thesis itself was still valid. The questions posed concerning the methods and techniques utilized by HTQG for quantifying human terrain proved illuminating and invalidated the authors' assumptions regarding HTQG. A few classified details are located in Appendix C.

1. How Does HTQG Identify Causality Between Geo-spatial Features and Socio-cultural Traits?

Socio-cultural traits are often directly related to the geo-spatial features. Terrain influences the occupying population. HTQG has software products that automate aspects of the terrain analysis.[1] Analyzing terrain features enables predictions of human movements because some terrain simply is not traversable. Humans have tendency to take the path of least resistance between two points, and the terrain often directly affects how easy the path is to travel. Since the terrain directly affects human movements, it also indirectly affects other aspects of society.

Geo-spatial features shape the societies that occupy them. Inhabitants of mountainous areas develop different societies than those that occupy tropical islands. It is a complex mix of terrain, resources, climate, and other geo-spatial features that influence how people congregate into societies. The majority of the knowledge regarding socio-cultural traits is gained through academic resources. Combining this socio-cultural knowledge with geo-spatial data reveals patterns in how the geo-spatial features affect socio-cultural traits.

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[1] HTQG, interview with authors, Washington, D.C., February 21, 2008.

2.   How are Non-homogenous Data Sources Utilized to Produce Standard Results?

Though the data is derived from numerous outside data sources, and rarely follows any standard formatting across the various databases, it is successfully utilized in the analysis predominately through the analysts entering the data into iBase.

HTQG maintains the iBase database as a standardized way of handling all the data absorbed from the partner agencies. Due to the non-standard nature of the data from the partnering agencies, HTQG analysts must glean the relevant information from the external databases and enter them into iBase. Once in iBase, the data is homogenous and searchable by any other analyst in the organization

3.   How Does HTQG Utilize Multiple Inputs From Existing Systems to Facilitate Geo-cultural Predictive Analysis?

Chapter III and Appendix A describe where HTQG inputs come from and how they are utilized to produce products. In short, the databases are searched for relevant information and the data is ingested into HTQG's network. Since much of the data is not homogenous, the analysts are required to data mine and enter the required project information into iBase. Once entered, the data can be quickly searched, pulled, and referenced throughout the research and production phases. The data for the final product begins as non-homogenous data when it exists outside HTQG, but is internalized and standardized for utility inside. The final HTQG product is a combination of signals intelligence, human intelligence, imagery intelligence, and open-source intelligence analysis combined with geo-spatial and human terrain analysis. All the "INT's and various analysts work together to utilize the numerous, non-homogenous inputs that are required to make a single, cohesive HTQG product.

4.   **Can HTQG Methods and Techniques be Applied to Other Human-based, Complex Problems Outside the Current Target Set?**

Yes, HTQG methods and techniques can be applied to other human-based, complex problems. HTQG has applied their techniques and analysis toward emerging problems in current conflicts.[2]

It is reasonable to assume that with similar intelligence available, utilization of the methods and techniques described in the previous chapters, and implementation of the critical factors identified in Chapter III and Appendix B any other organization with human-based complex problems will benefit from this type of analysis. Potential examples of problems where this form of geo-spatial, socio-cultural analysis may prove fruitful are drug trafficking, human trafficking, illegal immigration, smuggling, and industrial espionage.

5.   **How are *a priori* Geo-cultural Assumptions Validated After Observing Later Occurring Effects?**

Feedback is critical to the completion of the system loop. Without a proper feedback loop, a system is unable to adjust to changing conditions. Regardless of whether the system is physical, such as a weapon's system, or conceptual, such as HTQG, without feedback the system will be unable to adjust to its environment.

HTQG desires feedback from it customers, however, due to the nature of the operational tempo in forward deployed locations, feedback is often delayed or neglected. A formal feedback process is most desirable but the demands such a process puts on an operational tempo that is already high may be too much for the customer to handle.

6.   **How are Social and Classical Sciences Merged During Analysis to Provide a Useable Output?**

Classical sciences such as mathematics and physics are generally utilized during the analysis of the physical terrain. They are used when analyzing the physical environment, such as the slope of a mountain path, or the distance traveled by a man on

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[2] HTQG, interview with authors, Washington, D.C. and Reston, VA, February 21 & 23, 2008.

foot. The social sciences are applied to the human behavior that occurs in that terrain. The social sciences aid the analysts in determining whether or not a mountain path is likely to be traversed by the target of interest, not based upon the slope and weather which were analyzed utilizing the classical sciences, but based upon human behavior. Does the path run between two villages known to be friendly to the target? Questions like this become critical in analyzing routes utilized by targets because the classical science may say the path of least resistance between two villages is "Route A." Applying social sciences to the analysis reveals that one stop along "Route A" is hostile toward the target; therefore the target will avoid that stop and is more likely to travel along "Route B."

Classical sciences are vital to analyzing the physical levels of human terrain, but the social sciences are absolutely necessary for the non-physical levels, such as religion and customs. HTQG merges the classical and social sciences throughout the analysis process in order to provide analysis not based solely upon the numbers generated by the classic sciences, but also upon the conclusions of the social sciences which are supported by quantifiable evidence. There is not, however, a formula or defined method by which the classic and social sciences are related. It is to this end that human terrain analysis is referred to as "more art than science." The process is heavily dependent upon the analysts' intuition and expertise to equate the hard data to human behavior.

## B.	CHALLENGES IN QUANTIFYING HUMAN TERRAIN

Simply quantifying various aspects of human terrain does not yield a functional product. Many of the challenges regarding the quantification of human terrain are not related to the actual quantification, but what to do with the data once it is quantified. There are several challenges that must be accounted for during any human terrain analysis process because they directly affect the quality of the product.

### 1.	Accuracy and Precision of the Product

The products produced by the HTQG are currently only intended for the operational level due to the fact that the scale of the precision of the product is directly

proportional to the scale of the product. A map of the human terrain of an area works under the same principles as a conventional map.
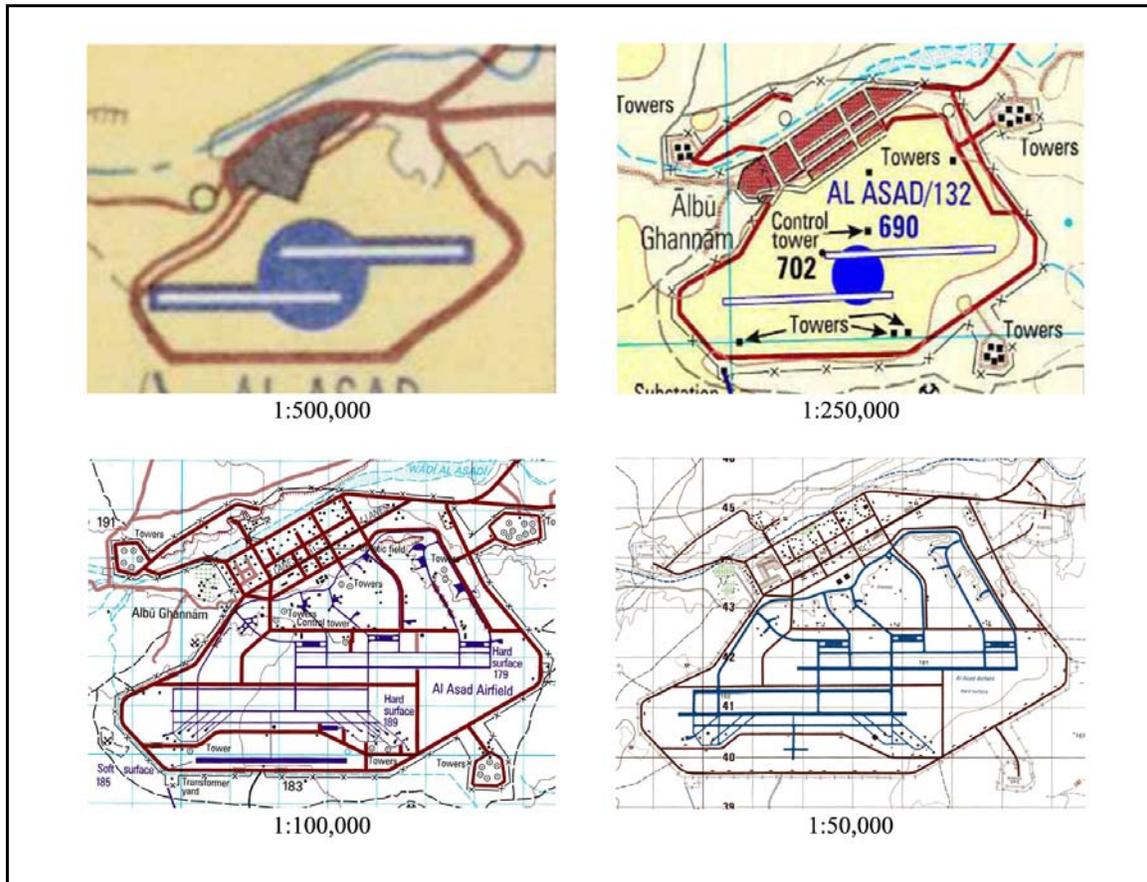
Figure 11.   Al Asad airbase, Iraq at various scales

Figure 11 illustrates a 9 km x 7 km view of Al Asad airbase in Iraq. Although all the maps are all accurate, their precision is affected by the scale. At the largest scale the presence of an airbase is about the maximum precision that can be derived from the map. At the smallest scale individual towers, buildings, and taxiways are identifiable. Human terrain maps function the same way. Though a human terrain map of the entire country of Iraq may be accurate and precise enough for a strategic plan, it lacks the precision required for the operational or tactical level. The needs of the customer determine the optimal scale of the final product. However, these small-scale desires may be unobtainable given the quality of the data available.

2.   Precise and Accurate Data is Often Not Available

The accuracy and precision of the final product is only as good as the data the analysis was generated off. Data to produce products at the scale desired by HTQG's customer is limited by the data available. Much of the human terrain data available in the current areas of concern is several decades old, and often not very scientifically accurate. Data with enough precision to analyze human terrain accurate to a few city blocks is rarely available.

The United States census, perhaps the most detailed study of who constitutes the United States as a whole, is prevented from asking questions regarding many aspects of human terrain by legislation.[3] Private institutions often conduct their own surveys of human terrain traits, such as the Jewish Community Study of New York conducted by the United Jewish Appeal (UJA) Federation of New York. Whereas the census is prevented from asking questions related to religious affiliation, an extremely important piece of human terrain data, private institutions have no such restriction.

Even private institution data has its limiting factors though. It is often extremely limited in scope and tends to focus on only a single area of study, not the broader taxonomies associated with human terrain. Even when they are detailed, they are often of the wrong scale to be applied to the level of precision desired by the operational commanders.

a.   *Jewish Community Study of New York: 2002*

The *Jewish Community Study of New York: 2002*, perhaps the most detailed study of New York City's Jewish population, was conducted by a private institution to provide detailed demographic data regarding the Jewish population in New York to serve as both a reference guide and a stimulus for planning and policy decisions that affect the Jewish residents of the New York City area.[4] Even after 4,533 interviews

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[3] Public Law 94-521 prohibits the US Census Bureau from asking a question on religious affiliation on a mandatory basis.

[4] United Jewish Appeal--Federation of Jewish Philanthropies of New York, *The Jewish Community Study of New York: 2002 Geographic Profile* (New York, NY: UJA-Federation of New York, 2004), 15.

and a 75% cooperation rate amongst the interviewees, the data is still limited to a level of detail only down to zip codes within neighborhoods. This level of detail may be sufficient in a small town of one zip code and numerous neighborhoods in that zip code, but in New York City the neighborhoods encompassed several zip codes and some zip codes contained more than 107,000 Jewish residents.[5] At this scale, even given all the detail collected by the UJA Federation of New York and the years it took to compile the data into various reports, the precision of the product is only down to several tens of thousands of residents. This study was conducted with a largely cooperative population, in their native tongue, within the borders of the United States; imagine attempting to gather an even greater level of detail in a hostile country, via translators.

A private institution with sufficient funding and a timeline extending over several years was able to accomplish a level of precision that was still too imprecise for a tactical level view of human terrain. If this level of precision was so difficult to achieve in a permissive Western nation, is it realistic to presume it may be done in a non-permissive, asymmetric environment?

3. Expectations and Relevance

Expectations of the value of human terrain must be actively managed by those producing the human terrain products. Although a great deal of relevant information can be garnered from the HTQG products, they are intended for the operational level of planning, not the tactical level. That is not to say they hold no tactical level value, but they must not be expected to be as precise at the tactical level as they are for the operational level. A city may have a specific human terrain signature, and at the operational level this signature is accurate, but for a fire team of Marines, at the tactical level, fighting his "Three-block war,"[6] his three blocks may not mirror the city's signature. The scaling factor is less applicable in the opposite direction. Figure 11 illustrates how scaling in the wrong direction can lead to complications. At a scale of

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[5] United Jewish Appeal--Federation of Jewish Philanthropies of New York, *The Jewish Community Study of New York: 2002 Geographic Profile* (New York, NY: UJA-Federation of New York, 2004), 52.

[6] Charles C. Krulak, "The Three Block War: Fighting in Urban Areas," *Vital Speeches of the Day* 64, no. 5 (Dec 15, 1997), 139.

1:500,000 the map is accurate and precise enough for higher level planning, but not nearly precise enough for tactical execution. However, the 1:50,000 scale is the appropriate choice for the tactical level. Such a small scale would still be accurate and precise enough for higher level planning, but including all the details given on the 1:50,000 scale would make the map unusable at 1:500,000.

Paralleling the scale of the product is the operational relevance of the data in the product. Recall the scenario in Chapter II regarding Geronimo and Lieutenant Gatewood. To most of the United States, Geronimo was an Apache. To some people and most importantly to other Apaches he was a Chiricahua Apache. The distinction may seem insignificant but it is a matter of scale and relevance. On a broad scale, designating Geronimo an Apache may be sufficient, but at a finer scale it may become necessary to designate him not only an Apache, but a Chiricahua Apache from the Bedonkohe band. If Geronimo were asked "What are you?" any of the three answers are truthful and accurate. Their relevance to the scale of the human terrain varies though.

4. Human Terrain Analysis is a Long Term Investment

In a world fed by streaming media and instantaneous communications, nearly instant gratification has become the norm for most of the world. An investment in human terrain is contrary to this norm though. For one, the analysts require a great deal of specialization in a very small geographic area to become experts in the human terrain of that area and this specialization takes time. Two, analyzing human societies and cultures requires a great deal of long-term observation to determine the underlying truths, which also takes time. Third, training the personnel who will be doing the observations takes a great deal of training, which takes a long time. It is not only language training they will require, though they must be fluent in their language if any chance of understanding nuances in human communications is to be achieved, but they will require a great deal of cultural training or immersion. They could not accurately observe many of the societies in the world when they are viewed as foreigners. Anthropologists have long understood that to observe a culture accurately first requires developing a trust between the observer and the observed. Many societies in the world do not give trust away readily; it takes a

long time of fostering good relations to build a system of trust that then allows observation from inside the society. When all aspects of human terrain analysis are considered, the final product is merely the end of a very long, slow investment.

C.   HUMAN TERRAIN OBSERVATIONS

At the conclusion of the research phase the authors identified a series of observations that were related to the thesis and impact the system, but were not related to any specific thesis question. The authors believe these conclusions to be environmental. They will affect any program related to human terrain. If these conclusions are not considered when designing a human terrain organization, repetition of previous mistakes will occur.

1.   A Definition of Human Terrain is Required

The United States Government, including the DoD, has not established a standard definition of human terrain. As a result of the lack of a definition, numerous terms are used to describe human terrain. There are also several terms often used synonymously. Lacking a definition of human terrain leads to a tremendous amount of confusion and individual interpretations of the phrase.

The authors' definition of human terrain[7] in Chapter II is a single example of a specific definition of human terrain. Human terrain is indelibly related to cultural intelligence, cultural awareness, cultural terrain, and cultural knowledge but is not synonymous with any of them. Human terrain's current vagueness allows it to be used as a fluid descriptor of many concepts. Unfortunately, without a distinct meaning human terrain is little more than a popular term which fails to succinctly describe anything.

In order to formalize the need for knowledge of human terrain, the term itself must be defined and the finer points of the definition must be explained. Currently human terrain is more of a concept than a specific item. It encompasses several supporting terms, including human factors and cultural awareness which have been defined by the DoD and others. Though some supporting terms have been defined, the

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[7] The aggregate of socio-cultural traits present at a specific temporal, geo-spatial point.

multi-discipline, integrated approach has not been laid out in DoD publications. In order to marshal resources, integrate existing capabilities, and facilitate innovation in addressing the socio-cultural capabilities gap, human terrain and its relationship to other socio-cultural terms must be defined.

2. Accurate Human Terrain Requires a Multidiscipline Approach

Although the interpretation of human terrain is entirely dependant upon intuition and inference, human terrain is solidly grounded in quantifiable data. Every quantum of human terrain must be tied to a specific geographic location or temporal reference in order to be plotted. Without this relationship to geography or time, the quantum has no tangible value. However, once this quantum is linked to a time or place it can then be plotted, trends described, and predictions derived from the quantum's relationship to other points.

The analysis of geo-cultural traits involves both social sciences and the classical sciences. Mathematical algorithms help determine trends, pathways, and perform nodal analysis. Trigonometry triangulates locations while physics describes collection coverage in various regions. Sociology and human behavior helps describe personal relationships and societal relationships. History helps establish trends and statistical analysis vets the accuracy of various databases. Human terrain analysis is not the realm of a single specialty; rather it is a synchronized blend of highly specialized people working to help bound and describe highly complex problems.

Human terrain analysis is not a new intelligence function under the sole purview of the intelligence community. Human terrain analysis is supported by the capabilities and skills of the Intelligence Community, but as with its predecessor, human geography, it requires a multidisciplinary approach to synchronize the efforts of analysts, technical support, and operational requirements. Already established pieces of human terrain analysis exist outside the Intelligence Community, such as Foreign Area Officers and Regional Area Officers, the State Department's diplomatic embassies and missions, the Defense Attaché Office, academia, and commercial enterprise.

3. Human Terrain Solutions are Not Technological, Technology is an Enabler

Human terrain is a manpower intensive, collaborative field. Each product is the result of intense work by several analysts, supported by the Technologists, utilizing data produced by collection assets managed by personnel located at the partner agencies, and vetted up the short chain of command to the customer in the field.

Supporting each cell in their endeavor is a large amount of technology. The technology though is not the "key ingredient." It is the people, the analysts that enable the leap from data and figures to actionable intelligence. The technology merely enables the analysts. The software is predominately COTS or GOTS, the only proprietary pieces being the parts modified by the Technologists. The hardware is entirely COTS.

The human terrain analysis provided by HTQG is not the product of a mysterious super computer located in a remote server room, it is not a technological solution. It is the product of several analysts working together, interpreting data and intelligence to produce a geographic depiction of hot spots in order to support a case for predictive analysis. The technology may change and improve, but the analysts are the keystone for accurate human terrain analysis.

As desirable as it may be to have a technological solution, human terrain analysis is dependent upon human intuition and interaction. While this intuition is backed up by quantifiable data, it still is reliant upon the analysts' analysis, not a computer crunching numbers. Human terrain analysis does not have a technological solution. It may be enabled by technology, but it cannot be devoid of the human brain's ability to analyze.

4. Complex Problem Analysis Requires a Unique Organizational Structure

Bureaucracy is based on the premise that an individual is essentially unimportant and can be made compliant through the proper use of rules, procedures, rewards, and punishments. Organizational efficiency is enhanced through providing offices according to jurisdiction and hierarchical structure or authority and staffing those offices with experts controlled as above. The resulting behavior typically is static, rigidly

inappropriate and depersonalizing.[8]   As discussed in Appendix B, bureaucracy would stifle human terrain analysis in a horizontal, All-Channel setting.   If a human terrain analysis organization is to be created, the bureaucracy must be limited to the minimal levels possible in order to not inhibit the critical cross-education nor limit the ability of the organization to adapt to its customer's needs.   Implicitly, the number of cells in the organization is proportional to the bureaucracy required to manage the cells.   This is why human terrain analysis at an enterprise level is so challenging.   The management would grow too large; too many links in the chain between the cells and their customers will dilute the final products.

It is for this same reason the cells must be kept small.   Large groups inherently begin to organize; and in a hierarchical society like the United States it will not likely be the horizontal organization that works so well for quantifying human terrain.   The cells must maintain their cell members within the same peer group; any title of project leader must be more honorific than positional.   This is why HTQG project leaders rotate with each project; it limits the establishment of a hierarchy within the cell.

5.   Human Terrain Shortcomings are Continually Identified by the United States but are Not Rectified

Throughout its entire existence, the United States has repeatedly identified the need for human terrain knowledge when dealing with asymmetric societies or asymmetric adversaries.   From conflicts with Native American tribes occupying what would later become the United States to societies in the Middle East, the United States is regularly involved with cultures that are different enough to its own that her soldiers, sailors, airmen, and Marines cannot inherently adjust to their new cultural surroundings.

Lieutenant Gatewood was requested to find Geronimo and elicit Geronimo's surrender because he was the only soldier in the western territories with the required knowledge of the human terrain surrounding Geronimo to complete such a task.   During WWII Ruth Benedict, Margaret Mead, and others were contracted by the United States

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[8] Cary M. Lichtman and Raymond G. Hunt, "Personality and Organization Theory: A Review of some Conceptual Literature." *Psychological Bulletin* 76, no. 4 (1971): 271-294.

Office of War Information to describe the "national character" of several nations involved in WWII.[9] The wars in Afghanistan and Iraq further illuminate the differences between the cultures present in those countries and the culture familiar to the soldiers and Marines deployed to those countries. Generals Zinni,[10] Petraeus,[11] Major General Chiarelli,[12] and Lieutenant General Odierno[13] are not alone in calling for an awareness of human terrain. Though, again, the terms are not consistent, they all call for a better understanding of human terrain.

The DoD has identified the need for an ability to quantify human terrain but cannot develop this ability independently. The requirements of human terrain exceed any single agency in the United States government; it must be a unity of effort. Some agencies are better aligned, and tasked by their charters, to collect certain aspects of

[9] Margaret Mead, *Ruth Benedict: A Humanist in Anthropology*, 30th anniversary ed. / with new forewords by Lois Banner and Nancy Lutkehaus ed. (New York: Columbia University Press, 2005), xxx; Federico Neiburg, Marcio Goldman and Peter Gow, "Anthropology and Politics in Studies of National Character," *Cultural Anthropology* 13, no. 1 (Feb. 1998): 57.

[10] MajGen Anthony C. Zinni, USMC, Deputy Commanding General, Marine Corps Combat Development Command: "What I need to understand is how these societies function. What makes them tick? Who makes the decisions? What is it about their society that's so remarkably different in their values, in the way they think, compared to my values and the way I think in my western, white-man mentality?" Strange, Zinni and Marine Corps University, *Capital "W" War: A Case for Strategic Principles of War: (Because Wars are Conflicts of Societies, Not Tactical Exercises Writ Large)*, 267.

[11] GEN David Petraeus, USA, Commanding General, Multi-National Force Iraq: "What they're dealing with is much more complex and much more nuanced than what we were trained to do when I was a captain. You have to understand not just the military terrain... the high ground and low ground. It's about understanding the human terrain, really understanding it." Babak Dehghanpisheh and others, "Scions of the Surge; Five Years on, the War is Transforming the American Officer Corps." *Newsweek,* March 24, 2008, 28.

[12] MG Peter W. Chiarelli, USA, Commanding General, 1st Cavalry Division: "In accurately defining the contextual and cultural population of the task force battlespace, it became rapidly apparent that we needed to develop a keen understanding of demographics as well as the cultural intricacies that drive the Iraqi population." Peter W Chiarelli, Patrick R. Michaelis. "The Requirement for Full-Spectrum Operations." *Military Review* 85, no. 4 (July 2005): 5.

[13] LTG Raymond T. Odierno, USA, Commanding General, Multi-National Corps Iraq: "Detailed knowledge of host populations is critical in areas where U.S. forces are being increased to conduct counterinsurgency and stability operations in Iraq. U.S. forces continue to operate in Iraq without real-time knowledge of the drivers of behavior within the host population. This greatly limits Commanders' situational awareness and creates greater risks for forces. This human terrain knowledge deficiency exists at all command echelons" *Joint Urgent Operational Need Statement (JUONS) for Human Terrain Team Support to OIF Surge*, submitted by Multi-National Corps – Iraq (MNC-I), approved by Raymond T. Odierno, LTG, Commanding, 2007.

human terrain data. The data collected must be shared and the DoD must reach out to its fellow agencies and departments for access to the data. However, the DoD should not outsource human terrain collection entirely. Organic human terrain collection ability is the only way to provide the DoD with unfettered access to human terrain data.

6.   It is Absolutely Necessary to Master Human Terrain

The United States has continually bled her Armed Forces by not understanding the human terrain of the battlefields. In war after war, conflict after conflict, the United States has come to realize the importance of human terrain only after conflict has flared into armed hostilities and the bloody cost has risen. Then, only after the realization that technological solutions and conventional means are no longer viable has consideration been given to the understanding the human terrain. Human terrain is not a means to end a war, but it can accelerate the natural sequence of events that eventually lead to a cessation of hostilities.

The failures of the Bush Doctrine have made abundantly clear that cultural knowledge must be an important dimension of policy and strategy because it influences the way people think and respond and thus how policy and strategy are formulated and implemented.[14] If human terrain considerations are taken into account across all sections of the United States government involved in foreign policy, it may be possible to avoid many armed conflicts all together. Shaping of the operational environment presupposes an understanding of the social and cultural aspects of that environment. The United States cannot shape these environs if she does not understand them.

Knowledge of what makes a people act a certain way, what motivates them to continue fighting is critical to resolving any war. In some conflicts the answer may be attrition and nothing will be concluded until one side no longer has the means to resist. Others may simply require self-determination or the establishment of security to foster self-governance. Without knowledge of the human terrain present in the conflict,

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[14] Jager, Army War College (U.S.) and Strategic Studies Institute, *On the Uses of Cultural Knowledge*, 20-21.

arriving at these realizations may be unnecessarily delayed, costing both side untold lives and suffering. Comprehension of the human terrain may shorten conflicts and save lives.

The United States government has the capability and means to quantify human terrain around the globe. The failure is not in a lack of ability, but in the lack of organization. Creating knowledge of human terrain will help prevent the alienation of indigenous populations, enable "softer" tactics to support kinetic approaches, and lower the antipathy present when the United States fulfills it mission in that region.

D. RECOMMENDATIONS

> As exceptional as America may be, it should not blindly believe it can overcome the force of culture in foreign places.
>
> — Howard LaFranchie paraphrasing George F. Will[15]

Beyond the critical and unique factors identified in Appendix B and conclusions of section C, there are several key points to consider if any method of quantifying human terrain is going to succeed.

1. Unrestricted Information

Information is critical to the success of quantifying human terrain. Not all of the information collected regarding human terrain will necessarily be unclassified, but it must still be free. Even classified information can be free; it will just be free within the proper enclave. Information is often thought of only as free when it resides on the unclassified enclave because the internet has made such tremendous amounts of information freely available to anyone with access to the internet. This freedom of information fosters a self-perpetuating cycle of growth, where the freedom of information fosters critical thinking and analysis, leading to the generation of more information and the cycle repeats. The same can apply on the classified enclaves. Classified information is necessarily restricted, and some can be distributed to other entities much more easily than

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[15] Howard LaFranchi, "In Foreign-Policy Battles, are Neocons Losing their Hold?" *Christian Science Monitor (Boston, MA)* July 13, 2004.

other information. Information in the classified enclaves though is often not anywhere near as free as it could be, even within its distribution restrictions, because the architecture is not there to support such freedom.

a.   *Data Flow Chokepoints Must be Managed/Understood by Commanders*

Data collected from forward in the field must be able to flow back to the analysis location. Vast quantities of data generated by forward deployed collection assets need a reliable system for populating human terrain databases.   This may be accomplished by populating the databases in the forward areas and performing a reachback to update the databases in the analysis cells, or a method of transporting the raw data back to the cells and performing the database population onsite with the analysis cells.[16]   Bandwidth is often limited in forward areas, and preservation of knowledge necessitates the data be duplicated in the rear positions, not funneled back so the forward deployed assets have none of the data if they require it for their own analysis. These large amounts of data will encounter chokepoints, both physical and bureaucratic, that must be recognized and managed by both those generating human terrain data and those desiring human terrain data.

b.   *Human Terrain Data is Most Complete When Everyone Shares*

There are several private organizations and institutions that collect massive amounts of human terrain data. Some of this data is publically accessible, but much is not. Some of it may be for sale though and purchasing human terrain data from those that generate it is no different than renting satellite bandwidth from commercial communications companies. The data would still need to be vetted by those desiring to utilize it, but any data utilized, even from organic sources, would be vetted before use.

Within the United States Government there are numerous repositories of human terrain data. These should be more openly shared between branches and services.

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[16] This concept is employed by Naval Postgraduate School's Program for Culture and Conflict Studies (CCS) (http://www.nps.edu/Programs/CCS/) which routinely receives updated information from forward deployed personnel which enhances the accuracy of subsequent research and support from CCS.

Chokepoints between agencies and services, as well as internal chokepoints, must be recognized and managed. Collecting tremendous amounts of data from forward deployed teams does the analysts in the rear absolutely no good if the data never reaches them.

2. Formal Human Terrain Assets are Required[17]

Due to the nature of human terrain data, and the sources it is derived from, remote collection assets utilized by the United States Government are minimally effective. With the exception of Level 0 and Level I data, remote sensors are incapable of measuring human terrain data. Without remote sensing capabilities, the prime option for collection is first hand, human asset collection.

Furthermore, the long-term investment and slow return rate of human terrain data requires specific skills, dedication, and perseverance to collect. To this end dedicated human terrain assets are required. A formal cadre of personnel trained in human terrain collection will provide the long term collection of human terrain data via first hand collection and cultural immersion. These personnel must be educated in not only all aspects of human terrain and collection methods and requirements, but also the culture and society they will be observing. They cannot be generalists because the knowledge required to comprehend the nuances of many foreign societies necessitates continual immersion in the culture. These personnel, because they specialize in a specific culture and society, cannot necessarily be aligned with political boundaries, or even the DoD's Areas of Responsibility, because many societies and cultures extend beyond political boundaries. For example, a human terrain specialist with expertise in the Pashtun region may be required to spend time in all of Pashtunistan, which extends beyond the border between Pakistan and Afghanistan.

A dedicated human terrain collection program will enable access to ethnographic data beyond that which is remotely observable. Satellites cannot observe the social norms, or behavioral activities of the people they are observing. This data can only be

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[17] For potential solutions, see Anna Simons and David Tucker, *Improving Human Intelligence in the War on Terrorism: The Need for an Ethnographic Capability*, report submitted to Office of the Secretary of Defense for Net Assessment, 2004 and Alfred E. Renzi, Jr, "The Military Cooperation Group" (Masters thesis, Naval Postgraduate School, 2006).

quantified through first hand observation of a people. Those tasked with collecting this kind of data must be allowed long term immersion in their target society. Books and education can only provide the barest of baselines to begin to understand a culture and society. The nuances which are critical to accurate human terrain observation require intimate first hand knowledge of the people being observed.

The current wars in Afghanistan and Iraq have highlighted just how little the United States, as a whole, understands about those two cultures. As General Scales said, "the conflict was fought brilliantly at the technological level but inadequately at the human level."[18] Many conflicts and much of the animosity between coalition forces and the native population may have been avoided by better understanding the social and cultural forces that drive the indigenous people to behave the way they do. Social morays and taboos, often ignored by coalition forces, fomented an environment hostile toward reconstruction and security. The enemy exploited the coalition's ignorance in aligning the people of those countries against coalition forces, long after the initial assaults were successful and the primary resistance had been eliminated. Technology enabled a rapid conclusion to the Phase III operations, but Phases IV and V require more human capabilities than technological and these capabilities were not properly developed.[19] Now that these conflicts are in the later phases the United States is attempting to develop the capability after the fact. Emphasis must be placed on ensuring this capability is present prior to the next conflict.

3.   Future Research

Human terrain analysis is an emerging field. There is a tremendous amount of research required to further refine its abilities and requirements. Based upon the authors' research, the following areas have particularly urgent requirements for research.

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[18] Robert H. Scales Jr., "Culture-Centric Warfare," 32.

[19] U.S. Joint Chiefs of Staff, *Doctrine for Joint Operations*, Joint Chiefs of Staff, (Washington, D.C., 2008), IV-29. Phase III: Domination; Phase IV: Stabilize; Phase V: Enable Civil Authority.

a. *Development of a Formal Definition of Human Terrain and its Interactions Between Agencies and Departments of the United States Government*

A thorough exploration into what is required for a formal definition of human terrain will prove useful in then defining interagency and joint interactions regarding all aspects of human terrain, to include collection, analysis, and production.

b. *Delineation of What Human Terrain Data is Required*

A complete gathering of all the human terrain data from all points on earth is an outlandishly ridiculous proposition. There are certain human terrain aspects at each human terrain level that uniquely identify an area's human terrain signature. Analysis into exactly which traits ought to be quantified at each level will not only simplify the collection requirements, but can streamline the process and shorten the amount of time analysts spend sifting through data they do not need in hopes of finding the data they do need.

c. *Analysis of the "Best" Ways to Collect Human Terrain Data*

Once the data collection requirements have been established, how should the data be collected? Some of the areas are not permissive environments, some areas would not be as honest (if the collection method were an interview) with a 6'2" white skinned, blonde haired soldier from Kansas as they would with someone closer to their ethnicity. Is an interview even the most effective form of collecting the data, or perhaps just passive observation yields more accurate results? There are numerous collection methods which may be judged based upon established statistical methods, sociological factors, and human behavior.

d. *How Do You Select, Retain, Reward Those that Choose to Dedicate?*

The investment in human terrain collection is a long term investment requiring highly specialized personnel operating in remote reaches of the world. Analysis of various manpower solutions for recruiting, retaining, and rewarding these personnel is necessary. The fact they will likely be stationed in foreign countries for

extended periods of time, away from operational units, means the traditional military promotion construct will fail them. They cannot compete on a level playing field when they do not deploy, do not earn warfare qualifications, and do not operate in a traditional military operational chain-of-command. Yet as uniformed personnel with a large amount of training and education invested in them, the DoD must find a means to reward them for their service and retain their expertise.

e. How Do We Train Human Terrain Analysis Specialists?

Human terrain analysts must be specialized in a small geographic area in order to understand all the nuances and complexities that make up the human condition. However, the traditional military training regimen does not produce specialists; it produces generalists that may then be specialized. If the skills that must be developed for accurate human terrain analysis require specialization, how can military training produce human terrain analysts?

APPENDIX

The accompanying classified appendices to this thesis are available from Dudley Knox Library. Requests for these appendices should be directed to the Restricted Resources Services at 831-656-2947 or DSN 756-2947.

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