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14. ABSTRACT

This paper examines why the Department of Defense (DOD) should accept and lead the use of agent-based modeling and simulation (A-B M&S) in support of strategic decision making in the US whole of government approach. It examines why the Department of State (DOS) should accept and use A-B M&S for reconstruction, stabilization, and development of national strategic and operational objectives in Afghanistan. The focus of A-B M&S in each instance is to measure the support of the Afghan people for the Government of the Islamic Republic of Afghanistan (GIRoA). The DOD should lead and provide A-B M&S to all US whole of government approach members by developing models that support security decisions. Security is a mission requirement that DOD leads and it is a benefit to all members of the US whole of government approach.

This paper demonstrates how decision makers can measure progress on national strategic and operational objectives by measuring how Afghans feel when security zones are expanded to include more villages. The agents in the model represent Afghan citizens.

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AGENT-BASED MODELING AND SIMULATION: PROPOSAL FOR DEPARTMENT OF DEFENSE SUPPORT TO THE WHOLE OF GOVERNMENT APPROACH IN AFGHANISTAN

An enhancement to policy assessment through specialty modeling and simulation

by

Tony Alan Grayson

GG-14, Department of Defense

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AGENT-BASED MODELING AND SIMULATION: PROPOSAL FOR DOD SUPPORT TO THE WHOLE OF GOVERNMENT APPROACH IN AFGHANISTAN

by

Tony Alan Grayson

GG-14, Department of Defense

A paper submitted to the Faculty of the Joint Advanced Warfighting School in partial satisfaction of the requirements of a Master of Science Degree in Joint Campaign Planning and Strategy. The contents of this paper reflect my own personal views and are not necessarily endorsed by the Joint Forces Staff College or the Department of Defense.

This paper is entirely my own work except as documented in footnotes.

Signature: _____

1 March 2012

Thesis Adviser:
Jon Stull

Signature: _____

Name, Thesis Advisor

Approved by:

Signature: _____

Name, Committee Member

Signature: _____

Name, Committee Member

Signature: _____

James B. Miller, COL, USMC, DIRECTOR
Joint Advanced Warfighting School

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ABSTRACT

This paper examines why the Department of Defense (DOD) should accept and lead the use of agent-based modeling and simulation (A-B M&S) in support of strategic decision making in the US whole of government approach. It examines why the Department of State (DOS) should accept and use A-B M&S for reconstruction, stabilization, and development of national strategic and operational objectives in Afghanistan. The focus of A-B M&S in each instance is to measure the support of the Afghan people for the Government of the Islamic Republic of Afghanistan (GIRoA). The DOD should lead and provide A-B M&S to all US whole of government approach members by developing models that support security decisions. Security is a mission requirement that DOD leads and it is a benefit to all members of the US whole of government approach.

This paper demonstrates how decision makers can measure progress on national strategic and operational objectives by measuring how Afghans feel when security zones are expanded to include more villages. The agents in the model represent Afghan citizens. The model itself represents their village in its natural environment. The simulation is generally understood to be the imitative representation of the functioning of one system or process by means of the functioning of another (such as a computer). The simulation in an agent-based model is the change or changes that a decision maker wishes to make in the campaign plan that affects the Afghans of the village that is modeled.

If the data on Afghan tribal societal zones is known, the villages in those zones can be modeled as functional agents that represent their tribal normality. Agents that are modeled on individual villagers who live in those zones will interact and can change their

viewpoint due to the interaction. The US whole of government approach can validate investment decisions on projects that are intended to support its strategic and operational objectives by modeling with A-B M&S and studying how the agents are affected by the project before project approval is granted.   In this way, decision makers might better form an opinion on how the Afghan's might view the GIRoA years after it is presumed to have assumed full responsibility for security and governance in late 2014.

As the DOS assumes management of the model from the DOD, it can use A-B M&S to unleash the power of economics, information, and the rule of law in the simulations.

A-B M&S empowers the US whole of government approach decision makers by enabling them to compress time through computer simulations of modeled Afghan villager interactions for years after a simulated US whole of government approach solution has been implemented by a GIRoA ministry.

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ACKNOWLEDGEMENTS

DEDICATION

This thesis is dedicated to my wife whose support of me in all of my professional pursuits has never wavered and whose patience with me (when I trashed her house with academic papers, books, and computer equipment) during my tenure at the Joint Forces Staff College was tested, but never broken.

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INTRODUCTION

By late 2011, the American people had grown weary of Operation ENDURING

FREEDOM (OEF). As the war passed its tenth anniversary, it approaches the final year

of a third United States (US) Presidential term while the world is mired in economic

concerns.   Following the al-Qa'eda-initiated September 11, 2001 attack on American

soil, the Taliban, an Afghan insurgency, was offered a chance through diplomatic

channels to turn over to the US the al-Qa'eda leadership and personnel; Taliban leader,

Mullah Omar, chose to link the Taliban's fate to that of al-Qa'eda.[1]   On September 20,

2001, President George W. Bush addressed Congress in an internationally televised

speech. In that speech, the President declared the War on Terrorism.[2] The war opened

with an attack on the Taliban in Afghanistan on October 7, 2001.

In the ten years that followed, considerable American and Allied blood, as well as

billions of dollars in resources, have been expended. The effort to crush both the Taliban

and al-Qa'eda, or at least to deny the use of Afghanistan as a safe haven for either

organization, is not complete. However, both the Taliban and al-Qa'eda are considerably

weakened, the latter especially so because of the death of its elusive leader. In 2011, the

US continued OEF Phase IV stability and reconstruction operations in Afghanistan while

it continued to fight insurgencies and global terrorism in that country. Typically, Phase

IV of a five phase operational plan occurs when a tipping point is reached in which

sustained combat operations gives way to management of threat while the local civil

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[1] US Department of State, *Game plan for Political Military Strategy for Pakistan and Afghanistan,* Declassified: September 09, 2011, Washington, D.C., George Washington University, http://www.gwu.edu/~nsarchiv/NSAEBB/NSAEBB358a/doc06.pdf (accessed October 10, 2011).
[2] Bob Woodward, *Bush at War*, New York, New York, Simon & Schuster, 2002, 107-108.

authority is empowered and supported.[3]   The fifth (and final) phase of an operation is to enable civil authority to govern the country. US military forces are expected to depart at the end of the final phase or during and throughout that phase.

On June 22, 2011, President Obama conducted a conference call with his senior administration officials; the details of the conference call were made public by the White House Press Secretary. The President had determined that the three objectives that had precipitated his order of a 30,000 military personnel surge in Afghanistan in December 2009 had been mostly met. The President announced his plan to drawdown 10,000 conventional forces from Afghanistan beginning in July 2011 (to be completed by December 2011). He also scheduled a 23,000 military personnel rotation from Afghanistan in the summer of 2012 (to be completed by September 2012).[4] These actions began to draw down the surge of US forces that began in 2008.

On October 06, 2008, the Department of Defense (DOD) stood up US Forces – Afghanistan (USF-A), under United States Central Command (USCENTCOM).[5] In cooperation with the North Atlantic Treaty Organization (NATO) International Security Assistance Force (ISAF), USF-A has trained and supported the Afghan National Army (ANA) to protect and support the Afghan National Police (ANP) as it provides security to the people of Afghanistan. Authorities were established for a cooperative effort between the United States Department of State (DOS) Chief of Mission (COM) in Afghanistan

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[3] US Department of Defense, *Joint Operation Planning Publication 5-0*, Washington, D.C., 2002, IV-37.

[4] US President Proclamation. "Conference Call to Administration Officials announcing a troop withdrawal schedule in Afghanistan, June, 22, 2011,". Washington, D.C., The White House Office of the Press Secretary, http://www.whitehouse.gov/the-press-office/2011/06/22/background-conference-call-senior-administration-officials-preview-president (accessed October 10, 2011).

[5] US Department of Defense, Office of the Assistant Secretary of Defense, *Defense Department Activates US Forces Afghanistan*, Washington, D.C., 1000 Defense Pentagon, October 06, 2008, http://www.defense.gov/releases/release.aspx?releaseid=12267 (accessed October 10, 2011).

and the Commander, USF-A. An integrated Civil-Military Campaign Plan (ICMCP) was

signed on August 10, 2009, and revised in 2011.[6] The US whole of government

approach effort in Afghanistan was defined in the integrated plan, based on close

collaboration with NATO ISAF and the United Nations Assistance Mission in

Afghanistan (UNAMA). The plan's most important component was a strong and

continuing partnership with the Government of the Islamic Republic of Afghanistan

(GIRoA) in order to build stability.   The ability to measure and forecast reaction of

elders serving within the GIRoA is essential to decision makers in order to assess the

effectiveness of stabilization efforts. Agent-based modeling and simulation (A-B M&S)

is a means to project reception by the Afgan people of stabilization initiatives by the

GIRoA.

This thesis proposes that the DOD should establish and provide an A-B M&S

capability in support of strategic and operational decision makers of the US whole of

government approach to stabilization in Afghanistan. The thesis will explain A-B M&S

by definition, in context through a case study, and to justify why the DOD should use and

lead the capability. A detailed explanation will be provided on how the DOD would use

A-B M&S in Afghanistan for security decisions. A transition strategy will be offered on

how and why the capability should be passed from DOD to the DOS by late 2014.

Recommendations and conclusions complete the thesis. The President's stated national

strategy and the supporting authorities to support reconstruction and stabilization efforts

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[6] US Department of State, *US Government Integrated Civilian-Military Campaign Plan for Support to Afghanistan, Revision 1, dated February 2011*, Chief of Mission, US Embassy Kabul and USF-A, http://www.ccoportal.org/sites/ccoportal.org/files/icmcp_feb_2011final.pdf (accessed October 10, 2011).

in Afghanistan will be discussed in the context of the late stage of OEF, the war in Afghanistan.

This thesis stands on three assumptions and its related impact of A-B M&S. First, the basis for democracy in Afghanistan is the shura (meeting) of elders of Afghan society.

> The shura (parliament) in Afghanistan manifests the will of the people and represents the whole of the nation. The people of Afghanistan participate through the shura in the political life of the country. Although elected from a particular constituency, each member of the shura shall, at the time of expressing his opinion, take the general interest of the whole of Afghanistan as the basis for his judgements.
>
> The shura consists of two houses: the Wolesi Jirga (house of the people) and the Meshrano Jirga (house of the elders). Together, both houses are known as the Loya Jirga. The system of shura is present at all levels of Afghan society and will be closest to the people at the lowest level.[7]

Shuras guide Muslims to discuss and decide their own affairs. This implies that shuras and the reaction by elders are critical indicators in measuring whether democratic values and policies are being accepted. Measurement of these attitudes could greatly assist decision makers. A-B M&S is a means with which to measure projected responses by Afghans to policy initiatives. The second assumption is that the US Army is the lead component for the military and it utilizes its procedures to measure the effectiveness of its civil-military operations in Afghanistan. It is the dominant ground service that supports the operation. This suggests that if A-B M&S is used as a measurement tool, then the Army will lead it and will mostly use Army information gathering techniques. The third and final assumption is that the DOS will increasingly assume the lead stabilization and use of A-B M&S development efforts as the military presence

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[7] Constitution of Afghanistan, 1964, http://www.afghan-web.com/history/const/const1964.html (accessed March 29, 2012).

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diminishes. Accordingly, DOS must plan to assume the lead from the DOD as it passes

the security responsibility to the ANA.

A-B M&S provides a unique capability to assist US whole of government

approach decision makers with a measure of Afghan support for the GIRoA. With the

DOD in the lead of the capability, all of the US whole of government approach can

observe how A-B M&S is used in security decisions and consider it in their established

agency decision processes to plan and execute operations. While each department or

agency of the US whole of government approach contributes a weave in the fabric of

Afghan advancement, the true measure of success in OEF is the perception that Afghans

have of their government. In that sense, the US whole of government approach efforts

should be transparent and supportive of GIRoA ministry activities performed for the

benefit of Afghans.

In order to understand how an Afghan reasons, the actions of the human must be

observed and analyzed. Then conclusions may be drawn. A-B M&S provides US whole

of government approach decision makers, many of whom are geographically distant from

Afghanistan, with a measure of complex Afghan human behavior and reaction to

proposed US whole of government approach activity.   The agents in the model are

complex interactive "people" or artificial Afghan villagers. They are built with a

combination of known biological, ethnic, and historical data plus current information that

is regularly obtained through US whole of government approach human collection

methods. A-B M&S allows time to be compressed, which empowers analysts to be able

to provide decision makers with assessments of long range outcomes on proposed

campaign changes. Simulations occur at the speed of the computational capability of a

computer. In weeks, US whole of government approach decision makers can see the

Afghan reaction to change in the short term and years into the future.

A-B M&S will enhance US whole of government approach unity of effort

decisions most effectively at the village level in Afghanistan. Successful demonstration

at the lowest level will justify expansion to district, province, regional and national levels.

A-B M&S is publicly available, and thus can be acquired and utilized by NATO and non-

governmental organizations (NGOs). The US whole of government approach can

consider sharing the underlying database that is built to support its efforts, as long as the

data therein is unclassified. A-B M&S reports on security will become an accurate and

useful database for stability, reconstruction, and development decision makers.

A-B M&S can measure how Afghans feel about the ten US whole of government

approach Transformative Effects and the 2011-2012 objectives that are described in the

ICMCP.[8]   These effects and their measures of effectiveness (MOEs) are:

1. Countering Corruption. MOE: Improvement in transparency,
    accountability, and in enforceable regulatory mechanisms.
2. Cross-Border Access for Commerce (not insurgents). MOE:
    Improvement in cross-border management and in the development of
    economic trade.
3. Advancing Livelihoods and Sustainable Jobs. MOE: Enable and
    support small and medium businesses.
4. Access to Justice. MOE: Both traditional and formal justice systems are
    made available and are recognized by Afghans to be legitimate.
5. Countering Narcotics and Illicit Finance. MOE: Identify and disrupt
    key nodes in criminal, narcotic, and illicit finance networks. Deny
    funding to insurgents.
6. Action against Irreconcilables. MOE: Insurgent leaders are neutralized
    by the GIRoA and rejected by Afghans.

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[8] US Department of State, *US Government Integrated Civilian-Military Campaign Plan for Support to Afghanistan, Revision 1, dated February 2011*, Chief of Mission, US Embassy Kabul and USF-A, http://www.ccoportal.org/sites/ccoportal.org/files/icmcp_feb_2011final.pdf (accessed October 10, 2011), iii and 5.

7. Expansion of effective, representative, and accountable Governance. MOE: GIRoA institutions are durable, inclusive, and responsive to Afghans.
8. Electoral Reform and Continuity of Governance. MOE: The electoral process is inclusive, transparent, and legitimate.
9. Agricultural Opportunity and Market Access. MOE: Viable agricultural employment and markets provide a practical alternative to poppy cultivation.
10. Secure the Population. MOE: The GIRoA provides security for Afghans and has the trust of the Afghan people.[9]

The plan is a cooperative agreement between the Commander, USF-A and the COM, Kabul on the ends, ways, and means necessary to meet US strategic objectives through support to the GIRoA. The plan supports GIRoA National Priority Programs (NPPs). During this critical time of US public sensitivity with the continuation of OEF and the need for fiscal restraint, A-B M&S can support decisions to mitigate risk, attain optimal efficiencies, and align resources.

However, there are consequences in over-investment and over-reliance on A-B M&S. First, the agents must be continually refreshed (the regular update of information on Afghan opinions into the agents of a model) which requires a personnel investment that is consistent with the level of detail that the decision maker requires in order to believe the model results. Questions that are relevant to the simulation and desired by a US whole of government approach decision maker must be developed and asked of the Afghans that are modeled as agents. The questioning must be done consistently and the answers provided collegially to A-B M&S analysts so that they can refresh both specific and general (similar ethnic) agents before a simulation is run. The challenge is that those who are tasked to collect the data from Afghans are likely not to be organizationally connected with the A-B M&S effort. The information collectors must be identified,

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[9] Ibid, iii.

trained, and they must correctly perform their work or the simulation can be skewed to give a decision maker a false impression.

Second, an unpredictable number of US whole of government approach personnel and decision makers will resist their involvement in (or use of) the capability; some of these personnel may be in key command or decision positions. Within their respective organizations, from low to high levels of authority, US whole of government approach personnel will be asked to take a role in A-B M&S; decision makers (low to high) will hear the explanation of how the capability works and many will see demonstrations followed by regular presentations of the reports on the simulations. They will see the utility of the capability better if they can link it to the Commander's Intent.

Third, decision makers may be tempted to use A-B M&S as a reliable predictive analysis tool. If they do, they may blame A-B M&S for their decision failures. The capability does not predict; it gives insight on how Afghans perceive actions taken by their government. The A-B M&S outcome reports are decision aids that can address benefit or lack thereof in a pending decision.

Last, a model that is run by DOD solely for security analysis will be less useful to the DOS. The COM Kabul needs to know how Afghans feel about civilian-led efforts that are in support of GIRoA ministries. The Afghanistan Director of the US Agency for International Development (USAID) needs to know how Afghans will react to economic and development assistance programs. One model can address all of their needs, but the decision makers of the three different US whole of government approach organizations must develop the questions for Afghans that will support their respective organizational decisions. The DOD will not necessarily assume the burden of data refresh collection for

the DOS and USAID.   If the model is built by DOD analysts solely for DOD's security

decisions, then the behavioral rules in the modeled environment and in the agents may

not support DOS and USAID decisions. If those two organizations understand the

benefit of using A-B M&S by observing DOD usage of it in security decisions, they may

reach a tipping point on their use of it. They could develop their own A-B M&S.

Holistically, several such A-B M&S models of the same Afghan society will render

simulations that are symbiotic and the results of the simulations of several models should

strengthen an argument put before any strategic decision maker. However, the cost of

such redundancy is not justifiable. It also is not necessary, nor is it supportive of the

civil-military cooperation that is the subject of agreement in the ICMCP. A wholistic

approach to use of A-B M&S could lead to an aggregate cost savings by reducing the

number of failed decisions made because the decision maker did not consider the reaction

of Afghans.

An indepth review of A-B M&S capabilities will reveal how to incorporate its use

in DOD and DOS decision processes as well as how to transition the capability from the

former department to the latter as Phase IV of the operation concludes and the GIRoA

assumes the DOD responsibility for security.

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CHAPTER 1: AGENT-BASED MODELING AND SIMULATION CAPABILITIES

The United States (US) enhances the element of national power known as information when it couples useful new technology with massive computing power in order to produce a means to gather and manipulate information in a way that can produce credible guidance for strategic decision makers. Agent-based modeling and simulation (A-B M&S) is representative of such a powerful combination for it offers decision makers a means to compress time. In seconds, the agents (which represent the Afghan people in a village of a district in a province of Afghanistan) conduct a full daily routine in the model. The activity of each agent during that day is captured in the computer database. Years of agent daily activity can be simulated in hours or in less time depending on the power of the computer. This enables a decision maker to see how the Afghan agents in the model react to a Government of the Islamic Republic of Afghanistan (GIRoA) change (which is simulated) today and how the change affects those agents years afterward. If the model is duplicative of reality and the decision maker is satisfied with the analysts' explanation of the underlying rules and methods of the model, A-B M&S reports can be a powerful supplement in the factors of their strategic, operational, and tactical decisions on what to do or not to do to support a strategic objective.

Analysts can use computer screen shots of agent movement and support conclusions that they draw from the simulation by providing a detailed analysis as a decision maker requires. The decision maker can (and should) participate in defining rule

sets prior to the model simulation (known as a run). This is useful in that the capability can be focused on the specific details of a decision that are wanted by the decision maker.

As an hypothetical example, the Afghanistan Director of US Agency for International Development (USAID) must decide where a well will be drilled in the proximity of two Afghan villages. The operational objective is for Afghans of both villages to feel welcome and safe in obtaining clean drinking water from the well. However, the villages are in different valleys of a district and one village is predominately ethnic Pashtun while the other is predominately ethnic Hazara. The villages do no regularly interact. The USAID Director can be given the opportunity to decide the factors (rules) that will be applied on successive runs of an agent-based model of the two villages that will have 5,000 Afghan agents built into each modeled village. He can decide geographically where he wishes to simulate the placement of the new well by the Afghan Ministry of Water & Natural Resource Management. Each run will conclude with a measure of how the Afghans of each village feel about the GIRoA. The results of the simulation runs should favor either to build the well in a specific location, to build two wells (one for each village and their optimum location), or to build no well if the model shows no improvement in how the Afghans feel about the GIRoA, no matter where a well is built.

After the runs, the analysts can offer data to the decision maker indicating why the agents (Afghans) of one village or the other did or did not change their view of the GIRoA. The analysts can discuss changes to human cognition that is simulated by agent behavior to the level of detail that is desired. However, the decision maker is also at liberty to use other subject matter expertise to comment on the analysts' premise and

conclusions about expected Afghan behavior in the villages. The results of the run can be

formatted to fit the style of briefing that the decision maker prefers. Runs such as the one

just described when done in conjunction with many other runs for various reasons will

enable US decision makers to pass the lead for security and governance to the GIROA by

the end of 2014.

Color changes to the visual displays in the model can be used to indicate to

decision makers a change in agent behavior over days, weeks, months, or years of

interaction. In the case of the example of where to place a well, successive runs on

specific placement of the well can be compared to a run of the model before a placement

of any well and if color is used in the visual displays, the point of change in opinion can

be more easily seen and further analyzed. The decision maker will then have

complementary data to consider along with the advice given to him by subordinates. He

can query the analysts about agent specifics during the times in the simulation that show

a change in Afghan agent behavior. The decision maker can have his staff, other

advisors, and subject matter experts present so they can critically examine the A-B M&S

report and query the analysts.

The Model: Developing the Environment and Agents

Modeling is understood to be a system of postulates, data, and inferences

presented as a mathematical description of an entity or state of affairs. Agents are the

initial population that is placed in the model. Agents have both fixed characteristics

(such as genetics) and variable characteristics (such as status in the society that is being

modeled). Agents perform more realistically in a simulation of the model if they are

artificial representations of real people who live in the Afghan villages that are the

objects of US whole of government approach activity in support of the GIRoA. Male and female Afghan agents are programmed to die naturally at age 44, which is normal longevity for them. The start position for agents will be on grid coordinates of the geography of the model. Village dwellers will be placed in their villages and farmers will be placed on rural lands in proximity to the villages.[1] Some agents are functional in nature, E.G. a Provincial Reconstruction Team (PRT) agent is functional. If a PRT actually exists near the villages that are to be modeled, then an agent that represents what a PRT normally does must be placed in the model. The PRT agent might or might not be a catalyst for change in the simulation. If it is, then rules to make it a catalyst will be designed and applied by the analysts. The computer is the key enabler. A computer data base is built and can be seeded with the repository of the history of the society, to include the topography of its location and any details on the environment in which the society lives, and with which the agents interact.

Much environmental data is also encoded into agents in the form of rules of behavior. Rules are fixed. Agent interaction does not change how they feel about rule-based behavioral traits which include heredity (ethnic identity) and deoxyribonucleic acid (DNA)-like traits that can be built into agents to simulate human cellular level hereditary material such as the agent's sex and its metabolism. By giving agents a metabolism and by placing food with a calorie measure where food would be located (a village market), the agents will gather at the food source and intermingle, where they will exchange information. Also, if food is lacking, agent metabolism will provide a health measure of that effect. Each agent is also imbued with changeable aspects of its character, such as its

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[1] Joshua M. Epstein and Robert Axtell, *Growing Artificial Societies: Social Science from the Bottom Up*, Washington D.C., Brookings Institution Press. Cambridge, Massachusetts & London, England, The MIT Press, 1996, 23.

culture, preferences, health, economic pursuits, and political affiliation.[2] The changeable

aspects of the agents' behavior are also rule-based, but these rules are a form of artificial

intelligence. They are the thought processes that mimic human societal conflict in social

society (ethnic, tribal, religious, and nation state).

Regularly collected current data is required to refine (called refresh) the modeled

environment and the agents. This is a labor-intensive task that is best performed by face-

to-face interview (surveys, observation, meetings, conversations, reading critically

written articles or other human collected means of capture) with Afghans who have a

keen awareness of the environment that is modeled and especially with Afghans who are

the actual basis of agents. Refresh data must be provided to A-B M&S analysts either on

a schedule or when it is known that there have been national or local events that will have

affected the opinion of the modeled society. In either instance, it is prudent for a refresh

to be performed before a new run is commenced so that the analysts will interpret the

human and environmental reality of the moment. This step is especially important to take

before a simulation run is planned and executed. The agents are programmed to interact

as their human counterparts would do in a village. It is counterproductive to build agents

that are based on a uniform distribution of accepted data. For example, the model will be

skewed if all ethnic Pashtuns are assumed to behave in a robotic manner. Pashtuns who

live in villages of varying sizes and alongside large or small concentrations of other

Afghan ethnicities and with different variances in age, sex, employment, and harrassment

by an insurgency will behave differently. The natural grist or friction of daily life in a

specific Afghan village must be captured in the build of agents or the simulation reports

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[2] Ibid., 24.

will be of questionable value to a US whole of government approach decision maker. A-B M&S analysts must establish a standard process for devising survey questions, the manner in which they are asked, and how (method of transmission and form of data) that they must receive the Afghan responses. The data collection must be implemented by trained US whole of government approach personnel who closely adhere to the standard process. All decision makers who will receive the A-B M&S reports must understand and support the process.

It is impractical to model all people in Afghanistan as agents. The science of A-B M&S permits modeling of a million or more agents. However, it is not feasible to interview regularly and collect data from a million Afghans prior to runs. What is necessary is to identify the segment of the Afghan population that should be modeled and determine what is a representative sample of that segment that will be modeled. This is a subjective decision for decision makers (advised by analysts) and it can be augmented by creating as many additional agents above the decision sampling that the analysts and the information gathers can support. Generally, 50,000 agents should be adequate to model an Afghan province and 10,000 should be adequate to concentrate on a single district.[3]

The underlying computing system database must contain all known, critically acceptable, current historical, social, political, geographical, and other data that is relevant to the location. Since that modeled environment is a rule-based medium, the agents act with human cognition within that medium by the bounds of the environmental rules. An example of a rule-based environment is the internet. The internet functions are bound by natural forces of the electro-magnetic spectrum as explained by known science,

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[3] Ibid.,24.

math, and engineering. However, additionally, internet usage rules are set by

governments, non-governmental institutions, internet service providers, internet hardware

and software component manufacturers and vendors, or are self-imposed by the users

themselves. By encoding all possible natural and human authority rules as A-B M&S

environmental rules, the model will more accurately represent humans in their

environment.

Yet, humans can and do violate rules. The A-B M&S will not allow the agents to

violate environmental rules (E.G. agents cannot spontaneously fly or change their sex).

The distinction of A-B M&S over other forms of modeling and simulation is that the

modeling begins and ends with the agent's perspective.[4] Agents can change their opinion

(their viewpoint, allegiance, where they are on Maslow's hierarchy of needs).[5] Afghans

of small villages tend to live their lives functionally and their concerns are for basic needs

to survive. The capture of opinion in an agent was explained by Joshua M. Epstein, PhD,

Professor of Emergency Medicine at Johns Hopkins University and member of the

external faculty of the Santa Fe Institute (SFI). In his article "Why Model" he describes

an implicit model as a social dynamic with hidden assumptions, unknown logical

consequences and an unknown relationship to data. He further stated that an explicit

model lays out assumptions in detail so that one can see what will happen when a change

is made to an assumption and that expertise can be incorporated with rigor.[6]

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[4] Michael J. North and Charles M. Macal, *"Tutorial on Agent-Based Modeling and Simulation,"* http://www.dtic.mil/dtic/tr/fulltext/u2/a488796.pdf (accessed September 1, 2011).

[5] Abraham Maslow, *Motivation and Personality*, Third Edition, Harper and Row Publishers, 1954, 91-236.

[6] Joshua M. Epstein, *"Why Model?,"* http://www.mit.edu/~scienceprogram/Materials/Monday%20Materials/WhyModel.pdf , 2008 (accessed September 15, 2011), 1.

The A-B M&S should be an explicit model so that a detailed explanation can be given to decision makers on how the outcome of simulations is achieved. In other words, it is necessary to be able to qualify for decision makers the basis and soundness of the modeled outcomes so that they can internalize the credibility of the results as they critically evaluate the decisions before them. It is the vastness of possible situations that make the explicit model appealing to the challenge of stability and reconstruction. However, the temptation is to view models as predictive tools when they are not. A-B M&S does not replace the responsibility of a decision maker; it is intended to clarify complex human (Afghan) reaction to possible US whole of government approach actions on behalf of the GIRoA.

The rules in agent behavior are designed to cause the agents to interact. Rule-based interactions can be for the purpose of trade of a commodity or durable goods, to get or to give a service, to mate, to exchange political views, to exhibit a human emotion like happiness, indifference, or to become angry. The rules will establish a routine that closely mirrors the habits of real Afghans who live in actual villages of Afghan districts.

Dr. Epstein deferred the intrigue about prediction by emphasizing the utility of modeling in the decision process. He said that modeling can be used to explain (very distinct from predict), guide data collections, illuminate core dynamics, suggest dynamical analogies, discover new questions, and promote a scientific habit of mind. It can bound (bracket) outcomes to plausible ranges, illuminate core uncertainties, offer crisis options in near-real time, and it can demonstrate tradeoffs as well as suggest inefficiencies. Modeling can challenge the robustness of prevailing theory through perturbations, expose prevailing wisdom as incompatible with available data, and train

practitioners. It disciplines the policy dialogue, educates the general public, and it can reveal the apparently simple (complex) to be complex (simple).[7]

Agents have a "life." Afghan agents will be encoded with a life span that is commensurate with their ethnic affiliation, their sex, their age at the time they are created (they can be created as adults), and allowances can be made to account for the environment since some Afghanistan environments vary in degrees of harshness. Agents can starve to death, be killed by any environmental phenomenon that could naturally kill them (and is encoded in the model). Agents can kill each other. Their actions are rule-based; their interactions can be made to be realistic. However, the value of A-B M&S is for agents to interact, not to terminate.

The insurgency in Afghanistan is complicated, yet it can be modeled, but it must be correctly modeled by region in order to be of value in the simulation. It is most unlikely that actual insurgents will identify themselves and cooperate in data collection so that agents can be properly built. Yet, an insurgency must not be ignored in the model. A functional agent can be built on what is known and the Afghan agents can form opinions when they encounter that functional agent. Afghan dissatisfaction with economic and justice systems might be a leading cause of citizens becoming insurgents, therefore close attention should be paid to the current economic affairs and the system of justice in any Afghan region to be modeled. Poor governance and weak security are key factors that favor an insurgency to take root in a region. Village agents should be built to have an "understanding" of the actual conditions of governance, safety, justice, and economics in their village.

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[7] Ibid., 3.

The Human Terrain System

Collectors are needed to populate agents with data. A-B M&S was available in primitive forms during the opening phases of Operation ENDURING FREEDOM (OEF) and Operation IRAQI FREEDOM (OIF), however, the technology was not structured to support military security operations. Also, there was no clear focus on who was the military decision maker who needed to know how Afghans felt about the US whole of government approach providing for their security. That focus was made clear in 2006 with the advent of the US Army's Human Terrain System (HTS). The HTS was developed by the Army to support brigade-level commanders by providing them with ethnic, economic, and cultural information on the indigenous populace. This information was intended to complement intelligence data that the commander received regularly. Brigade commanders (whose operational areas were individual provinces in Iraq and in Afghanistan) each received a dedicated five-person Human Terrain Team (HTT) trained, equipped, and staged from the Foreign Military Studies Office (FMSO) at Fort Leavenworth, Kansas.

HTTs consist of five members:[8]

- Team Leader: Principal advisor to the commander for the results of measures of human terrain that were conducted in the province. Takes guidance from the commander on where to conduct surveys and is the commander's staff point of contact for the entire HTS.

- Cultural Analyst: An anthropologist or a sociologist who is fluent in the local ethnic language, trained to follow HTS techniques and use associated

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[8] Jacob Kipp, Lester Grau, Karl Prinslow, and Don Smith, "The Human Terrain System: A CORDS for the twenty-first Century," Department of the Army, Washington, D.C., 2006, (accessed October 9, 2011).

software. Ideally, this analyst has experience in and personal connections with the province.

- Regional Studies Analyst: Support person (and with similar experience to the cultural analyst). Expertise is one of context on how the culture fits into the state or region. (In Afghanistan, the Pashtun culture exists on both sides of the Afghanistan-Pakistani border).

- Human Terrain Research Manager: A military intelligence officer. Integrates the human terrain research with military intelligence to support the brigade commander. Serves as the HTT interface with other agencies and organizations.

- Human Terrain Analyst: A military intelligence officer who supports the manager. Primarily conducts the research and builds deliverables for the commander.

The HTS maintains a central Reachback Research Center (RCC) located at FMSO. It is staffed by analysts and researchers who maintain contact with and assist the HTTs. The RCC also maintains a current cultural database with the information the HTTs collected and provided to the brigade commanders. The information in the RCC database can be used for further study, modeling, simulation and, as represented in a Department of the Army publication, "to facilitate economic development and security, the compiled databases will be turned over to the new governments of Iraq and Afghanistan to enable them to more fully exercise sovereignty over their territory and to assist with economic development."[9]

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[9] Ibid.

The Simulation

Simulation brings the model to life. It is generally understood to be an imitative representation of the functioning of one system or process by means of the functioning of another (such as a computer). The computer compresses the element of time in the model (in the lives of the modeled agents who live in the artificial society). A powerful computer (such as a supercomputer) will allow the simulation to speed up time so that the agents will live days of their lives in seconds, with all activity captured for analytical study and measurement. This feature of A-B M&S is especially useful for US whole of government approach decision makers who are operating on guidance to transfer security and governance responsibility to the GIRoA by the end of 2014. If the simulation results are based on correctly modeled data, decision makers might use the reports to identify and weed out friction-hampered and fog-enshrouded development options and focus instead on projects that illustrate decisive Afghan support for the GIRoA. Additionally, this gives to the decision maker a glimpse on how the Afghan's might view the GIRoA years after it is presumed to have assumed full responsibility for security and governance in late 2014.

An example of a simulation follows: Most Afghans get their food from a village market, usually at a central location in the society. An agent rule for the model might be for all Afghan agents to go to the market each day. There, they will encounter all other agent types if that is the place that all agents of the village must go to gain their daily calorie intake (a rule-based requirement). Another agent rule might be for all agents that practice the Islamic faith to go to the village mosque on Friday night. Each village and district will have members of the shura who will hold political meetings at the village

place of assembly. Each agent that is modeled to be a shura member will have a rule to attend those regularly scheduled meetings; the actual meeting times can be programmed into the model and the times can be changed during a refresh if the actual times were known to have changed. Shura agents must eat and will interact with the village populace at the market. They also will interact with the Islamic faithful at the mosque on Friday nights.

A more sophisticated rule might be developed to measure interaction between two villages, each of which is located in a different valley. The villages normally do not interact; however, village A may produce a crop of corn beyond its needs and village B may produce fruits beyond its needs. An agent rule can be established in which a percentage of village A women will travel to the village B market when village B produces a 10% or greater than normal crop of corn. If the corn production is 20% greater, a greater number of village A women will visit the market of the other village. The same type of rule could be installed to cause percentages of village B women to travel to the village A market. The point of the rule is to establish a cause (such as the actual production of a greater crop yield) and measure the effect of that cause in a myriad of ways, including the social interaction with Afghan people who would not visit their neighbors without a logical reason to do so. The simulation will capture many details about the interaction and the analyst will interpret those details in a post-simulation report for a decision maker. This example illustrates the importance of including the decision maker early in the process of setting the rules. In this example the decision maker should understand that an agent caused 10-20% of village women to travel where they would not ordinarily go and he should agree that this rule should be applied.

In order for the agents to represent their human counterparts, information must be gathered regularly on the actual human social networks that are at work in the village. It is possible for an Afghan man, who works as a farmer and lives near a village, to encounter new people who become important to his trade. Such encounters can validate his religion, influence his political opinion, and cause him to be centered in a societal norm or those same encounters might cause him to stray into fear or anger-induced behavior that is uncooperative with the society. This is the type of information that is sought by information or intelligence collectors and given to A-B M&S analysts to build or to refresh agents.

Afghanistan is a place of conflict. The rugged geography in that place facilitates isolation of villages within narrow valleys. Even when the villages are populated with ethnically similar people, unless they regularly trade they do not develop common interests or trust. Over time, the societies of Afghanistan have developed into distinct tribes and sub-tribes. Strife has been caused over time when one tribe has attempted to control all Afghan tribes. If the data on Afghan tribal societal zones is known, the villages in those zones can be modeled as functional agents that represent their tribal normality. However, the functional agents are rule distinct and will not change their viewpoints whereas agents modeled on individual villagers who live in those zones will interact and can change their viewpoints due to the interaction.

The Report for Decision Makers

The report is modeling put to use in the decision process. A basic assumption is that A-B M&S will be most effective if the model is developed on the most local level in which an Afghan society gathers (the village). The particular village to be modeled

should be one in which US whole of government approach-orchestrated security, stability, reconstruction, and development changes on behalf of the GIRoA will be applied. Ideally, the DOD has provided (and is continuing to provide) a high level of security for DOS stabilization and reconstruction activities and USAID development activities in or near candidate villages. The basis for the simulation is an extension of DOD security for an expansion of that DOS and/or USAID activity through GIRoA ministries. The agents should be modeled on one or more Afghan villages that will be affected by the expanded DOS and/or USAID activity. The presence of a PRT is implied (source of the stability and reconstruction activity) and there may be DOD combat outposts (COPs), camps, and Forward Operating Bases (FOBs) or other military support bases in the area. All close proximity USF-A bases and US whole of government approach activities must be considered as potential sources of collection of refresh data. Non-US sources of data can be considered on a case-by-case basis. All data collection sources must be approved by decision makers and by the A-B M&S analysts. Those US whole of government approach personnel who volunteer or are assigned to conduct the surveys must be trained on how to collect, document, and report the data to the A-B M&S analysts.

A-B M&S can be acutely valuable to a US whole of government approach decision maker who must consider taking an action that will put differing ethnic societies in greater proximity to one another than they are naturally. Great care must be taken in the A-B M&S process to build proper distinctions in the rules of agents with different ethnic makeup. As an example, a Tajik, a Pashtun, a Hazara, and a Turkman might view differently a social service for women that is provided to their shared village by the

Ministry of Women's Affairs. Yet, it is the measure of their interaction in the simulation that is valuable, because they are programmed to be ethnically correct.

A-B M&S is a recognized academic, government, and commercial tool.[10] It has been used to model how US citizens feel about the placement of a new stoplight, school, post office, and grocery store. It has been used to model the spread of infectious disease by societies that have limited or robust means of travel. Law enforcement organizations have used A-B M&S to model the spread of categories of crime in a society. Local government organizations functioning on limited budgets must advance solutions to social needs without wasting money on mistakes. A-B M&S allows those leaders to assess the reaction of their modeled population to a range of possible solutions before a costly contract is let to make the solution real.

A-B M&S has been shown to be useful even in modeling vanished civilizations. The technique involves gathering and studying the historical evidence left by the lost society. Any remaining and critically examined written history, as well as archeological evidence, can be used to build an A-B M&S environment and agents who will interact in that environment much as the actual people would have done. The technique is used to validate theories and to establish hypotheses that will fill in unknown data about the lost society as well as to glimpse the social behavior and reasoning of the society.

An A-B M&S of the Anasazi Paleo-Indian culture in Long House Valley (northeastern Arizona) was run to see if the agents would reveal clues where archeology was short of answers about what happened to that civilization. It was suspected that the successful introduction of maize as a food crop was the catalyst for a population increase

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[10] Joshua M. Epstein, *Generative Social Science: Studies in Agent-Based Computational Modeling*, (Princeton, NJ: Princeton University Press, 2006), 90 – 93.

in 1800 B.C. and that severe drought over several growing seasons had caused the society to die or leave around 1300 A.D.[11] The environment built into the model was the result of a combination of archeological data that substantiated an incomplete historical record, hydrological and soil analysis, investigation of ruined dwellings, and a 100% survey of Long House Valley. The runs showed how the agents developed an awareness of where maize would optimally grow. The expansion of family sites in the model repeated what was known to be correct from archeological study. The model did not provide proof of why the society failed or left, but it did (through many runs) reveal how the Anasazi likely interacted with changes to the environment and the effects of those changes on their social structure. The model gave researchers an opportunity to try an unlimited number of factors, many of which were largely ignored until the A-B M&S was available for use.[12] It is that opportunity to include the less popular, poorly resourced, and politically unacceptable ideas (that sometimes have great merit) that supports A-B M&S use by the US whole of government approach in Afghanistan.

In summary, A-B M&S use permits the study of correctly modeled Afghan society. It greatly expands the range of options a decision maker might have to consider on where and how to invest for security, stability, reconstruction, and development.

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[11] Ibid, 90-93.

[12] Ibid., 94-114.

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CHAPTER 2: CASE STUDY

The same technique that is used to model extinct human societies can be used to

model current and former insurgencies and counterinsurgencies. The value is to model

historical societal reaction to insurgent behavior and to counterinsurgency techniques.

The data gleaned from Agent-based modeling and simulation (A-B M&S) of such

historical case studies can lead to a refinement of current counterinsurgency and security

tactics, techniques, and procedures. Although A-B M&S was not available during classic

insurgencies like Malaya, the Mau-Mau insurgency in Kenya, the Irish Republican Army

insurgency in Northern Ireland, or the Viet Cong insurgency in Vietnam, it is useful to

examine how it might have been used in one of the classics such as Malaya.

Malaya

Valuable lessons can be learned on how to establish security during an insurgency

from the 1948–1960 British experience in conducting counterinsurgency operations

against an insurgency in Malaya. In 1943, the British Government was focused on

defending its homeland and its far-flung colonial empire from the aggressive military

actions of Germany, Japan, and Italy. With such pressing matters of World War II

(WWII) close to home, Britain's investment against the Japanese incursion on the small

British colony of Malaya in Southeast Asia was necessarily small. In that year, the

British landed a small team of guerrilla fighters known as Force 136 behind the Japanese

lines. Mostly, the Japanese occupation force concentrated its efforts on the western coast

of Malaya where the local population dwelled.[1]

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[1] Julian Paget, *Counter-Insurgency Operations Techniques of Guerrilla Warfare* (New York, New York: Walker and Company, 1967), 43.

Local population did not necessarily mean indigenous Malayans, who in fact made up only 44% of the ethnic population of Malaya in the latter days of WWII. Of the remaining population (not including the Japanese occupation force) 38.5% were Chinese.[2] Upon its arrival in Malaya, Force 136 established itself in the jungle for safety and it was there that it encountered the Malayan People's Anti-Japanese Army (MPAJA), an existing 6,000 man ethnic Chinese guerrilla force. It was well-organized and focused on doing the very thing that Force 136 was sent to do: drive out the Japanese occupiers.[3] It made sense to the British to cooperate with the MPAJA. It would have been absurd and impractical for the British to try to recruit local support for their own independent force of guerrillas when there clearly was a shared purpose. They cooperated with the MPAJA, but they did not inquire why they were so well organized and if they had an outside sponsor or source of support.

As the Japanese retreated from Malaya as their nation failed in WWII, the British returned to rule their colony. The Chinese expatriates were largely content with the return of British rule for they had come to Malaya to escape civil war in China. The indigenous Malays were glad to have the British back and many of the British expatriates who had fled the Japanese occupation returned after the war. However, in 1948, the British discovered that there had been more to the MPAJA than they had surmised in 1943. They were Communists, members of the Malayan Communist Party (MCP) and the leaders were part of a cadre trained by a faction of Mao Tse-tung's army to fight the Japanese on other fronts and to be in position to organize phase one of a three phase

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[2] Paul Melshen, "1S7C-03 Low-Intensity Conflict Old War/New War Malaya 1948-1960" teaching aid (2011), 6.
[3] Paget, *Counter-Insurgency Operations Techniques of Guerrilla Warfare*, 43.

insurgency[4] to topple the post-war British colonial government when it returned to its colony. The insurgent leader, Chin Peng, launched phase one, a rural armed struggle in Malaya, in February 1948.[5] This was the beginning of a struggle between the British Government and the MCP that lasted for twelve years.

British General Sir Harold Briggs was sent to Malaya to be the Director of Operations against the insurgency. In July, 1950, he announced his four part campaign plan:[6]

1. Dominate and secure populated areas; increase insurgent information sources.
2. Break up Communist (insurgent) organizations in the populated areas.
3. Isolate the insurgents from food and supply organizations in populated areas.
4. Destroy the insurgents by compelling them to attack on British-controlled ground.

Brigg's approach was effective, but it did not crush the insurgency. Instead, it led to the insurgents adopting an asymmetric approach to their operations. Mostly, the Chinese squatters (who were the source of insurgent support) had not settled in populated areas. Instead, they were scattered about in smaller villages which were located between the major population centers and employers of the squatters, plantations and mines situated along the west coast. Many of the squatter villages were set near the jungle, where the insurgents took refuge as they had done when they were the MPAJA. The insurgents reestablished food and supply support with squatter villagers, terrorizing the villagers whenever cooperation was not forthcoming.

As the British comprehended the situation, they realized that they could not clearly distinguish between an ethnic Chinese insurgent and a peaceful Chinese

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[4] Samuel B. Griffith II, *Mao Tse-Tung On Guerrilla Warfare* (1325 South Oak Street, Champaign, Illinois: University of Illinois Press, 2000), 66-70.

[5] Richard Clutterbuck, *Riot and Revolution in Singapore and Malaya 1945-1963* (3 Queen Square, London, England: Faber and Faber Limited, 1973), 167.

[6] Paget, *Counter-Insurgency Operations Techniques of Guerrilla Warfare*, 56-57.

expatriate. In order to identify friend from foe, the British designed and implemented a compulsory citizen registration program requiring all citizens over the age of twelve to be interviewed and screened to have issued to them identification papers. As the registration program progressed, the insurgents became isolated. Insurgents could not register for identification papers and squatters who had cooperated with them might pass intelligence to the British during the interview process. Insurgent safety outside of the jungle was effectively compromised by the identity program and by the intelligence gain derived from it.[7]

Briggs took further steps against the insurgency following the successful registration program. He consolidated his command and control by setting up the Emergency Operations Council (EOC), which integrated the civil, military, and police functions under one director (the Prime Minister). Similarly, he installed a lower level version of the EOC in all nine Malay states and at the settlements of Penang and Malacca. Mounting an early offensive, he drove the insurgents deep into the jungle and installed counterinsurgency troop bases at locations that were central to several villages so that the troops could respond quicker to calls for help when insurgents threatened or attacked. Then, he systematically began a program to relocate entire villages of Chinese squatters to new villages on the west coast that were unapproachable from the jungle. Since the squatters had identification papers, Briggs was confident that he was relocating peaceful people. Furthermore, the squatters were grateful for the move that proved to be

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[7] Ibid., 53.

the ultimate security for them. Finally, as villages were relocated, the number of remaining villages that required troop protection became more manageable.[8]

The insurgents had little choice left to them. They began to put even greater pressure on Chinese squatters that had not yet been relocated; in that way, they were able to get food. When Briggs confirmed that this had happened, he took the draconian step of limiting the food ration to squatter villages that had not been relocated. Villagers were given only enough rice for one day. Families had to cook it all in the morning and (once cooked) they had only enough rice for that day's feeding of the family. The squatters understood that should they give their rice to insurgents, the family would go hungry. The new circumstance made insurgent threats less impressive. Furthermore, most villager families simply ate all of their single rice meal just after it was cooked, before they left for work, school, or other activities so that insurgents could not take food from them. In time, Briggs understood that he could not perpetuate the food rationing for it threatened to damage the winning of the "hearts and minds" of the squatters, so he accelerated the relocation program. He also began to adapt to insurgent tactics as intelligence revealed much on how they operated.

After a hard-fought campaign and the loss of British High Commissioner of Malaya Sir Henry Gurney by assassination and Briggs departed Malaya over health concerns, but his departure facilitated the arrival of General Sir GeraldTempler in February 1952, and a fresh look at the campaign. Templer, who was named the new High Commissioner of Malaya, instituted remaining elements that would complete the

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[8] Ibid., 58.

campaign plan.[9] He delivered a hopeful promise of independence (on conditions) to the entire Malaya Colony. Thus, he provided a political end state that directly confronted the insurgent goal of establishing a Communist state. Furthermore, the defeat of the Communist insurgents was made a key condition for granting independence. Templer brought in a greater military force and had at his disposal generous funding to build on what Briggs already had done to grow the police and the Home Guard. He instituted a program of amnesty for communists who turned themselves in. From this surrendered population he recruited a number of guides who were familiar with the insurgent jungle bases. The guides led British counterinsurgency forces on deep jungle search and destroy operations; they crushed insurgent infrastructure where it could be found. By 1958, the insurgents were driven deep into the jungle and they were compelled to reverse their gains. The insurgents returned to phase one of their operational plan as Templer entered phase three of the British plan.[10]

Yet, Templer had not yet stamped out the insurgency. Through his intelligence channels he learned that the insurgents had gone so deep into the jungle that they encountered indigenous aboriginal people and had terrorized that population into growing food (mostly rice) for them. Templer was obliged to change tactics. He brought in helicopters, which could loiter over the canopy and find the isolated small rice plots. Still, knowing where to strike was only half the battle. He sent teams of forces in to contact the aborigines, from whom he received support as foreign area knowledge experts (a force multiplier). The new tactic was to go in by helicopter and drop in on the isolated jungle rice plots, with aborigine scouts leading the way. Additionally, Templer instituted

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[9] Ibid., 58-64.

[10] Ibid., 64 – 68.

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a massive information campaign by continually dropping surrender appeal leaflets into the jungle to urge the insurgents to give up their lost cause.[11]

There were surrenders, but the MCP did not capitulate in the face of such a determined opposition to their cause. Doggedly, they continued to survive. Templer began to suspect that they were getting support from outside of Malaya. In the early stages of the insurgency, the MCP received no outside support because China was still forming a communist state. By 1958, it was possible for them to get support from China via land routes from Thailand. Templer negotiated with the government of Thailand and was granted permission to cross into Thailand up to ten miles to engage insurgents who lurked across the border. With no meaningful support remaining to the insurgents and no sanctuary untouched by the counterinsurgency forces, the insurgency effectively ended in 1960 when the survivors slipped away to rejoin the general population.[12]

In conclusion, the Malayan Campaign demonstrated the power of enacting a political solution and supporting it early in the insurgency. Cooperation between the government, civilian population, and the military was a key factor to success. Security for the population was essential in order to deny support to the insurgency and to get the intelligence needed to stamp it out.[13] Finally, by seeking and gaining cooperation from the government of Thailand, Templer showed the value of diplomacy and the wisdom of amending your counterinsurgency campaign plan when the insurgency changes its tactics.

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[11] Ibid., 68-73.

[12] Melshen, "1S7C-03 Low-Intensity Conflict Old War/New War Malaya 1948-1960" teaching aid (2011), 7, 39-40.

[13] Paget, *Counter-Insurgency Operations Techniques of Guerrilla Warfare*, 8.

Hypothetical Analysis

Had computers and A-B M&S existed in 1948–1960, the British might have

accelerated their counterinsurgency program and achieved the same favorable outcome in

less time and with fewer resources. The following is a hypothetical analysis of how A-B

M&S might have been applied to the Malaya counterinsurgency campaign. In 1943, as

British Force 136 landed in Malaya, a British A-B M&S of Malaya would have been

operating aboard a ship in a protected area. The Malaya environment, to include detailed

historical knowledge of ethnic Malayans and Chinese squatters, and intelligence on the

command and control (C2), organization, and equipment of the Japanese occupying

force, was known. This information could have been entered into the computer database

by British Malaya A-B M&S analysts. The model then could have simulated proposed

actions by Force 136 on selected Malayan villages. Agents would have been modeled on

the ethnic Chinese villagers in question and on Japanese C2. Dozens of Force 136

personnel might have been trained social modeling information collectors. They might

have interviewed selected Malayan villagers and collected intelligence (learned

information obtained by interview). This information could be transmitted by encrypted

radio message to A-B analysts who refreshed the data on Chinese squatter agents.

When Force 136 encountered the MPAJA, British C2 would have determined to

create MPAJA C2 agents for the model. Under the cover story of needing to understand

the needs and wants of the MPAJA before planning a cooperative (Coalition) allied

operation against the Japanese, British information collectors could have gathered

intelligence by interview with MPAJA members. From the interviews, the British may

have learned that although the members of the MPAJA were ethnic Chinese, they were

not socially part of any Chinese squatter village and had been trained to conduct guerrilla warfare by using the Chinese villagers as a source of logistics. The MPAJA probably would not have revealed who trained them or why as allied operations were conducted forcing the Japanese to withdraw from Malaya at the conclusion of WWII. Force 136 disbanded, but the MPAJA did not, nor did they assimilate into ethnic Chinese squatter society or leave the security of their jungle bases. British C2 had no reason to continue the Malaya model (without Japanese agents), but former British information collectors from the disbanded Force 136 might have been assigned to the security force of newly-arrived British High Commissioner of Malaya Sir Henry Gurney.

After the MPAJA reasserted itself as the MCP, the British could have been able to provide newly-appointed Director of Operations Briggs with A-B M&S to support his counterinsurgency planning against the communists. Briggs would have instituted his four part campaign plan. After he dominated and secured populated areas, he would have directed the information collectors to collect intelligence on Chinese villagers to give to the analysts who refreshed existing agents and created new agents. A simulation might have been run on the model. In the simulation, various techniques would have been tried individually in separate runs. These techniques should have included all conceivable and supportable ways to protect (provide security for) ethnic Chinese villages, deny food and supply to the MCP, and to compel the MCP to attack places of overwhelming British advantage. Each simulation would have been conducted for a one-month, six-month, one-year, three-year, and five-year timeframes. All simulations would have been completed and the results provided to Briggs in two weeks. He should have been able to assess how the ethnic Chinese villagers felt about each action that he might take one

month, six months, one year, three years, and five years after he took any action. He might have been able to see how the MCP insurgent agents behaved during each action over the same span of time from one month to five years. Likely, the A-B M&S would have guided Brigg's decision to accept the optimum course of action at every decision point in his campaign. Probably, the model would have validated Brigg's conclusion to establish an identity program, to relocate villages away from MCP influence, and to ration food in villages that had not yet been relocated. Applying A-B M&S to this case study would have reduced the loss of life and conserved resources by allowing the British to successfully complete their mission in far less time.

CHAPTER 3: MODELING FOR OPERATION ENDURING FREEDOM

Collection of human intelligence on Afghans at village level is a critical activity that is vital to build the agents and to regularly refresh the data on agents. This function, although originally structured to support the Department of Defense's (DOD's) prosecution of the security mission, must be refined over time to include other sectors such as economics and governance. This refinement would permit the inclusion of the whole of government approach under the Department of State (DOS) as the DOD departs Afghanistan in 2014.

The security of the country outside of the capital region of Kabul is divided into five geographic regions: North, South, West, East, and Southwest, yet, security issues within those regions are addressed at the lower province level. The security for each province in Afghanistan is the responsibility of a brigade commander or the commander of the largest organized military unit (in lieu of a brigade) who is assigned and is responsible for security in that province.[1] Accordingly, the model for security should focus at the provincial level in Afghanistan.

Based on the introductory assumption that the historical basis for democracy in Afghanistan is the use of the shura (meeting) of elders of Afghan society, assessing viability of policy implementation should be on that group. The highest level of shura in Afghanistan is the Loya Jirga. While the national-level shura does not bind the decisions of the elected government of Afghanistan, its opinion certainly carries great weight for it publicly represents how the Afghan people feel about what the Government of the

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[1] North Atlantic Treaty Organization; International Security Assistance Force. "ISAF Joint Command," Kabul, Afghanistan, http://www.isaf.nato.int/troop-numbers-and-contributions/index.php , February 12, 2011 (accessed January 06, 2012).

Islamic Republic of Afghanistan (GIRoA) does. President Karzai sought and received

Loya Jirga endorsement of his proposal for the GIRoA to assume full responsibility for

governance and security in Afghanistan in 2014.[2] The organization of Afghan shuras

cascades down from the national level Loya Jirga to provincial, district, then village

level. GIRoA officials at the national and provincial levels are elected. However, at

district and village levels, they tend to be appointed. Whether they are elected or

appointed, officials wisely consult with shura elders, who find their way onto the

provincial district and community (village) development councils.

The former commander of Task Force Titan Combat Outpost (COP) described the

importance of balancing United States (US) objectives with GIRoA decisions and the

popular opinion of Afghans in this way:

> I conducted daily meetings with the district governor (s), the Afghan
> National Army (ANA) and Afghan National Police (ANP) chiefs, and
> with my commander. I might hear of GIRoA ministry approval of some
> project, but I knew to verify that guidance had come to the governor from
> the district development council. They should have gotten the idea by
> consensus from village level Afghan community development councils.
> The villagers knew their community (what they needed and what
> threatened them) better than anyone. A decision from the community
> council (or shura if they had yet to form a council) led by the village
> elders, was the best basis upon which to do something for the Afghans that
> would support our objectives. If I wanted to cross check them, I would
> gather intelligence from the village women, who invariably knew and
> could explain why anything happened in their village.[3]

The Old Dominion University (ODU)Virginia Modeling and Simulation Center

(VMASC) used Agent-based modeling and simulation (A-B M&S) to model the effects

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[2] King, Laura. "Afghan Loya Jirga endorses Karzai's goals for USSecurity Pact", Los Angeles, CA, Los Angeles Times – World, http://latimesblogs.latimes.com/world_now/2011/11/afghan-loya-jirga-endorses-karzai-goals-for-pact-with-us.html , November 19, 2011 (accessed December 22, 2011).

[3] Gukeisen, Thomas B. *Memorandum for Record: Subject: 3-71 Cavalry Extreme Makeover (EMO) Mid-Point Lessons Learned,* September 13, 2009, interviewed by Tony Grayson, December 6, 2011, cited with permission of LTC Gukeisen.

of a US Forces-Afghanistan (USF-A) and North Atlantic Treaty Organization (NATO)

International Security Assistance Force (ISAF) (Coalition) troop surge to combat the

Taliban, which had regrouped and returned to Afghanistan in strength.[4] The VMASC

results of the A-B M&S run on a single Afghan province in 2007 were used by the US

whole of government approach to make an operational decision to plan for and execute a

surge in US forces for all of Afghanistan. The justification for modeling a single process

was that a brigade commander (or equivalent commander) of the military force in each

province is the primary decision maker for security. A critical analysis of the VMASC

model follows:

> The VMASC model was based on a premise that because NATO end
> strength in Afghanistan had fallen from its peak to a low of 55,000
> soldiers by 2007, the Taliban was able to regroup and surge its operations
> in the country. The task of VMASC was to build three models of coalition
> troop surges (one at 50%, one at 200%, and the third at 400%) over 2007
> levels and simulate the effects on the agents that were built into the
> models. The outcome was expected to be a report that would show an
> effect on the security of Afghanistan should coalition troops be surged at
> the differing levels. VMASC modeled Khost Province, which is 99%
> Pashtun, with agents developed on Khost inhabitants after the year 2007,
> to include Afghan civilians, coalition soldiers, Provincial Reconstruction
> Teams (PRTs) (as teams), Afghan government assets (as holistic entities),
> the ANA, a US/coalition Quick Reaction Force (QRF) , and there was a
> terrain agent. 1,300 civilian agents were built for this model.[5]

The modelers stated that they had "no direct measure available" for building the

Afghan agents so they used a "uniform distribution" of information on how Afghan's feel

about the GIRoA, coalition troops, coalition activities, insurgent activities, and ethnic

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[4] John A. Sokolowski, Catherine M. Banks, and Brent Morrow, *Using an Agent-Based Model to explore troop surge strategy*, The Society of for Modeling and Simulation International, Sage Publications, March 11, 2011, https://www.dtic.mil/DOAC/document?document=ADA544643&collection=trpub&contentType=PDF&citationFormat=1f (accessed September 23, 2011).

[5] Ibid., 4-8.

cultural factors.[6] The model addressed the insurgency for all of Afghanistan. An example of the expansiveness of the task is found in the introduction of the report. The insurgency agents in the model were an amalgamation of the Taliban (called the neo-Taliban) which included the Taliban that were driven out of Afghanistan by Allied Special Operations Forces (SOF) forces in 2002, warlords, drug runners, nationalists, Pashtuns, al-Qa'eda terrorists, and all foreign fighters who participated in a Jihad against western governments.[7] Although some of these groups may cooperate, they do not have a collective political strategy. None of the separate groups divided its forces into equal strength that is invested in every province of Afghanistan.

A-B M&S could be more effective if national level intelligence is sought and received so that insurgency or criminal groups and their membership numbers can be defined accurately at the district level of each province. Further intelligence definition should be sought to establish the area of operations of each group, their objectives, resourcing, and methods of operation. The level of intelligence detail should allow for a more defined focus on the task. Since VMASC was given a decision that there would be a troop surge, their task was only to model the affects of a preponderance of numbers.

The US whole of government approach commands the PRT in Khost. Rather than conduct three runs only on Khost, the modelers might have run an additional three models of coalition troop surge strengths on other provinces, such as Badakhshan province, which is an ethnically Tajik Northeastern Afghanistan province and has a known Tajik-based insurgency called the Haqqani Network. The Tajik insurgency is loosely allied with the Pashtun-rooted Taliban. Instead, the modelers created a "Neo-

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[6] Ibid., 3-4.

[7] Ibid., 1.

Taliban" and in it they lumped all factions of the diverse insurgency. This was an error for the insurgency groups have historically fought each other.

The historical rivalry between Tajiks and Pashtuns was not considered due to the assigned purpose of the model to only look at varying degrees of coalition troop surge in Khost. It was assumed that the simulation report would be applicable to all of the Afghan provinces since the troop surge was not applied only to Khost Province. The VMASC model notes that coalition force strength dropped while the US concentrated its efforts on OIF. It alluded to other factors for an insurgent surge that were rooted in social problems (at the village or any level or a combination of levels, village to national), economic challenges, and political issues.[8] In order for the A-B-M&S to provide a useful decision-making product, these other factors must be accounted for in the model. Yet, the modelers did not obtain and apply such details; they elected or they felt compelled to use uniform distributed data, thus limiting the significance of their run for decision makers.

In order for A-B M&S to be effective as a decision tool, it must be built on an historically correct environment. The agents must be engineered to have the human cognition of their genuine Afghan counterparts. When the modeler generalizes and homogenizes data used to build the background of the model and the agents that interact in the model, the outcome must be presumed to render a solution based on similar elements (generally correct but lacking sufficient detail upon which to base a decision). The VMASC model was sufficient to complete the modeler's task, however, for Phase IV security, reconstruction, stability, and development decisions, the US whole of government approach decision makers require A-B M&S detail to the village level within

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[8] Ibid., 1.

districts in order to gain a basic measure of how Afghans feel about the GIRoA. The

VMASC model correctly identified the primary decision maker for A-B M&S for

security to be the brigade commander (or equivalent military commander) who provides

security for a province, but failed to provide a more comprehensive and discreet report

upon which to base a US whole of government approach.

On the assumption that security in Afghanistan is subject to compromise mostly

due to insurgent activity, the primary place for the GIRoA to apply good security is at the

village level in order to crush the activities of an active insurgency at the most base level.

Historically, insurgencies require sustenance from the regions in which they operate as

illustrated previously in the Malaya case study. As the GIRoA expands its influence in

districts, the expansion occurs at the fringes of established good security and good

governance. Villages are at the fringes and must be subsumed by good security in

advance of governance which in turn will then advance stability, reconstruction, and

development. The advancement should be viewed like an ink spot on paper. The ink

spot or oil spot strategy (also known as *tache d'uile*) was developed by French military

officer Joseph Gallieni in 1905 while he fought an insurgency in Madagascar. His ink

spot counterinsurgency strategy was perfected and applied by Marshal Hubert Lyautey in

Morocco.[9] The analogy of an ink spot that spreads slowly as an expanding circle is the

description of how to expand security among a citizenry that is subjected to harassment

and control by insurgents. An ink spot will join with the expanding ink of other nearby

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[9] Peter Paret, Gordon Craig, and Felix Gilbert, *Makers of Modern Strategy: From Machiavelli to the Nuclear Age*, Princeton, NJ, Oxford University Press, 1986, 376-407.

ink spots. Another way of looking at the expanding zone of good security is as a dome of protection or a "security bubble".[10]

A-B M&S used in this manner can support the USF-A decision process as the USF-A supports the ANA during an expansion of the perimeter of a security bubble. While simulations on the A-B model are applied to support the expansion of security, the agents can also be refreshed with intelligence that will enable them to provide a measure of how they feel about the GIRoA progress in governance and in development. Data that is gathered from Afghans of a village that is to be modeled should include information on the economic conditions of the village and information on local politics. These categories of information are encoded into the agents and will form an agent basis in which to simulate improvements that decision makers might consider. Additionally, since there are active insurgencies in Afghanistan, the analysts can offer decision makers a choice: either, the insurgents can be represented in the model by a functional insurgent agent or the analysts can model the insurgency dynamically (to interact with the agents that are modeled to interact).

If there are credible intelligence indications of insurgents living among the villagers and a percentage of the village population can be reasonably deduced, then civil violence agents that represent that percentage can be built. Civil violence agents (CVAs) are heterogeneous and contain aspects which are unrelated to or are in addition to the local data that is collected and built into each village agent. These agents have built into them both an economic hardship factor and a political grievance factor. Their economic poverty and low trust of the GIRoA may combine with other perceived negativity

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[10] Thomas B. Gukeisen, *Task Force Titan*, interviewed by Tony Grayson, December 6, 2011, cited with permission of LTC Gukeisen.

associated with the change that is being simulated. Reasons that an agent might tip over

to rebellion can be exacerbated by their age, sex, degree of isolation, ethnicity, religion,

the availability of food and water, or in their perception of justice.[11] These specifics will

be noted during the collection of data for agent refresh. The dynamics will come into

play during agent interactions in a simulation.

Rules must be developed for the CVAs if they are to be included in the model, for

they represent villagers who are so dissatisfied with the GIRoA that they support the local

insurgency. For the purposes of the simulation, it is not important to define CVAs as

insurgents. Whether they are or whether they only provide logistics support to

insurgents, they are against the GIRoA. Aside from seeing the agent reaction to

simulated changes, decision makers may also want to see if the number of CVAs

increases or decreases because of the action that is simulated. The CVAs will rebel

against GIRoA activity (or not) based on the rules that are set and if the parameters of the

calculated utility in the rules have or have not been met.[12] Because this is a village level

simulation, CVA dynamic action and their numbers are decentralized functional agents

that should not be extrapolated to mean a measure has been taken on the success or

failure of the goals of the local insurgency.

Since there are ethnic and tribal differences in Afghanistan, it is likely that as the

security bubble expands it will encompass two villages of distinctly different social

makeup. A-B M&S can be applied to this situation. Both villages should be modeled on

decision maker initiatives that are intended to focus on the dynamics that are known to be

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[11] Joshua M. Epstein, *Generative Social Science: Studies in Agent-Based Computational Modeling*, (Princeton, NJ: Princeton University Press, 2006), xvi, 246.

[12] Ibid., xvii.

present between different tribes or ethnic groups. This model is not political; it is not about how the village level Afghans feel about the GIRoA.[13] Instead, it is focused on what the GIRoA can do to lower violence that is inherent between two villages that will not tolerate each other. CVAs can be used in this model, but the rules must be changed to reflect how the ethnic CVAs of each village view the society of the other village. From this example it can be seen how A-B M&S analysts must be given and understand details of human cognition on the people that are being modeled and that they must know what is the decision that is being considered for those people. The analysts have options on how to encode functional agents (like the CVAs) so that they will impart correct information exchanges to the modeled agents of the people that they will encounter during a run.

The rule of law can be measured in villages, which also helps to define the security bubble. Essentially, it is the same model with village agents that are encoded with the current view of Afghan villagers on their economic hardship (their physical and economic conditions) plus their political view of the legitimacy of the GIRoA. The CVAs are used in the model if there is intelligence to support their use. Additionally, ANP agents might be used, but they must be configured to be functional agents since they and the ANA are (by Afghan law) an amalgamation of the different ethnic members of Afghan society. If a functional ANP agent is built, rules must be devised for the agent on what level of lawlessness it will perceive during its interaction with the village agents and what actions will it take when it perceives lawless acts.[14]

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[13] Ibid., 247.

[14] Ibid., 248.

Since the purpose of the simulation is to determine if law and order is improved or not by the presence of the ANP functional agent, all village agents must be refreshed with data that will establish their risk aversion. Afghans will be more or less prone to take risks in affronting authority based on their ethnicity, sex, age, poverty level, perception of justice, the proximity in which they are located with like-minded Afghans, and other factors.[15] The village agents in the model should reflect these factors. The decision maker can have simulations on a variety of resource applications that will cause the agents (with a correctly modeled set of risk aversion factors) to act and the ANP agents to react. The ANP agents can be encoded to make arrests. The number of arrests can be recorded by the analysts and the effect of the numbers can be considered in the simulation. Also, the number of increased ANP agents included in the simulation can be considered for how that affects agent activity. Simulations can be run on how the villagers react to where the ANP police station is placed (E.G. near the mosque, near the food market, or other society locations). A rule must be created that will cause each Afghan agent and each ANP agent to interact in a distance from each other that is commensurate to line of sight. This establishes an identity check (reality) justification as to why they would interact.

Decision makers may benefit from color coding of agent reactions or by seeing split screen shots of agent activity at tipping points (violent or pronounced outbursts of activity from substantial numbers of agents) in the simulation. For example, CVA agents can be configured to be blue before they rebel and red once the rule parameters are met to indicate that they are now insurgents or are sympathetic to insurgents. Clustering of

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[15] Ibid., 249, 250.

agents (the villagers of one tribe who are fighting the villagers of another tribe) can be shown to a decision maker more clearly if they are shown alone on a second screen as compared to all agent interaction on the first screen.[16]

<div align="center">Province</div>

A PRT is a center of development within an area of risk of a state that is governed by a transitional (weak) government. The security force is there solely to protect the development efforts. PRTs in Afghanistan are under the jurisdiction of the NATO ISAF. PRTs extend the authority of the central government beyond Kabul. A PRT facilitates, monitors, assesses and reports on development in the province in which it is located. A PRT shares information, contributes to reconstruction, and it closely coordinates with the United Nations (UN)-mandated assistance mission, non-government organizations (NGOs), and international associations that operate in the province.[17]

The complement of a PRT in Afghanistan is tailored to the requirements of the Provincial Governor. PRT Laghman in Laghman Province is typical with 84 military and 25 civilians and contractors. Of the civilians, four were from the US whole of government approach, with two of them from DOS, one from the US Agency for International Development (USAID), and one from the Department of Agriculture. The PRT follows the ink spot strategy of establishing a security zone of protection and good governance in the zone. Since the primary interface of the PRT commander is with the Provincial Governor, the PRT tends to be located in or near the provincial capital. In an interview, the PRT Laghman Commander stated,

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[16] Ibid., 252.

[17] US Department of Defense, *Fact Sheet – Provisional Reconstruction Teams*, Washington, D.C., September 27, 2004 (accessed December 23, 2011).

Three times a week, I met with the Provincial Governor (Presidentially appointed) and at least once a month with the Afghan Provincial Development Council [which is popularly elected]. I found both to be a source of good ideas on how to improve the lives of Afghans in the province and to further good governance. However, they perpetually lacked the means to do those things. Regrettably, the primary means that I had to organize long-term or large scale projects was USAID, which invested only a single employee in Laghman Province. But, I did have access to and regularly used Commander's Emergency Response Program [CERP] funds.[18]

The CERP program is a Congressionally-funded program to put small amounts of money in the hands of Joint Task Force (JTF) commanders for their use as a means to win trust and to promote civil infrastructure development at low levels of Afghanistan and Iraq Society (Village and District).[19] Generally limited to $25,000 per month, CERP funds permit US military commanders to pay construction contracts and to hire Afghan or other nationality citizens to perform contracts. The CERP program is evidence of Congress' clear understanding of the resourcefulness of US military commanders in the field. CERP program funds are an enabler for the DOD to support the security mission by shaping the environment that is to be secured. It is a fine line of distinction since the DOS has direct responsibility for reconstruction and stability and oversight on USAID development. It must be assumed that Congress understood that DOS and USAID were not resourced to do their work effectively in the provinces or at all at district level. The PRT Laghman Commander stated,

It was important for the PRT to achieve its mission through Afghan authority and in consideration of Afghan culture, religion, and accepted practices. There was a cultural melting of the different ethnic groups in the cities of the province. We looked for friction, but had to avoid being

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[18] Red Walker, Lt. Col., USAF, *Provisional Reconstruction Team, Laghman Province*, interview by Tony Grayson, December 14, 2011, cited with permission of Lt. Col. Walker.

[19] Mark S. Martins, *Commander's Emergency Response Program*, St. Louis, Mo, Joint Force Quarterly, 2005, http://www.dtic.mil/doctrine/jel/jfq_pubs/0937.pdf (accessed October 15, 2011).

heavy-handed about our response to individual cases of minority abuse. At their pace, the Afghans were making progress in that area. For example, by law, all of the ethnic groups were integrated into the ANA and the ANP. We encountered corruption in the GIRoA, but came to realize that it was viewed by the Afghans as an alternative tax base. We had to be especially careful not to oversell empowerment to the Afghan women. Even though that subject links to a US strategic objective, the women had to go home at night; there, an Afghan woman who asserts her rights risks being severely beaten by her man.[20]

District

Since PRT commanders concentrate their work at the Provincial Governor level, the COP is in the best position to provide agent refresh support to A-B M&S of villages that are at and beyond the security bubble that they provide. On September 13, 2009, the Third Squadron, Seventy-First Cavalry Regiment, Third Infantry Brigade Combat Team, Tenth Mountain Division, Task Force Titan, Forward Operating Base Altimur (3-71) reported to higher headquarters on the benefits derived by their use of CERP funds in Afghanistan's Logar Province, Baraki Barak District. CERP funds were used most beneficially at the COP level of the 3-71.

The 3-71 described how it set up COPs in villages that were both a secure compound for Afghans and a source of intelligence generation. The definition of a COP is described in the Army Field Manual 7-10, Rifle Company, Infantry Regiment as "The mission of the COP is to delay, disorganize, and deceive the enemy. It aids in securing the battle position, gains timely information of the enemy, and inflicts maximum casualties on the enemy without engaging in close combat."[21]

[20] Red Walker, Lt. Col., USAF, *Provisional Reconstruction Team, Laghman Province*, interview by Tony Grayson, December 14, 2011, cited with permission of Lt. Col. Walker.

[21] US Department of the Army Field Manual (FM) 7-10, http://www.survivalebooks.com/free%20manuals/1962%20US%20Army%20Vietnam%20War%20Rifle%

Task Force Titan used CERP funds to provide both civil infrastructure

improvements and to spread goodwill. They were able to create a security bubble that

protected 37 villages, 24 mosques, and 18 schools. In time, they observed that villages

outside of this zone became envious of the extra protection, services, and infrastructure

improvements and the leadership of the villages on the outside actively engaged the 3-71

to gain an extension of the security zone for their villages.[22] There are approximately 100

US military personnel at a COP, of that number, about 40 regularly encounter local

Afghan civilians well enough to get to know them and to be comfortable conversing with

them. The COP tends to be located at the village central to economic activity of a

district. The marketplace is usually centered in a village. Religious, social, and authority

locations tend to be near and often are across the street from the marketplace. If possible,

the COP establishes a security perimeter around the government and social activities but

not around the marketplace. Within the secure perimeter, villagers feel safe, have a

means to seek justice, and they receive a benefit from GIRoA programs. While the

villagers participate in activities inside the secure perimeter, they are interviewed and

encouraged to talk freely about matters that affect their security in general and about the

insurgency in particular. [23]

From the early establishment of a security bubble around the principal village of a

district, the COP seeks to aggressively push the perimeter of that bubble outward, to

include more villages. The way in which this is done is an art practiced individually by

20Company%20Infantry%20&%20Airborne%20Battle%20Groups%20326p.pdf, Washington 25, D.C.,
August 27, 1962 (accessed April 7, 2012), 15-17.

[22] Thomas B. Gukeisen, LTC, USA, *Memorandum for Record: Subject: 3-71 Cavalry Extreme Makeover
(EMO) Mid-Point Lessons Learned*, September 13, 2009, interview by Tony Grayson, December 6, 2011,
cited with permission of LTC Gukeisen.

[23] Ibid.

COP commanders based on their training, experience, and on the resources that are made

available to them. Each COP is provided with a human intelligence (HUMINT) Team

(usually two soldiers, one male and one female). HUMINT personnel are trained on how

to conduct interviews with the Afghans. The female member is trained to encourage

female Afghans to speak freely with her. This team would be the ideal COP focal point

from which to organize and lead agent refresh data collection. Since the HUMINT

mission is to collect data and to provide written intelligence reports, decision makers and

the A-B M&S analysts should first consult the repository of those reports, which is US

Central Command's (USCENTCOM's) Combined Information Data Network Exchange

(CIDNE), in order to locate COPs and supporting HUMINT teams that are in position to

support districts (and villages) that are under consideration for new GIRoA programs.[24]

HUMINT Teams are not part of the Human Terrain System (HTS), however they will be

able to interface with the Human Terrain Analyst member of a Human Terrain Team

(HTT) since that analyst is also a military intelligence officer and the key member of an

HTT who prepares the team report for the same brigade commander who owns the COPs

in the province.

The COP has a Police Mentor Team (PMT), which regularly interfaces with the

ANP at the district level. The PMT would be another ideal COP focal point from which

to organize and lead agent refresh data collection. The approach would be similar to that

of the HUMINT Teams and that is to first consult the CIDNE for leads on who the

decision maker and A-B M&S analysts will contact. There is another advantage to using

the PMT in that the PMT can work with the analysts to determine a role for the ANP in

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[24] Intelligent Software Solutions, *Combined Information Data Network Exchange* (accessed December 22, 2011).

agent refresh data collection. The ANP regularly stops and checks the identifications of

civilians in their districts. They can easily do a sweep of a particular village and they can

ask questions of Afghan villagers that are relevant to the simulation that is to be run.

Additionally, if the ANP was involved in the agent refresh process, and regularly

supported it, then the ANP would be capable of continuing to refresh data for agents after

the GIRoA assumes responsibility for security from DOD and after DOS (possibly)

assumes the lead for use of A-B M&S. Some districts are assigned a District Support

Team (DST) of three to four US whole of government approach civilians paired with at

least one US Army Civil Affairs soldier. The civilians include personnel from DOS and

USAID. The DST is reminiscent of Civil Operations and Revolutionary Development

Support (CORDS) program, which was successfully introduced during the Vietnam War.

CORDS had such teams in Vietnam functioning down to the district level. The

dissimilarity is that CORDS did integrate command and control with an appraisal

system.[25] It would be greatly advantageous to the A-B M&S simulation to involve such

DSTs, if available, when the simulation is on a model of a village that the DST supports,

for the DST represents the most skilled cross-organizational US whole of government

approach tactical element that will be most capable to describe the villagers to the A-B

M&S analysts.

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[25] Bullington, James R., Ambassador (ret.), *Civil-Military Coordination: The CORDS Experience*, interviewed by Tony Grayson, Norfolk, VA, December 15, 2011, cited with permission of Ambassador Bullington.

Village

Since the brigade commander of a province is responsible for security in that province, it is the decision of the brigade commander (or military organization commander) who provides security in each province to determine how security will be expanded. He will consider and approve which village (s) will be subject to A-B M&S. Depending on their location, some villages are more accessible than others. Villages that have an ANP presence or any GIRoA ministry support of their welfare will be more easily accessed by information collectors who will build the agents in the model for that village. Isolated villages may not have any GIRoA support and the villagers may be wary of any US whole of government approach personnel who unexpectedly appear and engage them in conversation. Yet, their view of the GIRoA adds to corrrect planning of policy and strategy and it helps commanders who plan security in support of policy and strategy. Primarily, it is the PRT Commander and his team who discern and provide security for and interface with NGOs.[26] Also, similar security offers and interfaces occur with NGOs that do their work in the jurisdiction of COPs.[27] If PRT or COP commanders have directed their personnel to gather information to refresh agents, they should also consider seeking NGO assistance where the NGOs are in contact with Afghans who live in the village(s) that will be modeled. Some NGOs already contribute to the DOD-led security effort. If such NGOs are operating in or near a village(s) that will be modeled, those NGOs should be contacted by the designated DOD agent information collectors so

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[26] Red Walker, Lt. Col., USAF, *Provisional Reconstruction Team, Laghman Province*, interview by Tony Grayson, December 14, 2011, cited with permission of Lt. Col. Walker.

[27] Thomas B. Gukeisen, LTC, USA, *Memorandum for Record: Subject: 3-71 Cavalry Extreme Makeover (EMO) Mid-Point Lessons Learned*, September 13, 2009, interview by Tony Grayson, December 6, 2011, cited with permission by Lt. Col. Walker.

that a discussion can be undertaken to determine the willingness and capability that the NGO can offer to the A-B M&S effort plus their ability to help with NGO agent refresh.

For example, the University of Omaha Center of Afghan Studies (CAS) has been continually active in supporting Afghan education programs since 1973. They have several well-resourced, proven programs in place with many down to the village level. CAS works cooperatively with GIRoA ministries and it has actively assisted the DOD by providing language and Afghan cultural training to DOD personnel.[28]

> CAS provides formal training on Afghanistan to the Human Terrain System (HTS), a branch of the US military. In support of Training and Doctrine Command (TRADOC) missions, HTS military and civilian contractors deploy to Afghanistan to conduct operationally-relevant, open-source, social science research and provide commanders with embedded knowledge capabilities. To enable personnel to fully accomplish missions and objectives, they require understanding of Afghan language, culture, and history, which is provided by the UNO/CAS Immersion Seminar on Language, Culture, Society, History, Geospatial, and Political Affairs of Afghanistan. This seminar improves language and cultural understanding of Afghanistan for deploying Human Terrain Team (HTT) and Human Terrain Analysis Team (HTAT) members.[29]

The brigade commander (or the equivalent military commander) of a province should be the primary decision maker who will utilize and direct the use of A-B M&S in his province. The brigade commander should direct the HTT that supports him to perform the agent data collection function and for the HTT to coordinate with and utilize PRT and COP Commander assets and HUMINT Teams who support COP Commanders to perform that collection. He should direct the HTT to contact and cooperate with CAS and other NGOs that are active in the province for agent data collection. The brigade commander can consider using his influence to convince the Provincial Governor to

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[28] University of Omaha, *Center for Afghan Studies*, http://world.unomaha.edu/cas/about/CAS_Quick_Facts.pdf , (accessed January 06, 2012).
[29] Ibid.

involve the ministries, the ANA, and the ANP in agent data collection and to share that data with the HTT. The brigade commander in every province should share with the Provincial Governor the results of the A-B M&S report that is provided to him by the HTT.

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CHAPTER 4: FRAMING AND ORGANIZATION OF AGENT-BASED MODELING AND SIMULATION

The Department of Defense (DOD) will transfer its security responsibility to the

Afghan National Army (ANA) when the Government of the Islamic Republic of

Afghanistan (GIRoA) assumes state responsibility for security and governance at the end

of 2014. Since the DOD will then no longer have that responsibility for security in

Afghanistan, the Agent-based modeling and simulation (A-B M&S) capability should

transfer to the Department of State (DOS) by 2014 or earlier. The DOS leads stability,

coordinates other US Government efforts to lead reconstruction, and partners with the

United States Agency for International Development (USAID) to lead development. By

involving the DOS and its supporting elements in A-B M&S activity as soon as practical

they will become acquainted with the capability and they will be able to form an opinion

on its value before the process of transition. DOD has an opportunity to include the

newly formed DOS Bureau of Conflict and Stabilization Operations (CSO) with A-B

M&S. "The Bureau of CSO advances US National Strategy by driving integrated

civilian-led efforts to prevent, respond to, and stabilize crises in priority states, setting

conditions for long-term peace." [1] Accordingly, the Bureau of CSO should have the

responsibility for the overall stabilization effort before it transitions to long range

development under USAID.

While the DOD is planned to depart Afghanistan at the end of 2014, the DOS will

remain and likely will expand its footprint significantly as it continues reconstruction and

stabilization efforts in the country. Logically, the DOS should inherit the DOD A-B

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[1] US Department of State. *Bureau of Conflict and Stabilization Operations*, Washington, D.C., http://www.state.gov/g/cso/ (accessed December 20, 2011), 1.

M&S capability. DOS and USAID agent refresh collection questions could be facilitated via an Afghan ministry by the US Chief of Mission (COM), Kabul through any member of the US whole of government approach that supports a ministry. Should the DOS choose, it could work through the Afghan National Army (ANA) and Afghan National Police (ANP) to gather security-relative refresh questions from Afghans to maintain the security model of A-B M&S. Events will affect the level of cooperation that DOS can achieve with Afghan government organizations. Even though security is not a DOS responsibility, it is an element that is critical to the success of the DOS and it becomes a requirement of the Chief of Mission to obtain adequate security from the host government. It is an element that they must understand before the departure of DOD. The 2010 DOS Quadrennial Diplomacy and Development (QDDR) emphasizes that diplomacy and development are mutually supporting and that DOS will transform itself to stabilize states by concentrating on effective developmental activities in a state as well as reconstruction of state governance.[2] In Afghanistan, under the lead of the Secretary of State, there is some level of regular participation by all members of the US whole of government approach, as defined in National Security Presidential Directive (NSPD)-44. The Secretary of State uses the authority and procedures of the document, as amplified in the DOS QDDR, to direct the Bureau of CSO to form a Civilian Response Corps (CRC) team, whose members possess the skills needed to carry out a specific purpose outlined by the Chief of Mission in Afghanistan. The CRC usually performs short duration functions at the highest levels of the GIRoA. Following the function completion, the Chief of Mission will provide the Secretary of State with a report that describes a

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[2] US Department of State, *Quadrennial Diplomacy and Development Review*, Washington, D.C., http://www.state.gov/documents/organization/153109.pdf (accessed November 18, 2011), xii.

measure of success attained. There were seventy-two CRC deployments to Afghanistan

in 2010 (the latest available measure) which was more attention than any other state

received from the CRC.[3]

"USAID formulates and executes US foreign economic and development

assistance policies and programs, subject to the foreign policy guidance of the President,

the Secretary of State, and the National Security Council."[4] In this role, USAID will

continue to develop the economy of Afghanistan after the 2014 transition of lead for

security and governance to the GIRoA. Since the DOS guides USAID, DOS can guide

USAID on the use of A-B M&S in its decision process. Although much of what the

embassy does is the responsibility of the DOS and its partner USAID, there are several

other US whole of government approach agencies, such as the Departments of Justice,

Commerce, Treasury, Transportation, Homeland Security, Health and Human Services,

and Agriculture, that impact policy implementation. The Department of Justice

concentrates on instruction to the Afghanistan institution of courts, judges, and attorneys

that enforce a rule of law. The Department of Homeland Security guides the GIRoA on

critical infrastructure protection and control of borders. The Department of Health and

Human Services educates the Afghanistan medical community on how to identify and

stop the spread of communicable diseases. The Department of Agriculture advises its

GIRoA counterparts on how to inspect food, on proven safety methods of preparation of

food, and it takes an active role in agriculture development at the Afghanistan province

level. The Department of Commerce suggests business opportunities to its GIRoA

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[3] US Department of State, *Conflict Prevention & Stabilization Operations – 2010 Year in Review*,
Washington, D.C. http://www.state.gov/documents/organization/156036.pdf (accessed October 12, 2011),
20-21.

[4] US Agency for International Development, Washington, D.C.,
http://www.usaid.gov/policy/ads/100/101.pdf (accessed December 20, 2011), 3.

counterparts. The Department of Energy works with its GIRoA counterparts to plan

infrastructure that will support existing or expansive electrical power that will sustain

growth in the economy.[5]

USAID is the US whole of government approach agency that develops the

Afghan economy, trade, and agriculture by working to improve human health, by shaping

the urban and rural Afghan social environment, and by teaching lessons in democracy.

USAID advances US policy objectives practically through its field offices; they maintain

an office in Kabul, Afghanistan. The field offices employ local, informed and qualified

staff in partnership with American career professionals in order to assimilate local

cultural, historical, and subject matter expertise into their assessment and planning

process.

It is difficult for the Chief of Mission, to capture and explain to the Secretary of

State a measure of how Afghans in the provinces, districts, and villages feel about CRC

and GIRoA ministry activity. In order to get a measure of how the Afghan people feel,

the Secretary of State primarily looks inward, to the diplomatic connection that the DOS

has with the GIRoA leadership. The COM, Kabul, provides the Secretary of State with

regular reports on progress in reconstruction, stability, and development. Some of these

reports are based on information the Chief of Mission receives on the status of security

from Commander US Forces-Afghanistan (USF-A) and reports from the USAID Mission

Director for Afghanistan on development.

The GIRoA has evolved since 2002, when an interim Afghan Administration

Chairman (Hamid Karzai) was supported by five interim Vice Chairmen, and twenty-four

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[5] Ibid., 17.

ministries (national department level organizations). In 2011, the President of

Afghanistan also became the Chief of State. He has a Vice President and shares

governmental powers with a Legislative and a Judicial branch of government.[6] In 2010,

at a conference in London, President Karzai announced a national development strategy

to transfer civil and military responsibilities from Afghanistan's international partners to

the GIRoA and its civilian organizations. He named five broad sections in the GIRoA

strategy: Security, Good Governance, Economic Development, Regional and Global

Cooperation, and Peace Reconciliation.[7]

   The GIRoA developed twenty-two National Priority Programs (NPPs), which are

national objectives that the twenty-four Afghan ministries will support in order to effect

transference of civil and military responsibilities from the US whole of government

approach and other international partners. The justification for the transfer of

responsibility is that the GIRoA (via its leadership and ministries) is visible and

responsive to the Afghan people.   A-B M&S can measure and provides US whole of

government approach leadership that justification. It can provide the same information to

the GIRoA. The NPPs are grouped in one of six "clusters" which mostly reflect three of

the five sections of the GIRoA strategy (see Table 1). Of the six sections of transference,

security affects all Afghan activity; it is not a separate cluster. Regional and Global

Cooperation is controversial with the US whole of government approach and its allies, so

it is not openly stated by the GIRoA as a cluster. The Global Cooperation centers on

GIRoA pursuit of regional partners to include Pakistan, China, Russia, and Iran that may

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[6] US Central Intelligence Agency, *The World Factbook*, 2011,
https://www.cia.gov/library/publications/the-world-
factbook/docs/contributor_copyright.html (accessed November 23, 2011).
[7] Afghanistan Ministry of Finance, *Afghanistan National Priority Programs*,
http://mof.gov.af/en/page/3976 (accessed November 23, 2011).

not be consistent with US whole of government approach policy. Good Governance and Peace Reconciliation are combined into a single cluster. Economic Development is considered by the GIRoA to be so significant that it is divided into three separate development clusters (groupings). The following table illustrates the NPPs as they were presented by President Karzai at the London Conference in 2010.

Table 1. Clusters (groupings) of Afghan National Priority Programs (NPPs)

Governance	Human Resources Development	Agriculture and Rural Development	Private Sector Development	Infrastructure Development	Peace
- Economic & Financial Reform -Transparency & Accountability -Efficiency & Effective Government -Local Governance -Justice for All -Human Rights	-Skills Development and Labor -Education for All -Higher Education -Women's Affairs -Capacity Building for Health	-Water and Natural Resource Management -Comprehensive Agriculture -Rural Access -Strengthening Local Institutions	-Trade Facilitation and Subject Matter Expertise -E-Afghanistan	-National Regional Resource Corridor -Extractive Industries -National Energy Program -Urban Development	-Peace and Reintegration

Source: Afghanistan Ministry of Finance. *Afghanistan National Priority Programs*, http://mof.gov.af/en/page/3976 , November 23, 2011.

In the Integrated Civil-Military Campaign Plan (ICMCP), the COM, Kabul and the Commander, USF-A state, "The driving purpose of the ICMCP is to help Afghanistan secure and govern itself."[8]

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[8] US Department of State, US Forces Afghanistan, *US Government Integrated Civilian-Military Campaign Plan for Support to Afghanistan, Revision 1, Dated February 201,* http://www.ccoportal.org/sites/ccoportal.org/files/icmcp_feb_2011final.pdf ed. Kabul, Afghanistan: Chief of Mission US Embassy Kabul & USF-A, 2011 (accessed October 10, 2011), 1, Introductory Letter.

The GIRoA's Afghan National Development Strategy is specifically cited as a basis for the US Government's ICMCP.[9] However, the ICMP's ten campaign objectives must account for USF-A and DOS strategic US whole of government approach. Within the DOS portion of the ICMP, the Bureau of CSO-led whole of government activity plus USAID activity combine to create a comprehensive approach that is made more complex when the GIRoA sections, the NPPs, and the missions of the ministries are added to the mix. The complexity of this combination is illustrated in Table 2.

Table 2. Categorized and Prioritized ICMCP Campaign Objectives

SECURITY	GOVERNANCE	DEVELOPMENT
GIRoA Clusters	*GIRoA Clusters*	*GIRoA Clusters*
• Security	• Governance	• Agriculture & Rural Dev. • Human Resource Dev. • Economic & Infrastructure Dev. • Private Sector Dev.
ISAF Lines of Operation	*ISAF Lines of Operation*	*ISAF Lines of Operation*
• Protect the Population • Support Development of the ANA • Neutralize Insurgent Networks	• Support Legitimate Governance • Neutralize Criminal Networks	• Support Socio-Economic Dev.
ICMP Campaign Objectives	*ICMP Campaign Objectives*	*ICMP Campaign Objectives*
Cross-Cutting Objectives*	Cross-Cutting Objectives*	Cross-Cutting Objectives*
• Secure the Population • Action against Irreconcilables • Countering Narcotics & Illicit Finance	• Access to Justice • Expansion of Effective, Representative & Accountable Governance • Countering Corruption • Electoral Reform & Continuity of Governance	• Agricultural Opportunity & Market Access • Advancing Livelihoods and Sustainable Jobs • Border Access for Commerce, not Insurgents

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[9] Ibid.

Source: US Department of State, US Forces Afghanistan. *US Government Integrated Civilian-Military Campaign Plan for Support to Afghanistan, Revision 1, Dated February 201,* http://www.ccoportal.org/sites/ccoportal.org/files/icmcp_feb_2011final.pdf ed. Kabul, Afghanistan: Chief of Mission US Embassy Kabul & USF-A, 2011 (accessed October 10, 2011), 1, Introductory Letter.

      * Cross-Cutting Objectives are: Claiming the Information Initiative, Improving the Status of Women, and Reconciliation & Reintegration

The words in the chart do not translate practically into how such diverse governance-rooted focus will work harmoniously. For example, one of the ICMCP objectives is "Border Access for Commerce, not Insurgents". That objective is binned under Development. Yet, it might have been binned under Security, for the objective accounts for improved border security and deterrence of illicit transactions (to include poppy and heroin related transactions). Seventeen Afghan ministries have oversight on and engage in this single objective. There is no explanation given in the ICMCP on how Afghans can internalize such complex bureaucracy. Yet, through A-B M&S, it is possible to question Afghans on their opinion of every US whole of government approach and GIRoA activity in the chart and to build their comprehension of that into the agents.

In every country in which USAID has a presence, the field office develops a Country Development Cooperation Strategy (CDCS). Afghanistan can nominate development projects from its own strategy for development and the USAID field office will qualify, assess, and align those that are approved with US strategic objectives for the region. The USAID goal is to select sustainable development projects. The COM, Kabul, endorses the CDCS and submits it to the Secretary of State for approval.[10] When

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[10] US Department of State, US Agency for International Development, US Department of Defense, *Diplomacy, Development, Defense (3D) Planning Guide – Pre-Decisional Working DRAFT,* August 15, 2011, appendix 5, 18-19.

possible, USAID uses products made by US companies and services that are provided by US companies. It provides human health services, environmental protection techniques, agricultural development and regional economic growth, education and training, and the general promotion of the ideals of democratic government. It should be noted that USAID addresses functions that are owned by departments of the US whole of government approach that support stability and reconstruction in Afghanistan via the Bureau of CSO. In a meaningful way, USAID has the means to deliver the development that is identified by the departments and is accepted by the GIRoA. The 2010 QDDR identifies a transformation of USAID to focus it on six core strengths: Sustainable Economic Growth, Food Security, Global Health, Climate Change, Democracy and Governance, and Humanitarian Assistance. An investment in and empowerment of girls and women is an underlying theme in each core strength.[11]

Ideally, the power of economic growth is wielded by governments that are representative of all people in the state and are held accountable by the citizens of that state. The performance of the GIRoA, of the provincial governors, and of the district governors in this regard is central to the US whole of government approach effort to stabilize Afghanistan. Those districts and provinces that have demonstrated that their people feel respect and safety under their Afghan leaders and loyalty to them merit USAID investment in reconstruction. However, with the US whole of government approach entering a time of austerity, there is a receding limit to the resources that USAID can apply. Now, it is incumbent on the US whole of government approach to approach economic investment decisions the way Clausewitz approached military power:

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[11] US Department of State, *Quadrennial Diplomacy and Development Review*, Washington, D.C., http://www.state.gov/documents/organization/153109.pdf (accessed November 18, 2011), x.

concentrate it for maximum effect.[12]   US whole of government approach decision

makers must be stewards of the US taxpayers' capital as they invest in the Afghan people

through the ministries of the GIRoA. US whole of government approach decision makers

must have a measure that directly ties to the categorized and prioritized ICMCP

Campaign Objectives, for the decisions underpin a successful end to Operation

ENDURING FREEDOM (OEF), and are perceived to support the NPPs of the GIRoA.

<div align="center">Security, Stability, Reconstruction, and Development</div>

The predecessor organization of the Bureau of CSO was the Office of Coordinator

for Reconstruction and Stabilization (S/CRS), which was charged by the DOS to

establish the framework for planning for stability and reconstruction which results in a

unity of effort between DOS, DOD, and interagency partners with USAID responsible for

development. The Bureau of CSO leads DOS participation in a Diplomacy,

Development, and Defense (3D) Planning Group that shares assessments of conditions in

a state and attempts to align and account for the individual planning of DOS, DOD, and

USAID responsibilities in support of US interests in that state with security and stability

being the top tier of cooperative activity.[13]   In order to effectively stabilize Afghanistan

and to provide security to the people of Afghanistan, Afghan society must be understood

at the lowest social level: the village.

Information must be collected upon which an accurate agent or environment can

initially be modeled. In advance of collecting information on village level Afghans that

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[12] Michael Howard and Peter Paret, *Carl Von Clausewitz – On War*, edited and translated by Michael Howard and Peter Paret, Germany, Published by Alfred A. Knopf, New York, 1993, 86.

[13] US Department of State, US Agency for International Development, Department of Defense, *Diplomacy, Development, Defense (3D) Planning Guide – Pre-Decisional Working DRAFT,* August 15, 2011, 4.

will be modeled as agents, the A-B M&S analysts must construct the information that they want collected into categories. The village setting should be mapped topographically. Roads must be plotted, major buildings set correctly, and all villager gathering places must be indicated on the map. The place(s) in which the villagers go to get food, water, fuel, to conduct washing and sanitation, to hear their leaders' guidance, and to pray should all be illustrated. Local governance headquarters should be plotted on the village map. The village and any tribal leader offices, the ANP police station, the jail, the court and/or shura, schools, and any other location in which the GIRoA provides a service should be shown on the map and the service explained.

The supporting social infrastructure of the village should be plotted and explained. As much as possible, the entire village population should be categorized by gender, age, ethnicity, tribe, religion, and by wealth or social class. Cultural information such as history, customs, beliefs, styles of behavior, and significant dates or events should be determined. All known criminal activity should be identified. This should include especially information on organized crime and who are the typical victims by sex, age, and social status. Primary sources of economy must be identified. All government, public, and private banking and key businesses must be understood. All forms of information that the villagers use must be identified; an analysis of which forms of information reach which Afghans by gender, age, or other distinction should be obtained. Newspapers, books, radio, television, modern information technology (if it is available and the villagers use it) must be addressed. All NGO activity in the village must be identified, to include the NGO organization, number of personnel, locations, and missions.

The Afghan Institute of Learning[14] (an Afghan Women's NGO) and Doctors of Philosophy (PhDs) from a US or European university sometimes carry on long-standing and continuing social contacts with leaders and members of specific Afghan villages. If such a village is selected to be modeled, the simulation will be more robust if the analysts have a chance to interview members of the NGO or the PhD or to study their reports of in-depth understanding of the values and cognition of the villagers and each of the NGOs. Through such interchange, the analysts may be able to identify key individuals to model as agents. The preferred method of collection is face-to-face interview. If open sources or USF-A situation reports are used, the sources and method that the information was obtained must be understood and accepted by the analysts. Their determination of acceptable sources should be a final decision for the model.

The Bureau of CSO should lead the US whole of government approach to develop questions to pose to Afghans in the village(s) that is being modeled. The answers to the questions are intended to enable the Afghan agents to interact in a simulation of the model and to provide US whole of government approach decision makers with a measure of how the Afghans feels about each area of US whole of government approach responsibility that is being carried out by GIRoA ministry activities. The Bureau of CSO in conjunction with the country team would solicit appropriate questions from other government agencies such as Drug Enforcement Agency (DEA), Justice and Agriculture. This applies expertise from those agencies into the appropriate sectors of the model. For example, counterdrug questions should be developed by the DEA. Agriculture questions should be developed by the Department of Agriculture. Law enforcement questions

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[14] Sakena Yacoobi, *Afghan Institute of Learning*, http://www.afghaninstituteoflearning.org/index.html (accessed January 06, 2012).

should be developed by the Department of Justice. Similarly, each US whole of

government approach strategic objective for Afghanistan should be addressed with

carefully developed questions by US departments and agencies that have been assigned to

lead in those areas.

COM, Kabul, must accept and agree with the US whole of government approach

questions provided by the Bureau of CSO. The brigade commander (or the equivalent

assigned military commander) of the province where the modeled village(s) is located

will approve the security questions. After 2014, the COM, Kabul, will also approve

security questions if there is no DOD presence left in Afghanistan. The following

security and stability issues can be framed in the form of questions:

Do you feel safe in your village?

Can you travel the roads safely between your village and villages within 20 km of
your village?

Does the ANP protect you? Do criminals come to your village? Do criminals
live in your village?

Do you agree that the Taliban are insurgents who wish to topple the GIRoA?
Does the ANA defeat the Taliban and all insurgencies in Afghanistan? Does the
Taliban or any other insurgents come to your village? Do Taliban or any insurgents live
in your village? Has the Taliban or any insurgents come to your mosque? Has the
Taliban spoken to villagers in your mosque?

Can you get local justice from the Ministry of Justice?

Do you understand and support the GIRoA program to reconcile with and
reintegrate reformed insurgents?

Does the Ministry of Interior expose and stop the flow of illegal narcotics and
illicit finance?

Is there a government service that is available in another village that is missing in
your village?

Do you elect members of the Government of Afghanistan? Did you vote?

The same organizational construct used in designing questions to establish the

model for security and stability can be applied in developing the model for

reconstruction. The planning organization comes from the Bureau of CSO. COM,

Kabul, connects that bureau to his Political-Military section. Their combined efforts

might result in the sample questions below.

What is the name of your District Governor? Provincial Governor? The President
of Afghanistan? Do you trust these Governors? Do you support the GIRoA?

How do you get justice in your village?

Has any GIRoA official asked you for money or services (a bribe) as a condition
for supporting you? When?

Have you been given a chance to vote for who you want to govern? Did you
vote? Why/Why not?

Have criminals come to your village? Do criminals live in your village? Have
criminals come to your mosque? Have criminals spoken to villagers in your mosque?

Do women get justice in your village? How?

The planning organization for development is USAID. The same village model

that is used for security, stability, and reconstruction (governance) is used here to

measure development (how the Afghans feel about the GIRoA). Sample questions

follow:

Do you have a job(s)? What is your job(s)? How are you paid? Can you support
your family needs and wants with your pay?

Is life better for you than when the Taliban ruled? Is life better than it was last
year? Does the mosque approve of how the GIRoA have ruled in your village?

Do women get jobs in your village?

Is poppy grown near your village? Is it good for the village for no poppy to be
grown? Do you believe that poppy is grown to give benefit to criminals and to the
Taliban and other insurgents? Did you know that poppy is used to make heroin? Did

you know that heroin hurts and kills the families of the Americans and Europeans who have come to help the Afghans?

Does the GIRoA help village farmers to grow food? Does the village benefit from the GIRoA support to farmers?

Has the GIRoA helped start businesses in your village?

Can you borrow money in your village to support your family or business? How?

Does your village have business with Pakistanis, Iranians, Indians, Russians, Chinese, or other foreigners? Does your village benefit from commerce that comes from outside of Afghanistan?

While A-B M&S is managed by DOD, security concerns will have priority.

However, after the GIRoA assumes full responsibility for security in Afghanistan in

2014, the DOD may depart (as it did in Dec 2011 at the end of Operation IRAQI

FREEDOM). If the DOS assumes management of A-B M&S it is assumed that they will

shift the emphasis to security, reconstruction, and development in equal weight. DOS

will have to decide if it also wants to refresh agent data for a continued security focus by

cooperating with the ANA. Since it is likely that the insurgency will still threaten

Afghanistan, A-B M&S can continue to provide a measure on security if DOS finds a

way to work with the ANA to gain insight on how to refresh security data.

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CHAPTER 5: ANALYSIS, FINDINGS, AND RECOMMENDATIONS

This paper has examined why the Department of Defense (DOD) should accept and lead the use of Agent-based modeling and simulation (A-B M&S) in support of strategic decision making in the US whole of government approach for security. It has examined why the Department of State (DOS) should accept and use A-B M&S along with other members of the interagency community for reconstruction, stabilization, and development of national strategic and operational objectives in Afghanistan. The focus of A-B M&S in each instance is to measure the support of the Afghan people for the Government of the Islamic Republic of Afghanistan (GIRoA) and its implementation of US support. The A-B M&S capability for the DOD would logically begin through research and development (R&D). Much scholarly and practical information on the capability exists in the academic environment. It is recommended that the Joint Staff investigate the capability through academic channels and cause research and development on A-B M&S for security to be led by a government R&D laboratory managed by the Defense Advanced Research Projects Agency (DARPA).

Once the DARPA-led R&D is mature, the next step should be to conduct an experiment in the field (Afghanistan). Since A-B M&S will regularly require manpower to refresh agents, it is recommended that the Foreign Military Studies Office (FMSO) should be asked to accept and lead the experiment, to include implementing the Afghanistan A-B M&S database at their facility in Ft. Leavenworth, Kansas. Through the FMSO, it is recommended that agent data collection should be the responsibility of the US Army. It is recommended that the Human Terrain Teams (HTTs) which support every brigade commander in Afghanistan should lead the data collection and coordinate

that collection with current Afghanistan Provincial Reconstruction Team (PRT) commanders, Combat Outpost (COP) commanders, and utilize US whole of government approach, Non-Government Organizations (NGOs), and GIRoA sources to collect agent data when they can do that.

In order to be effective as an experiment and to be of operational use for DOD decision makers, DOD leadership must understand, accept, and endorse the use of the capability. It is recommended that the Joint Staff should demonstrate the capability to the Commander US Central Command (USCENTCOM) and Commander, US Forces-Afghanistan (USF-A) in order to gain their endorsement of its use. An endorsement by the Commander, USF-A is essential and must be communicated to all of the brigade commanders in Afghanistan prior to the HTTs seeking brigade commander agreement to support and use A-B M&S for security decisions as an experiment (and finally in operational use). The Commander, USF-A must understand and be willing to explain to the COM, Kabul, how A-B M&S is used by each brigade commander to measure effectiveness in the security portion of the Integrated Civil-Military Campaign Plan (ICMCP) campaign objectives.

The US whole of government approach will be more effective at applying its diverse capabilities to achieve strategic objectives by using A-B M&S to provide a measure of how the individual US whole of government approach efforts affect Afghan opinion. Through the simulation of a change to a model of Afghan society, A-B M&S enables US whole of government approach decision makers to examine options on the investment of resources and to make that investment holistic to the strategic mission. Each US whole of government approach decision maker can apply the measure to their

mission portion of every shared US whole of government approach objective, using their agency business processes. Beginning with a DOD lead of A-B M&S in support of security decisions that benefit all US whole of government approach members, the model can be passed to DOS and refined to represent the entire contribution of the US whole of government approach. The power of the A-B M&S capability can be realized by building an expanding number of diverse agents in a model that can be upsized from village to district to province, and then to regional levels in Afghanistan. As long as there is a mechanism to refresh the agents and to add new environmental data, the model can advance from single villages to nests of villages and to more than a million agents.

As a practical approach, simulations of the security models for villages can be run again for the other US whole of government approach functions as those decision makers gain exposure to A-B M&S. Villages that have enjoyed a period of good security and good governance are prime candidates to measure how Afghans view improvements to trade, shifts in economic activity, and measures of the rule of law, the freedom of women, and other measures of progress on the strategic interests of the US. The simulations that show results that are counter to what was expected are especially valuable for they can indicate fundamental flaws in US policy or its implementation. The DOD and the DOS should carefully analyze the results, establish changes to their support to Afghans and run the simulations again to find out what actions best encourage the behavior that is wanted from the Afghans.

A selection of the top two, the top five, and then all promising economic investments and run simulations on modeled villages that are supposed to have enjoyed a benefit from those programs should be identified for analysis. The analysts will

determine if the satisfaction level goes higher when multiple investments are run. The

models may show that a single, minimal investment in a village, or in two villages, will

garner a favorable reaction. Once an optimum approach in a village is understood, the

level of investment in that approach can be decided and applied to other similar villages.

Decision makers can decide how many successful models might be indicative of a leap

ahead to reason that a change in the operation should be made universally because that

change consistently produces a favorable response in the Afghan agents of several

modeled villages.

Early in 2014, it is recommended that the Commander USF-A, with the backing

of his brigade commanders, should propose to the COM, Kabul, that the Secretary of

State accept transfer of the A-B M&S capability from the DOD to the DOS. With the

COM, Kabul, endorsement, the USF-A should inform Commander USCENTCOM and

request his lead or assistance to prepare the Secretary of Defense to make the proposal to

the Secretary of State.   Practically, with the DOS acceptance of A-B M&S, the DOS

Bureau of Conflict and Stabilization Operations (CSO) should work with the FMSO to

accept control of the database. The DOS will reveal its willingness to use and to accept

responsibility to manage A-B M&S by its decision to resource personnel trainining and

A-B M&S data base support.

Much work on A-B M&S has been advanced at the Santa Fe Institute[1] (SFI), a

private, independent, multidisciplinary research and education center located in Santa Fe,

New Mexico. The SFI should be recommended to the DOS as a suitable organization to

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[1] Santa Fe Institute, *Agent-Based Modeling & Simulation Research*,
http://www.santafe.edu/search/results/?query=Agent+Based+Modeling+%26+Simulation (accessed
January 06), 2012.

assist in adapting the security focused A-B M&S to the mission focus of DOS and

USAID. Researchers from universities, government agencies, learning institutions, and

other organizations are welcome to engage in the advancement of learning at SFI. It is

recommended that SFI would be a suitable place for the US whole of government

approach members to meet and determine the optimum number of options available to

utilize A-B M&S as OEF transitions from Phase IV stability operations back to Phase 0

(Shaping).

   As the DOS assumes management of the model, it can use A-B M&S to unleash

the power of economics, information, and the rule of law in the simulations. It can

continue to measure security and governance (under the GIRoA) as long as the GIRoA

cooperates in agent refresh, which it is more likely to do if it perceives a benefit from A-

B M&S reports. The 3D Planning Group (3DPG) which is led by the Political-Military

Section of the embassy in Kabul (in cooperation with the Bureau of CSO) should

determine where to apply a DOS led A-B M&S effort in which provinces, districts and

villages in Afghanistan. The 3DPG has a responsibility to integrate and synchronize US

whole of government approach planning tools.[2] They should be a principle planner of

agent refresh questions for Afghans and they should be an actionable recipient of A-B

M&S reports. Specifically, the 3D Planning Group should consider the A-B M&S

reports as they prepare decision documents for the COM Kabul, the Afghanistan Mission

Director for USAID and for any remaining element of Commander of USF-A that will

remain in the country after 2014. The "3D Planning Guide – Diplomacy, Development,

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[2] US Department of State, US Agency for International Development, US Department of Defense, *Diplomacy, Development, Defense (3D) Planning Guide – Pre-Decisional Working DRAFT,* September 15, 2011, 35.

Defense " (a pre-decisional DRAFT dated 15 September 2011) and the associated "3D

Planning 101" guide (dated 31 Aug 2011) are useful documents that explain how the US

whole of government approach should work. 3D means that the DOD, DOS, and USAID

contributed to and agree with the methods of cooperation that are mentioned in the

document. The use of A-B M&S should be addressed in the two documents before they

are finalized.

The Afghanistan Mission Support Resource Plan (MSRP) is a sensitive DOS

country-level strategy document that guides Chief of Mission actions. The Bureau

Strategic and Resource Plan (BSRP) for the DOS Bureau of South & Central Asian

Affairs is a sensitive DOS regional-level document that explains how the Afghanistan

mission fits regionally. Both the Afghanistan MSRP and the South & Central Asian

Affairs BSRP should be accessed and studied to see how the DOS can best substantiate

decisions made in support of strategic objectives in Afghanistan by using A-B M&S.

The USAID in Afghanistan should develop a Country Development Cooperation Strategy

(CDCS). USAID then should consider the use of A-B M&S and address it in the CDCS

(currently in work). The DOS Quadrennial Diplomacy and Development Review

(QDDR) 2010 describes how the DOS and USAID will provide the strategic framework

and oversight on the ground to ensure that civilian power is deployed effectively and that

the tax dollars are best utilized.

"The Chief of Mission will get the tools he needs to oversee USAID as it focuses

on six core areas where it has expertise: Sustainable Economic Growth, Food Security,

Global Health, Climate Change, Democracy and Governance, and Humanitarian

Assistance."[3] The COM, Kabul, can benefit from regular measures of effectiveness reports on past projects and predictive analysis reports on proposed projects in the six core areas that include outputs from Security A-B M&S which are provided by DOS. As he understands the value of A-B M&S as a tool to support security decisions, he can take steps to garner use of that tool for both DOS and USAID decisions. From that basis, through the COM Kabul, the A-B M&S capability should transfer to DOS as DOD passes the security function to the GIRoA in 2014.

Priority of effort should be placed on modeled villages that are ethnically mixed. These villages should be especially valuable because the simulations will permit a measure of how the villagers as a whole react to changes and how the different ethnic groups react to GIRoA governance. This cuts to the heart of the challenge of Afghanistan. Fundamentally, much of the discord in Afghanistan that results in insurgencies is rooted in long-standing ethnic quarreling that is exacerbated by geographical isolation of villages. For centuries, their history has been one where the strongest and largest ethnic tribe preys upon the weak. A-B M&S will give DOS the means to simulate every possible approach to cause villagers to see themselves as Afghans and not as Pashtuns, Tajiks, Urdus, Hazaras, or some other ethnic group.

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[3] US Department of State, *Quadrennial Diplomacy and Development Review*, Washington, D.C., http://www.state.gov/documents/organization/153109.pdf (accessed August 26, 2011), vi, x.

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CHAPTER 6: CONCLUSION

The Department of Defense (DOD) must accept and demonstrate value in using Agent-based modeling and simulation (A-B M&S) to support security decisions by brigade commanders in Afghan provinces. If begun in 2012, there is ample time to demonstrate the usefulness of the capability to the Secretary of Defense and to the Secretary of State by 2013. The Chief of Mission (COM), Kabul, must be given an opportunity to see DOD use A-B M&S and to consider its value for Department of State (DOS) and United States Agency (US) for International Development (USAID) use in reconstruction and development. A transition of ownership of A-B M&S must begin and be completed before the DOD passes the lead for security to the Government of the Islamic Republic of Afghanistan (GIRoA) in 2014. The initial decisions using A-B M&S should be small ones that affect Afghan districts and provinces since those places are closer to the source and thus are better sources of Afghan intelligence collection and subsequently refresh agent data. The lowest level DOD & US government (USG) intelligence gatherers and their officers/managers should freely see how A-B M&S data was used in the decision process and they should be told which decisions were made using that data and for which decisions the data was rejected. Also, this feedback loop will motivate intelligence collectors.

The DOS' first Quadrennial Diplomacy and Development Review (QDDR) states that a central reason for the strategic document is to "use our resources most efficiently in a time of tight budgets."[1] US whole of government approach decision makers are

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[1] US Department of State, *Quadrennial Diplomacy and Development Review*, Washington, D.C., http://www.state.gov/documents/organization/153109.pdf (accessed August 26, 2011), 124.

provided with cascading and strategic guidance documents (like the QDDR) with stated

objectives (the ends). The decision makers are installed in US whole of government

approach departments, agencies, and lower organizations which are the ways in which the

ends are to be achieved. The decision makers are given resources (people, tools, money)

which are the means to achieve the ends. However, the decision makers need to

understand the effects that their decisions will have before they decide to invest

dwindling resources. In Afghanistan, the diverse Afghan people, no matter which district

or province they live in, determine the success or failure of the US whole of government

approach ends in their country. Decision makers need to assess Afghan reactions about

US whole of government approach decisions before commitments are made and the funds

are obligated. Often, decision makers' schedules are impacted by vendors, suppliers, and

self-promoting organizations who present well-polished briefings and demonstrations that

tempt and can distract decision makers. Mostly, these are subjective influences that do

not consider who and how measures of effectiveness will be rendered. A-B M&S

produces objective measures of the agents that are modeled. A-B M&S thus gives the

decision maker a sense of how Afghans might react to an option, if applied, and how they

might feel about the decision years after it is made. Naturally, the foregoing is only as

valid as the degree of bias of the collected intelligence.

Concerns about A-B M&S should be identified by DOD and by DOS upon its

acceptance of the capability. These concerns must be addressed early in A-B M&S

usage. Some of the major concerns about leadership acceptance and logistical support

that might arise are listed below:

1. Refreshing the data that describes the agents and their environment (agent refresh) requires continuous development of questions that must be asked of Afghans in a consistent way, with Afghan responses collected for refresh of both specific and general (similar ethnic) agents. This is manpower intensive and must be done correctly or it will skew the simulation results.

2. US whole of government approach personnel across the organizational hierarchies will be asked to take a role in A-B M&S and decision makers will hear the explanation of how it works and see demonstrations followed by regular presentations of the simulations. An unknown number of US whole of government approach personnel and decision makers will resist their involvement or use of the tool.

3. Even though the tool is intended to be a decision aid, the temptation will be to blame the tool for decision failures (if the simulation results were considered in the decision).

When the US whole of government approach passes the governance lead and DOD passes the security lead to the GIRoA at the end of 2014,[2] some level of US whole of government approach support presence is expected to remain in the country. The support will decidedly shift from uniformed military to a more robust US whole of government approach civilian presence. Yet, the A-B-M&S will remain viable since it can easily be adapted from DOD to the DOS and USAID decision processes and focus on strategic objectives for a more stable Afghanistan. The methodology, the analysis, and a superb database on Afghan history and customs will still be available to apply to districts

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[2] US Department of State, *US Government Integrated Civilian-Military Campaign Plan for Support to Afghanistan, Revision 1, dated February 2011*, Chief of Mission, US Embassy Kabul and USF-A, http://www.ccoportal.org/sites/ccoportal.org/files/icmcp_feb_2011final.pdf (accessed October 10, 2011), i.

that come under good security and governance. As long as data on the agents is refreshed, A-B M&S will continue to provide strategic decision makers with a good measure of Afghan feelings about the GIRoA as it continues to provide security, stability, and economic development.

In order to update and refresh data, the Human Terrain System (HTS) superbly ties together the support that is needed to make A-B M&S work. There is a Human Terrain Team (HTT) in support of a brigade commander in every Afghan province. It gathers ethnic, cultural, and economic data and fuses that with intelligence data for the brigade commanders. Provincial Reconstruction Team (PRT) and Combat Outpost (COP) commanders, and ultimately the COM, Kabul, can see the HTT Reports. The decision on how to expand the security bubble in each province belongs to the brigade commander in that province. He can determine which villages to model and direct the HTT to lead and work with the PRT and COPs to gather the refresh data. It is expected that the Afghan National Army (ANA) and the Afghan National Police (ANP) will follow the DOD model for security after they assume the responsibility for security in 2014.

The A-B M&S, while under the purview of the DOD, should be co-located with the Foreign Military Studies Office (FMSO) at Ft. Leavenworth, Kansas. The DOS, with USAID guidance, can determine if it suits them best to leave it there or to relocate it per guidance from the Bureau of Conflict and Stabilization Operations (CSO) when the DOS assumes the lead for A-B M&S use. In preparation for the 2014 turnover of the HTS database to the GIRoA and a decision on the continuance of A-B M&S, the US whole of government approach should prepare by planning for two possible transition scenarios.

The first scenario features a GIRoA invitation to and acceptance by the US whole of government approach to maintain a level of US military presence in Afghanistan to assist the ANA. A more robust DOS presence is assumed and the DOS is expected to take the lead for continued A-B M&S usage. However, in this scenario, the DOS will have an option to continue a US whole of government approach civil-military relationship and (if it does), the DOD will have an option to continue to use the HTS. HTTs might still be deployed in support of the most senior US whole of government approach military officer in each province. The DOS could elect to continue to maintain the A-B M&S database and to perform the simulations and analysis at FMSO.

The second scenario features a complete withdrawal of the US military following turnover of the security function to the GIRoA. The DOS must then determine how it might enjoy the services of the HTS or replicate that service in a way that makes sense to DOS and other interagency partners (through the Bureau of CSO). DOS can (and should) negotiate with the GIRoA in order to establish a cooperative relationship that might enable the Afghan ministries, the ANA and the ANP to actively collect and share with the DOS agent refresh data. Wherever the DOS determines to maintain the A-B M&S database and to perform the simulations and analysis, the A-B M&S analysis reports can be provided to the GIRoA in the spirit of cooperation with that sovereign government and in continued support of US whole of government approach strategic objectives.

In conclusion, this paper has examined why DOD should accept and lead the use of A-B M&S in support of strategic decision making in the US whole of government approach for security. It has examined why the DOS should accept the use of A-B M&S for stabilization, reconstruction, and development of national strategic and operational

objective decisions in Afghanistan. The paper has shown that the focus of A-B M&S in each instance is to measure the support of the Afghan people for the GIRoA and that agents in the models should be Afghans from the most local social groupings (villages). This paper demonstrates how decision makers can measure progress on national strategic and operational objectives by measuring how Afghans feel when security zones are expanded to include more villages.

A-B M&S empowers US whole of government approach decision makers by enabling them to compress time through computer simulations of modeled Afghan villager interactions for years after a simulated US whole of government approach solution has been implemented by a GIRoA ministry. Correctly modeled A-B M&S simulations assist US whole of government approach decison makers as they weigh friction-hampered and fog-enshrouded security, stability, reconstruction, and development options during a time of fiscal constraint. Afghanistan is a place of conflict that is located far from US whole of government approach business processes. A-B M&S is a powerful capability that can help the Commander US Forces-Afghanistan (USF-A) and the COM, Kabul, to make better decisions and to provide the strategic leadership of the US whole of government approach with measurable justification for those decisions.

PROVINCIAL MAP OF AFGHANISTAN

The ISAF "placemat" of PRTs in Afghanistan is correct as of May 16, 2011. Lead nations in each of the 26 provinces are shown by their national flags. [1]

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[1] North Atlantic Treaty Organization, International Security Assistance Force, *Image of Afghanistan with PRT locations identified*, NATO Brussels, Belgium, May 16, 2011 (accessed December 24, 2011).

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ABBREVIATIONS

A-B M&S   Agent-Based Modeling and Simulation
ANA   Afghan National Army
ANP   Afghan National Police
BSRP   Bureau Strategic Resource Plan
C2   Command and Control
CAS   Center of Afghan Studies
CERP   Commander's Emergency Response Program
CIDNE   Combined Information Data Network Exchange
CJCS   Chairman of the Joint Chiefs of Staff
CMPASS   Civilian-Military Plans and Assessments Subsection
COM   Chief of Mission
COP   Combat Outpost
CORDS   Civil Operations & Revolutionary Development Support
CDCS   Country Development Cooperation Strategy
CRC   Civilian Response Corps
CSO   Conflict and Stabilization Operations (Bureau of)
CVA   Civil Violence Agent
DOD   Department of Defense
DOS   Department of State
DARPA   Defense Advanced Research and Projects Agency
DST   District Support Team
EOC   Emergency Operations Council
FMSO   Foreign Military Studies Office
FOB   Forward Operating Base
GIRoA   Government of the Islamic Republic of Afghanistan
HTAT   Human Terrain Analysis Team
HTS   Human Terrain System
HTT   Human Terrain Team
HUMINT   Human Intelligence
ICMP   Integrated Civilian-Military Campaign Plan
ISAF   International Security Assistance Force
JIAWG   Joint Interagency Working Group
JTF   Joint Task Force
MCP   Malayan Communist Party
MPAJA   Malayan People's Anti-Japanese Army
MSRP   Mission Support Resource Plan
NATO   North Atlantic Treaty Organization
NGO   Non-governmental organization
NMS   National Military Strategy
NPP   National Priority Programs (of the GIRoA)
NSPD   National Security Presidential Directive
NSS   National Security Strategy
OEF   Operation ENDURING FREEDOM
OIF   Operation IRAQI FREEDOM

ODU   Old Dominion University
PMT   Police Mentor Team
PRT   Provincial Reconstruction Team
QDR   Quadrennial Defense Review
QDDR   Quadrennial Diplomacy and Development Review
QRF   Quick Reaction Force
RCC   Reachback Research Center
R&D   Research and Development
S/CRS   Office of Coordinator for Reconstruction & Stabilization
SFI   Santa Fe Institute
3D   Diplomacy, Development, and Defense
3DPG   3D Planning Group
TRADOC   Training and Doctrine Command (US Army)
USAID   US Agency for International Development
UNAMA   United Nations Assistance Mission – Afghanistan
US   United States
USCENTCOM   United States Central Command
USDEA   United States Drug Enforcement Agency
USF-A   United States Forces – Afghanistan
USG   United States Government
VMASC   Virginia Modeling and Simulation Center
WWII   World War II

VITA

Tony A. Grayson

Tony Grayson is a DOD civil servant who has served as a program manager of data security products, as a director of DOD Information Assurance support to the US Joint Forces Command, and as a Joint Planner with US Cyber Command. He completed a 30.5 year combined active duty and reserve career as a Naval Aviator and Naval Logistician, retiring at the rank of Navy CAPTAIN (O-6) in 2007.

He began a Navy career upon completion of a Bachelor of Science Degree at The Citadel in 1977. Designated as a Navy pilot in 1979, he qualified in and flew five types of US naval aircraft, accumulating more than 1,200 hours of flight time. In 1983, he attained a Masters Degree in Business Administration (MBA) from the Florida Institute of Technology.

In 1988, Tony accepted employment as a DOD civil servant and also began the Naval Reserve portion of his military career. As a DOD Program Manager, he led the development of several sophisticated communications security products and he achieved the first DOD endorsement of a commercially designed cryptographic engine.

Recalled to active duty in 2005 as a mobilized reservist, he served nearly three years during the Global War on Terrorism, to include duty with NATO's International Security Assistance Force (ISAF) X in Afghanistan.

Upon completion of the Joint Advanced Warfighting School, he expects to return to the DOD civil service as a Joint Planner.

Tony is married with two grown children.