DEPUTY UNDER SECRETARY OF DEFENSE FOR SCIENCE AND TECHNOLOGY

HSCB

HUMAN SOCIAL CULTURE BEHAVIOR MODELING PROGRAM

INTRODUCTION TO THE HSCB PROGRAM

Background

In 2008 the Department of Defense (DoD) established a new Research and Development (R&D) program to develop a science base and associated technologies for modeling human, social and cultural behavior. The overarching goal of the Human Social Culture Behavior (HSCB) Modeling Program is to enable DoD and the US Government to understand and effectively operate in the human terrain during non-conventional warfare and other missions.

The HSCB program is vertically integrated across three categories of Research, Development, Test, and Evaluation (RDT&E) funding: Applied Research, Advanced Technology Development, and Advanced Component Development & Prototypes. It addresses military capability needs centered on modeling for Irregular Warfare (IW) and Security, Stability, Transition, and Reconstruction Operations (SSTRO) and on using computational models to support operations analysis, intelligence analysis, training and Joint experimentation.

Structure

The HSCB program falls under the auspices of the Director for Biosystems, Robert Foster, Ph.D., under the Director, Defense Research and Engineering. The HSCB Program Director is CDR Dylan Schmorrow, USN, Ph.D., Assistant Director for Human Systems in the Office of the Deputy Under Secretary of Defense for Science and Technology.

An Integrated Project Team (IPT) guides HSCB program execution. A Senior Technical Expert Group (STEG) composed of senior DoD and Intelligence Community (IC) members provides strategic direction, interagency coordination, and transition support. A users group leverages the Office of the Secretary of Defense (OSD) Program Analysis and Evaluation Office (PA&E) Irregular Warfare Coordination Group. Together, these entities ensure inclusion of all relevant DoD and IC technologies and transition partners in the HSCB effort.

The Program Managers and IPT members represent the Combating Terrorism Technical Support Office

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ISSUE Nº 1 SPRING 2009

Welcome

Welcome to the Human Social Culture Behavior Modeling Newsletter

So you tell your friends and associates that you are working on the Human Social Culture Behavior (HSCB) Modeling program and they ask you what it is. While you know what you are doing on the program, you don't have the details necessary to answer that question in any depth. Our quarterly newsletter will solve that problem and help keep you informed and up-to-date on the program by introducing you to HSCB team members, research programs associated with HSCB, other scientists in the field, conferences, publications, and programmatic news.

This inaugural issue of the newsletter has articles that introduce you to the inner workings of the HSCB program – background information, team members, program goals, and funding vehicles. We've also asked some of the speakers from our February Technical Exchange Meeting in Bedford, Massachusetts to summarize some of their key points in "Highlights" articles. These presentations generated lots of conversation and thought, and we hope that these articles do the same.

We hope that you enjoy this publication.

Sincerely,
Dylan Schmorrow

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Dr. James Frank is the Program Manager for the HSCB Program at the Combating Terrorism Technical Support Office (CTTSO) and the Technical Support Working Group (TSWG) as an IPA from Battelle. He serves in the OSD HSCB program as a member of the Executive IPT, the COR for CTTSO-funded projects, and the leader for the Transition Working Group. Jim has a PhD in Public Policy from the University of Illinois-Chicago. Prior to joining CTTSO, he was Associate Director for the ONR Global.

Shana Yakobi, CTTSO
Ms. Yakobi is a Senior Program Analyst with the HSCB Program under the Technical Support Working Group (TSWG) of the Combating Terrorism Technology Support Office (CTTSO) as a SETA support contractor with ManTech. Ms. Yakobi is managing a portfolio of applied research and advanced development efforts for the OSD HSCB Program in the areas of intelligence analysis, information operations, operations analysis/planning, and training and mission rehearsal.

Dr. Jay Allen Sears, CTTSO
Dr. Jay Allen Sears is Vice President at the CNRI, Reston, VA. His work at CNRI focuses on developing national research initiatives that can be transitioned to users. At DARPA, he served as Assistant Director for Technology Transfer in IPTO from 1995-1998, and as a Program Manager from 1983-1987 helping to implement the DARPA "Strategic Computing" Program. In the early 1990s, Sears was Director of the Software Engineering Center at MITRE.

Dr. Jeffrey Morrison, CTTSO
Dr. Morrison is a scientist, engineer and program manager with the U.S. Navy, Space and Naval Warfare Systems Center – Pacific (SSC Pacific). The principal focus of his work is to advance information processing science and technology for new generations of intelligent systems and to create new human computer interaction technologies to enable leap-ahead human information processing capabilities. His work in the fields of cognition, decision support, advanced automation, and human factors has been instrumental in the success of numerous DARPA and ONR Programs.

Dr. Ivy Estabrooke, ONR
Dr. Estabrooke is a program officer at the Office of Naval Research in the Expeditionary Maneuver Warfare and Combating Terrorism Department where she is the lead for addressing expeditionary naval needs in the human, social, cultural and behavioral sciences. Ivy is a program agent for the OSD HSCB Modeling program. Ivy earned her doctorate in neuroscience from Georgetown University. Previously, Ivy served as a AAAS Science and Technology Policy Fellow at the Office of Naval Research.

Ted Stump, ONR
Mr. Stump provides technical support to Dr. Ivy Estabrooke on the ONR-HSCB program. He is currently Vice President of Technical Consulting at Strategic Analysis, Inc. where he is responsible for the supervision and development of the company's technical staff as well as oversight of corporate IR&D investments. He has over twenty years of experience with program management and transition of DoD scientific and technical programs having supported research projects at DARPA, ONR, and NRL, as well as several studies for the DSB.

Joanna Lozano, ONR
Joanna (Jo) Lozano is a new member of the ONR Code 30 HSCB team. Joanna obtained her degree in Leisure & Tourism from Stroud College in Gloucestershire, England before moving to the U.S. With extensive experience in account management at a local fortune 500 company and SETA support experience for ONR Code 33, Joanna joins the team as a Budget and Finance Manager to assist Dr. Ivy Estabrooke with budget and financial analysis/management and SETA support.

EXECUTIVE IPT MEMBERS

Dylan Schmorrow OSD	**Ivy Estabrooke** ONR	**Richard Pei** CERDEC I2WD	**Barbara Sotirin** USACE
Robert Foster OSD	**James Frank** CTTSO	**Joseph Watts** ERDC-TEC	**Barry Costa** MITRE Corp.

Target Audience Simulation Kit for Influence Operations (TASK-IO)

By Glenn Taylor

Influence operations occur at all levels of military activity, from a simple presence patrol in an Iraqi neighborhood to the strategic use of "shock and awe" to guide an invasion. Even if the effect of an operation on a local population is not always considered, it nonetheless has an impact that could be beneficial or harmful to the operation. The more aware the commander is of this potential impact, the more likely the mission will succeed. While larger operations benefit from having more resources to bring to bear, the further down the chain of command, the fewer tools, time, and range of experts are available to help when considering the impact of influence operations on a target audience.

Soar Technology is leading a team under the HSCB program to develop a planning support tool for tactical influence operations called the *Target Audience Simulation Kit for Influence Operations* (TASK-IO). TASK-IO is a modeling-and-simulation-based planning support tool that will allow users to experiment with various influence activities on potential target audiences. In line with the goals of the HSCB program, TASK-IO combines theory-based, computational models of social, cognitive, and cultural phenomena to simulate a "virtual target audience." TASK-IO will help practitioners understand the ways in which the members of the target audience will perceive, process, and respond to proposed influence activities. In time-constrained mission planning activities, TASK-IO will allow users to explore more influence activity options more quickly to get a better understanding of the potential impacts on the target audience. TASK-IO will help support influence operations planners within the doctrinal processes related to target audience analysis and experimentation with alternative influence actions. In addition, TASK-IO can be used to support intelligence operations, for example, in helping to develop collection plans to gather required data about a target audience, as well to support understanding how typical "kinetic" operations may be perceived and understood by nearby populations.

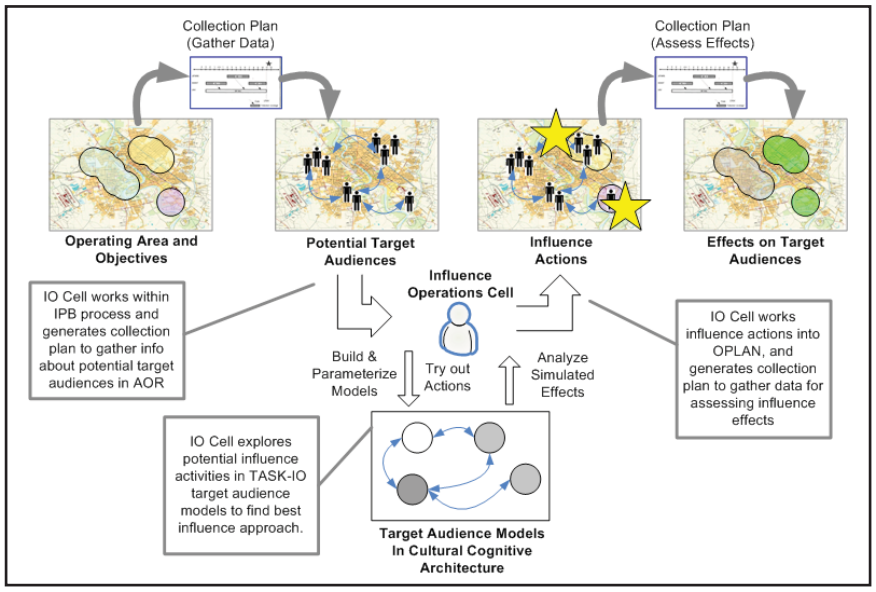

Figure 1. TASK-IO is being designed to support influence operations planning within existing doctrinal methods

One example of the type of operations we expect TASK-IO will be able to support might include encouraging civilians in a neighborhood to report IED activity to reduce the number of coalition and civilian casualties. Another example might be an operation to encourage a local police force to wear their uniforms and gear such that they appear trustworthy and legitimate to the civilian population. In both of these cases, there are particular target audiences whose cultures, perspectives and needs must be understood in order to effectively influence their behavior, whether that behavior is to report IED activity or put on their uniforms. TASK-IO will include the ability to build and experiment with computational models of these kinds of audiences, and experiment with different approaches to see how those audiences might be best influenced to achieve the mission.

Our technical approach to this work is to combine Soar Technology's expertise in the social-cultural and cognitive elements of human behavior (and how to model them) with our collaborators' expertise in marketing science and how consumers are affected by advertisements. This collaboration reflects a new approach to thinking about influence which is gaining momentum within the military. Our work builds on Soar Technology's existing Cultural Cognitive Architecture (CCA), a hybrid modeling framework that incorporates theories of culture and cognition to model how people from specific cultures perceive, make sense of, and behave in their environments. CCA is based on the Soar cognitive architecture, which implements theories of human cognition including associative memory and goal-based problem-solving. CCA extends Soar in a few important ways. First, CCA implements facets of Cultural Schema Theory, specifically to capture the mental representations and processes used by members of a culture in understanding and behaving in their environments. Second, CCA implements aspects of Appraisal Theory to capture how perceived events and situations are evaluated with respect to an actor's needs, goals, and expectations. CCA has been developed as a reusable computational modeling architecture that captures the core mental representations and processes related to understanding information in social-cultural contexts. This architecture is used

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Joe Watts, Joanna Lozano, Bob Foster, Dylan Schmorrow, Barbara Sotirin, Richard Pei, Michael Baranick, Ivy Estabrooke, Jim Frank, Shana Yakobi, Barry Costa, and Ted Stump

HIGHLIGHTS OVERVIEW

Overview of Technical Exchange Meeting

By Allison Ounanian

On 3–5 February 2009, experts from academia, government, and the commercial sector gathered at The MITRE Corporation for the "Human Social Culture Behavior Modeling Technical Exchange Meeting" to discuss ideas, technological advances, and experiences on the challenge of modeling human, social, cultural and behavioral scenarios.

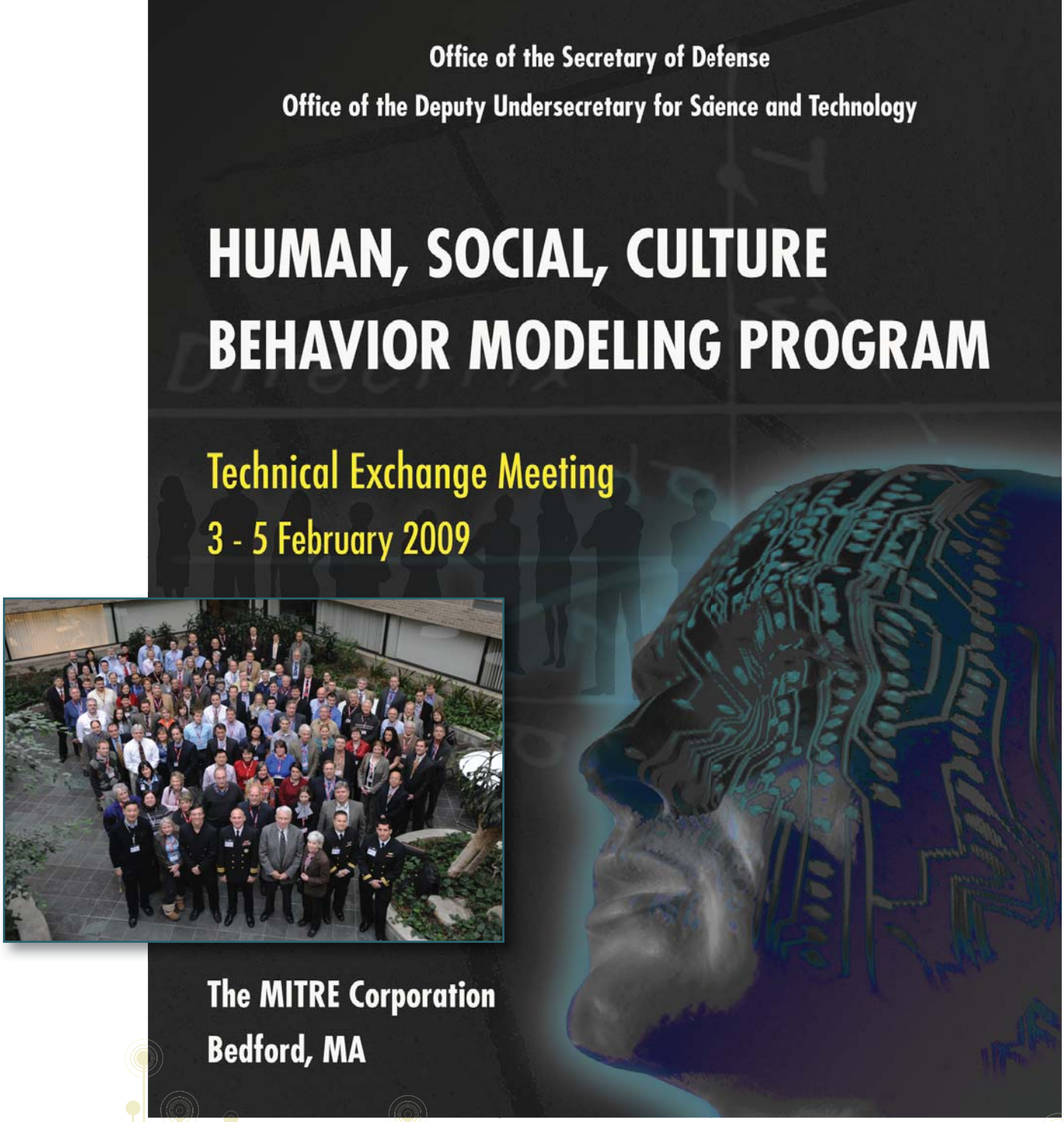
Welcoming the guests to the meeting, Commander Dylan Schmorrow, Assistant Director, Human Systems, at the Office of the Secretary of Defense, asked that both government representatives and invited researchers generously share their knowledge, expertise, and best practices in order to identify a way ahead in modeling the human terrain. Finding out what users need and fielding models that meet those needs will give war fighters, intelligence analysts, strategic/operations planners, national disaster preparedness personnel, and humanitarian effort teams a way forward in understanding the human terrain.

Conference briefings covered HSCB program funding mechanisms and structure, types of models, data requirements, modeling assessment and validation processes, metrics frameworks, and systems architecture solutions for model integration. The entire group was fully engaged in the forum, debating processes as well as seeking and giving counsel about the preparation and normalization of data sets for ingestion, formulation of standards, the VV&A (verification, validation, and assessment) process, the transition process, and much more.

Experts such as National Defense University's Dr. Mike Baranick, Dr. Richard Pei, from the Army's Communications-Electronics Research, Development, and Engineering Center (CERDEC), and MITRE's Dr. Gary Klein provided insight into modeling methodologies and technological solutions, urging modelers to formulate transparent models that support independent verification and traceability of results. The speakers noted that models will be integrated into larger systems alongside other models, and can never thrive in a vacuum. The input of subject matter experts is essential to model generation and validation.

Quoting statistician George Box, Dr. Klein said "All models are wrong; but some are useful." The keys are to identify and understand the circumstances in which a given model is applicable, powerful, and valuable, and to fully recognize the model's scope and limitations. In this context, Dr. Baranick urged the audience members to apply the essential common sense of the "Heilmeier catechism," a set of questions developed by Dr. George Heilmeier during his time at DARPA, to any proposal:

- What are you trying to do? Articulate your objectives using absolutely no jargon.
- How is it done today, and what are the limits of current practice?



- What's new in your approach and why do you think it will be successful? Who cares?
- If you're successful, what difference will it make? What are the risks and the payoffs?
- How much will it cost? How long will it take? What are the midterm and final "exams" to check for success?

Over the two-and-one-half days many challenges surfaced. They included ensuring that senior leaders understand and embrace the value of modeling in the assessment of human terrain, enabling better communication across the modeling community by establishing a common vocabulary to identify model components, determining what kinds of metrics can qualify and quantify the utility and success of a model, formatting unstructured data from a wealth of sources for model ingestion, and gaining a better understanding of the model verification process.

Conferees praised the forum for bringing together representatives from different spaces in the modeling community to ask and answer questions about the proposal process and modeling contexts, and for providing valuable networking opportunities. HSCB community members look forward to a similarly fast-paced and high-caliber exchange at the next meeting, which will include model consumers.

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INTRODUCTION TO THE HSCB PROGRAM

(CTTSO), Office of Naval Research (ONR), US Army Corps of Engineers, US Army Research, Development, and Engineering Command, and The MITRE Corporation.

Projects

HSCB-funded projects focus on:

- Developing an applied science base and general-use, cross-domain capabilities/tools to support all HSCB applications. This includes computational/analytical anthropological data collection, theory development, and application methodologies and tools. Projects create validated software tools that will assist decision makers (intelligence analysts, operations analysts, operations planners, and wargamers) to forecast human terrain responses at the strategic, operational and tactical levels.
- Maturing, hardening, and validating software related to human, social, cultural, and behavior modeling for integration into the architectures of existing programs of record, or maturing software via open architectures to allow broad systems integration.
- Developing computational modeling capabilities, visualization software toolsets, and training/mission rehearsal systems that provide forecasting capabilities for human terrain responses at the strategic, operational and tactical levels. Projects will develop, integrate and demonstrate technologies that provide cultural understanding in existing intelligence and influence operations and operations planning systems. The HSCB program will develop, integrate and demonstrate training and mission rehearsal capabilities that go beyond strategic level planning tools and extend them to the operational and tactical levels, creating a broader, more in-depth training/retention capability.

Funding Vehicles and Awards

The HSCB program uses Broad Agency Announcements (BAAs) to solicit work in the Applied Research and Advanced Component Development categories. Various program offices, such as CTTSO and ONR, serve as executing agents for these categories of funding. The program may also provide direct allocation of funds for certain projects, especially in the Advanced Technology Development and Advanced Component Development & Prototypes categories. Solicitations are open to any qualified entity, domestic or foreign, including industry, academia, government laboratories, and FFRDCs.

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RESEARCH SOAR TECHNOLOGY

to build specific models of social-cultural behavior.

During the TASK-IO project, we are further extending the CCA modeling architecture to focus specifically on the social psychology of consumer behavior. A key theory in this space is the Theory of Reasoned Action (TRA), which hypothesizes the relationship between how people perceive inputs (e.g., advertisements), how they evaluate them, and what they do in response. Multiple related lines of research have extended the original TRA theory with concepts related to self identity, culture, and behavior models. TRA and its extensions have been useful in predicting a range of consumer behavior, including the effectiveness of anti-smoking campaigns and weight loss programs—each of which are examples of "marketing influence" on a particular target audience. We are using these research findings to extend CCA with regard to how foreign target audiences perceive and evaluate the influence activities of US forces relative to their own goals, their social environment, and their expectations.

TASK-IO is a specific application of the Cultural Cognitive Architecture and associated models to influence operations planning. We will be developing end-user tools around CCA to reflect and support existing doctrinal processes associated with influence operations planning. To ensure relevance to current operations, and to help facilitate transition, we are working with members of US Army South and other Joint military organizations to develop example influence operations missions that will aid in the development of a first prototype of TASK-IO, both in terms of the kinds of models that need to be built, as well as the use cases and user interfaces that best support how TASK-IO would be used by mission planners.

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The HSCB Assessment Process

By Dr. Gary L. Klein

All models are wrong (Box & Draper, 1987) in that they are always only an abstraction, a simplification of the real world. Because they deal with some of the most complex aspects of our world, Human Social Cultural Behavior (HSCB) models can be especially wrong in a number of ways, and will require appropriate technical assessments and usage to be most useful. A key element of the HSCB program will be the implementation of a technical assessment process that will help establish confidence in the program models, and help with selection of efforts for continued funding.

There are three major components of the technical assessment process:

- A tailored technical assessment process
- Project-defined progress assessments
- Operational demonstrations

Tailored Technical Assessments

Many of the social science models have been developed for academic and scientific use. In science and academe, their validity is judged on a scientific basis by peer review of the underlying theories, reasonableness of their scientific conclusions and replication of their results. This can take place over a long period of time. However, when such models are put to operational use, the immediacy and consequent commitment of the decisions based on these models requires that the users have immediate confidence that the models have been developed correctly. Harmon and Youngblood (2005) write that ultimately the validation goal for a simulation model is establishing the conditions under which it is useful.

Assessing these models is nontrivial. By their nature their development requires a multidisciplinary perspective, usually social scientists articulating theories and gathering relevant data and computer scientists creating the software model. Other disciplines may be involved also, such as statistics, artificial intelligence, and data mining/machine learning. This diversity of information, tools, and techniques required to create a socio-cultural behavior tool necessitates a particular structure to its documentation and presentation.

Bankes (1993) notes that when a model is used for predictive purposes (as in scientific use), validation of its fidelity normally requires confirmation by experiment. Where facts are well-known, a simulation model merely consolidates these facts into a software expression of the simuland. If well-constructed, the model is a high-fidelity surrogate of the simuland. With such consolidated models, experimental confirmation can be accomplished scientifically for the model in the same way that it can be for the underlying facts and theories.

However, HSCB models are generally not consolidated models. First, because of the complexity of the socio-cultural phenomena they model, all HSCB models are incomplete in order to be computationally tractable. They therefore may inherently account for a relatively small (albeit statistically significant) amount of the variance in the behavior of their simulands. In addition, the translation of real-world socio-cultural data into HSCB model parameters values is also an uncertain and ultimately a subjective process. Given these two major sources of uncertainty, large amounts of behavioral comparisons would need to be available to establish a statistically significant relationship between a model's prediction and a simuland's behavior. For many HSCB models, the model is a unique representation of a given simuland, and therefore large amounts of behavioral examples simply are not available. This is particularly true when we are trying to model the impact of novel courses of action that have never before been applied to a particular simuland. An alternative to the experimental validation process is therefore needed.

The alternative being used in the HSCB program is a process that technically assesses the components of HSCB models.

One component is the software engineering quality of the modeling. When a mature software engineering process has produced documentation of that process, these experts can review that material. When such formal documentation is not available, experts will need to assemble it from interviews with the developers, materials that are available, which may include direct examination of the programming code.

Another component is the theoretical foundation of the model. If the model is theoretically based, then the acceptance of this theoretical foundation by the peer community needs to be assessed.

Next, the computational expression of the underlying theory must be assessed. In atheoretical models, a mathematical assessment of the appropriateness of the statistical approach is needed. In theoretical models, the reasonableness of the computational expression of each of the parameters needs to be made.

Finally, the conceptual relationships actually instantiated in the model and their appropriateness for the target simuland needs to be examined.

Most aspects of the required documentation for this technical assessment are quite typical including, *inter alia*, user documentation and technical documentation discussing APIs, data requirements, hardware requirements, other necessary software, etc. However, what is most important is a plain language model formulation. It is this plain language formulation that will allow other domain experts to be involved with a review of the socio-cultural behavior M&S tool. This formulation must include, at a minimum, three parts:

1. Descriptions of all theories that underlie the model,
2. Descriptions of all modeling techniques used in the model, and
3. An explanation of why, for a given simuland, the chosen modeling techniques are appropriate to use with the theories that underlie the model.

Such a formulation will enable an independent review of the socio-cultural

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HIGHLIGHTS ASSESSMENT

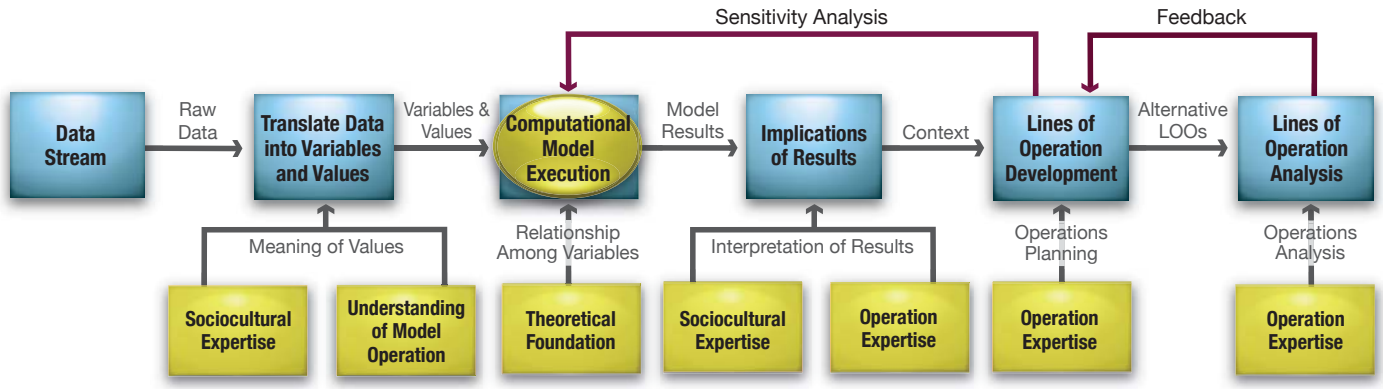

Figure 1. An End-To-End Process Basis For Operational And Technical Interoperability

behavior model; one that can include not just computer scientists verifying the code base, but also domain experts that can review the theories that shaped the computer code. In this way, the government can truly gain an appreciation for the socio-cultural behavior tool and how best to use it.

The HSCB program involves a wide variety of modeling efforts both in terms of level of effort and level of research (from applied research to advanced technology development and demonstration). As such the level of assessment will be tailored to match each project. It is planned that each performer will participate in an initial multi-hour meeting with their program manager and members of a MITRE assessment team that will assess the technical underpinnings of their project.

Such an assessment will provide strong evidence that the model is correctly constructed and that it represents plausible knowledge about the simuland. When so assessed, even with all of its inherent uncertainty, we can have confidence that the HSCB model will be useful.

Project-Defined Assessments

In addition to the initial assessment, each performer will work with their program managers and the MITRE team to define concrete, measurable metrics to verify the project achieves its objectives.

How do you define a "better" mousetrap? One that catches more mice, or one that catches them without harming them? Similarly, what does it mean for an HSCB model to provide "improved cultural understanding?" Does "improve" mean better, faster, or cheaper? How will understanding be measured? If understanding means "making the correct decision for given cultural circumstances," how do you measure correct? If it means developing better courses of action, how do you measure better? Who will be the judge? If these "improvements" are a project's final objectives, then how will progress toward them be measured?

Larger projects will have at least two milestone achievement assessments to answer such questions.

Operational Demonstrations

A number of operational demonstration opportunities are planned. In some cases, these may fulfill the project-defined assessments. Ultimately, each project will have to show how it maps into a model-based analysis/planning process, such as that illustrated in Figure 1.

There will be individual project sessions in which a performer can demonstrate how their technology would map into such a process: what would be its inputs and outputs into the process. In more extensive demonstrations projects will be brought into an operational lab environment and tested for military utility with a realistic scenario and military users. Finally, select technologies will be installed and tested at COCOM or other locations to determine their usefulness in addressing actual current operational problems

These assessments and demonstrations will help develop the confidence in the usefulness of HSCB models, which ultimately will lead to their viable transition into regular operational usage.

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HSCB—How We Got Here and the Next Steps

By Stuart Schwark

When we look at the HSCB program today, we need to understand that our current progression represents the current state of a long line of complementary efforts, now coming to a point of culmination between our military experience, the increasing sophistication of our doctrine and approach, and the realization that the role that models and computed forecasts can bring to bear. While these areas may seem disjointed and unrelated, the situation with HSCB serves as a superb example of how these three areas are now coalescing into fused efforts.

Accordingly, not only are we starting to realize the importance and the depth of complexity of the issues associated with HSCB topics, but our shared understanding of modeling and behavior representations have dramatically increased. In our history and experiences with things that have been akin to HSCB, there is a nexus between our HSCB needs and experiences, our increasing sophistication in the military doctrinal perspective on this, and our ability to use high end models, simulations, and depictions to increase our appreciation of the true situations. As a result, now is a perfect time to examine the "whys and hows" of the program. The beginning of that process was clearly started at the recent Technical Exchange Meeting in the first week of February 2009 in Bedford, MA.

Our Military Experiences

The American experience with things that would have been seen as similar to HSCB spans the nation's history: from the earliest experiences with Native American peoples through to our more recent history we have experienced interaction with foreign peoples, cultures, and beliefs. Unfortunately many of these meetings have resulted in (or been the result of) conflict, where mutual misunderstandings have tended to amplify the underlying difficulties. From a historical context one would certainly say that is true in the American experience in conflicts with Mexico, the Latin American nations, the Maghreb (we remember that early in our history one of our first fights was against the Barbary "pirates"), the Japanese, the Koreans, Chinese, Vietnamese, and our more recent conflicts throughout the Middle East. Throughout these engagements, there is an increasing appreciation that the understandings of human, socio-cultural, and behavioral drivers of activities are under-appreciated. Certainly the events of 9/11 taught us all that many do not think or act as we would – and that we need to better know and understand those who are different and why some are so fundamentally opposed to us.

Unfortunately we have often seemed to "unlearn" many of the lessons that directly apply. In the instance of the Vietnamese war, one might argue that various programs such as CORDS (an effort to meld military and interagency players to assist in reconstruction and stabilization within Vietnam) provided an attempt to integrate and assist the civilian population; to understand and help them as a people. However as the conflict deepened and the divisions in American society resulted, our military's attention fell away from this effort and shifted to the more traditional views of preparing for a possible war between NATO and the Warsaw Pact. Many in the Department of Defense seemed only too happy to leave the lessons of Vietnam far behind.

Yet we cannot ignore the fact that our nation's needs placed us in situations where we had to interact with foreign cultures and methods: the situation where the US was faced with quelling a major insurgency in El Salvador with a very limited number of staff and advisors who were culturally savvy, also our strained relations with the Iranians, the experiences of Somalia, and later exposure to the long and deep hostility between the Serbs, Croats, and Bosnian people. All of these experiences should have reinforced the need for the types of understanding the HSCB program will manifest.

The Change in Our Doctrinal View

There has also been a more recent shift in the thinking reflected in our military doctrine and policies supporting HSCB. With the writing s of authors, such as Lieutenant Colonel John Nagl's *Learning to Eat Soup with a Knife* or T.E. Lawrence's classic work, *Seven Pillars of Wisdom*, and the advent of documents such as the new Army and Marine Corps manual on Counter-Insurgency (Field Manual 3-24), the impetus seems to have swung back into the view of learning again about other societies, cultures, and behaviors. Certainly the doctrinal imperatives for viewing the spectrum of human conflict from deterrence to irregular warfare; from major combat operations to stability, support, and recovery operations indicates a dramatic shift from the previous military views.

The Changes in Our Simulation and Modeling Structures

At the same time that our needs and increasing knowledge of these topics has continued to manifest, (both in experience and in our doctrine), the view that increasingly sophisticated models and simulations could be brought to bear has arisen. This increase represents the next logical progression in a fast and often frenetic shift within the modeling and simulation community: in fairly short order we progressed from modeling largely quantitative logistics interactions and movements onward to war-games with multi-variate interactions between quantitative and qualitative data and player units in more dynamic "free play" exercises, and now to now building the means to model true the "soft factors" that are so essential to HSCB programs. This progression (a combination of detailed research, increased computing power, and a joining of social sciences and computing approaches) brings us to a state that we will investigate and explore.

A good question that the sponsors of these new requirements and needs should now ask is: "Can we merge these new developments into a cohesive whole? Can we use these techniques and research to enable

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new tools, technologies, and understandings?" One certainly hopes so – but the proof will be tests and examinations to see if our constructs stand up to scrutiny and deliver cogent, integrated, and usable solutions to meet the increasingly divergent needs of the Defense users. We'll also need to look carefully at those that we feel demonstrate possible solutions so they are fully integrated into our command, intelligence, operations, planning, and simulation systems. At the end of the day we'll need to ensure that not only do we think we have a solid solution to many of the issues we're grappling with, but that these can be implemented within the spaces and systems that the user operates within, and delivers technically correct answers that are understandable and render an increased appreciation of the HSCB situation and outlook.

We also need to help our users move from the perspective of letting them accept the use of high-end models and simulations only by specially trained ORSA officers into the broader field. The challenge on which we will have to focus as we look to transition pathways is to instantiate these types of approaches that will be immediate and tactile for our military and civilian consumers, and embed them within the systems and processes they use.

HOW WE GOT HERE

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Transition Approaches

By Dr. James R. Frank (CTTSO and Lead, Transition Working Group)

The HSCB program ranges from Applied Research (categorized as 6.2 funds) through Testing and Evaluation (categorized as 6.4 funds) so technology transition is extremely important. In addition, as a National Academy of Science study on "Behavioral Modeling and Simulation: From Individuals to Societies" (G. Zacharias et al., 2008) pointed out, in order to properly develop federated models for military HSCB applications, it is critical that actual and potential users of these models and analytical tools get involved early so that issues are identified, constraints to operations understood, and useable tools are evolved more efficiently as the science is developed. While it is understood that major transition networks like DSGS-A are a critical path for many HSCB applications, we also need to identify other Programs of Record (POR), emerging PORs, or other transfer mechanisms that address critical strategic, operational, and tactical requirements of the various User communities that are related to HSCB models and tools. Also, it is in our interest to engage the User communities early on in the program to help guide our program and individual projects that may be of interest. In addition, these will include communities other than DoD who are active in the HSCB community.

In order to guide our Transition strategy, we have formed a Transition Working Group. Currently the active members include Barry Costa, John Boiney, and Stu Schwark from MITRE, Joe Watts from TEC, and Jim Frank from CTTSO. Our goals are to:

- Identify and link with current and emerging transition programs of record with respect to operational, strategic, and tactical requirements.
- Identify other transition paths for HSCB products and analyses.
- Identify, support, and implement strategies for transition of models and tools to the User Communities.

HSCB Technical Meeting, MITRE Bedford, MA 4 February 2009

By Paul F. Gorman, General, US Army (Ret)

Some wine, as you know, improves with age. I am here to attest that for some of us, at least, age improves with wine. Since I know surely that each of you will age appreciably during the Sisyphean undertaking launched with this conference, let me start by advising your being generous with your evening libation.

Formidable indeed are the tasks ahead of you. Science-based modeling of exogenous cultures has long been an elusive target for academia and for government analysts. A successful OSD program for maturing, hardening, then validating and verifying human, social, cultural, and behavioral models and simulations will clearly be most advantageous for our military forces in the Long War ahead of them. Let nothing I say tonight lead you to believe that I do not agree with your goals, for my purpose is not to deter your trying to reach them, but rather to offer advice, and to urge you onward to take full advantage of modern gaming engines, geographic information systems, and advanced displays. In my generations, repetition was key to learning; I am convinced that today, experiential learning is both feasible and necessary. *Experientia est mater studiorum.* Would that I had had an opportunity like that lies before you.

In 1963 while serving on the Army General Staff, I was sent into the dungeons of the Pentagon to lead a team preparing a study entitled "World-wide Integrated National Strategy II," known as WINS Two. There had been a contentious precedent study by Army Engineers. Their study, WINS One, on preparedness for nuclear warfare, had already been presented to Secretary McNamara. WINS One had proposed diverting funds from marginal programs for strategic offense into passive defense of key national infrastructure, recommendations that had, of course, gored the Air Force ox. The blue-suiters, apprehensive over another WINS study, pursued information about WINS Two with

- Help provide User support to HSCB projects

For example, as a result of the Program kick-off in early February, we identified specific projects in our portfolio that have the potential for immediate involvement with the User community and were able to use ongoing activities within these communities to start integrating projects in the HSCB portfolio. In one case, this resulted in increased funding for the HSCB project and a significant modification of the original Statement of Work. Overall, a better project has been developed.

The Transition Working Group is also in the process of identifying other ongoing projects within the User community that can provide mutual 'win-win' opportunities for both the HSCB program and the User communities. Ongoing discussions include JMISC, PSYOP, JFKSWC, TRADOC, SKOPE, and other organizations that are interested in working with our program and in technology transition. In addition, we are engaging some of these organizations so that task groups can be formed with HSCB projects addressing similar areas (e.g. PSYOP or IO) can have an opportunity to present their ideas to working operators, receive feedback, jointly work out science and technology gaps, and identify new requirements that can lead to useable technology. In addition, the Transition Working Group has been working together to identify new topics for an FY 10 BAA with CTTSO that will be focused on barriers to transition and topics and capabilities that were not addressed sufficiently by previous BAAs.

The Transition Working Group will be working with all of the HSCB projects as we convert HSCB from a collection of projects to a program. It will be our job to try to provide projects with the feedback from the User community identify and pursue 'win-win' opportunities, and increase chances for success by all of our participants.

a vengeance, and intramural tensions became dysfunctional. Unknown to the Air Staff, the task assigned to the WINS Two study group was to examine Third World cultures afflicted with insurgency, and had little potential impact on the Air Force. However, to divert our flieger confreres, I caused my admin folks to dummy up several books of blank paper, the covers of each marked with every classification for which we could find a rubber stamp, and boldly labeled WINS Three. I then co-opted some trusted agents on the Army Staff who frequented joint meetings to casually place one of the WINS III books on the table, and to refer to it guardedly from time to time in the best "close-hold, burn before reading" style. That tactic succeeded, and enabled my WINS Two officers to walk the halls of the Pentagon without being shadowed. When WINS Two emerged from the basement, senior Army leaders averred that they found it useful, and approved most of its recommendations. The latter included a substantially larger establishment of foreign area officers (FAOs) —individuals whose careers centered on understanding an alien culture and language. Four new, separate regimental combat teams were to be added to the Army's force structure, each oriented on a violence-prone region of the Third World, both to provide troop-leading experience for the FAOs, and to supplement Special Forces as a source for linguists and trainers of indigenous military forces. However, those measures were subsumed by Vietnam before they could be enacted. The four separate regiments, if my memory is accurate, all deployed as line combat units, and the FAO program was cut back, and narrowly focused on the Soviet Union and key NATO allies. What survived and grew during Vietnam was the cultural rigor and breadth within the J.F. Kennedy School and Center at Fort Bragg, which underpinned the services' extensive advisory effort in Southeast Asia.

In that era, some Army contemporaries considered study of foreign culture a professional diversion, a threat to the warrior ethic, a detour from soldiering. Such attitudes persist; you will no doubt encounter a few bluster and grunt holdouts. But the generation of senior military officers whom I was serving in the 1960's remembered well that the careers of many of the prominent combat commanders of World War II and Korea had been founded on FAO-like

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SPEECH READINESS FOR THE LONG WAR

assignments. George Marshall mastered enough Mandarin during three years in Tientsin (1924-27) to interrogate a Chinese witness in a U.S. court-martial, and that skill factored in President Truman's decision to send him to China in 1945-1946. Shortly after Marshall took office as Chief of Staff of the Army in 1939, he was directed to counter the growing influence of German and Italian military officers in Latin America. He delegated the mission to two field-grade officers on his planning staff: Matt Ridgway, a Spanish linguist and Latin American specialist, and Max Taylor, who spoke, beside Spanish, French and Japanese. Both were rewarded with command of airborne divisions; Ridgway later pulled MacArthur's chestnuts out of the fire in Korea, and was selected to be Chief of Staff of the Army; Taylor succeeded Ridgway as Chief of Staff, and then became a key adviser to John F. Kennedy. As another example, George Marshall picked Vinegar Joe Stilwell for command of the invasion of North Africa in 1942 because he rated him as the best tactician in the Army. But President Roosevelt overruled Marshall, and sent Stilwell instead to China because of his understanding of its culture and language. Marshall's key war planner in 1941-1943 was Albert Wedemeyer, a field grade officer who had spent two years at the German *Kriegsakademie*, and was deservedly reputed as an authority on German doctrine, equipment, and tactics; Marshall elevated him to serve as Chief of Staff to Lord Mountbatten in the China, Burma, India theater, and later to succeed Stillwell in China. An army exists to control land and people; understanding foreign lands and peoples is central to the professionalism of an Army officer, and cultural expertise should weigh heavily with promotion boards.

In the post-Vietnam era all the services concentrated on readiness for conflict between NATO and the Warsaw Pact. But it is important to note that in those years hundreds of thousands of service personnel and their families acquired what can well be termed cultural awareness by living in Europe, confronting daily barriers of language and mores with neighbors and allies. And if military training became focused in those years on kinetic engagement, it was based on models and simulations that portrayed enemy tactics, techniques, and procedures categorically different from our own, that had to be understood to be countered.

That brings up an important point: models and simulations in the 1970's were largely centered on stochastic models, and field exercises based on rules derived from said models. Breaking that paradigm took years of patient research and development, years in which service leadership had to impress upon a community of conservative trainers and a skeptical Congress the importance of embracing training open to engagement simulation, and therefore capable of exploiting live and virtual simulation as well as constructive models. As an example, the Army learned to train its maneuver units to oppose the most highly trained Soviet motorized rifle regiment in the world: the OPFOR at the National Training Center, Fort Irwin, California. I have been part of that transformation, both in uniform, and since.

Our approach of the past two decades continues to serve the Army well, for the Mission Readiness Exercises conducted at Fort Irwin today populate the countryside with Arab and El Quada role actors. But were adaptations of gaming technology — experiential, collaborative learning driven by reliable models of foreign behaviors and using advanced geospatial visualization— to enable (1) effective training at home station while a unit was "resetting" for another deployment, and (2) major economies resulting from simply avoiding the cost of transportation to Fort Irwin and maintaining that "OPFOR" there.

You should find it easier to convince incumbents than did we in my day. Present day leaders of the armed services of the United State have learned what their predecessors once knew well: military success against a determined enemy embedded within a foreign population can be achieved neither by applications of advanced technology, however adroit, nor by indiscriminate coercion, however violent. Rather, that population has to be regarded as an invaluable source of information on adversaries, and treated humanely in a manner that minimally avoids overt hostility, and optimally obtains cooperation. This approach is not only humane, but militarily functional, serving the traditional American object beyond the war: to convert our most bitter enemies into friends and allies. Current military doctrine embodies such concepts.

As you proceed to devise models and simulations to support military doctrine, you should understand that "doctrine" is an operative term: referring not only to what is written, but also to what is persistently taught in training, thereby to assure the consensus that, amid violence, facilitates cooperation among components of American forces. All training must convey awareness of what affects indigenous attitudes and behaviors, both pro and con. For example, killing or maltreating detainees is both reprehensible and dysfunctional, inciting an adversary to do likewise, and negating a useful source of intelligence. But altogether too often, Americans have acted ignorant of that reality: battles in World War I were disfigured by ill-trained, murderous doughboys. In World War II, initial contacts by GIs with Arabs in North Africa were soured by thoughtless American brutality. And there were massacres of civilians in Korea and Vietnam…..

The articulation of U.S. Army doctrine in June 2001 —written in an era of preoccupation with "overwhelming force" and "shock and awe"—emphasized domination. It characterized land combat as **"contact with the enemy throughout the depth of an operational area…maneuver, fires, and other elements of combat power to defeat or destroy enemy forces."** It did note, however, **"land combat normally entails close and continuous contact with noncombatants. Rules of engagement reflect this."** Coupling the word "contact" on the one hand to "defeat or destroy," and on the other hand to treatment of noncombatants, failed to address the usual circumstance in contemporary, asymmetric conflict: to defeat or to destroy an adversary he must first be found, and rules for engagement once we find him (or he finds us) can not address the importance of the role the populace can and should play in the "finding." And to destroy the enemy is less desirable than to promote collaboration by indigents in putting an end to violence. In 2008, forty years after My Lai, Secretary Gates commented ruefully on deplorable behavior by some American troops: "In Iraq and Afghanistan, the heroic efforts and best intentions of our men and women in uniform have at times been undercut by a lack of knowledge of the culture and people they are dealing with everyday -- societies organized by networks of kin and tribe, where ancient codes of shame and honor often mean a good deal more than 'hearts and minds...' "

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In contrast to that doctrine operative at the outset of the war in

Denise Nicholson, Ph.D., CMSP

Catalyst for Integration and Collaboration

By Dr. Sae Schatz

Dr. Denise Nicholson directs the Applied Cognition and Training in Immersive Virtual Environments (ACTIVE) Laboratory (http://active.ist.ucf.edu) at the University of Central Florida's Institute for Simulation & Training (UCF-IST). She also holds joint affiliations at UCF's Modeling & Simulation Graduate Program, Industrial Engineering & Management Department, and College of Optics & Photonics. Dr. Nicholson joined UCF in 2005 after serving more than 18 years in the government. She has authored more than 100 technical publications, and is coeditor of *The Handbook of Virtual Environments for Training and Education*.

Today, Dr. Nicholson is known for her ability to direct large-scale cross-disciplinary efforts—work that bridges the gaps between scientific disciplines as well as among academic, government, and military sectors. But when she began her postgraduate education in the late 1980's, she did not plan on being a multidisciplinarian.

Dr. Nicholson's master's thesis in Optical Sciences first introduced her to the critical need for interdisciplinary work. At that time, her research focused on developing a model of thermal imaging for the Air Force's buried-mine detection efforts. "Scientists were developing sensors, and they just assumed that if the sensors could discriminate the buried-mine signature, then the human would be able to see it, too." Dr. Nicholson realized that there were several gaps in the system, and in the end, she developed a complete model of mine-detection imaging that included data about the optical emittance of the mines, the cockpit display contrast, the visual discrimination ability of pilots' eyes, and pilots' cognitive interpretation of visual sensations.

After completing her doctorate in Optical Sciences, Dr. Nicholson took at position with the Navy's NAVAIR Training Systems Division in Orlando, FL. Once again she was called upon to close-the-loop between separate scientific efforts, this time between training scientists who were developing Scenario-Based Training and computer scientists who were building simulations. "At NAVAIR, there was a real need to help translate the psychology research for the technologists and vice versa. We also had to help the academics understand the Navy's operational needs and build bridges between different government organizations."

In 2005, Dr. Nicholson left NAVAIR to direct the UCF-IST ACTIVE Laboratory, which leads currently-funded efforts associated with training and assessment in virtual environments, adaptive learning science, operational neuroscience sensing, human/agent collaboration, unmanned systems, and of course cultural modeling. Still, she views collaboration and integration as one of her (and her lab's) most significant contributions. "Scientists from different disciplines can be examining the same problem at the same time, but they may not realize it because of inconsistent terminology. It is essential to develop a common language among collaborating disciplines." She went on to say, "More than just terminology challenges, there may be gaps in the science. Everyone draws the boundaries of their research differently and makes assumptions about what portion of the problem space other disciplines will tackle. At best, this leads to duplication of efforts, or more often, it leads to the formation of a gap—which has been the case with HSCB efforts in the past."

For the currently-funded HSCB work, the UCF-IST team is tasked with developing frameworks and architectures to help bridge the social science and computer science research and development. "Other performers are necessarily focused

on highly-specialized areas such as a specific culture or modeling approach. UCF-IST will help establish a common framework into which researchers can integrate their methods and findings." Dr. Nicholson hopes that their lab's work will help foster a culture of collaboration among HSCB performers. "For HSCB we could all work independently, with each group 'faking' the inputs from the other efforts (such as modelers using simulated anthropological datasets), or we can work synergistically."

"At UCF, we are working to be a catalyst for collaboration. We acknowledge that we cannot do it alone. We hope that other HSCB researchers share our vision for integrated science. We should not be competing with each other. We have common goals, and I think that by sharing data and working together we can all benefit."

Dr. Nicholson can be reached at dnichols@ist.ucf.edu, and more information can be found at http://active.ist.ucf.edu. She also invites interested performers to tour the UCF-IST facilities in Orlando, Florida.

Iraq, the current expression of Army doctrine, Field Manual 3-0, published one year ago this month, enjoins commanders to go beyond defining "rules of engagement" to integrating their objectives for the populace into their plans and operations for achieving and sustaining stability:

> **1-12. The operational environment will be extremely fluid, with continually changing coalitions, alliances, partnerships, and actors. Interagency and joint operations will be required to deal with this wide and intricate range of players occupying the environment. Ö.complex cultural, demographic, and physical environmental factors will be present, adding to the fog of war. Such factors include humanitarian crises, ethnic and religious differences, and complex and urban terrain, which often become major centers of gravity and a haven for potential threats. The operational environment will be interconnected, dynamic, and extremely volatile.**

Hence, your task, as I understand it, is to provide models and simulations that capture this fluidity, this dynamism, and thereby to provide the armed services tools for conducting training, and preparing leaders for sound decisions in combat.

Despite blots on the American escutcheon, however, our forces have shown that, properly led, acting in concert with other agencies of the U.S., and amply resourced, they can successfully conduct operations predicated on respect for indigenous populations. Secretary Gates himself, in a previous office, participated in one historical success, cited approvingly in 1988 by the Commission on Integrated Long-Term Strategy:

> **In many situations, the United States will need not just DoD personnel and material, but diplomats and information specialists, agricultural chemists, bankers and economists, hydrologists, criminologists, meteorologists, and scores of other professionals. Because so many Americans are predisposed to pessimism about our role in the Third World, it is worth pointing to one recent example of a U.S. intervention that, against high odds, did very well: the saving of democracy in El Salvador. In 1980 it seemed quite possible that the country would fall to guerillas supported from Nicaragua by the Sandinistas and Cubans. Many Americans assumed that the [Salvadoran] government would soon be toppled by the Communist insurgents. Congress severely limited the security assistance our government could make available to it. And yet by 1985 there was a democratic government in place in El Salvador, and Congress became committed to supporting it.**

By agreement with the Congress, American military on the ground in El Salvador 1983-1985, other than individuals assigned to the Embassy, were limited to 55. These were foreclosed from direct participation in combat, and confined to training the Salvadoran armed forces both to limit the ability of the guerillas to move freely through the countryside in their depredations, and —more importantly— to observe in relations with the populace strict rules for respect of human rights. Those Americans so assigned by USCINCSO –your speaker-- were largely drawn from units of the Army's Special Forces that were linguistically and culturally prepared to instruct and to motivate Salvadorans, supplemented by Spanish-speaking technicians, such as communicators, medics, and one US Southern Command civilian sociologist. In one helpful project, the corps of cadets of the Salvadoran military academy were transported to Fort Benning, Georgia, there to undergo a version of the U.S. Army's Officer Candidate School (OCS) conducted entirely in Spanish that emphasized the essential utility of observing human rights, of avoiding casualties among non-combatants, and thereby, of wresting popular support away from the guerrillas.

In the words of the Commission on Integrated Long-Term Strategy such measures worked a transformation in relations between Americans and the peoples of Central America:

> **The transformation in large measure reflects ideas that are applicable elsewhere. American technology gave the Salvadoran government a new tactical intelligence capability, which became a prod to action for the [Salvadoran] military (while also giving it constant feedback on the effectiveness of its operations). The war also became a model of sorts for cooperative efforts: under American leadership, other Latin American countries proved willing to offer military training and some economic aid of their own to El Salvador. Our security assistance program helped the Salvadoran military to acquire weapons systems that made possible more discriminate attacks on enemy troops and reduced civilian casualties. We also did a lot for the morale of our allies by introducing medical programs that drastically reduced death rate among wounded Salvadoran troops (from around 45% to around 5%). …**

The Commission set forth these concepts:

- **Conflicts in the Third World were less threatening than any Soviet-American war would be, yet they can undermine our ability to defend our most vital interests.**
- **Low intensity conflict is not a problem just for the Department of Defense.**
- **U.S. forces will not in general be combatants.**
- **Security assistance requires new legislation and more resources.**

I served with that Commission, and must report that the demise of the Soviet Union subsumed actions per the Commission's findings and recommendations, even as the American involvement in Vietnam subsumed those of WINS II. But I truly believe that you have a much better chance of succeeding, given that Secretary Gates will remain in office, and given the present acceptance among the armed services of necessity to posture for a long war similar to the one they are now fighting. Moreover, each of the military departments has already undertaken measures that invite the application of human, social, cultural, and behavioral models and simulation. Let me mention a few of these:

- Programs have been established to build cultural awareness for stability operations, to acquire germane data, and to use communication for collaboration, distributed training and consultation. These programs are disparate, yet to be well coordinated among the services or COCOMs. You can be a unifying factor for OSD.

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- USMC programs, such as the Center for Advanced Operational Culture Learning (CAOCL) and the related Career Marine Regional Studies Program (CMRS), require all officers and NCOs to demonstrate learning about the culture(s) of one of 17 regions worldwide. These programs can use your help.
- The USAF has activated at the Air University a set of "centers" intent upon developing insights into foreign cultures for stability operations, and building a culturally aware Air Force. You can improve the content and efficiency of these centers.
- U.S. Army programs are not yet closely coupled, but TRADOC is developing a holistic strategy embracing cultural awareness and linguistic skills for operational readiness:
  - Mission Readiness Exercises at Combat Training Centers now emphasize cultural awareness.
  - Professional Military Education is being modified to the same end.
  - Use of a combat force structure unit such as 1st BCT, 1st ID, to prepare Provincial reconstruction teams is an undoubtedly painful expedient for the Army, one it wants to replace as soon as possible.
  - The Human Terrain System seems likely to provide useful support to BCTs engaged in stability operations, but it too has been an uncomfortable recourse for the Army.
- Both Air Force and Army maintain reportedly extensive networks of consultants among social scientists.
- Efforts are underway to create DoD-wide, network accessible, repositories of culturally specific data, upon which you can draw, and to which you can contribute.
- And because of my work with the George C. Marshall Foundation, let me suggest an early application for behavioral models: Army and the Air Force Junior ROTC programs. These influence about a half million high school students, mostly in inner city schools. They eschew teaching military doctrine and tactics, and focus instead on citizenship and character to portray role models that teach sound personal values using machinima or propaedeutic vignettes that capture situations in which moral choices must be made, You won't need DCGS-A; you can model the culture from the pages of the Boston Globe or the Washington Post.

Allow me to offer two concluding observations:

First: the climate within the Department of Defense is propitious. What you seek to build is urgently needed not only for operational efficiency, but also for cost avoidance within the military departments.

Second: you would be foolish not to study military doctrine and training closely, seeking to understand how your products can meet service needs, and making a partner of service end-users early in your development cycle.

I wish you success. May you early and often be able to improve military readiness for the Long War.

HSCB online

On February 3-5, the Human Social Culture Behavior Modeling (HSCB) Program conducted its first technical exchange meeting at The MITRE Corporation in Bedford, Massachusetts. Those who attended will recall the collaborative spirit of the event; colleagues shared their best ideas and their hardest problems and engaged in a meaningful exchange of knowledge. As a means of facilitating further knowledge sharing, a HSCB Program Share Point has been established. The workspace contains briefings presented at the February meeting, links to key information sources such as the Defense Technical Information Center's (DTIC) collection of military doctrine, essential information on procedures and requirements, and a calendar of upcoming HSCB events. Starting In March, program participants will receive via electronic mail an invitation to establish a site account.

CALENDAR OF UPCOMING CONFERENCES AND WORKSHOPS

Date	Event	Location	Sponser	Website
March 23–27, 2009	Joint 2009 Spring Simulation Interoperability Workshop (SIW)	San Diego-Mission Valley, CA	SISO and SCS	www.sisostds.org www.scs.org
March 30–April 2, 2009	The 18th Behavior Representation in Modeling & Simulation (BRIMS) Conference	Sundance, Utah	BRIMS	brimsconference.org
July 6–8, 2009	20th IASTED International Conference on Modeling and Simulation	Banff, Alberta, Canada	IASTED	www.iasted.org
July 13–16, 2009	2009 International Simulation Multi-Conference	Istanbul, Turkey	SISO and SCS	www.sisostds.org www.scs.org
August 5–7, 2009	OSD HSCB Focus 2010: Technical Exchange Meeting	Washington, DC	OSD	

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