STORYNET
STORIES, NEUROSCIENCE AND EXPERIMENTAL TECHNOLOGIES:
ANALYSIS AND DECOMPOSITION OF NARRATIVES IN SECURITY CONTEXTS
AGENDA—February 28, 2011

SESSION III: ANALYTICS
12:30–1:00 PM  Dr. Steve Corman
    Arizona State University
1:00–1:30 PM  Dr. Mark Finlayson
    Massachusetts Institute of Technology
1:30–2:00 PM  Dr. Kristin Glass
    ICASA
2:00–2:20 PM  Dr. David Eagleman
    Baylor College of Medicine
2:20–2:40 PM  Dr. Ken Kishida
    Virginia Tech Carilion Research Institute
2:40–3:10 PM  Break / Poster Set Up
    Ednam Hall

SESSION II: STORIES & POLITICAL VIOLENCE
3:10–4:30 PM  Open Floor 5 Minute Research Updates
    Ednam Hall
4:30–5:15 PM  Open Discussion/Questions and Answers
    Ednam Hall
5:15–5:30 PM  Break

SESSION I: WHAT IS A STORY?
8:30–9:00 AM  Dr. Matthew Kirschenbaum
    University of Maryland
9:00–9:20 AM  Dr. Keri Kraus
    University of Maryland
9:20–9:50 AM  Professor Patrick Winston
    Massachusetts Institute of Technology
9:50–10:00 AM  Break

10:00–10:30 AM  COL Troy Thomas
    Office of the Chairman of the Joint Chiefs of Staff
10:30–11:00 AM  Professor Thomas Johnson
    Naval Post Graduate School
11:00–11:30 AM  Mr. Kurt Braddock
    Pennsylvania State University
11:30–12:30 PM  Lunch
    Pavilion 1

7:00–8:00 AM  Registration/Continental Breakfast
Pavilion Conference Center
8:00–8:30 AM  Introduction & Welcome,
    Lt Col William Casebeer, Ph.D.
    Program Manager, DARPA/DSO
Plenary Speaker Biographies
Plenary Speaker Biographies:  
Stories, Neuroscience and Experimental Technologies (STORyNET) Workshop

Lt Col William Casebeer  
Program Manager, DARPA/DSO

LtCol Casebeer joined DARPA in August 2010. An intelligence analyst, he holds a bachelor of science in political science from the U.S. Air Force Academy, a master of arts in national security studies from the Naval Postgraduate School, a master of arts in philosophy from the University of Arizona and a joint Ph.D. in cognitive science and philosophy from the University of California at San Diego.

Formerly an associate professor of philosophy at the Air Force Academy, LtCol Casebeer was a fellow at the Carr Center for Human Rights Policy at Harvard's Kennedy School of Government from 2005 to 2006. He was a term member of the Council on Foreign Relations and is an experienced Middle East analyst with multiple deployments.

His research interests include the intersections of cognitive science and national security policy, neuroethics, terrorism, philosophy of mind and military ethics.

He is author of Natural Ethical Facts: Evolution, Connectionism, and Moral Cognition (MIT Press), co-author of Warlords Rising: Confronting Violent Non-State Actors (Lexington Books), and has published on topics from the morality of torture interrogation to the rhetoric of evil in international relations in venues such as Nature Reviews Neuroscience, Biology and Philosophy, and International Studies.

Before joining DARPA, LtCol Casebeer was Deputy Head of the Joint Warfare Analysis Center's Technology Advancement Department. His most recent intelligence assignment was Chief of Eurasian Analysis at NATO Military Headquarters in Belgium.

Dr. Matthew Kirschenbaum  
University of Maryland

Matthew G. Kirschenbaum is Associate Professor in the Department of English at the University of Maryland, Associate Director of the Maryland Institute for Technology in the Humanities (MITH, an applied thinktank for the digital humanities), and Director of Digital Cultures and Creativity, a living/learning program in the Honors College. He is also an affiliated faculty member with the Human-Computer Interaction Lab at Maryland, a Vice President of the Electronic Literature Organization. An avid game player, his recent work has included studies of serious games and simulations, and the use of games as tools for procedural learning and narrative storytelling. Visit his Web site at http://mkirschenbaum.net or follow him on Twitter as @mkirschenbaum.
Dr. Kari Kraus  
*University of Maryland*

Kari Kraus is an assistant professor in the College of Information Studies and the Department of English at the University of Maryland. Her research and teaching interests focus on new media and the digital humanities, textual scholarship and print culture, digital preservation, transmedia storytelling, and game studies. Kraus is a local Co-PI on an Institute of Museum and Library Services grant for preserving virtual worlds; a Co-PI on an IMLS Digital Humanities Internship grant; and, with Derek Hansen (iSchool), the Co-Principal Investigator of an NSF grant to study Alternate Reality Games (ARGs) and transmedia storytelling in the service of education and design. She has taught at the University of Rochester and the Eastman School of Music, and in the Art and Visual Technology program at George Mason University.

Professor Patrick Winston  
*Massachusetts Institute of Technology*

Patrick H. Winston is Ford Professor of Artificial Intelligence and Computer Science at the Massachusetts Institute of Technology. Professor Winston received the B.S. in 1965, the M.S. in 1967, and the Ph.D. in 1970, all in Electrical Engineering and Computer Science, all from the Massachusetts Institute of Technology. He has been with MIT Artificial Intelligence Laboratory since 1967, joined the faculty in 1970, and was the Director of the Laboratory from 1972 to 1997. His principal publications are textbooks and edited volumes, including the popular introductory textbook "Artificial Intelligence." He is chairman and co-founder of Ascent Technology, Inc., a company that produces sophisticated scheduling, resource allocation, and schedule recovery applications in use throughout the world in major airports and the Department of Defense. He has served three terms as a member of the Naval Research Advisory Committee (NRAC), from 1985–1990, 1994–2000, and 2003 to the present. Professor Winston's research is on developing computational models of human intelligence; in particular, he focuses on the interface between vision and language, and how storytelling is a defining feature of the flexibility and power of human cognition.

COL Troy Thomas  
*Office of the Chairman of the Joint Chiefs of Staff*

Col Troy Thomas is a Special Assistant to the Chairman of the Joint Chiefs of Staff. He is an intelligence professional with experience in Operations SOUTHERN WATCH, NOBLE EAGLE, ENDURING FREEDOM, and IRAQI FREEDOM. During IRAQI FREEDOM, Troy served as Director of Operations, 485th Expeditionary Operations Support Squadron (F-15C/C-130). He later commanded the 70th Operations Support Squadron. In addition to a tour in Korea as a war planner and the US Air Force Academy as an Assistant Professor, his staff assignments include the Air Staff, Office of the Secretary of Defense, and the Joint Staff. He holds advanced degrees from the University of Texas, George Washington University, School of Advanced Warfighting (US Marine Corps University), and National War College. He is co-author of Warlords Rising.
Professor Thomas H. Johnson is a faculty member of the National Security Affairs Department at the Naval Postgraduate School as well as the Director of the Program for Culture & Conflict Studies. Under his direction, the CSS program coordinates research activities on Afghanistan and other countries of South and Central Asia. At NPS, Professor Johnson teaches courses on Afghanistan, Central Asia, terrorism, and insurgencies/couterinsurgencies. He also regularly contributes to the Regional Security Education Program and the Leadership Development and Education for Security and Peace Program at NPS where he briefs deploying troops. Johnson has taught at the University of Southern California and the Foreign Service Institute, and frequently lectures at Service Academies. Before joining the faculty of the Naval Postgraduate School, he served on the faculty of George Mason University.


He spent much of summers 2008-2010 in Afghanistan conducting field research for a book manuscript on the culture and implications of the Taliban as expressed through their narratives especially in the form of shabnamah or “Night Letters,” poetry, chants, and other artifacts. In 2010, he served as the Counterinsurgency Advisor to the Commander of Task Force Kandahar.

Mr. Kurt Braddock


Kurt Braddock is a Ph.D. candidate in Communication Arts and Sciences at the Pennsylvania State University where he also holds research positions at the International Center for the Study of Terrorism and the Applied Research Laboratory.

Having investigated terrorist de-radicalization, disengagement, and adaptation to counter-terrorism efforts, Mr. Braddock's current research is primarily focused on the role of persuasive communication in the psychological development of the terrorist. His dissertation, which is related to the role of online extremist narrative in promoting radicalization, has been funded by the National Consortium for the Study of Terrorism and Responses to Terrorism (START), a Center of Excellence for the U.S. Department of Homeland Security based at the University of Maryland. Mr. Braddock additionally conducts research on cyber-offending, with an emphasis on the psychological motivations and effects of engaging in hacking and cyberterrorism.
Dr. Steve Corman  
*Arizona State University*

Steven R. Corman (Ph.D. 1988, University of Illinois) is Jeanne Lind Herberger Professor in the Hugh Downs School of Human Communication at Arizona State University where he directs the Consortium for Strategic Communication, and blogs at the Consortium’s COMOPS Journal (http://comops.org/journal). He is currently Principal Investigator of an Office of Naval Research grant project to study extremists’ use of narrative to influence contested populations, and co-Principal Investigator on a Minerva Initiative project focused on identifying “moderate” Muslims. Since 2001 he has served as an invited participant on numerous national and international workshops and symposia on counterterrorism, strategic communication and public diplomacy. In 2003-2005 he was a member of the Scientist Panel for the Strategic Operations Working Group at U.S. Special Operations Command. He has recently given invited presentations and briefings for the NATO Center of Excellence for Defense Against Terrorism, USJFCOM/USSOCOM, Asia Pacific Program for Senior National Security Officers, Marshall Center for European Security Studies, Army War College, and the State Department, among others. Corman is also co-editor of the book *Weapons of Mass Persuasion: Strategic Communication to Combat Violent Extremism* (2008, Peter Lang), and co-author of the book *Master Narratives of Islamic Extremism* (Spring 2011, Palgrave). Corman’s other research interests include organizational communication systems, text and conversation analysis, social networks, and computational modeling/simulation.

Dr. Mark Finlayson  
*Massachusetts Institute of Technology*

Mark A. Finlayson is a doctoral candidate at MIT CSAIL, and will finish his thesis in Spring of 2011. He received the B.S in 1998 from the University of Michigan, and the M.S. in 2001 from the Massachusetts Institute of Technology, both in Electrical Engineering and Computer Science. He co-chaired the 2009 MIT Workshop of Computational Models of Narrative, and chaired the 2010 AAAI Fall Symposium on Computational Models of Narrative. His doctoral research focuses on extracting higher-order plot patterns from sets of stories, with the goal of deepening our understanding of human cognition and culture, and enabling machines to perform abstraction over semantically complex information.

Dr. Kristin Glass  
*ICASA*

Kristin Glass received a Ph.D. in Industrial Engineering from New Mexico State University in 1993 and is presently a Senior Research Scientist with ICASA at the New Mexico Institute of Mining and Technology. Her research and teaching activities have focused on modeling, simulation, and analysis of systems of importance in nature and society. A recent emphasis of this work is the study of complex networks, including identifying and quantifying the properties of networks which enable uncertainty reduction, reliability enhancement, and predictive analysis. Systems of interest include those relevant to national security, social processes, and cultural markets.
Since 1993, Dr. Glass has published over 100 peer reviewed papers reporting results of her research and delivered numerous presentations related to this research. During this period her work has received generous support from Sandia National Laboratories, the National Aeronautics and Space Administration, the Army Research Office, and the Department of Defense. She has served on the editorial boards for a number of journals and was Editor-in-Chief of the *International Journal of Robotics and Automation* during 1997-1999.

**Dr. David Eagleman**  
*Baylor College of Medicine*

David Eagleman, Ph.D. is a neuroscientist with joint appointments in the Department of Neuroscience and Psychiatry at Baylor College of Medicine in Houston, Texas. He directs the Laboratory for Perception and Action and is the founder and director of Baylor College of Medicine's Initiative on Neuroscience and Law. His areas of research include time perception, vision, synesthesia, and the intersection of neuroscience with the legal system. He is the author of several neuroscience books, including *Wednesday is Indigo Blue: Discovering the Brain of Synesthesia* (MIT Press, 2009), and *Incognito: The Secret Lives of the Brains* (Pantheon, 2011) and *Livewire: The Dynamically Reorganizing Brain* (Oxford University Press, 2012). Dr. Eagleman writes about neuroscience in the *New York Times*, *Wired*, *Discover*, *Slate*, and *New Scientist*.

**Dr. Ken Kishida**  
*Virginia Tech Carilion Research Institute*

Ken Kishida received a Ph.D. from the Baylor College of Medicine; Houston, TX 2006, currently a Postdoc working with Read Montague in the newly formed Human Neuroimaging Lab and Computational Psychiatry Unit at Virginia Tech.

As a postdoctoral associate Ken gained extensive experience at all levels of investigation using functional magnetic resonance imaging (fMRI). Ken is currently working on the development of a novel fMRI paradigm, which has the ability to monitor continuously changing subjective assessments of pain and preference. This paradigm will allow for the measurement of neural responses related to the effect simple narrative manipulations have on changing the subjective experience of susceptible individuals. Ken is currently investigating how the “placebo narrative” (a.k.a. the placebo effect) can provide insight into the mechanisms of suggestibility.
Literary narrative theory is most directly applicable to the first and third stated goals of the STORyNET workshop: surveying narrative theories, and surveying the state of the art in narrative analysis and decomposition, respectively. One sub-field within literary studies, narratology, has developed a powerful nomenclature for decomposing stories, but that nomenclature is most useful for treating the story as an autonomous, aesthetic unit, and does not generally address the effect of stories in the wider cultural sphere of ethics and politics. A variety of literary theories have attempted to extend narratology to wider cultural and political contexts, and to consider the functional effects of stories in those contexts. Five of these functionalist theories appear useful for STORyNET:

1. **Rhetorical Theories.** Wayne Booth's rhetorical theory focuses on the ethical interaction between author and reader. Booth has influenced a variety of reader response theories, but his theory does not extend to wider cultural and political issues beyond author and reader.

2. **Evolutionary/Darwinian Theories.** Evolutionary theories, such as Brian Boyd's, address the pragmatic effects of stories and often emphasize the universal effects of narratives on humans. Such theories are consistent with psychological and neurobiological approaches.

3. **Marxist Theories.** Theories in the Marxist tradition are concerned with the interaction of stories, technology, economics, and politics. Walter Benjamin's analyses of how new technologies used to disseminate stories can undermine traditional power structures, for example, seem relevant. Marxist approaches, however, are not generally quantitative.

4. **Masterplot Theories.** Masterplots are recurrent stories that affect how people develop their identities and values. Masterplots, such as Cinderella and Horatio Alger, are often studied in the context of persuasion, particularly the ways that people conform information and events to such masterplots.

5. **Cognitive/Functionalist Film Theories.** Stories, of course, are increasingly told in visual media such as video. I consider the cognitive theory of David Bordwell and the extent to which narrative theories developed for written stories apply to visual media.
**Name:**
Kenneth T. Kishida, Stephen La Conte, Ellen Lumpkin, and P. Read Montague

**Organization:**
Virginia Tech Carilion Research Institute, Roanoke, VA and
Department of Physics, Virginia Tech, Blacksburg, VA

**Contact Information:**
2 Riverside Circle, Roanoke, VA 24016
540-526-2022
read@vt.edu

**Poster Title:**
THE PLACEBO EFFECT, HOT SAUCE, AND THE “SUGGESTIBILITY PHENOTYPE”

**Abstract:**
The call to join terrorist efforts goes out to many, but not all respond. What distinguishes the “type” that will join from those that will walk away? A variety of demographic variables identify the target population in the particular case of Muslim terrorist groups like Al Qaeda, but neurobiological variables may be more predictive for identifying the type of human that is susceptible to recruitment efforts of extremist groups in general. In addition elucidation of these variables will provide clues as to the mechanisms by which successful recruitment occurs. In this context, we propose that “suggestibility” is an important human phenotype with multiple neurobehavioral dimensions that can be characterized using a continuous-performance subjective assessment task and functional magnetic resonance imaging (fMRI).

The “suggestibility phenotype” may be best known for its role in the placebo effect. The placebo effect is typically elicited in a medical context whereby a medical authority (often a trusted doctor or surgeon) provides a highly suggestive narrative about the efficacy of a given pill or procedure on the alleviation (placebo) or exacerbation (nocebo) of problematic symptoms and side effects. Importantly such a narrative can be shown to be effective even when the pill or procedure is a sham, i.e., known to be ineffective in the absence of a convincing narrative. The placebo effect is rather robust in instances where the report for symptom alleviation is based on the subjective assessment of the treated patient; for example, the alleviation of pain or mood disturbances are known to express consistently strong placebo effects in clinical trials and laboratory experiments. Currently, the spectrum of normal human variation in the so-called suggestibility phenotype is unknown.

We hypothesize that the placebo effect, as it is expressed in individuals, is one form of expression that an individual’s underlying suggestibility phenotype can take. An accurate and quantitative estimate of an individual’s suggestibility phenotype may predict their behavioral responses to narrative suggestions in a number of alternative scenarios including those where a trusted individual uses the narrative voice to recruit new members to a terrorist organization.

We propose to determine the spectrum of normal human variation in the “suggestibility phenotype” using a hot-sauce assay, functional magnetic resonance imaging, and advanced machine learning algorithms. In particular, these methods will be used to 1) determine characteristic patterns of brain activity for changes in subjective experiences of spiciness and (dis)pleasure, 2) provide personalized fMRI-based biofeedback to subjects about their subjective state, and 3) manipulate the feedback to determine a metric for each subjects’ degree of suggestibility.

Determining the neurobehavioral variables that characterize the suggestibility phenotype will provide a basis for investigating the mechanisms by which the narrative voice is successful in providing a convincing – action producing – suggestion. An understanding of these mechanisms will provide a number of opportunities to intervene and disrupt efforts where the narrative voice is used to recruit susceptible individuals to dangerous terrorist organizations.
Strange Attractors: Counter Cultural Narratives to Change Paradigms of Terrorism & it’s Enabling Stories

If you know how to read this image, we will know how to overcome Terrorism
Personal stories in weblogs are a source of information about daily life
Joint work with Christopher Wienberg and Cosmin Adrian Bejan

The rise of weblogging has created new opportunities to study the behavior of people on a large scale. In this paper we explore the potential of one genre of weblog posts, the personal stories that people write about their everyday lives. We describe our efforts to collect every English-language personal story posted in weblogs in 2010. Using supervised machine-learning techniques, we developed an accurate story classifier, and used it to filter a daily stream of posts provided to us by a commercial weblog aggregator. The resulting corpus, consisting of over 10 million personal stories, provides a unique opportunity to examine the daily lives of millions of people. We compare this resource to other sources of information about human behavior, including search query logs and micro-blogging, by tracking the use of certain words and phrases of the course of a year. We demonstrate that personal stories are similar to micro-blogs in that they document the everyday experiences of people, but provide greater depth of content through the use of the narrative form.
Audience-based Measures of Effectiveness (AB-MOE):
Using narrative to evaluate the efficacy of efforts to improve the ANP

Joshua D. Mora
SCL, London, UK

It is crucial to begin planning how to evaluate an intervention before it is implemented. Articulating precisely what an intervention is intended to achieve should guide planning. If the results of an intervention cannot be measured, there is cause to re-consider either its intent and/or approach.

A novel, hybrid approach to defining and evaluating success is demonstrated in addressing the following question: How can an ‘effective’ Afghan National Police (ANP) force be defined from the population’s perspective, and how can progress towards this objective be measured over time?

Using audience research, it becomes possible to clearly articulate what a better Afghan National Police (ANP) Force should ‘look like.’ Conventional approaches to evaluation focus on the collection and testing of ‘metrics.’ However, in a COIN environment, the parameters for ‘success’ should be derived from the population.

Based on field data collected in Kandahar, Afghanistan during August and September 2010, SCL’s poster presents a novel technique for evaluating the efficacy of interventions. The modeling approach combines Multi-criteria Decision Analysis (MCDA), System Dynamics (SD) Modelling, conventional statistical analysis and qualitative analysis to provide a parsimonious and practical methodology for determining and tracking ‘success’. The challenge of improving the ANP provides a case study for this novel approach.

In striving to influence behavior, and evaluate such interventions, the research provides the key narratives that define the locals’ disposition towards cooperation with the ANP. Specifically, two key perceptions — each with a corresponding behavioural norm — define cooperation: perceptions of Government Viability and of ANP Professionalism. Understanding what local populations expect in these regards provides the key both to planning effective influence campaigns as well as evaluating the efficacy of such campaigns.

Binaries that define Kandaharis’ perceptions of the ANP and Afghan National Government

<table>
<thead>
<tr>
<th>Binary:</th>
<th>The Current National Government (GIRoA) is...</th>
<th>Binary:</th>
<th>The ANP are...</th>
</tr>
</thead>
<tbody>
<tr>
<td>Motivation</td>
<td>... self-serving (i.e. “corrupt”) vs. serve a large purpose (e.g. Islam, their country, etc.)</td>
<td>Employer</td>
<td>... a last resort vs. desirable employer</td>
</tr>
<tr>
<td>Foreign</td>
<td>... a foreign proxy vs. serve Afghans’ interests</td>
<td>Community Role</td>
<td>... abusers of vs. protectors of the community</td>
</tr>
<tr>
<td>Viable</td>
<td>... transient vs. likely to last for more than a generation</td>
<td>Motivation</td>
<td>... self-serving vs. serve a large purpose (e.g. (i.e. “corrupt”) Islam, their country, etc.)</td>
</tr>
<tr>
<td>Strength</td>
<td>... weak vs. strong</td>
<td>Foreign</td>
<td>... a foreign proxy vs. serve Afghans’ interests</td>
</tr>
</tbody>
</table>
LEARNING AND USING PLOT PATTERNS

Mark A. Finlayson and Patrick H. Winston
Computer Science and Artificial Intelligence Laboratory
Massachusetts Institute of Technology
Cambridge, MA, 02139, USA
{markaf, phw}@mit.edu

We describe a proof-of-concept pipeline that combines three systems in development at MIT. We have demonstrated the ability of the pipeline system to learn plot patterns from sets of example narratives, and then identify those plot patterns in developing stories. Such a capability points the way to a number of interesting technological capabilities, for example, an early warning system that detects developing problems and prompts intervention, or a military information analyst’s workbench that would retrieve relevant precedents for a situation under consideration, potentially stopping serious blunders. It is also a model that speaks to human’s cognitive abilities in story understanding and retrieval.

The first system in the proof-of-concept pipeline is the Story Workbench annotation tool, which allows us to deeply analyze the semantics of free text. The tool allows semi-automatic annotation, meaning that the tool itself does a great deal of automatic processing of text using the latest NLP technologies, but allows a human to veto, correct, or augment the information provided automatically. This tool allows a nearly three-fold increase in annotation speed over other computerized annotation tools, while simultaneously reducing costs four-fold by allowing the use of non-linguistically trained layperson annotators.

The semantic analysis of the Story Workbench is fed into the Genesis Story Understanding system, which augments the explicit information in the surface text of the story with commonsense semantic inferences. The result is an elaboration graph that ties together the events in the story in preparation for higher-level discovery of plot patterns or further processing by the Analogical Story Merging Algorithm.

The Analogical Story Merging algorithm, which is a modified form of Bayesian Model Merging, takes advantage of semantic constraints to find plot patterns. These plot patterns are then fed back into the plot pattern library that the Genesis system uses for story understanding at the level of concepts such as revenge and sell out.
DARPA STORyNET Workshop

FORMAL REPRESENTATION OF STORIES FOR MACHINE ANALYSIS IN SECURITY CONTEXTS

J. Wesley Regian, Laurie Waisel & Joe Lichtenfels
Concurrent Technologies Corporation

ABSTRACT

Under DARPA sponsorship, CTC has developed a Comprehensive Military Ontology (COMO) [1] that supports formal modeling of events and activities of security interest. COMO constitutes a formal (machine usable) representation of military/defense concepts and processes. COMO provides an extensible abstraction hierarchy capitalizing on OWL (Web Ontology Language) machine understanding capabilities. COMO currently includes 32,000+ local concepts, including tasks and events from The Army Universal Task List (AUTL), and objects and entities from the Joint C3I Information Exchange Data Model (JC3IEDM). Building COMO on DoD and NATO standard information exchange data models has significantly enhanced our applications’ systemic capability for machine understanding of tactical message traffic and has proven ideal for formal modeling of military plans, strategies, scenarios, situations, and lessons learned. CTC has developed a variety of prototype reasoning systems that rely on COMO to understand and reason about security operations. Limited time allotment in this venue disallows presentation of all prototype systems, so we will present two closely related systems. The Military Analogical Reasoning System (MARS) operates by comparing many instances of stored human domain awareness and activity based intelligence (HDA/ABI) stories, determining which include analogous situations, and then returning a description of the possible enemy activities that may be occurring or may be planned at identified locations [2]. The Multi-source (MUSE) intelligence integration system executes machine reasoning (quantitative-predictive in combination with semantic-analogical) logic to model, cross-correlate, and reason about multi-intelligence HDA/ABI in support of Predictive Battlespace Awareness (PBA) [3].

ACKNOWLEDGEMENTS

Concurrent Technologies Corporation acknowledges funding from the Defense Advanced Research Project Agency for the military analogical reasoning system.

REFERENCES


The views expressed are those of the author and do not reflect the official policy or position of the Department of Defense or the U.S. Government.
**Abstract**

The Event Horizon model is an account of how information is structured and retrieved from event models, including events derived from narratives. This model was created to account for patterns of data that show that the presence of event boundaries makes memory performance both worse and better, as well as make predictions for future studies. There are five parts to the Event Horizon model: (1) the segmentation of events, with only one event model being active at a time, (2) the foregrounding of actively processed event information, (3) an influence of causal connectivity, (4) the facilitation from noncompetitive retrieval across multiple events, and (5) the interference from competitive retrieval across multiple events. This model is applied to data from a range of studies to illustrate these principles.

Events in the world are highly structured and the mental representations of events are called *event models*. These serve as mental simulations that contain many types of information, including temporal, spatial, causal, motivational person-related and object-related information. One common way to convey events is through narratives. Because events are changing over time, people segment the stream of action and activity into smaller units (Kurby & Zacks, 2008). Different cortical regions are involved in event segmentation, particularly in the parietal, temporal and frontal lobes (Speer et al., 2007), such as the posterior inferior temporal sulcus, the fusiform gyrus, and particularly areas surrounding and including the precuneus. Moreover, work with rats (Derdikman et al., 2009) have found that place cells and grid cells engage in a resetting process when there is a shift from one spatial region to another (an event shift).

Some evidence shows that event boundaries disrupt memory. After an event boundary, there is a decline in the availability of information from prior to the boundary (Zwaan, 1996). Also, it has been found that walking through doorways causes forgetting when objects being carried are represented in multiple room by virtue of their having been moved from one place to another (Radvansky & Copeland, 2006). Another line of evidence using the fan effect has shown an increase in response time to a recognition probe when elements are stored in multiple event representations (Radvansky & Zacks, 1991). Finally, there is some evidence of the disruptive effects of event boundaries from priming studies (Oliphant, 1983).
Event boundaries can also facilitate memory. There is less retroactive interference after a change in location (Nagge, 1935) and memory is better for word lists when there was an event boundary in the middle of the list (Radvansky et al., 2011). Memory is better with massed practice if an event boundary occur between item repetitions (Verkoeijen et al., 2004). Finally, event boundaries improve the processing of goals in an AX-CPT task (Reimer et al., 2010).

The first principle of the Event Horizon model is that event models segment events. Research in narrative comprehension has found that reading times increase when event boundaries are encountered (Zwaan et al., 1998). This is supported by neuroimaging evidence that there is an increase in neural activity when people encounter event boundaries (Zacks et al., 2001).

The second principle is that elements of the current event are foregrounded, and so are more available than those of a just prior event, which decline in availability. The foregrounded event is currently in working memory. Radvansky and Copeland (2010) had people read texts in which objects were either moved from one room to another or left behind. When they were moved, they remained available, but when they were left behind, and fell out of the foreground, the information was less available.

The third principle is that people track the causal structure of a sequence of events. In a study of information read as part of a novel or for events from autobiographical memory, the speed with which details were recalled was strongly related to the number of causal connections for that item in the event sequence (Radvansky et al., 2005).

The fourth principle is the idea that when information is represented across multiple events, and the aim of the task is to produce as much information as possible, people can use this segmentation to improve performance. In some sense, the event models act like categories and help chunk information. In one study (Radvansky, Tamplin, Krawietz, & Thompson, 2011), people read texts that either did or did not contain an event shift in the middle. The results showed that the presence of an event boundary improved memory for the narrative.

The fifth principle is the idea that when there are multiple event models in memory, but the task requires the retrieval of only a single one, a person will experience interference. This can manifest itself as either an increase in retrieval time and/or the number of errors that may be committed. In a study by Radvansky and Copeland (2006), using a virtual environment, people moved objects from room to room. People responded to memory probes for those objects slower and more error prone when they had moved from one room to another as compared to just across a room. When an object is moved from one room to the next, there are now two event models, one for each room, that contain that object. Thus, these two models compete, producing interference, and slowing retrieval time. However, when the movement is across a large room, then there is only one event model involved and processing proceeds unhindered.

References


Dr. John Niekrasz

SRI International

Title: Narrative Discourse and the Displacement of Conscious Experience: A Computational Perspective

E-mail: niekrasz@ai.sri.com

Abstract:
Narrative, like all language use, is a conversation amongst participants. And at any point in time in a conversation, the participants must ask themselves the question "what is it that's going on here?" This conscious experience of communicative purpose is central to our subjective appreciation of any instance of language use.

The research described here concerns methods for automatic analysis of purpose and experience in conversation. The work is grounded in a diverse set of findings from the cognitive science of joint activity (Bangerter and Clark, 2004) to the linguistics of narrative flow (Chafe, 1992), and notably, Goffman's work on framing and the social organization of experience (1974). The common theme among these sources is that the factual content of narratives is supported by a rich structure of participants' *relationships to that content* (e.g., attitudes, cues to purposes, subjective language, and presentation). These features of a discourse are the basis for our computational approach. We provide tools that extract such features and use them to segment narratives into component parts and to identify participants' purposes and achievements.

Thank you,

Dr. John Niekrasz
Poster Title: The Olive Tree and the Fig Tree: Lessons from Fables.

Rationale

Stories provide narrative content which each listener/reader applies to his own belief system. This application depends on the perceived truth or falsity of the propositional content not of the story itself, but of the deeper meanings associated with the content. Stories may well be fictional and implausible, but still create new or reinforcing truths in the beliefs of the audience. What happened in the story is not as important as what kind of thing happened. These deeper associations may be true and valuable even in the most outlandish tales.

Problem

Every concept in a story has multiple meanings with which it can be associated. These potential associations are of course linguistic in nature. Some may survive translation, causing similar associations in a new audience in a different culture. Some may not. Even in one language, different cultures/subcultures can view things quite differently. It is also not a trivial task to determine these deeper associations with any accuracy, even in a homogeneous culture. This must of course be done not just for one story, but for all possible stories – for the entire language.

The Story

The Olive Tree and the Fig Tree (from Electronic Text Center, University of Virginia Library)

THE OLIVE-TREE ridiculed the Fig-Tree because, while she was green all the year round, the Fig-Tree changed its leaves with the seasons. A shower of snow fell upon them, and, finding the Olive full of foliage, it settled upon its branches and broke them down with its weight, at once despoiling it of its beauty and killing the tree. But finding the Fig-Tree denuded of leaves, the snow fell through to the ground, and did not injure it at all.

Method

Aesop’s fable of the Olive Tree and the Fig Tree is presented with an analysis of its propositional content in Worldview, our propositional network software. The semantic features associated with the concepts and relations are also presented, to show the depth of analysis which would be necessary to compare stories with different indicators of
similar content. Our most basic semantic feature, which we have validated as a reality for English language users, is a measure of **valence** for individual words. This is simply whether a word has unambiguously "good" or "bad" associations. Other more specific associations are included here as annotations, but have not been done generally. They are included to show how they might be useful, and to indicate the magnitude of the task of providing them for the whole English language.

**Conclusions**

In general, it is easy to find the main characters in a simple story structure. The Worldview software measures their **salience** by counting the number of times they occur (pronoun and implied reference has been resolved), and it includes the number of valence connections. In this story, the top three active concepts are **Snow (20)**, the **Olive Tree (13)**, and the **Fig Tree (6)**. **Bad1**, the valence feature present here, is also high on the list (16); but is distinguished from the others because it has no subject connections – it does not act. The salience of the valence indicators show that they may be useful for finding protagonists and antagonists. In this fable, **Snow** is very bad (8), the **Olive Tree** somewhat less so (4), and the **Fig Tree** least of the three (1).

But there is more than that to the story. Looking at the features associated with the various content elements, we can construct implications contained in the story's use of these particular words. Some are basic enough to be transparent. "Change" is change. For the Olive Tree to "be green all the year round", on the other hand, requires some interpretation to be seen as the opposite of change. "Beauty" is pleasing, but also indicates vanity and attraction and is easily found by the "bad" snow, which despoils it. The Fig Tree, on the other hand, changes its leaves (outward appearance) with the seasons (changing circumstances) and the snow finds it "denuded of its leaves" and cannot injure it. "Ridicule" provides a sense of some social cost of changing and losing possessions, and some social benefit of keeping beautiful possessions. The snow and its effects suggest that society's values are somewhat less important than survival values.

Although providing features of underlying meaning for the whole language is a big task and a necessary first step, even more troublesome is how to know which of these features are most important in the context of the actual story being told. For example, another story could be told where "denuded of leaves" is not life-saving wisdom, but in fact a tragic mistake. In fact one aspect of this story is that the "change" must occur at the right time – in the winter when the shower of snow comes. Here this is only implied by the use of the phrase "with the seasons".
Brain-based Cognitive Architecture for Training through Stories

The Georgia Tech Research Institute (GTRI), the applied research arm of Georgia Institute of Technology, in collaboration with two faculty members from the resident instruction side of Georgia Tech, are engaged in an IR&D project to explore new brain-based training architectures. The team consists of Elizabeth Whitaker (GTRI–Artificial Intelligence (AI) and intelligent systems, case-based reasoning), Christopher Hale (GTRI–Cognitive Psychology, task analysis, training), Ethan Trewhitt (GTRI–Software Engineer), Eric Schumacher (School of Psychology–Neuropsychology) and Mark Riedl (College of Computing–Narrative Generation, training, AI).

The objective of this research is the development of an architecture and approach for conducting training activities based on neuroscientific models of student reasoning, learning, and emotion. We will integrate lessons from brain-based models of human learning and reasoning with more traditional student modeling, teaching and learning theories. We are exploring the integration of case-based reasoning and scenario generation techniques, the use of stories, to drive training content in an agent-based architecture for training and mission rehearsal. This research will support an innovative approach to continuous learning, in pursuit of a system that can A) objectively assess an individual’s learning and emotion, and B) act decisively to dynamically adapt training activities to increase training effectiveness.

The automated scenario generation problem is as follows: given a specification of the learning objectives, knowledge about the individual (or small team), and a world model, find a sequence of events that, should they play out in an interactive virtual environment, result in measurable learning gains. Automated scenario generation solves the scenario generation problem by computationally producing a training activity from scratch. Automated scenario adaptation takes an existing training activity and makes changes until it conforms to a new set of specifications and learner attributes.

**What can be learned about the type of decisions being made during a complex scenario using fMRI?**

Our research intent is to use fMRI analysis to drive the design of software architectures to support cultural training for military personnel.

- We have chosen as our test scenario a house search being performed in Afghanistan by US Military personnel.
- Soldiers must balance multiple conflicting regulations and guidelines.
- We will have several subjects make similar types of decisions while monitoring their mental processes via fMRI.

<table>
<thead>
<tr>
<th>Type</th>
<th>Includes</th>
<th>Expected Brain Region(s)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tactical</td>
<td>Concerns about security, awareness of threats</td>
<td>Medial-temporal lobe (MTL)</td>
</tr>
<tr>
<td>Operational</td>
<td>Procedures, rules, general ways of doing things</td>
<td>Pre-frontal cortex (PFC)</td>
</tr>
<tr>
<td>Emotional</td>
<td>Empathy, stress, sympathy, interpersonal stress</td>
<td>Amygdala</td>
</tr>
<tr>
<td>Cultural</td>
<td>Societal norms and expectations, prohibitions</td>
<td>Basal ganglia (BG) projecting onto PFC</td>
</tr>
</tbody>
</table>

**Case Based Reasoning: Using Stories to Reason about New Problems**

Case based reasoning provides a means for capturing, knowledge about known entities and situations and adapting it to new unknown entities and situations for reuse in addressing new problems. It can be applied to capture part of the reasoning process of experts in a particular domain and adapting solutions.
to new cases. These cases can be presented to students as case-studies or active learning scenarios. Cases or stories in the case library are indexed by a set of predefined features that so that the appropriate case can be retrieved for reasoning or teaching purposes.

**Architecture**

An advanced architecture is required to make use of these new capabilities and apply them to the delivery of dynamically adaptive training. Figure 1 shows our preliminary thoughts on the brain-based training architecture. We use fMRI to guide the development of the training architecture. Figure 2 shows the brain regions of interest with respect to decision making. Neural signals in prefrontal, parietal and temporal cortices as well as limbic regions (e.g., hippocampus and amygdala) may identify cultural factors related to, e.g., violence. Once discovered, these brain systems may be used as assessment criteria for effective training regimens.

**Figure 1. Training scenario generation, adaptation**

**Figure 2. Brain regions**

An advanced architecture is required to make use of these new capabilities and apply them to the delivery of dynamically adaptive training. Figure 3 shows our preliminary thoughts on a brain-based training architecture.

**Figure 3. Preliminary architecture**
LEVERAGING PARENTS TO PREVENT RADICALIZATION OF MUSLIM AMERICANS

Karen Aroian, PhD., RN
Professor and Director of Research
College of Nursing, University of Central Florida
PO Box 162210, Orlando, Florida 32816-2210
karoian@mail.ucf.edu

The front on terrorism has shifted to include radicalization of individuals who are citizens or permanent residents of the U.S. For these individuals, the first step towards radicalization occurs from feeling marginalized and alienated from the U.S. Current anti-Muslim sentiments in the U.S. provide a ripe environment for Muslim American youth to feel alienated, making them vulnerable to individuals seeking to radicalize and recruit them as terrorists. Fortunately, most Muslim American parents want to prevent their youth from being radicalized.

We intend to mobilize Muslim American parents as a key resource for mitigating the threat of terrorism. This intention is consistent with a strategy put forth by the Department of Homeland Security -- to work together with the American Muslim community to achieve the common goal of reducing radicalization and recruitment of marginalized individuals into terrorism. Our major premise is that adolescents will be less open to recruitment into terrorism if they receive effective parental support to assist them to cope with discrimination. This premise is based on research findings that identify parents as pivotal in assisting youth to cope with discrimination. Parental support, when effective, helps adolescents cope with discrimination by empowering them to manage or resolve discrimination incidents. Parents empower youth by providing useful coping advice as well as making meaning and reinterpreting the incident to minimize the youth’s distress. Empowerment, minimizing distress, and making meaning are the antithesis of alienation.

Both parenting and coping are embedded in cultural and situational contexts with no single “right way” to handle every situation. Thus, our main goal is to develop a situationally valid, group-specific model of parenting for discrimination. We also seek to answer questions about which parental responses are effective and which are detrimental. For example, some research findings suggest that very subtle differences in parental responses to youth reports of discrimination can increase alienation by promoting mistrust and resignation rather than empowering youth to cope proactively (e.g. counteracting negative stereotypes by educating the perpetrator or demonstrating behavior that does not fit the negative stereotype). It is conceivable that parents whose responses are detrimental are also feeling alienated, creating conditions whereby their own alienation induces alienation in their youth. Thus, the specific aims of this study are to:

1. Determine how parents’ discrimination experiences and parents’ alienation affect how parents respond to youth’s discrimination experiences.
2. Identify which parental responses prevent alienation in youth experiencing discrimination.

The expected outcomes are to identify predictors of alienation in Muslim American parents and youth and generate the knowledge for developing interventions for parents to prevent youth radicalization. More specifically, accomplishing the study aims will identify which parental responses are important to target. Second, Muslim American parents will be more receptive to the interventions if the interventions are consistent with their beliefs about effective parenting and relevant to their life circumstances.

The study design will be mixed methods (qualitative data from individual semi-structured interviews, focus groups, role playing, diaries, and observations; quantitative data from rating parental responses for effectiveness and two paper and pencil measures of alienation). The
study will also use innovative computer technology, more specifically, Mixed Reality (MR), which includes real parents interacting with computer generated adolescent avatars. There will be multiple sites for conducting the study: (1) Greater Orlando, Florida, (2) Greater Detroit (primarily Dearborn), Michigan, and (3) Southern California (Greater San Diego and Greater Los Angeles).

First, role-play and diary data from Muslim American adolescents will be used to develop gender-specific scenarios about discrimination experiences. These scenarios will be used as computer generated stimuli in a MR environment to elicit parent communication behaviors and coping advice. Second, in depth interviews will be conducted with Muslim American parents to elicit their personal stories of discrimination in the U.S. Third, using MR technology, professional actors will digitally puppeteer computerized adolescent avatars to elicit responses from the parents who provided personal stories about their own discrimination experiences. Parental responses to the MR (i.e., avatar youth reports of discrimination and requests for coping advice) will be coded using two a priori coding schemes, one for verbal and nonverbal supportive communication and one for discrimination coping strategies. The a priori coding scheme for verbal and non verbal communication contains 8 general categories of supportive and non supportive responses (i.e., offering advice, sympathy, sharing a similar problem, minimizing the situation, offering help, asking questions, assigning blame, and affirming/encouraging) and a number of subcategories. The a priori coding scheme for discrimination coping includes self-protection (reinterpret, withdraw, accept, demonstrate worth/value, minimize, avoidance), self-control (contained response, ignoring) and confrontation (contesting, hiding out, responding in kind). Both coding schemes have demonstrated reliability and validity. The unit of analysis will be each parent’s overall response, comprised of the parent’s communication behavior and coping advice. Open coding will also be used for data that does not fit the a priori schemes.

Parents participating in the MR and one of their randomly selected adolescent children will also independently complete two paper and pencil measures of alienation. These data will be used to establish the relationship between select parental responses and alienation.

The proposed study builds upon theories of parenting, supportive communication, and coping. It leverages the technological expertise of the University of Central Florida Institute of Simulation and Training with the principal investigator’s (PI Karen Aroian) expertise in two areas: (1) parenting and adolescent behavior problems in Muslim families and (2) mixed methods and qualitative research designs. Collectively, the key personnel for this study are experts in adolescence, Muslim culture, discrimination coping, and supportive interpersonal communication. The Muslim American Community has already been engaged and two role-playing groups with adolescents about their discrimination experiences have been conducted. One of the two alienation measures was developed by the PI and has been used widely by researchers throughout the world, including in the PI’s five-year, longitudinal study of parenting in Arab Muslim immigrant families (funded by the National Institutes of Health).
Attendee List
<table>
<thead>
<tr>
<th>Name</th>
<th>Organization</th>
<th>Address</th>
<th>Phone</th>
<th>Email</th>
</tr>
</thead>
<tbody>
<tr>
<td>Arefaine, Mickey</td>
<td>Blue Nile Ethiopian Cuisine</td>
<td>181 North Main Street, Harrisonburg, VA 22801</td>
<td>540-209-8200</td>
<td><a href="mailto:m.arefaine@gmail.com">m.arefaine@gmail.com</a></td>
</tr>
<tr>
<td>Argenta, Chris</td>
<td>Applied Research Associates</td>
<td>8537 Six Forks Road, Suite 600, Raleigh, NC 27615</td>
<td>919-854-2838</td>
<td><a href="mailto:cargenta@ara.com">cargenta@ara.com</a></td>
</tr>
<tr>
<td>Aroian, Karen</td>
<td>University of Central Florida</td>
<td>4000 University Boulevard, Orlando, FL 32816</td>
<td>407-823-5045</td>
<td><a href="mailto:karoian@mail.ucf.edu">karoian@mail.ucf.edu</a></td>
</tr>
<tr>
<td>Baribeau, Grégoire</td>
<td>Balsillie School of International Affairs, uWaterloo</td>
<td>c/o April Wettig, HH314, 200 University Ave W, Waterloo, ON N2L 3G1</td>
<td>1-519-619-1307</td>
<td><a href="mailto:gbaribeau@balsillieschool.ca">gbaribeau@balsillieschool.ca</a></td>
</tr>
<tr>
<td>Benachenhou, Dalila</td>
<td>Femvestor, Inc.</td>
<td>11140 Rockville Pike, PMB 234, Rockville, MD 20852</td>
<td>202-427-4631</td>
<td><a href="mailto:D_b@femvesvtor.com">D_b@femvesvtor.com</a></td>
</tr>
<tr>
<td>Braddock, Kurt</td>
<td>International Center for the Study of Terrorism</td>
<td>326 Pond Laboratory, The Pennsylvania State University, University Park, PA 16802</td>
<td>(609)234-6267</td>
<td><a href="mailto:braddock-icst@psu.edu">braddock-icst@psu.edu</a></td>
</tr>
<tr>
<td>Casebeer, William</td>
<td>DARPA/DSO</td>
<td>3701 North Fairfax Drive, Arlington, VA 22203</td>
<td>703-526-4163</td>
<td><a href="mailto:william.casebeer@darpa.mil">william.casebeer@darpa.mil</a></td>
</tr>
<tr>
<td>Chatham, Ralph</td>
<td>ARPA Consultant</td>
<td>2631 Kirklyn Street, Falls Church, VA 22043</td>
<td>703-698-5456</td>
<td><a href="mailto:ralph.chatham@verizon.net">ralph.chatham@verizon.net</a></td>
</tr>
<tr>
<td>Christy, Lowell</td>
<td>Cultural Strategies Institute</td>
<td>14915 Berryville Road, Darnestown, MD 20874-3501</td>
<td>301-869-9098</td>
<td><a href="mailto:lowellchristy@verizon.net">lowellchristy@verizon.net</a></td>
</tr>
<tr>
<td>Connolly, Patrick</td>
<td>Teledyne Scientific &amp; Imaging, LLC</td>
<td>5001 South Miami Boulevard, Suite 200, Durham, NC 27703</td>
<td>919-323-4778</td>
<td><a href="mailto:pconnolly@teledyne-si.com">pconnolly@teledyne-si.com</a></td>
</tr>
<tr>
<td>Name</td>
<td>Organization</td>
<td>Address</td>
<td>Phone</td>
<td>Email</td>
</tr>
<tr>
<td>--------------------</td>
<td>--------------------------------</td>
<td>----------------------------------------------</td>
<td>-----------</td>
<td>-------------------------------</td>
</tr>
<tr>
<td>Corman, Steve</td>
<td>Consortium for Strategic Comm</td>
<td>Box 871205 Arizona State University</td>
<td>480-965-3830</td>
<td></td>
</tr>
<tr>
<td></td>
<td>unication, Arizona State U</td>
<td>Tempe, AZ 85287-1205</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cox, Michael</td>
<td>University of Maryland</td>
<td>A. V. Williams Bldg.</td>
<td>301-405-2696</td>
<td><a href="mailto:mcox@cs.umd.edu">mcox@cs.umd.edu</a></td>
</tr>
<tr>
<td></td>
<td></td>
<td>College Park, MD 20742</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Davis, Fleet</td>
<td>SA Technologies</td>
<td>3517 Piney Woods Place E101</td>
<td>770-790-5464</td>
<td><a href="mailto:fleet.davis@satechnologies.com">fleet.davis@satechnologies.com</a></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Laurel, MD 20724</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Eagleman, David</td>
<td>Baylor College of Medicine</td>
<td>Department of Neuroscience</td>
<td>713-798-6224</td>
<td><a href="mailto:eagleman@cpubcm.edu">eagleman@cpubcm.edu</a></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Baylor Plaza</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Houston, TX 77030</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Faerber, George</td>
<td>Radial Studios, LLC</td>
<td>423 E Town Street</td>
<td>614-846-7315</td>
<td><a href="mailto:george@radialstudios.com">george@radialstudios.com</a></td>
</tr>
<tr>
<td></td>
<td></td>
<td>#206</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Columbus, OH 43215</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Farrell, Kevin</td>
<td>Department of the Navy</td>
<td>3251 Suitland Road</td>
<td>301-669-2878</td>
<td><a href="mailto:kevin.c.farrell@navy.mil">kevin.c.farrell@navy.mil</a></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Washington, D.C. 20395-5720</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ferguson, William</td>
<td>BBN Technologies</td>
<td>10 Moulton Street</td>
<td>617-873-2208</td>
<td><a href="mailto:wferguson@bbn.com">wferguson@bbn.com</a></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Cambridge, MA 2138</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Finlayson, Mark</td>
<td>MIT</td>
<td>32 Vassar Street</td>
<td>617-515-0708</td>
<td><a href="mailto:markaf@mit.edu">markaf@mit.edu</a></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Room 32-258</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Cambridge, MA 2139</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Fuller, Doug</td>
<td>Social Science Automation</td>
<td>4653 Trueman Boulevard Suite110</td>
<td>614-527-5200</td>
<td><a href="mailto:Doug@socialscience.net">Doug@socialscience.net</a></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Hilliard, OH 43026</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Giles, Kendall</td>
<td>Virginia Commonwealth University</td>
<td>P.O. Box 843083</td>
<td>804-828-0001</td>
<td><a href="mailto:kegiles@vcu.edu">kegiles@vcu.edu</a></td>
</tr>
<tr>
<td></td>
<td></td>
<td>1015 Floyd Avenue</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Richmond, VA 23284-3083</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Attendee Address List

Glass, Kristin
ICASA
22 S. Camino Don Carlos
Santa Fe, NM  87506
Phone:  505-603-1248
Email:  kglass@icasa.nmt.edu

Goldberg, Dave
The Washington Post
1150 15th Street NW
Washington, D.C.  20071
Phone:  202-334-9673
Email:  dave.goldberg@wpost.com

Gomez, Jeff
Starlight Runner Entertainment
5 Union Square West
4th Floor
New York, NY  10003
Phone:  212-337-0900
Email:  jeff@starlightrunner.com

Good, J R
ENSCO
5400 Port Royal Road
Springfield, VA  22151
Phone:  703-321-4482
Email:  good.randall@ensco.com

Gupte, Ketki
Verilogue, Inc.
220 Gibraltar Road
Suite 300
Horsham, PA  19044
Phone:  215-394-0365
Email:  kgupte@verilogue.com

Hale, Chris
Georgia Tech Research Institute
2970 Presidential Parkway
Suite 310
Fairborn, OH  45324
Phone:  937-427-0125
Email:  chris.hale@gtri.gatech.edu

Hall, Adam
SERVE Center
7273 Old Whitmire Highway
Newberry, SC  29108
Phone:  803-924-2300
Email:  ahall@serve.org

Heatley, Heater
The Rendon Group
1875 Connecticut Avenue NW
Washington, DC  20009
Phone:  202-745-4900
Email:  hheatley@rendon.com

Henning, Ronda
Harris Corporation
Mail Stop W3/31G
P.O. Box 98000
Melbourne, FL  32902
Phone:  321-984-6644
Email:  rhenning@harris.com
<table>
<thead>
<tr>
<th>Name</th>
<th>Organization</th>
<th>Address</th>
<th>Phone</th>
<th>Email</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hurd, Jerrie</td>
<td>Hurd Words and Images</td>
<td>2010 Goss Street, Boulder, CO 80302</td>
<td>303-898-1435</td>
<td><a href="mailto:jerrie@jerriehurd.com">jerrie@jerriehurd.com</a></td>
</tr>
<tr>
<td>Jasak, Joan</td>
<td>Temple University</td>
<td>728 Anderson Hall, Philadelphia, PA 19122</td>
<td>484-431-9008</td>
<td><a href="mailto:jasak@temple.edu">jasak@temple.edu</a></td>
</tr>
<tr>
<td>Johnson, Thomas</td>
<td>Naval Postgraduate School</td>
<td>Monterey, CA 93943</td>
<td>831-656-3190</td>
<td><a href="mailto:thjohnso@nps.edu">thjohnso@nps.edu</a></td>
</tr>
<tr>
<td>Kettler, Brian</td>
<td>Lockheed Martin Advanced Technology Labs</td>
<td>4301 North Fairfax Drive, Arlington, VA 22203</td>
<td>571-480-7565</td>
<td><a href="mailto:bkettler@atl.lmco.com">bkettler@atl.lmco.com</a></td>
</tr>
<tr>
<td>Kipersztok, Oscar</td>
<td>Boeing Research &amp; Technology</td>
<td>P O Box 3707, MC 7L-44, Seattle, WA 98124</td>
<td>425-373-2884</td>
<td><a href="mailto:oscar.kipersztok@boeing.com">oscar.kipersztok@boeing.com</a></td>
</tr>
<tr>
<td>Kirschenbaum, Matthew</td>
<td>University of Maryland</td>
<td>B0131 McKeldin Library, College Park, MD 20742</td>
<td>301-405-8505</td>
<td><a href="mailto:mkirschenbaum@gmail.com">mkirschenbaum@gmail.com</a></td>
</tr>
<tr>
<td>Kishida, Kenneth</td>
<td>Virginia Tech Carilion Research Institute</td>
<td>Two Riverside Circle, Roanoke, VA 24016</td>
<td>540-526-2063</td>
<td><a href="mailto:kenk@vtc.vt.edu">kenk@vtc.vt.edu</a></td>
</tr>
<tr>
<td>Kogut, Paul</td>
<td>Lockheed Martin</td>
<td>P.O. Box 8048, Philadelphia, PA 19101</td>
<td>610-354-3524</td>
<td><a href="mailto:paul.a.kogut@lmco.com">paul.a.kogut@lmco.com</a></td>
</tr>
<tr>
<td>Kraus, Kari</td>
<td>University of Maryland</td>
<td>Room 4105 Hornbake Bldg, South Wing, College Park, MD 20742</td>
<td>240-997-9759</td>
<td><a href="mailto:karimkraus@gmail.com">karimkraus@gmail.com</a></td>
</tr>
<tr>
<td>Kruse, Amy</td>
<td>Total Immersion Software, Inc.</td>
<td>2001 Jefferson Davis Highway, Suite 703, Arlington, VA 22202</td>
<td>703-415-7577</td>
<td><a href="mailto:akruse@totimm.com">akruse@totimm.com</a></td>
</tr>
</tbody>
</table>
## Attendee Address List

<table>
<thead>
<tr>
<th>Name</th>
<th>Company/Institution</th>
<th>Address 1</th>
<th>Address 2</th>
<th>City, State Zip</th>
<th>Phone</th>
<th>Email</th>
</tr>
</thead>
<tbody>
<tr>
<td>Laabs, Tracy</td>
<td>Strategic Analysis, Inc.</td>
<td>4075 Wilson Boulevard</td>
<td>Suite 400</td>
<td>Arlington, VA 22201</td>
<td>703-797-2271</td>
<td><a href="mailto:tlaabs@sainc.com">tlaabs@sainc.com</a></td>
</tr>
<tr>
<td>Lannon, Robert</td>
<td>Verilogue, Inc.</td>
<td>220 Gibraltar Road</td>
<td>Suite 300</td>
<td>Horsham, PA 19044</td>
<td>215-394-0350</td>
<td><a href="mailto:rlannon@verilogue.com">rlannon@verilogue.com</a></td>
</tr>
<tr>
<td>Lee, Robert</td>
<td>Davidson College</td>
<td>Box 7164</td>
<td>Davidson, NC 28035</td>
<td>Phone: 704-894-2404</td>
<td>Email: <a href="mailto:rolee@davidson.edu">rolee@davidson.edu</a></td>
<td></td>
</tr>
<tr>
<td>Leventhal, Todd</td>
<td>Center for Strategic Counterterrorism</td>
<td>Communications</td>
<td>U.S. Department of State</td>
<td>State Annex 5, 5th floor</td>
<td>202-632-3300</td>
<td></td>
</tr>
<tr>
<td>Montague, P. Read</td>
<td>Virginia Tech Carilion Research Institute</td>
<td>Two Riverside Circle</td>
<td>Roanoke, VA 24016</td>
<td>Phone: 540-526-2022</td>
<td>Email: <a href="mailto:read@vtc.vt.edu">read@vtc.vt.edu</a></td>
<td></td>
</tr>
<tr>
<td>McDonald, David</td>
<td>SIFT, LLC</td>
<td>211 N 1st Street</td>
<td>Suite 300</td>
<td>Minneapolis, MN 55401-1480</td>
<td>617-873-8002</td>
<td><a href="mailto:dmcdonald@sift.info">dmcdonald@sift.info</a></td>
</tr>
<tr>
<td>Millar, Patricia</td>
<td>CoachThink</td>
<td>917 Fern Avenue</td>
<td>Orlando, FL 32814</td>
<td>Phone: 407-898-1966</td>
<td>Email: <a href="mailto:patti@coachthink.com">patti@coachthink.com</a></td>
<td></td>
</tr>
<tr>
<td>Miller, Christopher</td>
<td>Smart Information Flow Technologies</td>
<td>211 First Street North</td>
<td>Minneapolis, MN 55401</td>
<td>Phone: 612-716-4018</td>
<td><a href="mailto:cmiller@sift.net">cmiller@sift.net</a></td>
<td></td>
</tr>
<tr>
<td>Miller, Paul</td>
<td>Paul Miller</td>
<td>P.O. Box 1546</td>
<td>Davidson, NC 28036-1546</td>
<td>Phone: 704.894.2271</td>
<td><a href="mailto:pamiller@davidson.edu">pamiller@davidson.edu</a></td>
<td></td>
</tr>
<tr>
<td>Loeb, Shoshana</td>
<td>Telcordia Technologies</td>
<td>One Telcordia Drive</td>
<td>RRC 1A-335</td>
<td>Piscataway, NJ 8854</td>
<td>732-699-6429</td>
<td><a href="mailto:shoshi@research.telcordia.com">shoshi@research.telcordia.com</a></td>
</tr>
</tbody>
</table>

STORIES, NEUROSCIENCE AND EXPERIMENTAL TECHNOLOGIES
STORyNET
Charlottesville, VA
February 28, 2011
<table>
<thead>
<tr>
<th>Name</th>
<th>Organization</th>
<th>Address</th>
<th>Phone</th>
<th>Email</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mora, Joshua</td>
<td>SCL Group</td>
<td>8 Grafton Street, St. James, London, UK W1S 4EL</td>
<td>-5532</td>
<td><a href="mailto:joshua.mora@scl.cc">joshua.mora@scl.cc</a></td>
</tr>
<tr>
<td>Morgan, Julia</td>
<td>Orions Arrow Inc</td>
<td>P.O. Box 66, Appomattox, VA 24522</td>
<td>804-592-6702</td>
<td><a href="mailto:julia@orionsarrow.com">julia@orionsarrow.com</a></td>
</tr>
<tr>
<td>Morris, Jon</td>
<td>University of Florida/AdSAM</td>
<td>5206 NW 50th Lane, Gainesville, FL 32653</td>
<td>352-371-3737</td>
<td><a href="mailto:jonmorris@adsam.com">jonmorris@adsam.com</a></td>
</tr>
<tr>
<td>Niehaus, James</td>
<td>Charles River Analytics, Inc.</td>
<td>625 Mount Auburn Street, Cambridge, MA 2138</td>
<td>617-491-3474</td>
<td><a href="mailto:jniehaus@cra.com">jniehaus@cra.com</a></td>
</tr>
<tr>
<td>Niekrasz, John</td>
<td>SRI International</td>
<td>9988 Hibert Street, San Diego, CA 92131</td>
<td>858-527-1408</td>
<td><a href="mailto:niekrasz@ai.sri.com">niekrasz@ai.sri.com</a></td>
</tr>
<tr>
<td>Nodelman, Uri</td>
<td>Stanford University</td>
<td>202 Cordura Hall, Stanford, CA 94305</td>
<td>443-921-6918</td>
<td><a href="mailto:uri@nodelman.org">uri@nodelman.org</a></td>
</tr>
<tr>
<td>Novak, Alex</td>
<td>International Center for the Study of Terrorism</td>
<td>325 Pond Laboratory, Pennsylvania State University, University Park, PA 16802</td>
<td>814-863-9550</td>
<td><a href="mailto:anovak@psu.edu">anovak@psu.edu</a></td>
</tr>
<tr>
<td>Nugent, Tom</td>
<td>Strategic Analysis, Inc.</td>
<td>4075 Wilson Boulevard, Arlington, VA 22203</td>
<td>703-797-4513</td>
<td><a href="mailto:tnugent@sainc.com">tnugent@sainc.com</a></td>
</tr>
<tr>
<td>Ortiz, Charles</td>
<td>SRI International</td>
<td>333 Ravenswood Ave, Menlo Park, CA 94025</td>
<td>650-859-4461</td>
<td><a href="mailto:ortiz@ai.sri.com">ortiz@ai.sri.com</a></td>
</tr>
<tr>
<td>Ouellet, Julian</td>
<td>Joint Forces Command</td>
<td>4048 Higley Road, Dahlgren, VA 22448</td>
<td>540-284-0985</td>
<td><a href="mailto:julian.j.ouellet@ugov.gov">julian.j.ouellet@ugov.gov</a></td>
</tr>
<tr>
<td>Name</td>
<td>Organization</td>
<td>Address</td>
<td>Phone</td>
<td>Email</td>
</tr>
<tr>
<td>---------------------</td>
<td>---------------------------------------------------</td>
<td>---------------------------------------------------</td>
<td>---------------</td>
<td>--------------------------------</td>
</tr>
<tr>
<td>Poulin, Chris</td>
<td>Dartmouth Metalearning Working Group</td>
<td>Dartmouth Thayer School of Engineering</td>
<td>617-755-9049</td>
<td><a href="mailto:chris.poulin@dartmouth.edu">chris.poulin@dartmouth.edu</a></td>
</tr>
<tr>
<td>Pritchett, John</td>
<td>US Department of State</td>
<td>Center for Counterterrorism Communications</td>
<td>202-632-6388</td>
<td><a href="mailto:pritchettjs@state.gov">pritchettjs@state.gov</a></td>
</tr>
<tr>
<td>Radvansky, Gabriel</td>
<td>University of Notre Dame</td>
<td>18-C Haggar Hall</td>
<td>574-631-6473</td>
<td><a href="mailto:gradvans@nd.edu">gradvans@nd.edu</a></td>
</tr>
<tr>
<td>Richards, Joel</td>
<td>JoelRichards.com</td>
<td>518 W. 111th Street</td>
<td>6464849351</td>
<td><a href="mailto:me@joelrichards.com">me@joelrichards.com</a></td>
</tr>
<tr>
<td>Rigdon, Grace</td>
<td>Strategic Analysis, Inc.</td>
<td>4075 Wilson Boulevard</td>
<td>571-218-4692</td>
<td><a href="mailto:grace.rigdon.ctr@darpa.mil">grace.rigdon.ctr@darpa.mil</a></td>
</tr>
<tr>
<td>Ritchie, Steven</td>
<td>Total Immersion Software, Inc.</td>
<td>10814 Jollyville Road</td>
<td>512-776-8256</td>
<td><a href="mailto:sritchie@totimm.com">sritchie@totimm.com</a></td>
</tr>
<tr>
<td>Rosen, Julie</td>
<td>SAIC</td>
<td>4001 North Fairfax Drive</td>
<td>703-585-9552</td>
<td><a href="mailto:julie.a.rosen@saic.com">julie.a.rosen@saic.com</a></td>
</tr>
<tr>
<td>Rubin, Gregory</td>
<td>7724 Dibble Avenue NW</td>
<td>Seattle, WA 98117</td>
<td>518-878-1836</td>
<td><a href="mailto:grrubin@gmail.com">grrubin@gmail.com</a></td>
</tr>
<tr>
<td>Russell, Anne</td>
<td>Science Applications International Corporation</td>
<td>4001 North Fairfax Drive</td>
<td>703-469-3694</td>
<td><a href="mailto:russellav@saic.com">russellav@saic.com</a></td>
</tr>
<tr>
<td>Schlosser, David</td>
<td>Analects ink LLC</td>
<td>143 Timberside Drive</td>
<td>704-660-5482</td>
<td><a href="mailto:dbschlosser@analects-ink.com">dbschlosser@analects-ink.com</a></td>
</tr>
<tr>
<td>Name</td>
<td>Organization</td>
<td>Address</td>
<td>Phone</td>
<td>Email</td>
</tr>
<tr>
<td>------------------</td>
<td>-------------------------------------</td>
<td>----------------------------------------------</td>
<td>--------------</td>
<td>------------------------------</td>
</tr>
<tr>
<td>Shine, James</td>
<td>US Army Topographic Engineering Center</td>
<td>CEERD-TR-G 7701 Telegraph Road, Alexandria, VA, 22315-3864</td>
<td>703-428-3691</td>
<td><a href="mailto:James.A.Shine@usace.army.mil">James.A.Shine@usace.army.mil</a></td>
</tr>
<tr>
<td>Stacy, Webb</td>
<td>Aptima, Inc.</td>
<td>12 Gill Street, Suite 1400 Woburn, MA 1801</td>
<td>781-496-2437</td>
<td><a href="mailto:wstacy@aptima.com">wstacy@aptima.com</a></td>
</tr>
<tr>
<td>Thomas, Troy</td>
<td>Office of the Chairman of the Joint Chiefs of Staff</td>
<td>Pentagon Washington, DC</td>
<td>703-693-6086</td>
<td><a href="mailto:troy.thomas@js.pentagon.mil">troy.thomas@js.pentagon.mil</a></td>
</tr>
<tr>
<td>Tufts, James</td>
<td>James Madison University</td>
<td>MSC 7101, Duke Hall Room 215 Harrisonburg, VA, 22807</td>
<td>540-246-2649</td>
<td><a href="mailto:WALKER@WALKERTUFTS.COM">WALKER@WALKERTUFTS.COM</a></td>
</tr>
<tr>
<td>Wesley, Regian</td>
<td>Concurrent Technologies Corporation</td>
<td>15091 Alabama Highway 20, Suite A Madison (Huntsville), AL 35756</td>
<td>256-560-6602</td>
<td><a href="mailto:regianj@ctc.com">regianj@ctc.com</a></td>
</tr>
<tr>
<td>Weyhrauch, Peter</td>
<td>Charles River Analytics</td>
<td>625 Mount Auburn Street, Cambridge, MA 2138</td>
<td>617-491-3474</td>
<td><a href="mailto:pweyhrauch@cra.com">pweyhrauch@cra.com</a></td>
</tr>
<tr>
<td>Wheeler, Schaua</td>
<td>National Ground Intelligence Center</td>
<td>2055 Boulders Road, Charlottesville, VA 22911</td>
<td>434-980-7309</td>
<td><a href="mailto:schaun.wheeler@us.army.mil">schaun.wheeler@us.army.mil</a></td>
</tr>
<tr>
<td>Wheeler, Tracey</td>
<td>System Planning Corporation</td>
<td>3601 Wilson Boulevard, Arlington, VA 22201</td>
<td>703-286-9607</td>
<td><a href="mailto:tracey.wheeler.ctr@darpa.mil">tracey.wheeler.ctr@darpa.mil</a></td>
</tr>
<tr>
<td>Whitaker, Elizabeth</td>
<td>Georgia Tech Research Institute</td>
<td>250 14th Street, Atlanta, GA 30332</td>
<td>404-407-6656</td>
<td><a href="mailto:betty.whitaker@gtri.gatech.edu">betty.whitaker@gtri.gatech.edu</a></td>
</tr>
<tr>
<td>Winston, Patrick</td>
<td>MIT</td>
<td>32 Vassar Street, Cambridge, MA 2139</td>
<td>617-253-6754</td>
<td><a href="mailto:phw@mit.edu">phw@mit.edu</a></td>
</tr>
</tbody>
</table>
Yohai, Ian
Aptima, Inc.
1726 M Street, NW
Suite 900
Washington, D.C.  20036
Phone:  202-552-6125
Email:  iyohai@aptima.com

Young, Jason
Army Geospatial Center
7701 Telegraph Road
Alexandria, VA  22315
Phone:  703-428-6592
Email:  Jason.C.Young@usace.army.mil

Young, Michael
Social Science Automation
4653 Trueman Boulevard
Suite 110
Hilliard, OH  43026
Phone:  614-527-5200
Email:  michael@socialscience.net

Zantow, Katherine
Fictician
1140 Bishop Lane
Charlottesville, VA  22902
Phone:  7572917625
Email:  kazantow@email.wm.edu