CESI RICERCA

DAMSE

EC funded project
JLS/2006/EPCIP/001

CESI RICERCA · MINISTERIO DE MEDIO AMBIENTE · CONFEDERACIÓN HIDROGRÁFICA DEL JÚCAR · Verbund · CVA

A European Methodology for the Security Assessment of Dams

Lessons learned and final remarks

by Massimo Meghella, CESI RICERCA Spa

Final meeting, Valencia, February, 25th-26th, 2008

Role of Technology

IEEE Spectrum Magazine (Sept. 2006):

- ✓ All major recent attacks (*New York and Washington on 9/11/01*; *Bali in 2002*; *Beslan, Russia, and Madrid in 2004*; *London in 2005*; and *Mumbai in 2006*, *etc.*) required no significant technological sophistication to pull off.
- ✓ At the same time, however, some terrorist groups have proven extraordinarily adept at using the *Internet*, *networks*, and *digital video to recruit*, *conspire*, and *communicate*.
- ✓ Meanwhile, developed countries, that the extremists are doing their best to *terrorize*, have launched *research programs* that will in coming years help determine how much of a role *advanced technology* can have in this struggle.

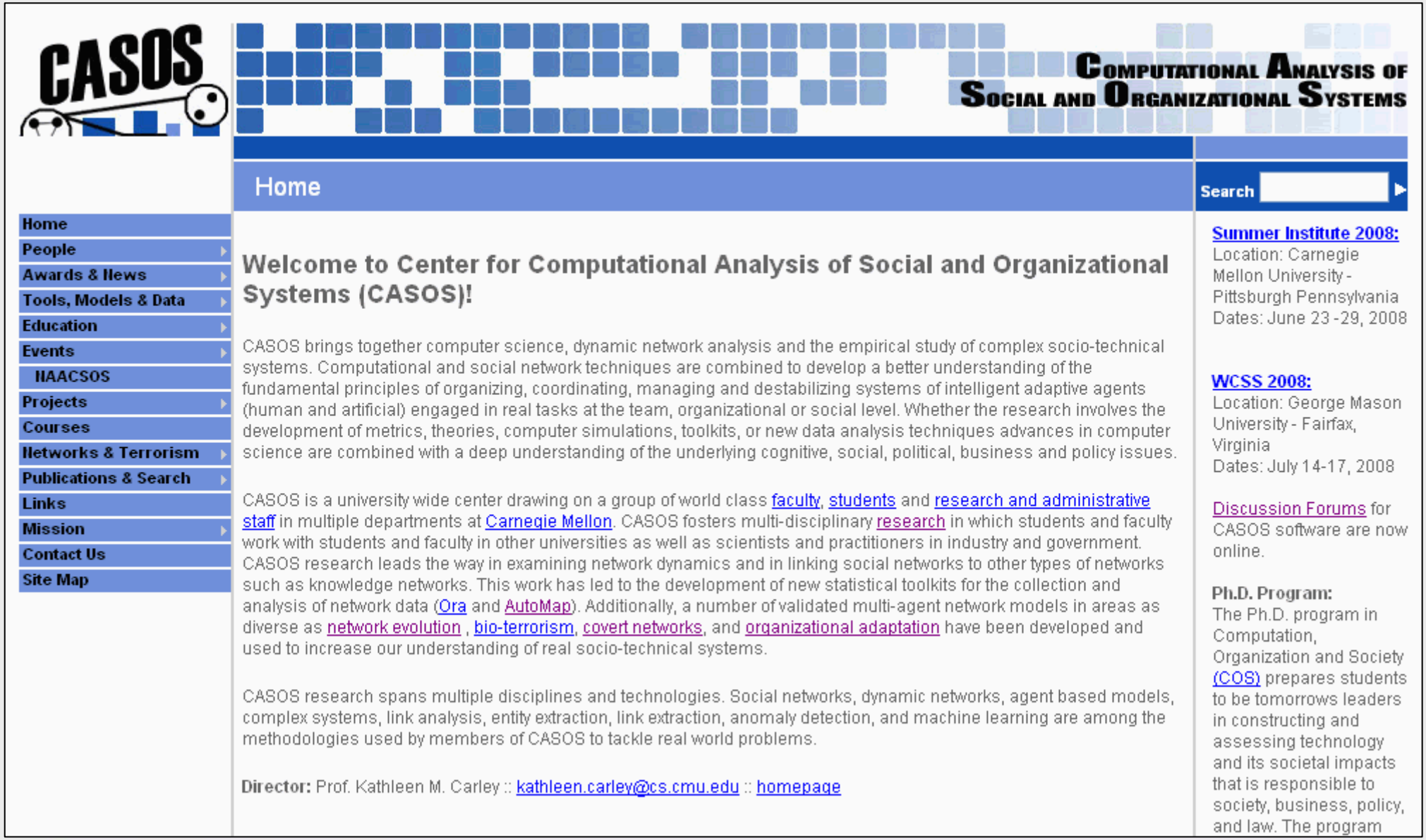
Role of Technology

Could the hypothetical terrorist scenarios do harm by giving terrorists ideas they may not have thought of?

- ✓ it is common the belief that exposing a danger is, in the long run, better than ignoring it while hoping that terrorists won't notice it;
- ✓ moreover, knowing that a specific target is effectively protected might prevent an attack, or decrease its likelihood to occur;
- ✓ often, secrecy and confidentiality may hide incompetence and/or lack of effective information for an effective risk prevention or mitigation.

How to predict and to model threats?

- ✓ Information go about in the web and in other media.
- ✓ Gathering, analyze and manage such amount of information require advanced computational tools to effectively model the complex interdependencies between terrorist groups


CASOS
Computational Analysis of Social and Organizational Systems
Home
Search
Home
People
Awards & News
Tools, Models & Data
Education
Events
NAACSOS
Projects
Courses
Networks & Terrorism
Publications & Search
Links
Mission
Contact Us
Site Map
Welcome to Center for Computational Analysis of Social and Organizational Systems (CASOS)!
CASOS brings together computer science, dynamic network analysis and the empirical study of complex socio-technical systems. Computational and social network techniques are combined to develop a better understanding of the fundamental principles of organizing, coordinating, managing and destabilizing systems of intelligent adaptive agents (human and artificial) engaged in real tasks at the team, organizational or social level. Whether the research involves the development of metrics, theories, computer simulations, toolkits, or new data analysis techniques advances in computer science are combined with a deep understanding of the underlying cognitive, social, political, business and policy issues.
CASOS is a university wide center drawing on a group of world class faculty, students and research and administrative staff in multiple departments at Carnegie Mellon. CASOS fosters multi-disciplinary research in which students and faculty work with students and faculty in other universities as well as scientists and practitioners in industry and government. CASOS research leads the way in examining network dynamics and in linking social networks to other types of networks such as knowledge networks. This work has led to the development of new statistical toolkits for the collection and analysis of network data (Ora and AutoMap). Additionally, a number of validated multi-agent network models in areas as diverse as network evolution , bio-terrorism, covert networks, and organizational adaptation have been developed and used to increase our understanding of real socio-technical systems.
CASOS research spans multiple disciplines and technologies. Social networks, dynamic networks, agent based models, complex systems, link analysis, entity extraction, link extraction, anomaly detection, and machine learning are among the methodologies used by members of CASOS to tackle real world problems.
Director: Prof. Kathleen M. Carley :: kathleen.carley@cs.cmu.edu :: homepage
Summer Institute 2008:
Location: Carnegie Mellon University - Pittsburgh Pennsylvania
Dates: June 23 -29, 2008
WCSS 2008:
Location: George Mason University - Fairfax, Virginia
Dates: July 14-17, 2008
Discussion Forums for CASOS software are now online.
Ph.D. Program:
The Ph.D. program in Computation, Organization and Society (COS) prepares students to be tomorrows leaders in constructing and assessing technology and its societal impacts that is responsible to society, business, policy, and law. The program

CASOS

Computational Analysis of Social and Organizational Systems

What does AutoMap do?

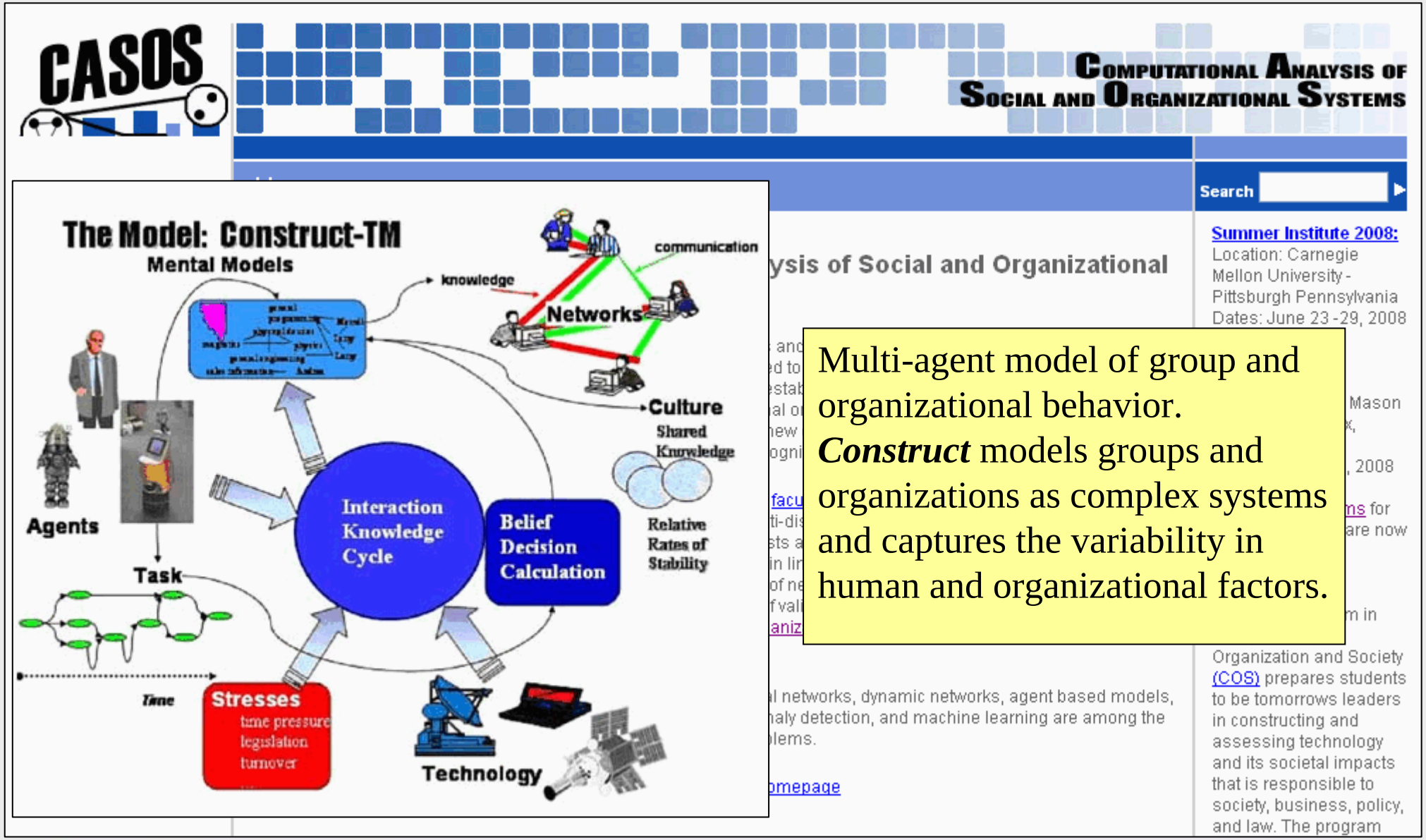
It extracts relational data from raw texts. Depending on the type of Analysis run in AutoMap, the networks represent mental models (of individuals or teams) or social structure of organizational systems.

AutoMap: Network Text Analysis

Researcher: Coding Settings

Director: Prof. Kathleen M. Carley :: kathleen.carley@cs.cmu.edu :: homepage

and its societal impacts that is responsible to society, business, policy, and law. The program


CASOS
Computational Analysis of Social and Organizational Systems
Search
The Model: Construct-TM
Mental Models
knowledge
communication
Networks
Culture
Shared Knowledge
Relative Rates of Stability
Agents
Task
Interaction Knowledge Cycle
Belief Decision Calculation
Time
Stresses
time pressure
legislation
turnover
Technology
Multi-agent model of group and organizational behavior.
Construct models groups and organizations as complex systems and captures the variability in human and organizational factors.
Summer Institute 2008:
Location: Carnegie Mellon University - Pittsburgh Pennsylvania
Dates: June 23 -29, 2008
Organization and Society (COS) prepares students to be tomorrows leaders in constructing and assessing technology and its societal impacts that is responsible to society, business, policy, and law. The program

CASOS

Computational Analysis of Social and Organizational Systems

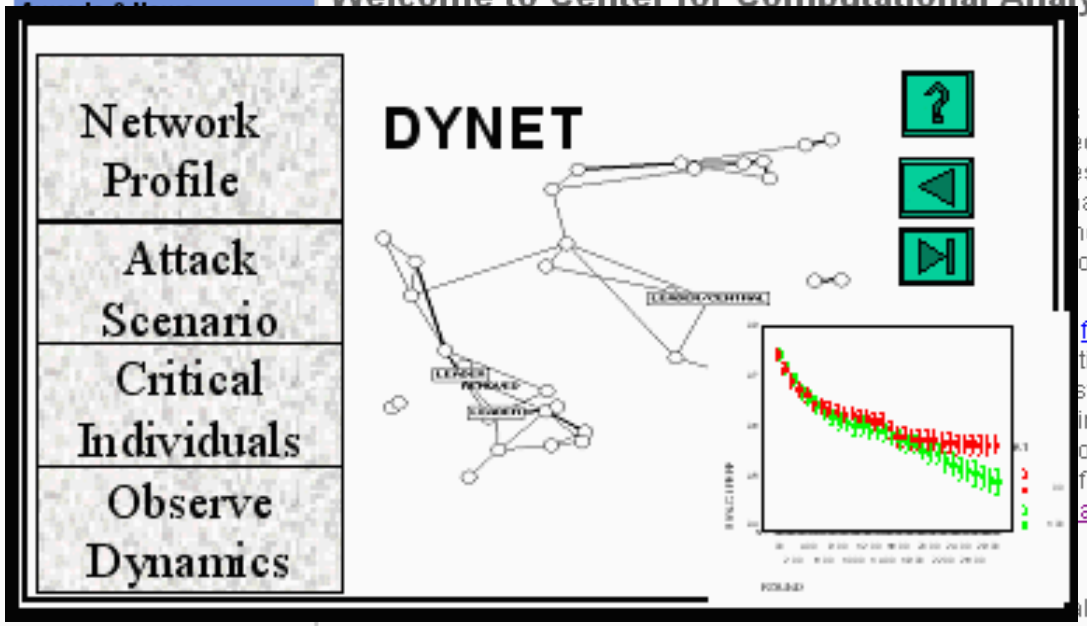
Home

Search

Home

People

Welcome to Center for Computational Analysis of Social and Organizational



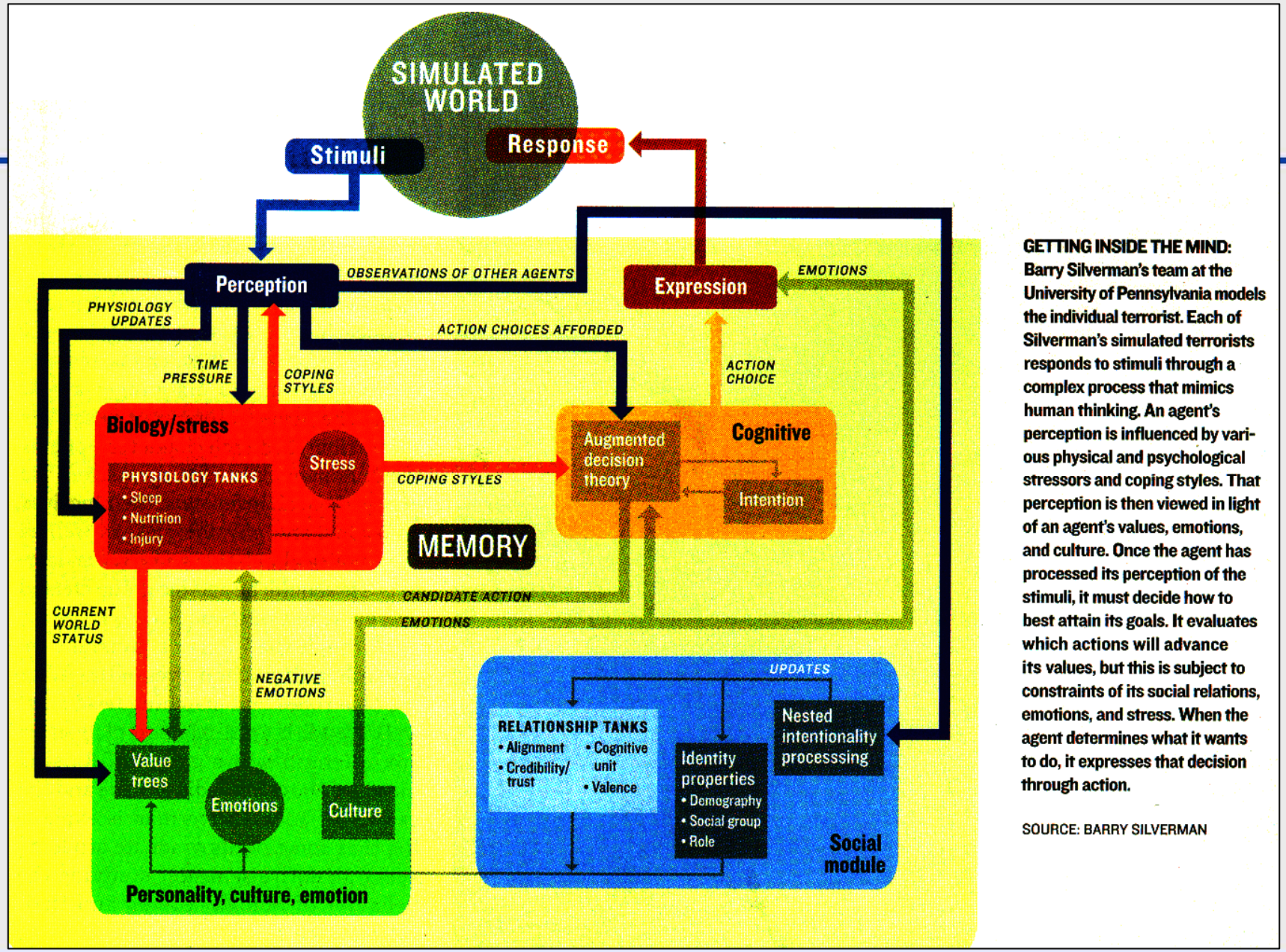
DyNet a simulator for dynamic networked organizations through a blending of computer science, social networks and organization theory.

l networks, dynamic networks, agent based models, complex systems, link analysis, entity extraction, link extraction, anomaly detection, and machine learning are among the methodologies used by members of CASOS to tackle real world problems.

Director: Prof. Kathleen M. Carley :: kathleen.carley@cs.cmu.edu :: homepage

Summer Institute 2008:
Location: Carnegie Mellon University - Pittsburgh Pennsylvania
Dates: June 23 -29, 2008

Organization and Society (COS) prepares students to be tomorrows leaders in constructing and assessing technology and its societal impacts that is responsible to society, business, policy, and law. The program



GETTING INSIDE THE MIND: Barry Silverman's team at the University of Pennsylvania models the individual terrorist. Each of Silverman's simulated terrorists responds to stimuli through a complex process that mimics human thinking. An agent's perception is influenced by various physical and psychological stressors and coping styles. That perception is then viewed in light of an agent's values, emotions, and culture. Once the agent has processed its perception of the stimuli, it must decide how to best attain its goals. It evaluates which actions will advance its values, but this is subject to constraints of its social relations, emotions, and stress. When the agent determines what it wants to do, it expresses that decision through action.

SOURCE: BARRY SILVERMAN

ITSTIME Italian Team for Security, Terroristic Issues & Managing Emergencies

Home

Chi siamo
About us

Attività
Activities

Sala di lettura
Reading room

Situation Room

Links

Contatti - Contacts

ITSTIME
Università Cattolica
Dip. di Sociologia
Largo Gemelli, 1
20123 Milano - I
itstime@itstime.it

Chiedi a ITSTIME per **la formazione** e **la consulenza** su sicurezza, terrorismo e disaster

ITSTIME è un sito multilingue, pertanto - con l'eccezione di rari casi - i materiali sono pubblicati nella loro lingua originale, senza traduzione. La lingua del titolo della pubblicazione o del menù del sito identificano la lingua impiegata in quello specifico rimando.

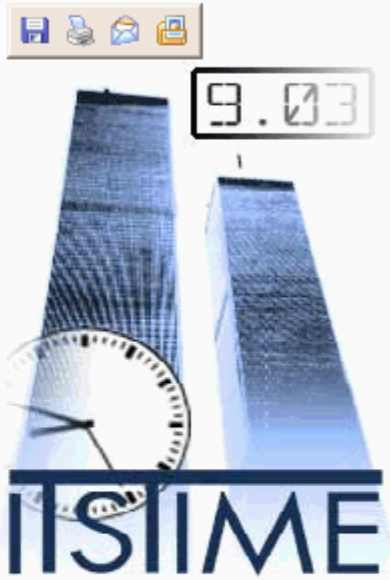
ITSTIME - Italian Team for Security, Terroristic Issues & Managing Emergencies è un progetto nato nel **Dipartimento di Sociologia** dell'**Università Cattolica del Sacro Cuore** di Milano. Il suo carattere è altamente interdisciplinare per affrontare i temi complessi della sicurezza secondo una molteplicità di prospettive.

chi siamo.....

ITSTIME website is multilingual: with few exceptions, all the papers and materials are published in their original language with no translation. Titles or web menu identify the language used.

ITSTIME - Italian Team for Security, Terroristic Issues & Managing Emergencies, is a research project based at the **Catholic University** of Milan (**Department of Sociology**). Our multidisciplinary approach allows us to develop and conduct research focused on security issues from different perspectives.

about us.....



ITSTIME è membro dell' Osservatorio per la Sicurezza Nazionale, un network per la sicurezza nazionale, promosso da CeMiSS e da Elsag-Finmeccanica.

more...

Gennaio 2008 - Di **Stefano Bertozzi** un interessante volume su **"La Comunità Europea Di Difesa. Profili**

I promotori del progetto

I partner fondatori del progetto

CROCE ROSSA ITALIANA

Dipartimento dei Vigili del Fuoco, del Soccorso Pubblico e della Difesa Civile

Ministero della Salute

Università Cattolica del Sacro Cuore

Università di Macerata

Guardia di Finanza

Polizia di Stato

Esercito Italiano

Marina Militare

Aeronautica Militare

Arma dei Carabinieri

Conclusions & Lessons Learned

1) Current security measures seems not fully justified and/or not based on rationale and comprehensive assessment
2) Simplified methods (e.g. *Risk Indexes* methods), even if easier and cheaper to apply, may provide wrong results and misleading conclusions
3) Significant improvement in security levels can be achieved at a considerably lower cost than for upgrading safety
4) *Redundancy* is one of the key concepts to effectively improve both security and safety

Conclusions & Lessons Learned

5) *Social acceptance* of risks related to terrorist threat is generally lower than the one related to natural hazards
6) Computational modeling of threats aimed at providing a numerical *estimate of threat probability*, is still not fully reliable and not directly applicable, due to inherent high level of uncertainty and limitations
7) The above statements highlight the difficulty to afford and manage *security* and *safety* in a *common framework*

Conclusions & Lessons Learned

8) The latter, anyway, should be definitely pursued, as *safety upgrading improves security too*, while the opposite might not be always true (e.g. the effort to check vehicles for explosives delayed the arrival of aid in Louisiana following Hurricane Katrina)

9) For *new constructions*, more effective and cheaper protection against terrorist attacks can be achieved if security issues are properly addressed at the *design stage*

Conclusions & Lessons Learned

10) *Numerical modeling* can effectively support *vulnerability* analysis (FEM, BEM). Need of further research (e.g. explosives effects) is warranted

11) *Integration* and *coordination* between facilities owners, security experts, social scientist, police, intelligence and authority is of paramount importance.

Conclusions & Lessons Learned

End of presentation
Thank you