

## Section One: Understanding

### Gaining sociocultural understanding of a new area of operation

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The sociocultural behavior capability areas framework that guides the structure of this book begins its operational cycle with the requirement to understand the sociocultural environment. In order to achieve understanding, analysts, warfighters, and decision makers at all levels need capabilities that support thorough perception and comprehension, grounded in social and behavioral science, of the sociocultural features and dynamics in an operational environment (Schmorrow, 2011).

As noted in the introduction, understanding involves both situation awareness and option awareness of an environment. Endsley (1995) would include understanding the impact of a pattern of sociocultural factors on behavior in her definition of situation awareness, while Klein, Drury, Pfaff, and Moore (2010) would include comprehension of the effects of sociocultural factors on action-outcomes in a delineation of option awareness levels for mitigation planning. The framework that guides this book describes an organizational operational process, rather than the cognitive processing mechanisms of the brain – that is, it delineates a standardized approach to a process that ensures consistent behaviors and approaches across the members of an organization. This approach reflects the importance of laying down a foundation of knowledge and understanding prior to initiating operational activities in a given location. Even cognitive process models, such as Ulric Neisser’s perceptual cycle, describe a psychological process in which “anticipatory schema” prepare the perceiver to detect certain kinds of new information that then drives the modification of a person’s understanding.

#### Data Processing

Perceiving and understanding sociocultural behavior and the sociocultural environment is complex and difficult. Collecting data in the operational domain presents challenges: behavioral and environmental data is frequently difficult and dangerous to collect, access to the populace may be limited or denied, and cultural and language differences act as barriers. The chapter on data processing, by Elson, Dingwall, and Moaddel reviews some of the challenges and addresses two developing approaches for achieving sociocultural understanding in operational domains. The first approach focuses on two research methodologies – content analysis and survey research – that support the understanding of variables such as population values, attitudes, and ideologies. The second centers on burgeoning techniques for processing and understanding the output of mass communication tools such as Twitter. The authors discuss both the challenges of cross-cultural research and promising recent innovations.

## Computational Modeling

Humans are social actors who co-create complicated, adaptive systems; models of their orientations, actions, and environments can benefit from advanced methods and mechanisms. This chapter presents a sampling of the models and modeling techniques currently in use or under development that can represent social actors at both the individual and group levels. The chapter focuses on enhancements of various network, cognitive, and game-theoretical algorithms and models. Discussion of each technique addresses the factors a tool-user should consider when identifying the most appropriate technique, including assumptions about actor knowledge, data requirements, the representation of human activity, the level of analysis implied by the model, and how the model adapts to the system/environment.

## Visualization

Data visualization exploring the interconnections among social and cultural forces that manifest themselves in a variety of personal interactions is a complex and daunting task. Once sociocultural data have been identified, collected, processed, and used as input for computational models or to typify a snapshot of social interactions, the generated output, be it quantitative or qualitative, benefits from a visual display commensurate with the captured dynamics at play. Without good visualization tools and techniques, translating data into situation awareness and into useful recommendations becomes problematic. Ryan's chapter describes methods for visualizing quantitative and qualitative data, whether to provide organizational insights into the structure of a society or to characterize events that engage a society through its social networks. In addition to the more traditional means of displaying sociocultural data, the chapter examines new techniques for visualizing understanding in multi-dimensional space and the challenges presented by visualization using the next wave of data amalgamation – big data. These techniques afford analysts access to a multiplicity of media made available through technological innovations currently still in the experimental domain.

## Training

Achieving operational success depends not only on the ability of *researchers* to collect and process data, model the sociocultural environment, and visualize input and output, but also on the ability of *operational end-users* to gain access to the right data, analyze those data, use the data as input into models, and understand the models' output. As is the case with all new tools and techniques, successful application and use requires training. This chapter, by Behymer, Mateo, McCloskey, and Abbe, describes two categories of training tools – those that focus on interpersonal interaction and those that address group- or population-level dynamics. Training tools that emphasize interpersonal interaction use text, video, or virtual environments to simulate situations and interactions with others, while the tools focusing on group dynamics use multi-media tutorials, real-world imagery, and virtual environments to help end-users develop observational skills that will help them interpret and understand unfamiliar sociocultural contexts.

## References

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