The papers of this special section of Cartographica are the result of a meeting of invited specialists, held February 3-4, 2009, in Washington, D.C., on “Building an Ontology for The National Map.” Sponsored by the University Consortium for Geographic Information Science on behalf of the U.S. Geological Survey, the purpose of the meeting was to solicit ideas concerning the development of an ontology for The National Map of the U.S. Geological Survey. Academic, industry, and government participants were selected based on reviewed position papers. Though the immediate aim of the workshop was to further the goals of The National Map as a trusted, free, and responsive user tool, the workshop also aimed to benefit the broader geosemantic research community.

The workshop program offered 23 presentations. Four discussion sessions were organized as breakout groups on the topics of 1) problems and solutions of ontology/semantics for topographic features, 2) ontology from databases; connecting to legacy data, 3) ontology and operational components of topographic data: data integration, generalization, names, ontology-driven gazetteers, and 4) implementing a topographic ontology: Web application, graphical presentation, and query handling. The five papers included in this issue demonstrate a range of relevant facets of interest that emerged from this workshop. All of the papers present a rich framework for positioning their specific viewpoints on The National Map within the broader frameworks of geographic information and semantics.

Arguing that technology and society are recursive, Barbara Poore’s article, “Wall-E and the ‘Many, Many, Maps,’” states that organizers of The National Map would benefit from enabling bottom-up ontologies via crowd-sourced folksonomies because such projects shape a more intrinsically meaningful national map for its users. Poore identifies Web 2.0 projects that are leading to shared geospatial conceptualizations by non-specialist users, and ways that technologists are using these trends to create broadly inclusive ontological structures. Poore’s paper advances the case for volunteered geographic information for The National Map.

Ola Ahlquist describes his technique for geovisualization of semantic relations for data analysis in mapping portals in his paper “A Common Framework for Visually Reconciling Geographic Data Semantics in Geospatial Data Mapping Portals.” A semantic relation matrix supports the visualization of an array of meanings derived from various developed data layers and the thematic integration for applications that are made semantically complex by differing approaches, technologies, and purposes.

In “Extraction and Database Modeling of Topographic Eminences,” Gaurav Sinha and David Mark describe a system of cognitively evident landscape forms, viewed as objects, from quantifiable field values of elevation. By developing a multi-tiered framework consisting of fields, objects, and networks, landscape eminences are detected, delineated, and potentially stored in a database model that enables flexible queries. This contribution advances the possibilities for representing identifiable landforms in The National Map, which until now only was cognitively possible to do by visualizing contour lines on topographic maps, sometimes associated with geomorphic feature names.

Thomas Bittner’s article, “On the Integration of Regional Classification Systems for The National Map,” presents an ontological framework to integrate incompatibilities between the granularity of ecological classification systems and local regional character
and of *The National Map* with the Geosemantic Web. The paper presents a formal analysis of a complex ontological realm.

In her paper “Exploration of Ontologies for *The National Map*,” Nancy Weigand gives examples of applications that illustrate potential functional advancements of *The National Map* through the use of semantic technology and relational databases. These sample-use cases illustrate the power of queries enabled by inference, and may give the reader insight to how possible data applications for *The National Map* could advance similar needs.

The five papers demonstrate potential solutions to problems that remain challenging for users of more widely available geographic information science technologies, such the resolution of categorization differences and the expression of features with indeterminate boundaries. Technologies for semantic data models build the capacities to connect geographic information with Web 2.0. The ideas in these papers contribute directly to the semantic infrastructure being developed for national topographic data and graphics.