

**December 9, 2011**

**PSU Geography Coffee Hour**

### **Multiscale Redesign of The National Map with U.S.G.S.**

The success of the *The National Map* program lead by USGS < [nationalmap.gov](http://nationalmap.gov) > relies on readability of maps that present the important geospatial data resources prepared by the federal government for the public domain (copyright free). I have been working as Affiliate Faculty with the USGS Center of Excellence for Geospatial Information Science < [cegis.usgs.org](http://cegis.usgs.org) > on redesign of U.S. topographic mapping to produce attractive and effective large-scale mapping for the entire country that supports multiple map uses, multiple media, multiple delivery formats, at multiple scales, with integration of geospatial data from local data producers, and to suit all U.S. landscapes. This project provides guidance on how many symbol designs and combinations are needed to accomplish the reality of zooming in and out to see map features at multiple scales with detailed, high-quality, current data. I have involved Penn State students in varied aspect of the project, from designing terrain representations through scale, cataloging symbol and label rule changes through scale, weeding placenames from extensive GNIS listings through scale, and incorporating orthoimagery in the design. Our work with ScaleMaster diagrams has required us to be explicit about map design changes that produce readable topographic maps through a wide range in scales (1:20,000 to 1:1,000,000) by recording those changes in sequence and by theme along a continuum of target scales < [scalemaster.org](http://scalemaster.org) >. The basic categories of design change we record are geometry, symbols, content, and labels. A particular emphasis in this talk will be on a group of the decisions that remove features from a map as scales get smaller. These operations are variously called select, eliminate, omit, filter, prune, and thin. They seem to be some of the least consistently treated approaches in the generalization literature, perhaps because they ambiguously overlap the display change aspects of design. An advantage of this type of display change is that the mapmaker does not need to alter feature geometry or change the database to simply remove a class of features from a map and improve its readability.