Multiple Models in Human Space

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The main message of my presentation is that we are already using multiple environmental models, including in our research, management and use of the Chesapeake Bay. Decades of research from anthropology and psychology have demonstrated that the human brain, as it encounters external stimuli, first uses cognitive schemas or models to understand, at a general level, the second-by-second complex situations and interactions experienced by individuals as they engage with the world around them. These schemas or models are best understood as stored, dynamic, cognitive templates that are activated by the brain to help individuals make sense, understand, evaluate and value information and behaviors. These schemas and models are generated from cultural experiences, particularly those shared among a group of people in ways that makes the schemas and models of value, meaningful and part of a group's identity and place in the world. Of significant importance is that cognitive schemas and models are largely tacit and implicit knowledge: something individuals rarely question and or explicitly recognize or verbalize. It is taken-for-granted knowledge.

Because cognitive schemas and models are built on core knowledge and values, it is not surprising that individuals alone or individuals organized under institutional directives (CBP, STAC, ANPC, LimnoTech, etc.) initially may maintain different understandings and values about an environmental issue of shared concern. While some differences are driven by contested political and economic motives, many differences are due to contrasting or competing cognitive schemas and models.

Recognizing cognitive schemas and models can advance the implementation of formal, quantitative multiple models of the environment in a number of ways. First, it forces us to approach modeling as multiple: multiple models are in already in play, whether they be cognitive or formal quantitative models (and the former will encompass the latter). Second, it challenges researchers, managers, advocates and others to assess their own cognitive schemas and models for the environment, and how they influence their choices and actions in developing or evaluating (i.e., true, valid, useful, or not) quantitative environmental models. This introspection can be gleaned from lessons learned from recent case studies (e .g, LimnoTech, Neuse River, climate), and could results in a "next generation" of multiple "human-environment" models. Third, integration of cognitive schemas and models into formal multiple models of the environment will by default elevate stakeholder discussion and participation to include broader cultural and environmental research on topics such as uncertainty, nature, and sustainability. Finally, since individuals often engage in their environmental work (research, management or advocacy) in institutional settings (CBP, STAC, UMD, CBP, ANPC, etc.), the integration of a cognitive and cultural dimension can produce information useful to efforts by organizations to institutionalize policies and programs on multiple human and environmental modeling.