

CoPe Academy: A Combined Research Support Academy & Long Term Social Research Program

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Idea in a Nutshell - Reasoning and Supporting Evidence: *It is not enough for scientists to know how to communicate; they need to understand the full decision-making context for their contributions as well.*

Having good scientific knowledge is necessary to make good decisions about managing complex systems like coastal shorelines, and especially the human behaviors that affect them, but having good scientific knowledge by itself is not sufficient. Coastal management decisions, especially public planning and policy decisions, are made within complex institutional contexts that set parameters on what kinds of information can be considered and what kinds of decisions can be made. Making those decisions involves working through complicated, and often contentious, disagreements among the residents and citizens involved both in terms of who should be making decisions (e.g., public agencies, private landowners) and what the best use of a coastal environment should be (e.g., development of economically valuable homesites, conservation of healthy natural ecosystems). Finally, those decisions also typically implicate complex natural, physical, and social processes, such that actions taken to address one problem (e.g., manipulating physical processes by armoring a shoreline to protect beach-front property) can yield consequences affecting another (e.g., changing ecological processes through the loss of viable coastal wetlands).

Natural, physical, and social scientists are highly trained in their own disciplines, but they are often not so conversant in allied disciplines at play in a coastal setting, which can be a challenge when trying to conduct multi-disciplinary research or when synthesizing holistic information about options and consequences. More importantly, natural and physical scientists (and even social scientists, depending on the discipline), often have not been trained to understand and participate in the complex institutional contexts and value-system debates that frame and drive the public decision-making processes within which their scientific knowledge will be used (or not, as the case may be). As a corollary, building skills in sharing scientific perspectives within those processes and communicating not just across disciplines but with a wide array of community members is foundational to the uptake of research findings. Simply throwing yet more scientific data at coastal decision-makers in isolation of that institutional context, devoid of any reflection on the value systems at play (including the deeply held values of the scientists themselves bring to the table, often left unstated), and without authentic exchange with the people

affected by the decisions, is a recipe for having that scientific knowledge ignored or misconstrued at best, or for having contention and frustration by both decision-maker and scientist exacerbated unnecessarily at worst.

Investing in this context literacy reflects a common-sense, logical assessment of a needed next step to ensure that good scientific knowledge developed with support of the National Science Foundation's Coastlines and People (CoPe) program is actually useful and used. It also reflects a researchable proposition. That is, there is yet work to be done to understand and verify whether and under what conditions such training in context literacy for scientists engaging in coastal community-based research would help improve the use of good science in coastal settings, yield better outcomes for coastal systems and coastal communities, yield better 'basic' research programs for the scientists involved, and even yield better 'convergent' knowledge about coastal processes and communities. We propose that NSF create a 'CoPe' Academy that will: (1) Establish **research support training programs** for CoPe researchers and other stakeholders to improve their context literacy for the engaged research they are undertaking; (2) Improve **broadened participation** in the research project by preparing the scientists involved to better understand the institutional and community contexts within which they will be working, and (3) Establish a **rigorous research program** to assess whether and in what ways this training influences both coastal outcomes and follow-on basic and convergent research programs.

Differentiated Recommendation

The CoPe Academy has two complementary components: 1) a Training Program to provide proactive context literacy, communication skills for diverse audiences, and capacity to foster authentic dialogues with multidisciplinary teams, communities, and decision makers; and 2) Long-Term Social Research Program to assess the effectiveness and outcomes of the training program, and provide feedback loops to enhance its utility.

Training Program:

The purpose of the training program is to provide sufficient context literacy for community-engaged CoPe researchers as they develop and undertake their research programs. The academy will provide training for natural, physical, and social scientists so they better understand how their scientific knowledge fits into societal decision-making and how they can engage in the public process. The academy will also offer training in scientific disciplines to facilitate stronger interdisciplinary teams.

For example, the Training Program will include courses in:

- *humanities* (moral philosophy) - to help frame value debates likely to be at play;
- *legal processes* - to help frame the authorities, mandates, and constraints on decision-makers;
- *government planning and policy decision-making processes* - to help frame the nature of the decision(s) being made and situate them in larger institutional context; and

- *other relevant multi-disciplinary topics* – to help ensure the scientists are fully aware of the cross-disciplinary implications of their own work, position it for greater impact, and allow scientists to work more effectively across disciplines.

Some trainings may be tailored to meet project-specific needs to help shape their approaches so that findings can be useful and applied for decision makers.

Steps to implementing the Training Program include: (1) Develop training on decision-making processes and context (e.g., ‘Local Coastal Land Use Decision-Making Processes’); (2) Develop training on relevant topics (e.g., ‘Coastal Engineering 101 for Planners,’ ‘Coastal Ecology 101 for Engineers,’ ‘Value Debates in Shoreland Management,’ ‘Working on Multi-Disciplinary Teams’); and (3) Tailor programs to meet needs of a given research team based on who is participating and given the physical and institutional setting of their work.

Trainings will be co-developed by education training experts and topical experts (and local stakeholders where possible) with the intended target audience of scientists serving on multi-disciplinary teams (across career and experience levels), inclusive of local stakeholders where possible. While participation in CoPe Academy is initially envisioned as voluntary, the research feedback may demonstrate strong rationale for greater participation and may point to an incentivized approach to grow participation.

Long-Term Social Research Program:

Concurrently, a Long-Term Social Research Program will be deployed to assess and improve the effectiveness of the training program. The research program will help test basic social research hypotheses, such as:

- Do contributions from scientists who have had this training improve outcomes on the ground?
- Does participating in decision-making processes after receiving this training yield better and/or new ‘basic’ research questions and programs?
- Does this combination of this training and research yield new “convergent” knowledge?

This research program will be staffed by CoPe Academy scientists who are evaluating and studying the use of this kind of training program, and can recommend improvements to ensure effectiveness, accountability, and adaptation to maximize the benefit for NSF investment. In order to collect data for the research program, teams will need to develop monitoring and reporting protocols for their project, which CoPe Academy scientists can assist with.

Value Added:

The CoPe Academy will provide a sustainable, scalable approach to improve context literacy among coastal scientists. The academy will provide scientists with targeted context literacy training so they can engage more effectively in interdisciplinary research and with local decision-making processes associated with coastal systems. An immediate benefit of cross-disciplinary training is to enhance the knowledge and

comfort level of scientists who may be collaborating on research initiatives, but may not be as familiar with the concepts and language from other fields.

The trainings will support long term study of the impacts of improved context literacy on the use of scientific knowledge and outcomes within coastal decision-making processes. This could serve as a template for long term programs that address social research questions that cannot be resolved in the short-term, similar to the NSF Long Term Ecological Research (LTER) program. The outcomes of this research can in turn inform and support similar training programs in other agencies.

Within the broader institutional structure, CoPe Academy will provide added value to existing programs by emphasizing the training of scientists to enhance communication and collaboration across scientific disciplines and by demystifying coastal decision making processes for social, ecological, and physical scientists. Through this process, the Academy will strengthen existing connections among coastal research programs and locals and will build trust among local experts who participate in and use the outcomes of scientific research. This approach provides a template for shifting from the traditional linear science communication model to a multidirectional exchange among scientists and locals.

The goal is to make scientists more knowledgeable, reflective, and better able to collaborate with other scientists, community members, decision-makers, and other information users and stakeholders. The CoPe Academy is meant to lead to an improved bidirectional exchange to jointly solve problems in a way that multiple spheres of expertise and values being brought to bear. The trainings can help build skills for better understanding the languages of different disciplines and perspectives. Trainings will build capacity among scientists to foster authentic dialogue between scientists and the communities that their research can help serve.