

Leveraging Collective Impacts

CoPe Session San Diego: September 28, 2018

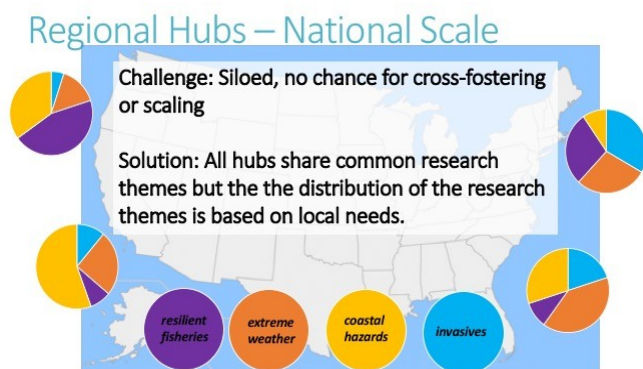
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Problem Statements

1. Are CoPe hubs place-based or issue-based?
2. How is this new? Or does CoPe just do more of the same research that we do now?
3. How do we leverage and scale up?
4. If the public doesn't trust science, how can CoPe change that?

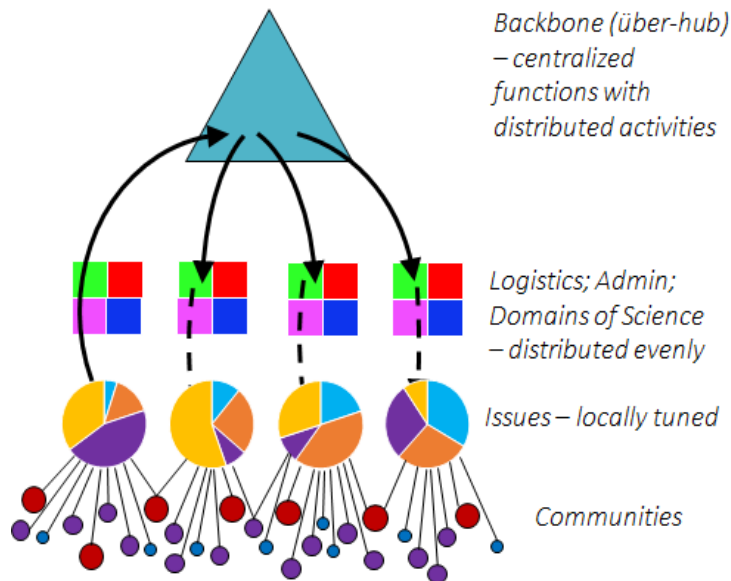
Structural Solution

Issues and opportunities for actionable research in the coastal environment are myriad, ever-changing, and often intransigent. Hubs must therefore be locally responsible, proactively flexible to ever-shifting issues, strongly connected to existing research and education structures, and linked in a structure that facilitates both bottom-up and top-down transfer of information, synthesis, training and problem-solving. Therefore, **hubs are both place-based and issue-based, and set within a hub network which is facilitated (but not controlled) by a central (über) hub (or backbone).** Each hub pursues each of these priority topic areas, but with place-appropriate emphasis on one or more areas. This allows for multiple perspectives on each topic, while maintaining standardization of methods; site to site comparison of models, methods or results; and emergent conclusions or ideas.



Each hub's specialization in one or more of the research topics pursued within the whole hub network allows it to both cultivate unique strengths and to experiment with new approaches. Such experimentation allows for “fast failure” while simultaneously promoting successes as experiments across the hubs. In this way the activity of each hub is leveraged across the full network.

While hub specialization is flexible, each retains even representation of physical, natural and social sciences, equal investment in community engagement and educational efforts, and standardized administrative and IT support. And though hubs are place-based, their work is not rigidly regional or geographically limited. Continuous community engagement efforts will be important to make sure that the research is transparent and responsive to local concerns, that trust and collaboration between hub scientists and the community is strong and resilient through time, and that any applied outcomes are informed by local experience and values. To support both effective community engagement and serendipitous discovery, hubs should be located in accessible community centers, with at least a portion of each hub open and available to the public.



A “central” (or über) hub would coordinate between and among hubs. Preliminary results and conclusions from each hub will be passed up to the central hub for meta analysis and synthesis by affiliated postdocs and their mentors, in search of general, foundational conclusions. This work could be accomplished in part through a post-doctoral fellowship program, which would also provide a chance for early career scientists to have broad regional and topical exposure. There may be opportunities for some typically “central hub functions” to be

distributed among the regional hubs.

The hub network is an incubator. CoPe is not a structure to add resources to the existing coastal “basic research economy.” Rather, it tackles emergent (new) problems and intransigent (old, unsolved) problems. Ideally, projects will fail fast (1 year), and successful approaches within region will be tested/replicated in other regions, and with other people/communities. The program will enable projects to operate on a variety of time scales, from the 1st-year fast fail, to a full 5-15 year cycle of community-engaged scoping, research, and integration back into stakeholder and user communities.

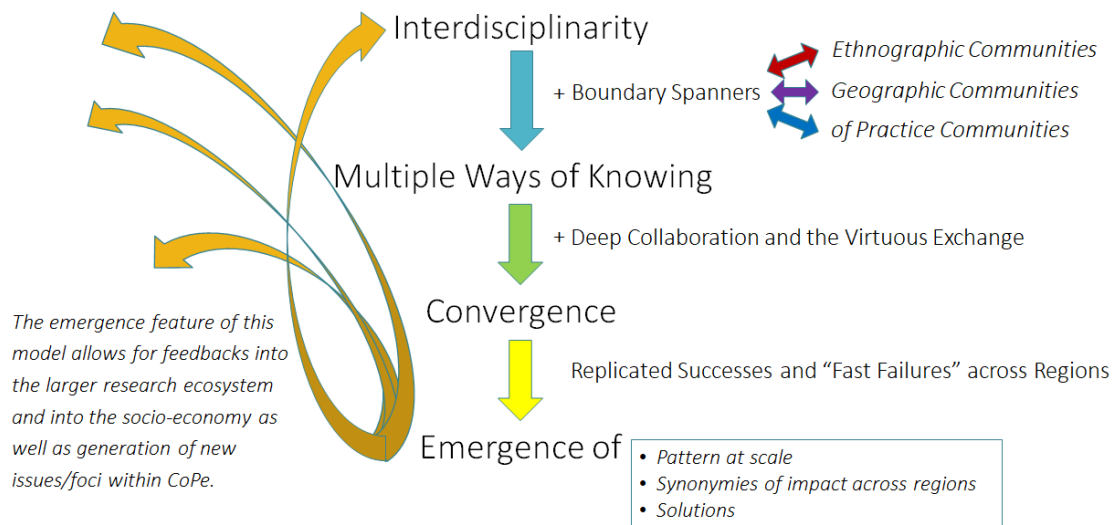
Hub structure facilitates local authentic community partnership to broaden participation.

To maximise community partnership and co-creation of knowledge, hubs will utilize boundary spanners. Boundary spanners are translators who often speak multiple languages, figuratively and literally. They are able to translate “science speak” to communities and frame community-based concerns within relevant scientific disciplines. Boundary spanners work within their communities to generate fundable research questions and proposals based on community concerns and feedback. The NSF INCLUDES project Coastal Almanac has sought to connect coastal communities and science, and its boundary spanners function as the fulcrum between Indigenous communities and mainstream science (<http://coastalalmanac.org>). Based on project outcomes, we know that supporting and **working collaboratively with boundary spanners is key to broadening participation and increasing diverse community engagement.**

Long-term community partnership relies on mutual respect and mutual benefit. One barrier to navigating mutual benefit is understanding that the currencies involved at the academic and community levels are different; for example, peer-reviewed publications may not have value at the community level, while supporting elementary after-school science programs does. To ensure currencies are paid at all levels of the Hub network, we propose the adoption of the “Virtuous Exchange” as an ethical framework for guiding interactions between underrepresented

communities and science. Deep collaboration and engagement in the Virtuous Exchange leads to truly convergent approaches to research questions and methods. These progressions in how research is conceived and carried out enable discovery of emergent ideas, fuel feedbacks to inform new cycles of idea generation and facilitate authentic community engagement.

Success is defined by integration of results into mainstream science, agency science, community empowerment, and related changes in policy and practice.



Hubs are learning centers offering training and professional development for emerging scientists, established scientists and the many communities CoPe serves. **Active recruitment of undergraduates from local communities** will support project research. Graduate students involved in **distributed graduate seminars** will cross-foster and scale hub research and generate next-gen science networks. CoPe postdocs will be able to leverage data across hubs for **innovative meta-analytic research**. **Professional development for emerging through senior scientists** will elevate awareness of equitable community engagement, cultural biases within mainstream science, and the virtuous exchange. **Information transfer workshops** will facilitate both technical knowledge transfer, and multiple ways of knowing, and will be available for the widest range of participants, from community members to senior scientists.

Challenges & Opportunities

These are questions that, when answered, can enhance the value of the network:

- How will priority topic areas be identified, and how will they change over time?
- How will the program effectively facilitate deep collaboration?
- Which über hub functions may be distributed and which should be centralized?