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Embracing the Opportunity to Change How We Educate the Next Generation of Ocean Sciences

Looking back over the past two years as President of The Oceanography Society, I see that many of the issues that I discussed in my first essay continue to be at the forefront of our national discussions. They include how we engage with the broader science community, how we educate and mentor our graduate students and early career faculty, and the need to form new partnerships with nonfederal agencies and the private sector as well as between our institutions. In contrast, the ongoing National Research Council (NRC) Decadal Survey of the Ocean Sciences 2015 is focusing on key themes and science questions for the next decade, the facilities needed to support that science, and the need for a balanced portfolio of investment across research themes and facilities.

We could classify the first set of “diversification” issues as ones of opportunity and challenge. How can we broaden the field of oceanography in terms of its scope and its community of interest? The second set being addressed by the NRC encompasses the traditional issues related to our ambitions to expand the field of oceanography, which have been the subject of several NRC reports over the past few decades. We have usually based our analyses of these “expansion” issues on an assumption of a growing federal budget. Science is essentially unbounded, and there are always new questions and new technologies for exploring and understanding the world ocean. However, with the prospect of flat or declining budgets for the next several years, the present NRC Decadal Survey has taken on an air of urgency and complexity. Coping with flat budgets and increasing costs could make us defensive and less visionary.

If our efforts to diversify our field by broadening our approach to research, education, and engagement are only regarded as means to increase funding, then I think we have missed an enormous opportunity to

broaden and deepen our impact. Moreover, developing effective strategies for addressing the disruptions facing our research and education institutions (as well as our individual scientists, faculty, and students) will require new organizational structures and processes. Simply doing “more of the same” will likely result in more competition and further fragmentation of our community. We can argue that low proposal success rates would be “solved” by adding more funds to the federal budget, but it would sidestep the larger issues of expanding and diversifying the value of our research to a larger community.

As another example, consider graduate education in the ocean sciences. Individual institutions could each develop their own approaches to the content of the graduate curriculum as well as the changing balance between specialization and diversity of the education experience. However, this path would likely lead to an increasing number of specialized, low enrollment courses that are not financially sustainable as well as greater confusion among prospective graduate students as to what a graduate degree in the ocean sciences means and what eventual career paths it might offer. Moreover, each institution would rely primarily on its local needs and the pressures of the surrounding university to drive the curriculum. Although the oceanography curriculum that has developed over the last 75 years is largely based on the Sverdrup, Johnson, and Fleming (1942) model, it was not because of a consensus decision across the oceanographic institutions. Instead, most programs were started by faculty who were newly minted by an oceanography degree program that had SJF at its base. Should we be more deliberate today in order to accommodate the diversity of our incoming graduate students and their eventual career paths? Working together, our institutions could forge new partnerships that would share specialized

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courses and facilities, thus increasing the choices available to our students and preparing them for career paths outside academia and government.

Ocean science is costly and challenging, and it has sometimes been likened to an expensive boutique: nice to have, but not essential. However, we can use the strengths of oceanography to develop new approaches to science and education. The field is inherently interdisciplinary, integrating across the natural science disciplines. We could build effective bridges with the social sciences to address complex issues such as climate adaptation and resource management. Oceanography is fundamentally a community-based science with significant dependence on shared facilities, most notably the research fleet. Vast areas of the ocean remain unexplored, and new technology can be developed to open up the time/space window. And it requires a long-term, persistent approach to understand its connections with the other components of the Earth system. When times are difficult, we could retreat into our own castles and hunker down. Or we could open up and build new partnerships and alliances on our strong foundation of interdisciplinary science, community-based approaches, and new technology.

I want to thank all of you for your support and your commitment to oceanography. Let's continue to work together for the advancement of our field. Lastly, my best wishes to Susan Lozier, as she takes the reins of TOS. Congratulations!



Mark R. Abbott, TOS President

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Thank you for your support of TOS as we start a new membership year!

