

PRESIDENTIAL ADDRESS

The Scientific Landscape of South Dakota in the 21st Century

Address to the South Dakota Academy of Science
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Whenever we pass from one relatively large unit of time to another, whether it be from year to year or from millennium to millennium, we seem compelled to assess our progress and to prognosticate into the future. I would like to take the opportunity of our first South Dakota Academy of Science meeting in the new millennium (at least, by my reckoning) to take a brief look at what roles our academy might play in maintaining its place as a valuable (and valued) scientific entity in the future of South Dakota.

As residents of the northern Great Plains, landscape typically means hundreds of miles, or tens of thousands of acres, and the scientific landscape before us today is equally as expansive. We live in a society becoming increasingly dependent on scientific information and scientific literacy. This is not a new trend, by any means, but the relationship between society and science is growing exponentially, and appears to continue to do so. When we look back on the last decade, or the last century, the nature of science has not changed much but the ways in which it is done, and the rate at which it is done, have changed considerably. How many of us in this room could have known, in our undergraduate days, the magnitude of effects on our scientific activities, let alone on our everyday lives, that would engulf us with the coming of the “digital age”? I used to laugh at my mentors as they pitied the new generation of scientists and our infatuation with computers when, in fact, it is increasingly evident that the future lays at the feet of those who are most adept at utilizing digital breakthroughs and innovative technologies, and the pioneers of yesterday can easily become the dinosaurs of tomorrow. I use computers as an example of the changes ahead of us because they have become so pervasive in the lives of every citizen of South Dakota, but the truth is that this pattern of technological advancement is evident in every one of the disciplines represented here today, and we as scientists become increasingly important to the future success of our state. Our fellow South Dakotans will be asked to make informed decisions on socially prominent issues such as cloning of tissues or offspring; genetic manipulation of crops, livestock, or humans; new and virulent infectious diseases; the impacts of population growth and land-use practices, including effects on air, water, and soil quality, global warming, biological diversity; space research programs; neutrinos and particle physics; and the

societal value of applied and basic scientific research. Our academy can play a vital role in South Dakota being ready for the adventures and opportunities that the new millennium has in store for us.

How can the Academy best serve the scientists and the citizens of South Dakota? The South Dakota Academy of Science was founded in 1915 for “the promotion of scientific research, the diffusion of scientific knowledge and scientific spirit, and the unification of the scientific interests of the state.” The founding president, Dr. Hilton Ira Jones of Dakota Wesleyan University, saw the functions of the Academy to include an “association with appreciative souls” and a means to “break down isolation and stimulate research”.¹ Our mission has changed little in the eighty-six years since, although we have expanded the inaugural objectives somewhat. Our current mission statement calls for the South Dakota Academy of Science to:

- develop interest in science,
- strengthen the bonds of fellowship between scientists,
- preserve information of scientific value, and
- stimulate research in areas that relate to the natural resources of the state.

The stated role of the Academy in fulfilling this mission is threefold: to promote scientific research and publication, strengthen science teaching, and provide a forum for the improvement of public understanding of science. The Academy is currently working toward all three of these objectives, but it is our responsibility to continually search for the most effective ways to fulfill our mission.

The focus of scientific research is being redefined to respond to the current needs of society. The challenges facing us now are not the same as those that were burdening South Dakota’s scientific community in 1915 (although Dr. Jones’s statements do have a certain resonance even today). Dr. Thomas Cech, a chemistry professor at the University of Colorado and President of the Howard Hughes Medical Institute, has identified several major trends developing in scientific research. These include the impact of constantly evolving technologies, an increasing importance of teamwork and interdisciplinary approaches to scientific problems, and innovative approaches to integrating science education with research.² The goals of the Academy and the market forces currently at work in science appear to be in harmony. This is evidenced by the success that South Dakota’s scientific community has been enjoying recently, in numerous collaborative ventures involving multiple academic institutions, often in conjunction with scientists working for various state and federal agencies or corporate entities. The capacity for science is here, and the institutional support is certainly increasing, but what can the Academy do to help us conduct research and improve science education and scientific understanding in South Dakota?

There are several mechanisms already in place through which we could accomplish our objectives. The annual meeting of the Academy is already an effective tool for sharing our research interests and looking for potential collaborative opportunities. It is a uniquely interdisciplinary meeting where scientists from across the state can work together toward developing innovative solutions to some of the state’s scientific issues. In addition, it is a venue well-suited for the training of our undergraduate and graduate students in the com-

munication of their research results and in scientific discourse. It would be even more effective if we could find ways to increase the participation to include more of our colleagues and broaden the scope of our interactions. The Academy also has a long history of working toward improving science education in South Dakota. Current examples of these efforts include cosponsorship of a science education workshop conducted in association with the annual meeting, a junior academy for high school students, and an active involvement in the SDBOR Science Discipline Council.

One area in which we clearly need to increase our effectiveness is in our communication – both within the scientific community and throughout South Dakota. So much of our dissemination is of competitive sound-bites – touting the accomplishments of one individual or one institution, and not explaining the relevancy of what we do to the citizens of South Dakota. If we want to have an impact on the scientific competency of South Dakota, we need to develop a collective voice that will say something to South Dakotans. As Bruce Alberts, President of the National Academy of Science, said recently: “In the 21st century, science and scientists will be judged on how well they help solve local and world problems, not on how well they generate new knowledge. The impact of our research is everywhere, and we must step out and make sure that our work is understood and appropriately used by the world.”³ I ask that the members of the Academy consider this calling as we busy ourselves with the science of South Dakota at this meeting. Only with your input and engagement will we be able to perform the functions that our state needs of us.

Thank you.

LITERATURE CITED

- ¹Jones, H.I. (1915) Presidential Address, *Proceedings of the South Dakota Academy of Science*. 1:20-25.
- ²Cech, T.R. (2001) Four trends to keep an eye on. *HHMI Bulletin*, January, 2001.
- ³Alberts, B. (2000) Science and human needs. Address to the 137th Annual Meeting of the National Academy of Sciences.