Summary of Breakout Sessions 7

Outreach: Social and Educational Opportunities and Challenges

Facilitator: Dr. Devedra P. Garg
Duke University

Discussion was initially focused on Outreach in K-12, Undergraduate, and Graduate Education. Participants identified outreach practices currently in place and the role of the National Science Foundation within these identified practices was noted. GK-12 collaboration, centers for learning and teaching, field based activities, local habitat and biology studies, development of curricular materials, were all shared as examples. Challenges regarding the transition that takes place between K-12, undergraduate, and graduate education programs were also discussed, and it was pointed out that programs that develop processes and means for a more successful transition are warranted, and should be supported.

As the discussion moved into Curriculum and Traditional Knowledge it was suggested that traditional knowledge is vitally important to one's work and is all too often overlooked. Traditional knowledge should be considered in curriculum as well as in research and design. This is especially important in understanding such areas as environmental issues. It was suggested that programs considering the influence of one's culture, as well as the impact of the local environment, would have a greater influence on student success, and funding with this in mind would prevent the loss of students as projects became more relevant to the learner.

The focus of the discussion transitioned to Counselors and Early Involvement. The tremendous influence that counselors have on students was emphasized. Unfortunately, counselors are not always aware of the opportunities available. It was suggested that NSF support the development of summer institutes, designed to increase counselors' awareness regarding opportunities for students and emphasizing the importance of engaging students in science, technology, engineering, and math. There was consensus on the importance of reaching students before they reach high school. It was suggested that NSF adopt a "cradle to grave" concept that draws and supports young Asian Americans and Pacific Islanders and guides them toward science and engineering. Dr. Robert Richmond, of the University of Guam, outlined a step approach that addresses the need for infrastructure, training, and support activities. The concept of bringing science to the students, by way of trailers that travel to less-funded districts, providing resources that would otherwise be unavailable was offered as example of an innovative approach to infrastructure. This is being done successfully throughout the country, and needs to be supported.

Participants agreed that science must be relevant to those who are learning it. Students need to see connections between the science they study and the lives they live from day to day. It was suggested that cultural science and ethno-science fit into this paradigm, and this transcends into teacher preparation, as well. A strategy for retaining teachers in the field might include 'real world' internship opportunities for Asian Americans and Pacific Islanders.

As the discussion turned towards Careers and Communication, it was pointed out that Asian American and Pacific Islander students possibly avoid going into science or engineering because they do not see these as viable career paths. For various reasons, including family goals, time considerations, financial rewards, job satisfaction, excitement, aptitude and attitude, other careers are becoming more appealing. Again, counselors were cited as being critical to the future generations of scientists and engineers. There was a deep concern that was stressed regarding the importance of quality teacher training and retention of successful teachers of science. The abundance of teachers teaching science at the lower grade levels, with virtually no science background, is a serious problem for all students, and one that must be immediately addressed. The value of partnering undergraduates, and graduate students with GK-12 programs was emphasized with participants pointing out that all groups benefit. It was suggested that the younger students often relate better to those who are closer to their own age. The older students benefit by gaining a deeper understanding of the content they are sharing. The teachers are often introduced to content and process skills they are in need of learning, and the teachers contribute their understanding of pedagogy to make sure the delivery is developmentally appropriate and stimulating.

One area that was determined by participants to be in need of funding is the Community College System, especially in areas that serve Asian American and Pacific Islander students in their cultural regions. It was pointed out that often the community college system is the only means for young people from various regions to receive an education. A realistic problem, where no one at the community college level is prepared to write proper and effective proposals was expressed. It was suggested that workshops addressing grant writing at the community college level should be supported, and participants were reminded that Congress mandates a certain amount of funding to support such needs.

Local Outreach is an area of concern that surfaced throughout the discussion. It is imperative that the community relates particular needs, including native language and local culture concerns. It was suggested that state and county levels of support be looked at to determine a need for funding, and that there was a need for more saturation in the social and behavioral sciences regarding Requests for Proposals. The need for Asian Americans and Pacific Islanders to be more properly informed about funding was reiterated. Before one can write for a grant, one needs to know of its availability. To address the challenges that community colleges face regarding grant writing, it was suggested that proactive and productive relationships between universities and local community colleges could help resolve these problems to the advantage of all partners.

Some of the concerns regarding outreach could be addressed through Review Committees and Effective Communication. More Asian Americans and Pacific Islanders need to become involved with review committees, in addition to the Chinese Americans and Indian

Americans who currently seem to already have a stronger presence. Asian Americans and Pacific Islanders need to serve on these committees, when asked, so that they are equitably represented. More Asian Americans and Pacific Islanders need to be encouraged to submit their information to be included in the NSF reviewer database.

In conclusion, the following recommendations were suggested in this breakout session:

- Fund and promote science institutes for middle and high school counselors.
- Fund and promote projects that support dynamic infrastructure for school children, especially in underserved areas.
- Fund and promote additional training for teachers, including elementary school teachers who teach science and math and all teachers in need of support in math and science content areas.
- Fund and promote enhanced AAPI internship and fellowship programs.
- Continue funding undergraduate and graduate programs that collaborate with K-12 students and teachers to improve content knowledge and process skills for all participants.
- Make better use of the community college system.
- Make Requests for Proposals linguistically appropriate.
- Increase participation of AAPI regions in NSF workshops.
- NSF needs to be explicit in 'Review Criteria' to enhance AAPI participation.
- Link AAPI regional colleges and universities with research universities for proposal writing benefits.
- Increase awareness of role models through media.
- Develop and support means for outreach programs.

Asian American and Pacific Islander Workforce Issues

Facilitator: Dr. Max Niedzwiecki
Southeast Asia Resource Action Center

The discussion began amid the examination of statistics addressing Asian American and Pacific Islander access issues. These statistics addressed concerns such as accessibility of programs, incidence of AAPI faculty members, and accessibility of resources for Asian Americans and Pacific Islanders. The discussion quickly moved toward financial gain and the potential for earning. "Money talks! When I advise my kids, I tell them to study business, not engineering," one participant conceded.

It was pointed out that the 'glass ceiling' affects Asian Americans and Pacific Islanders differently, depending on the segment of the workforce with which they are associated, be it industry, academe, or government. It was suggested that beyond that, the complex diversity of the Asian Americans and Pacific Islanders could present an even greater challenge in addressing overall success. To make this point, an example was provided that addressed the statistics showing that the Vietnamese are less linguistically advanced than the Hmong. It is suggested that this has to do with the settlement patterns of the Vietnamese, who tend more to stay together in smaller units in an attempt to retain their culture. The Hmong households tend to be larger than Vietnamese households and therefore are more likely to have someone in the unit who speaks English.

Though there is data to support these claims, it was suggested that the conclusions based on data are problematic, especially when attempts are made to quantify the data and draw conclusions. In some Asian American and Pacific Islander cultures, it is generally not considered wise to express negative feelings or bring attention to negative situations. It is often considered to be better to be evasive or even dishonest, rather than lose face or bring about dishonor by describing a negative situation with accuracy.

Another issue that was discussed addresses the situation that for some AAPI sub-groups, life expectancy becomes an issue. Some simply do not live long enough to make an impact on the workforce. For example, Hmong men often do not live beyond 30 years because of genetic disease. There is a disparity in lifespan when using data from this group to analyze the greater Asian American and Pacific Islander workplace issues.

It was pointed out that another consideration in workforce issues is that of cultural hostilities. In relating education and workforce issues that might be negatively influenced by cultural hostilities, one participant provided the example that many mainstream institutions of higher education have expectations that are hostile to Hawaiian thinking; namely, the expectation

that individuals leave their homeland to work. Other participants agreed, quoting the adage, "Hire from the outside, not from within." To address this issue, participants suggest that Asian American and Pacific Islander sub groups need to develop and advance the means for training their own experts.

Relevance and familial piety were other issues that often begin with education and extend to the workforce. Pauline Chinn of NSF elaborated, "Many Hawaiians are turned off by traditional science because it does not seem relevant to Hawaii and Hawaiians." She pointed out that Hawaiians share a deep love and loyalty to their homeland. Yet, the further one advances in education, the further one must become removed from the culture. What is being studied has relevance mostly for another place, lacking relevance for Hawaiians in their homeland.

Where for some cultures rebellion during the years of achieving higher education is expected, in Asian American and Pacific Islander cultures, it is not acceptable to challenge authority. In AAPI cultures, it often presents a disharmony in family relationships when elders are outranked. Promising students may not be encouraged to reach their potential in some AAPI cultures if it means surpassing their elders. On another note, sometimes when an Asian American or Pacific Islander does not finish school, it is because of family responsibilities. Dr. Jeffrey Chen, former CEO of General Science Corporation, pointed out that in the Chinese culture, for example, one has an obligation to the past and next generations. Americans, on the other hand, mostly take responsibility for the current generation. This cultural difference gives rise to the fact that nursing homes are so prevalent in America. In a Chinese American family, the parents and children are taken care of, regardless of expense, and education may have to be delayed or cut short to accommodate.

It was pointed out that for some Asian American sub-groups, such as the Japanese, a shadow is being cast over culture and tradition. As more generations live in the United States, the norms are gradually changing. This view was not held by representatives of some other sub-groups. As with the Chinese, some are still loyal to the old ways of caring for family, even if it is at the expense of one's education and advancement in the workforce.

It was pointed out that there are differences between the circumstance of the Asian American and Pacific Islander sub-groups that must be examined. One important difference is that Hawaiians are involuntary minorities, where many other Asians made the choice to come to America. This creates a tension between cultures and within the academic culture that must be considered when identifying barriers.

Dr. Niedzwiecki claimed that another barrier to higher education for Asian Americans and Pacific Islanders is that many of the parents are not literate in their own native tongues or in English, making it difficult for them or their children to succeed in higher education. Another factor involves the location where new and often poor immigrants are resettled. Frequently, it is in poor areas, where the newcomers follow the path, educationally and otherwise, of their lower income neighbors.

Are the cultures of Asian Americans and Pacific Islanders and the culture of being engineers or scientists in conflict? A participant suggested that one must go beyond the culture of science to become a scientist. Another suggested an approach of meeting in the middle. It

was pointed out that since many AAPIs are committed to their families as well as successful scientists and engineers, suggesting the obstacles lie somewhere else. One consideration is that the economy of Hawaii is primarily based on tourism, without another economic base to support the islands. Sara Hagedorn, in reference to Hawaiian students, claimed that perhaps one place to start would be effectively communicating the value of a college degree, under circumstances where it is not perceived as having value. This is indeed a challenge, because for some groups of Pacific Islanders, the best students are sent to the mainland and don't come back. That becomes a real and imposing cultural barrier.

Possibly, what is needed is a new paradigm for measuring success, some participants suggested. Is success measured by the ability to write and understand an equation or is it measured in happiness? Is earning a PhD the supreme measure of success? Isn't the colleague who stays on the island, foregoing the PhD to own a successful business also successful? It was suggested that the issue of sustainability – educating and keeping Hawaiians who so choose that path to be addressed as "scientists of the land," similar to the path taken by many Native Americans. Is there too much emphasis placed on advanced degrees and too little on knowledge? Has the value of cultural strength been undermined?

Though those are important questions for consideration, the reality is that many Hawaiians indicate that they are being held back by lack of higher education, often due to lack of the accessibility to institutions of higher education. It was suggested that certain areas of science are especially well suited for specific cultural and geographic considerations. The path might begin with identifying better ways of combining science, culture, and geography. The issue then becomes how to leverage this situation in terms of funding. This will require systemic reforms in education, including teacher retraining. Addressing teacher quality and preparation, curricula and instructional concerns, and accessibility and equity issues, which serve as both visible and invisible barriers to success, is a start. Ensuring that all children, regardless of gender or culture, have access to high quality programs that are challenging, relevant, and dynamic, must be at the heart of systemic reform. In all these goals, NSF can help by supporting projects that serve to advance the vision.

In an attempt to refocus the emphasis on workforce issues, questions were posed regarding NSF and AAPI individuals in its workforce. Consensus was that NSF must take on the role as a leader in the fair treatment and equitable representation of Asian Americans and Pacific Islanders on its staff. Suggestions for offering personalized coaching programs and benefits such as paying for advanced degrees were offered. It was indicated that at least part of this was already in place.

A call was made for action that would improve access to higher education and advancement in the workforce. A well-received suggestion was to open a branch of NSF on the West Coast, possibly in the Bay Area where lots of Asian Americans and Pacific Islanders have families.

Participants agreed that there is a major need to create good publicity about Asian Americans and Pacific Islanders who have taken the path of higher education and achieved workplace successes without compromising cultural and family values. Mentoring would be an essential part of this, providing role models and guidance for those considering fields in science and

engineering. The importance of this is critical. Many Asian Americans and Pacific Islanders aspire to become a nuclear physicist, for example, but few have any idea early on of what one must study to achieve this goal. In addition, there is a need to put money into training and recruiting Asian American and Pacific Islander teachers, who will stimulate interest within the culture and address issues of under-representation and access.

In conclusion, the following recommendations were suggested in this breakout session:

- It is important to identify, understand, and address issues that are specific to individual Asian American and Pacific Islander sub-groups.

- In considering quantifying data relating to Asian Americans and Pacific Islanders research and issues, caution must be taken to consider the effect that culture might have on data collection and reporting.

- When considering various aspects of the individual Asian American and Pacific Islander cultures, differences must be acknowledged that account for potential cultural misunderstandings and even hostilities.

- Both visible and invisible barriers, including familial piety and sense of responsibility, cultural ties to ancestral lands, the circumstances of resettlement, language barriers, and relevance to the culture, may temper the goals and values of Asian Americans and Pacific Islanders. To underestimate the significance of this is to fail to see the big picture.

- Teacher preparation and retention programs, especially in areas that serve Asian Americans and Pacific Islanders, must make sure that teachers understand and address the individual and cultural needs of their students, as well as their academic needs.

- NSF should be a front-runner in setting an example for mentoring, staff support and advancement, and accessibility to a wide range of opportunities.

- NSF should consider opening a branch office on the West Coast.

Education Issues

Facilitator: Jinfa Cai
University of Delaware

Tasked with identifying the educational challenges faced by Asian Americans and Pacific Islanders, and then measuring the progress that has been made and charting the next steps to be taken, participants in this breakout session made a significant contribution to the workshop as a whole. Deh-I Hsiung, of the National Science Foundation, appealed to breakout session participants to identify the educational challenges facing K-12, graduate, and undergraduate level students, teachers, and programs, especially as they relate to Asian Americans and Pacific Islanders. Facilitator Jinfa Cai, of the University of Delaware, suggested that in considering each specific level of education, they identify what makes some Asian American and Pacific Islander students successful while some struggle to succeed. He expressed the need to identify ways for recruiting and retaining skillful, qualified, and competent individuals into teaching science, technology, engineering, and math.

Possibly in part due to an overrepresentation of Asian success stories, many issues that Asian Americans and Pacific Islanders face are not being adequately addressed. Participants were reminded that the White House Initiative has provided the opportunity for stakeholders to make recommendations for programs that specifically benefit Asian Americans and Pacific Islanders.

Madeleine Long, of the American Association for the Advancement of Science, pointed out that there is a great deal of existing funding available for underserved populations with similar challenges as those experienced by Asian Americans and Pacific Islanders. The importance of establishing the fact that many Asian Americans and Pacific Islanders are not reaching the levels of success they could reach with adequate support, equity in access, and programs that address diverse needs cannot be denied. Researchers need to address this. For example, the Math Science Partnership (MSP) provides funding for the development of prospective teachers through partnerships between universities and K-12 school districts. The Principle Investigators need to be aware that it is acceptable to focus on the Asian American and Pacific Islander populations and begin to recognize this as a minority group. Effective communication from the National Science Foundation that addresses programming in this light is essential. It was suggested that NSF make an official statement to this effect, publicly recognizing Asian Americans and Pacific Islanders as an underrepresented group and an area of focus. It was cautioned that this support needed to be specifically defined to address the needs of Pacific Islanders and Southeast Asian groups.

The suggestion was made to broaden partnerships to leverage more support for projects to best serve underrepresented groups. For example, NSF could back school systems partnering with the workforce community. It was pointed out that NSF is already encouraging and supporting that type of work and that school districts are encouraged and excited about these kinds of partnerships. The challenge identified is getting the proposals written and getting productive partnerships established. Each of the pieces is available, including the funding, workforce, and teachers. The challenge is putting them in place through individuals with expertise in submitting their ideas through the NSF proposal process. As a first step towards this means, Deh-I Hsiung provided the groups with information available from NSF on how to write proposals.

A concern was noted regarding the lack of research and availability of subsequent data regarding all Asian Americans and Pacific Islanders. Without pertinent research data, it is difficult to make a case for change. Hoan Bui, of the University of Tennessee at Knoxville, shared his experience of attempting to write an educational proposal that successfully satisfied the NSF requirement for broader impact. He ran into a problem because he lacked the hard data to support his claims of need in this particular underserved population. He encountered reviewers who lacked an understanding of the issues and determined his focus to be unnecessary. Out of this area of discussion, the need for a number of steps to be taken, to gather data before approaching NSF with a policy recommendation were identified:

- There is a need for a clearinghouse with an inventory showing the latest research and data. This could provide the kinds of indicators that are affecting particular parts of the AAPI population. Further, there is need for a meta-analysis where one can see the effect size and the sample size of those studies.

- It is recommended that NSF fund a mini-conference, which could commission specialists such as those participating in the AAPI Workshop to study specific locales and use the profiles generated to support statistical analysis. There is an identified need for both statistical analysis and detailed profiles that can look at the processes of learning and the difficulties of delivering services.

- A specific policy recommendation to rewrite the language needs to be developed to open up the processes for Requests for Proposals, targeting, etc.

There was general consensus that these were steps that needed to be taken. It was pointed out that it would be essential to carefully identify the appropriate group of people to invite as participants in such a conference. It was suggested that the group look for an existing network to take the lead on the project, and the American Education Research Association was suggested. Clara Park, of California State University at Northridge, indicated that she chaired the Special Interest Group (SIG) on AAPI research, and that she has access to a list serve that would be available for use as a clearinghouse for the research being proposed. She volunteered to make this e-mail list available for this purpose. The group was reminded to consider that NSF will take unsolicited proposals.

The next step was to identify the type of program to be recommended. It was pointed out that there is a disparity of response in the four initiatives from the White House: Historically Black Colleges and Universities (HBCU), Tribal Colleges and Universities Program (TCUP),

Hispanic-Serving Institutions (HSI), and Asian Americans and Pacific Islanders (AAPI). In terms of viability and public relationships, it is perceived that Asian Americans and Pacific Islanders are still underrepresented, though this is not always acknowledged or understood because of the diversity in groups that make up the AAPI community. It was suggested that a comprehensive program, one that would separate and deal with the specific needs of the different subgroups in the AAPI community. To do otherwise, which is currently being recognized as a barrier, presents the Asian as always ahead with diminishing needs. There is a need for specific programs that address specific needs for those who are struggling. There needs to be specific programs to train those who are successful to become leaders.

The point was made that any available data must be disaggregated in order to show what is specifically needed for Pacific Islanders. It was maintained that this culture is uniquely different from the Asian group, and this must be kept in mind. Current indicators were cited that show that Pacific Islander socioeconomic positioning is more like Blacks and Hispanics than like the Asian group. Concerns were expressed, addressing this specific need for the disaggregation of data, in light of the fact that the numbers for Pacific Islanders are so small. It was indicated that there are advantages in keeping the AAPI populations grouped together because of the small numbers of Pacific Islanders, though frustration with their unique situation and concern that their specific issues would not be adequately addressed were duly noted.

In summary, the need to do a number of things, attacking the problems from all directions was described. A strong sense for keeping the Asian Americans and Pacific Islanders together as a group, yet proactively addressing individual subgroup needs was articulated. Though the need to develop the research that indicated trends is vitally important, it was elaborated that avoiding stereotyping in the process is essential.

In conclusion, the following recommendations were suggested in this breakout session:

- Utilize currently funded research, such as MSP, and proactively seek out future opportunities.

- Identify and address needs in all three phases of education: K-12, Undergraduate, Graduate and Faculty.

- Identify and address specific needs, differentiating the needs of those who need guidance and support to succeed and those who are already successful and will benefit from guidance and support to develop as leaders.

- NSF should support research that studies why so few Asian Americans and Pacific Islanders become teachers and what incentives might be effective in promoting teaching as a career.

- Assets of each culture need to be recognized and the cultural context that NSF is currently starting to fund needs to be supported.

- The development of culturally context-based science needs to be encouraged and supported.

- Structural barriers need to be identified and the means for navigating these need to be addressed.

- Effective communications networks need to be established and the monitoring of efforts resulting from the workshop needs to be in place in order to progress with this vision.

- Develop a specific action plan that includes the following:
  - o Clearinghouse for research and data
  - o Meta-analysis
  - o Mini conference
  - o Policy recommendation based on the above