

The ‘Icing’ on the Cake, Or is it the Cake Itself?

*“...a borderless ‘new world’ is shaped most by technology,
not ideology....”*

Mona Sutphen (Deputy White House Chief of Staff) and Nina Hachigian (quoted in the Washington Post, Tues. 14 April 09)

*“Science diplomacy represents a shift from an emphasis on
global competition to one on global cooperation.”*

Cora Marrett, NSF 2009

-
- *“International collaboration is here to stay.”*
 - *“International collaboration is an obligation, not an option; if we do not participate, the US will be at a great disadvantage.”*

NSF Program Officers, interviews, 2009

METHODS

- ~30 NSF program officers and managers were interviewed (BIO, EHR, ENG, MPS, OISE, OPP, OIA, OD)

(Nota Bene – the following are the collected opinions of individuals – not a survey, and not the policy of any group; not NSF or CGS policy, and are largely unfiltered*. As responses from individuals, they also sometimes reflect the parochial view from the perspective of individual programs.)

QUESTIONS POSED TO NSF PROGRAM OFFICERS

PROGRAM DOES INCLUDE GRADUATE LEVEL INTERNATIONAL COLLABORATION/EXPERIENCE (ICEE) OPTION

- **How is the ICE option described in your program solicitation?**
- **Level of engagement among participating universities or PIs?**
- **What are challenges facing universities / PI's that take advantage of these opportunities?**
- **Suggest changes to overcome these challenges?**

PROGRAM DOES NOT INCLUDE GRADUATE LEVEL ICEE OPTION

- **Describe how international collaboration is or is not relevant to the success of your program?**

- Nearly universal ENTHUSIASM for graduate ICEE
- But, sample also not random
- Outline:
 - Advantages, value, opportunities
 - Concerns, worries, issues
 - Field differences
 - Conclusions

Advantages, Value, Opportunities

(NOT a survey)

- ICE provides **access to facilities**, equipment and protocols that are otherwise not available. (Obvious examples are astrophysical facilities, or the CERN particle accelerator facility, or fossil field sites).
- students with ICEE are **more competitive for jobs** in academics and for business and industry.

This is the 'traditional' view: that "...the students that need international opportunities get them". (The 'need' is defined largely as access to equipment or facilities, or field sites.)

Like Dr. Marrett's opening comments, others argue for a broader perspective ('soft skills'): that international experience can re-calibrate a career, instilling an approach or a breadth in a field that is otherwise not attainable.

"[ICEE] ...so you will have the experience to draw on whenever overtaken by the common hubris of our time, which is that our time outranks all others in all attainments."

David McCullough, 1986 Commencement,
Middlebury College, VT

Advantages, Values, Opportunities

- **broader perspectives**
- **independence develops confidence** – travel away from home lab and major profs, and with new settings, new labs, different cultures (this may mean that international experience has an even greater value for students from smaller schools where such experience is less common on the home campus) builds stronger professionals
- *...”research approaches are more or less the same in the ‘hard sciences,’ no matter where one goes...”*, but the administrative/academic system is different, thus, students with ICEE **learn how to navigate in other professional settings**: excellent training for subsequent positions in academics, business or industry
- ICEE leads to **long term collaborations** that can enhance careers in tangible ways (more collaborations, more research, more publication) and intangible ways (broader professional outlook)
- **broader research portfolio**; enhanced opportunity for multi-national research initiatives
- including graduate students is an easy way to **achieve** minimum **‘broader impacts’** for NSF requirement; it is a ‘low bar’, but it does meet the minimum criteria

Early is better?

...the earlier students are exposed to international collaborations, the more likely they are to incorporate what they learn... to change their minds about their fields and approaches to the science, and thus to be open to ideas that are different from their own.

- Thus, there is broad support for international experiences, but there are relatively few who actually experience ICEE: e.g., only about 4% of NSF Graduate Research Fellows take advantage of international experiences.
- So..., what are the issues, challenges and concerns?

Issues, Challenges and Concerns

- For advocates, there is a **paucity of objective measures** quantifying the value of ICEE.
- Most cited: The **budget ‘pie’ is limited**, and can not cover all that PIs and/or program officers wish to support.

Thus, with the inevitable budget trimming, travel is often the first to go, and the first travel to go is often international and student support: e.g.,

“...Ah, another hidden cost to flat budgets over the past four years.” NSF Program Officer

Issues, Challenges and Concerns

- **Time to degree may be increased** with international elements, which may also **reduce productivity** / publication rate
- In fields where **research 'groups'** predominate, losing a key part of a research lab can stall or slow a whole system
- Business/industry wants degrees from **US institutions**, degrees they understand
- **Students not informed** about ICEE options; perhaps a grad school office can fill that void

Field Differences

not so much

- **world is becoming ‘flatter’**, and thus, most “fields have an international perspective, and one either has an international perspective, or one’s programs slip behind”
- overriding principle is that it is **individual connections** by research professors that **lead to international opportunities** for graduate students
- The personal commitment to international training/ experience is **not field-bound**

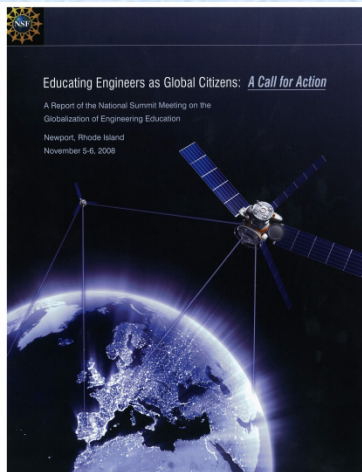
Field Differences

Possible examples

BIO – more ICEE in ecology/ evolutionary/ biodiversity areas (partly for obvious field reasons) than in molecular areas, but also, the latter is often practiced with large ‘groups’, with more interdependent pieces

SOC – perhaps lower proportion due to overall smaller grants programs, and lower rates of student / post doc support

ENG – most successful programs with joint/dual degrees?; also with ICEE?; the Faculty is very international



Newport, RI
5-6 Nov. 2008

Atlanta, GA
17-18 Nov. 2008



- *“... to cultivate a world-class broadly inclusive science and engineering workforce, and expand the scientific literacy of all citizens”, and to promote the further study in scientific disciplines on the part of young people who are likely to assume positions of decision-making responsibility in their own communities.”*

NSF Strategic Plan 2006-11

- *“Our collective goal ... is to encourage and enable exchanges of people and ideas ... around the world.*

Arden Bement, NSF, Georgia Tech 2008

- *“We must collaborate globally to prosper and thrive individually.”*

Cora Marrett, NSF, 2009

- *“... to cultivate a world-class broadly inclusive science and engineering workforce, and expand the scientific literacy of all citizens”, and to promote the further study in scientific disciplines on the part of young people who are likely to assume positions of decision-making responsibility in their own communities.”*
NSF Strategic Plan 2006-11

- *“Our collective goal ... is to encourage and enable exchanges of people and ideas ... around the world. “*
“We must collaborate globally to prosper and thrive individually.”

Arden Bement, NSF, Georgia Tech 2008

