

## **Comments for NAS meeting 5/3/2007.**

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I'd like to begin by thanking the National Academy staff and the advisory committee for making this meeting a reality. I'd like to make special mention of efforts of the committee chair, Tony DePass, whose efforts were undoubtedly a lot more than he expected when he agreed to be chair. I want to acknowledge and thank Barry Komisaruk, whose analysis and insight were critical in getting the research program off the ground.

Finally, I want to express my gratitude to all of you participants for taking time out of your lives to join in this discussion.

We are faced with a huge problem. Large segments of American society have not benefited fully in the advances of science, in particular, the fruits of biomedical and behavioral research. They are underserved. Members of those underserved groups are also underrepresented in the biomedical and behavioral research workforce, underrepresented on the faculty of research institutions and underrepresented in leadership positions in academia or in government. This not a new problem; federal agencies and academic institutions have had programs in place to address the underrepresentation for some 35 years.

But our progress in addressing the problem has been remarkably slow. Perhaps we haven't been going about it in the most effective ways. So the layman inside us asks a naïve question: "What works?" But that question isn't very meaningful. The problem is a complex, multidimensional problem: What works to do what? As we examine strategies of past efforts we see that some programs intended to promote student interest in research, some intended to remediate underpreparation, some sought to build skills needed for success in research, some sought to build supportive social learning environments, most sought to use the research apprenticeship as a vehicle to do much of the above; and most sought to provide financial assistance which they felt was a *sine qua non* for program success.

What are the assumptions that underlie our interventions? Are they valid? What do we need to know in order to design effective interventions?

What are the important questions? What are researchable questions? What kinds of research and what kinds of methodologies are needed to guide (and test) promising new interventions? (slide 2)

I have learned much just reading and sitting in on the study sections as the applications are being reviewed.

(slide 3) I learned that people's decisions is not always as noble as we might think and that their recollection of what influenced their decisions may be unreliable.

(slide 4) I, like many, am challenged by the use of statistics.

I have learned that there is a powerful negative force out there that threatens to frustrate most of our efforts at understanding and at effecting change. (slide 5) Beware the N=1. I'm not talking about researchers drawing conclusions from a single data point. I'm talking about readers whose major understanding of the world, especially when it comes to education, comes from their singular personal experience. The data you gather, the inferences that you present, go up against a mountain of preconceptions, of understandings drawn from real life. If your conclusions concur with what people already believe, you are a genius. If they contradict their N of 1, you are a bum. I'll give you an example. Many faculty and administrators tell me that minority science students, especially the financially disadvantaged, are far more attracted to professions, the MD, than to research careers, the PhD, because of the potential earning power. They say that poor people, having been poor, are concerned with making the most money. From my N of 1, which includes growing up extremely poor on a reservation, that is pure hogwash. I never knew a single poor person from a minority community who felt that way. Getting a good job, such as an engineer, a teacher or a nurse, were stretch objectives, not making a lot of money. (slide 6 ) So even I, yes thoughtful me, I am hypercritical if an explanation conflicts with my understanding. You had better have some fantastic data and thoughtful analyses if you hope to overturn my world view, my biases.

You researchers and educators have your challenges before you.

I am an amateur. In the etymological sense of the word I seek to understand the issues of training for the love of it. In the pejorative sense, I am just an - **amateur!**, seeking the wisdom and guidance of the professionals to help us reach our objectives.

Today, we want your help in focusing the questions that should be asked and your guidance in the appropriate methods to answer them.