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## The Good Book for our Science Education Neighborhood

### **My Vexation: The absence of planning within science education**

Recently I've been particularly tuned into some of the politics, policies, and developments within the new neighborhood into which my family has recently moved. One of the things that I found myself involved in was a neighborhood planning meeting in which residents from surrounding blocks got together to design a plan for the area. To me, this was somewhat astonishing and impressive on two levels. First, there was an explicit attempt to plan something. Further, there were individuals (employed by my local city government, no less) who actually had an idea for how the process could be conducted. We would look at a history of the area, investigate what we currently liked or wanted to improve, and then initiate a process by which the identity and goals of the neighborhood could be created. I entered the initial meeting with a fear that there would simply be a free-for-all voicing of opinions, initiatives, accusations, and the like. Instead I discovered a means by which everyone's ideas could be heard. The notion of planning, itself, was planned. I have yet to see how this all turns out, but at this point I'm at least impressed that there exists a process.

In my professional life I count myself as a science educator and consider myself a good neighbor within this community. Although the purpose of a research discipline is much different from that of a residential neighborhood, the neighborhood analogy fits. We "live" with one another, gather for special events, introduce new neighbors to the block, share a collective history, and have common interests. Too, we each make different contributions to the neighborhood, some of us as teachers, others as researchers, and still some as shapers of policy. And, we operate within a greater system.

What I learned from my own residential neighborhood is that a neighborhood does not have to exist in some kind of stasis, or even in a state of change that is solely directed by external forces. In fact, the members of any neighborhood should have the ability to dictate what the neighborhood's goals are and how it achieves these. What is needed is some kind of process, and it needs to look both at who we are, how we operate, and where we've been. While my own neighborhood planning processes have little to do with science education (although, perhaps it should!), it was in the midst of these that I realized something that was missing from our discipline of studying science education. I am riled by how the discipline of science education operates. Hypothetically, our community consists of teachers and school districts and state offices and federal offices and research organizations. Yet, although they each make reference to one another, none of these sub-groups seems to be able to align efforts with each other, except in the most desperately hopeful manner: I hope that my small research contribution will be read by someone who will then be spurred to research the issue some more and at some point perhaps this will effect some change in one's teaching or in a district's policy. In spite of this hope, though, I readily admit that I do little to really make what I do as a researcher apply toward some greater purpose for science education.

So, what is our identity as a science education neighborhood? Perhaps if I better understood this – or if it were created and planned for – I would have a better sense as to what exactly the discipline of science education is supposed to be doing. I'm looking for a sense of direction in science education. In fact, I think I've reached the point where I'd be receptive to a directive. The process of being a scholar and teacher is something modeled for me by mentors, starting while I was in graduate school and continuing while on a tenure track. However, there is no training, explicit or otherwise, regarding how one goes about making his work actually hold significance or induce change within a greater context. I don't know what my research on conceptual change and nature of science conceptualization actually does for the world besides give scholars something else to read. (When I think about it, I realize that my own hope is simply to be cited by someone else, even as an example of something worthy of being discredited. I imagine a whole academy full of scholars who hope for the exact same thing, and the result is merely a long string of citations rather than any actual product.)

I am looking for a mentoring, planning or guiding process by which scholars in the field of science education can begin to make their work more effective. While I believe in the academy and in allowing a certain freedom in each other's work, I also believe that we need to see more alternatives to how our work can be formed and what it can become. I'm looking for a compass and map for scholar activism (cf. Moss's *Crossroads* 2005 plenary address) in science education. Additionally, I'm looking for a cadre of scholars, teachers, and policy makers to take on the role of scholar activism in science education and progress this as a movement.

## The Good Book for our Science Education Neighborhood

### My Venture: The book

What I would hope to create for all residents of the neighborhood of science education is some kind of goal-setting and planning process. To some degree, I think that *Crossroads* itself was designed to create the public forum necessary to create some kind of community plan. I am learning, though, that the simple act of intersecting does not necessarily address the needs of an entire group. At the same time I'm learning that what comes out of interacting with one another and one another's work does begin to address group needs and create unique solutions and ideas that otherwise wouldn't exist.

The weakness of *Crossroads* is that it is both isolated and temporal. It exists in the social interaction, but this cannot extend itself to those who don't participate in the conference. Others may be affected as ideas from *Crossroads* find their ways into other offices and departments, but this isn't a way to hope for reform of any kind. The idea of a book is appealing to me because it holds onto ideas and documents some kind of interaction.

Before I elaborate, I have to admit that we don't need another book. There are libraries full of them, and even on my own shelf I have collected pages upon pages of information that will just sit there. Each book is there to support the next one on the shelf, at least most of the time. A new book – especially one that radiates from *Crossroads* – should not be a book in the traditional sense.

I want a book to document the means of reform in science education from multiple perspectives, and I want these perspectives to talk to and argue with one another. I want this book to describe a bit about what we've done, what the landscape of science education currently looks like, and (most importantly) gives instructions for the future of science education. In a sense, I want a text that becomes an owner's manual for science education reform and scholar activism, but from multiple, interacting perspectives.

Or, perhaps the image of "owner's manual" is too prescriptive. Maybe what I'm envisioning is something that has multiple prescriptions, each of which compares itself to another. I'm attracted to the idea of a large religious document (e.g., Old and New Testaments) that is a compilation from various writers with a self-referential system. Although I am not looking for prophecy, I am interested in having others join with me in suggesting what the future could possibly hold for science education.

I imagine this text as something to be read by those just entering the field (or moving into our neighborhood), as well as those who are more seasoned. The intent is to not so much get an understanding of a single line of research or specific topic within science education, but instead to look at what we do in the discipline. I want to begin to recharacterize, or at least problematize, what we mean by "doing" or "working" in science education.

I remember working in a lab as an undergraduate where we had a temperature controller that could be dialed in to make a chamber match a particular temperature. Not only did I need to set the temperature like you would on a thermostat, but also knobs to control how the device accounted for history of the chamber's temperature (how stable temperatures had been) and how quickly the device would try to change without regard for history. In a laboratory with, in this case, only the variable of temperature, it was still important to understand how quickly or gracefully I wanted the device to respond, so as not to overdo it. For similar reasons, the history and current state of science education become important pieces in all of this, as they determine what the third section can look like, and what choices are most prudent. In a similar fashion, the book I envision would describe where science education has been, what is currently happening, and propose how we work in the future. Of these three sections, I think the latter is the most interesting and would have the most contributions; but the other two are vital.

The discussion to be had here is crucial. I want to put together a book not because I have some answers, but because I am in need of the sorts of information that this book would contain. Just as with what's occurring in my family's neighborhood, I can see great value in working out a plan. I don't even expect to find or create answers so much as I want to discover where we have yet to look, what we have yet to do, and how we have yet to function as a discipline.