The scientific disposition: stories of personal experiences and questions to inform a transition from theory to practice

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Opening remarks

Dear colleagues,

It is with great regret that I am unable to attend the BtSM colloquium, 2015, as a result of a series of medical conditions that make extended travel virtually impossible. I have included, below, a photo that my husband took of me while I was working on my contribution to the BtSM colloquium. Visit this is an opportunity for you to be able to associate, to some extent, a face with a name and a name with the contribution. For many of you this is also an opportunity to refresh your memory of me as I have seen you in the last two or four years. Thank you, members of the colloquium, for allowing me to contribute with some thoughts to this event.

My contribution to *BtSM 2015* is strongly structured around the personal reflections (available in the appendix below) – reflections that motivated me to look at several instances of consequential decision making in which ***my decision making showed <u>little or no adoption</u> of the BtSM definitions, parameters, and sub-themes/notions.***

Questions for discussion

I present the questions that may be worthy of additional discussion in this final Building the Scientific Mind colloquium, which strives to make significant inroads in our plans to shift from placing the conceptual parameters around the construct, so that we can focus on opportunities and implications of practice.

Before I continue, allow me to encourage you to peruse the reflective paper in the appendix, since it builds on a framework of personal occasional challenges in "truly living BtSM"-building on the knowledge and habits of mind implied in Jan Visser's definitions of the construct (both the 2002, definition and the adjusted, 2015, definition).

Questions

1. What is required of each of us, and as a collective group, to truly embody and adopt the key premises of BtSM? In my reflective statement I have included three examples of where there was little or no evidence that I applied a full scientific disposition to major decision-making.
    a. Am I the only person in our group who, during decision-making where the scientific disposition was an appropriate framework, failed to integrate that framework and key decision points in my life? If so, should I continue to advocate for BtSM?
    b. Could my ability to identify these failures strengthen our efforts in transitioning from the conceptual discussions on the scientific disposition and move into sustained efforts of application?
2. What happens if we find (or perhaps acknowledge) that our interpretations of BtSM differ in key areas?
    a. Echoing the words of Jan Visser in “Question s that trouble me”, I would argue that there is tremendous importance in the BtSM community to have a collective, embodied, and sustained (but evolving) definition for BtSM.
    b. When I was pursuing my graduate studies one of my professors said to us that we have to be able to explain to our grandparents what we do as instructional designers (my area of study). Effectively we had to be able to describe non-experts and novices the vision, goals, and activities associated with instructional systems.
    c. What conditions can be set up so that definitions/interpretations of BtSM are collectively derived, and adjusted as a natural part of the and evolution of BtSM and the rapidly changing conditions of the communities in which we interact?
3. How do we develop an "operational definition" for BtSM and the scientific disposition?
    a. The term "operational definition" may immediately cause you to think of experimental research, etc. That is not my intention as such. As we move into is the application of theory and conceptual debate we require, in my view, a single operational definition, accepted by all members of the core BtSM community.
    b. Once able to operationally define the construct we can begin to conceptualize unique and appropriate methods for examining evidence of the presence of a scientific disposition. Working with an operational definition is one of the important steps in looking at the extent to which BtSM can be genuinely transferred and "exported" beyond the dedicated, yet numerically limited, group of individuals who have shown such consistent support throughout the, and in activities parallel to the colloquium.

4. How do we determine whether the scientific disposition/BtSM (as defined by us) is transferred in both near transfer and far transfer contexts? This arises when making complex decisions, when presented with opportunities to "spread the word" and apply BtSM in the "real world".

    a. It was noted by Robert Gagne that the transfer of learning was one of the few areas where he "drew the line" in terms of his research and theory building around learning. Since that time we have made significant progress in the study of however in an area that remains complex and full of questions. Therefore, I raised the question of being able to transfer the understanding of the scientific disposition as we transition from rhetoric to action.
    b. How do we know if the scientific disposition is present? ? Is this something that individuals can also self/co evaluate in their work? What strategies and activities must be undertaken in order to develop the skill set associated with a scientific disposition,
5. What unique research and evaluation methodologies must be investigated and developed to be able to take the myriad of conceptual and academic explorations of the concept into applied settings?
    a. Research and evaluation methodologies in enhancing our understanding of theory and practice relating to the scientific mind will be of great importance.
    b. Traditional research methods in the social sciences may not suffice. How do we go about being able to determine whether our efforts are working, who benefits the most from applied initiatives around the scientific disposition, what we must change in our efforts in order to improve our efforts at application, etc.?
6. How can each of us strive to live and model the "the scientific disposition"?
    a. As has been noted throughout the literature, the scientific disposition is only one of many potential dispositions. However, it can be an integral "way of being" as we tackle complex areas such as "peace in the minds of women and men", “the scientific disposition in service of beauty and harmony”, and "learning for sustainable futures".

Appendix 1

Reflective statements about my personal attempts (sometimes unsuccessful) in using BtSM and its foundational principles as a framework for major decision making.

The reflective statement below outlines three decision-making moments in my life when, in retrospect, all or part of my decision-making showed little evidence of "walking the talk" of BtSM.

Selecting a program of study for my undergraduate degree: coming out as a highly competitive and high quality secondary education (at a boarding school in southern Africa) I had to go about the process of selecting the University and the major. This was before the existence of Internet, so my research was based on a large selection of books and publications that describe the strengths and weaknesses of each university. So as to increase my chances and opportunities I

applied to no less than nine different universities in the United States and Canada. The process for doing so was extremely tedious, and to this day I have to thank my mother for her incessant emphasis on making this the single, key focus of a young 17/18-year-old version of myself. Our approach for selection of education institutions was highly systematic, strongly informed by our study and selection of statistical data for each of the universities (for example, we focused on "first year completion rates", and "percentage international students"). As a result of these dedicated efforts I was offered opportunities to attend many universities. Our final selection process was informed by a combination of being realistic, and – although we did continue to consult the data – we made the decision for my institution of study by also integrating my own preferences and impressions (however weak those may have been when applying to a university three contents over).

Here is the catch: I spent virtually no time ruminating over the major that I would pursue at the undergraduate level. Based on my areas of strength I identified several natures that would capitalize on my strengths and my experience. Things that started floating to the top include international relations/studies, communication, etc. This is the part of the story where things start to deviate from the scientific disposition as it is typically perceived within the BtSM community and literature. I recall very specifically determining opinion that I sould pursue a degree in an area where I already had a lot of experience, instead of taking the admission to the University as an opportunity to select programs of study which may to some extent mirror my strengths, but also place in front of me is demanding need to expand into other areas and to develop new kinds of skills. In the end I decided to study international relations. Having grown up in several areas of Africa, surrounded by parents and parents peers who were actively engaged in international development activities, my program of study effectively required me to think back to things I had heard and seen while traveling across several continents during my childhood and adolescence. The literature presented for the courses was a means by which I could build frameworks around what I already knew, and develop an appreciation for the theoretical and conceptual models used in international relations. One of my best friends was from rural Pennsylvania, he had grown up in a dysfunctional and limiting family environment, and he, too, was a student in international relations. Everything that he learned in the class was something new, and something allowing him to fill in the pieces of the puzzle. My approach was much different. There was very little that surprised me; it irritated me when teachers would negatively grade aspect of my assignments that were "over- analytical" – assignments for which I basically was applying my appreciation of the highly complex issues in non-Western countries. I rarely felt significantly challenged, and because of that was given approval to take graduate-level courses in my third and fourth years of study. However, even in those courses nothing was irritatingly unfamiliar, frustratingly difficult to learn, or something that caused me to seriously think about how I would change the world around me.

Given the curricular quality of the University I attended, there is no doubt that I learned a substantial amount during my studies at the undergraduate level. With very few exceptions the courses were all taught by highly experienced professors, and to the assignments and products were challenging even when you know the context that is being conceptually described. Nonetheless, I have often wondered why, at a critical moment in my education, I decided to

take the path of least resistance. This is particularly perplexing to me since my secondary education was of such high quality, seeping into each area of my life (academics, volunteer work, environmental work, additional team sports, etc.). I also came from a family where education lies deeply valued, where there was always an encouragement to remember that "there is nothing that you should assume you cannot learn," and where we were reminded that in occupying yet another space in the world, we should make sure that we did everything we could to make a difference.

Pursuing a doctorate

Having completed my undergraduate degree in international relations, I realized that there is no job title or function directly associated with this degree. I was privileged to earn an internship and full-time job in an organization that focuses on international development education. Many of my peers however were not that lucky. They had come to the same conclusion as I had (the lack of alignment of the degree of study with job functions). The best American students moved into internships on Capitol Hill and with the various lobbying firms and organizations. Peers, however, also came to the conclusion that this is a disciplinary area that really does not open up jobs until you have completed the highest levels of education and have been able to penetrate the complex spiderweb of networks in fields related to international relations, such as international advocacy work, policy work, etc. Many of them made and pursued professions by working as "temp workers" who were dispatched to fill "gaps" at critical times, but did not have the fortune of having occupational security or access to a strong benefits system.

I must reiterate that I have no regrets about the university I selected for my studies. I also had the good fortune of being employed by a wonderful organization that really "walked the walk" when taking on international development education projects. In retrospect, since I was not immediately inclined to pursue graduate studies, I have often thought back to the issue of selecting my degree of study, and seeing that as a moment in which few, if any, of the attributes of a scientific disposition were present in my reasoning. Looking back I have become very lucky is that I selected international relations as a field of study. It taught me rigorous, quality, literature-based writing. It also gave me the vocabulary to communicate with others in a systematic way about the diversity and complexity of local, national, and regional challenges. By being hired into an excellent organization I was able to rapidly develop strong professional skills. However, the point remains that I (A) dedicated very little time to deciding what I would study, (B) entered into a field in which there are few to no positions formally aligned with the degree, (C) selected my degree program on the basis of the academic strengths I had already shown in secondary school.

My story about my lack of use of a scientific mindset, as defined in the BtSM community resumes in my graduate education. By then I had decided that I would pursue a degree in instructional systems, allowing me to build on the work I had done in international development education while opening me to a profession that works across all different sectors, on all kinds of learning, training, knowledge, and performance activities. Most interestingly, as an instructional/learning designer one has the opportunity to constantly

interact with new and evolving gaps that impact human and organizational development at every level. As an instructional designer I worked on the development of instructional materials that were very detailed and had a very small, specialist, target audience. In addition, I worked on managing projects for bringing learning online at universities. And, I worked with developing high criticality training for the Navy and the Department of Homeland Security. Finally, I have overseen and supported the implementation of very large-scale organizational change management. In short, I was (and continue to be) very pleased with my decision to pursue this degree from my graduate studies.

There was, however, another significant moment where I was guided by decision matrices that would barely begin to attach to the notions implied in BtSM. My first introduction to this was when I had completed my Masters degree and was very certain that I was passionate enough about this field that I would want to continue taking academic courses so that I could strengthen my understanding of the relatively high level exposure I received in the Master's program. The next logical step, of course, is a doctorate degree. I realized I was in some trouble when I came in to the oral exam component of my comprehensive exams (this is the point at which your Master's degree committee evaluates and discusses your written comprehensive exams and asks you oral questions as a secondary means of assessing comprehensive exam performance and suitability for a doctoral degree. I was comfortable with the material I had prepared for my comprehensive exams, and the oral exam went along fine until one of the committee members asked me "so, why do you want to pursue a doctorate?" There was mostly silence, and the questioner elaborated and said "Do you want to become a professor, do you want to work with research institutions, or do you have something else in mind?. The truth of the matter is that I had never asked that question to myself. I only knew that I wanted to continue to learn about instructional systems so that I could become a constructive contributor to research and practice in that field. I do not know what my answer was to the question from the professor, but the presentation of the question brought somewhat of a fear in me; "do you mean that I have to know why I want to continue learning – what I want to do with the result of such learning when bestowed a doctoral degree?

I was thankfully admitted to the doctoral program, and the lingering question of "why" figured prominently throughout my studies. As I advanced in the courses I had to narrow my area of interest, in anticipation of my dissertation research. I was able to structure a relatively strong dissertation that allowed me to integrate copious pre-study and study assessments, combining both quantitative and qualitative measures. But, throughout the time that I was completing my dissertation I recall feeling very frustrated that I was being pushed into an ever narrowing area of focus. I had to go through that since this approach is part of the academic tradition for doctoral studies. I believe I met all expectations in this regard, although I felt a continuous sense of loss that I could not combine or connect my dissertation related research to my many other areas of interest.

It was only upon completely finishing my dissertation that I realized why the question in the comprehensive exams ("why do you want to pursue a doctorate in structural systems?") had continued to trouble me over all these years. If the doctorate-pursuing individual has done a

reasonable job with the dissertation they receive encouragement from many individuals to pursue an academic career. This would involve getting back into the treadmill of dedicating at least five years of my life to a single construct of research (for the promotion and tenure phase), having my work being constantly evaluated by a group of more advanced peers, and having to walk a very straight line. Promotion and tenure becomes challenging to achieve if you are perceived to be following too many "sub interests" in your field. Many higher education institutions have also moved to tenure system in which the heavily dominant expectations for the doctorate are structured around disciplinary research paradigms 2 x 2 factorial studies, etc.)., While my own review of literature in education and international development has made me increasingly aware that the strength of our disciplinary foundations is potentially being affected by (A) poor selection of research (that do not conform to their statistical assumptions) and (B) that one of our most significantly needed areas of growth in the instructional systems discipline is a better understanding of how we can reliably measure or record instances as complex as those involved in human learning.

Even though I had participated in the "preparing future faculty" workshops that are delivered at many of the larger institutions, my understanding of a faculty position remained vague. The faculty at my institution had all received tenure a long time ago, and even in meeting some younger faculty who were still pursuing tenure it was hard to determine what this system would really look like when entering into a faculty role.

For all the strengths of my graduate program, one of its weaknesses is the direct focus that is applied to pursuing a faculty promotion and tenure line if you are completing a doctorate. This, in spite of the fact that the degree itself opens up may possibilities to participate in complex and exciting instructional systems related initiatives in every sector of the economy. From a financial standpoint it would have made more sense for me to wrap up with a Master's (in my discipline Master's students tend to be very well positioned to pursue exciting and aggressive opportunities in the private sector). In fact, I concentrated very little when making this highly significant professional decision. I applied for a promotion and tenure line, and three months later was positioned at a university. Once the reality of the dysfunction present at so many universities started to sink in (through continued exposure) I applied for and received another promotion and tenure position. I figured that the deficiencies and non-alignments I had witnessed at the first university were "a blip", and that I would feel more comfortable at a university that has all the pieces in place to provide strong support for the promotion and tenure process. In this case, with me personally, that was a mistaken assumption.

Absolutely, please be assured that I am not "knocking" the promotion and tenure process that has been a significant part of the culture of the University for many years now. More directly, I am striving to demonstrate that in my transition to the work world I again appear to have fallen short in assessment of the correct decisions. Guided by the enthusiasm of my professors, and the personal values and I place on research to guide practice and policy, I incorrectly concluded that the traditional transfers from doctoral status to assistant professor status is what I should have pursued immediately upon my graduation.

There is a very happy ending to this rather complex series of experiences that I found in striving to traverse the steep waves presented at each of the most important points in one's academic and professional career. Realizing that I was not a good match for the conventional promotion and tenure system at that time in my life, I decided to do everything that I could, both formally and informally, to exercise my passion for learning and human development, science learning, human performance support, etc. I exited from the promotion and tenure trajectory after having completed some two or three years in the trajectory. Instead, I set myself up so that I could maintain very close relationships with the Colleges of Education (sometimes in a "visiting assistant professor line", and at other times working as an adjunct professor). Simultaneously I threw myself into undertaking very large initiatives in a variety of different sectors. I worked for the World Bank, as a consultant, for almost 5 years. I worked for the Pathways to Prosperity initiative in Illinois for two years, serving in the role of strategic planning, needs assessment and design parameters to support the implementation of this important initiative in the state of Illinois. I also took on smaller consultancies with very unique areas of emphasis, such as the development of a performance support tool/training system for United Nations fieldworkers engaging in the important task of using the International Phonetic Alphabet to "save" the many highly endangered languages throughout the world.

Most important is that as I have matured and learned to think for myself while also soliciting the conflict of others with making both small and big decisions. The framework presented in BtSM, and my active involvement in BtSM and related activities of the Learning Development Institute have given me a foundation framework from which to analyze the extent to which others and I deploy critical aspects of the BtSM frame of reference to make individual and collective decisions. The fact that, however, in some elements of my key decision making – and generally aware of the importance of the BtSM component concepts and performance measures –I failed to apply those constructs in a coherent fashion does bring to mind some important questions (presented above), relating to whether the members of the BtSM community “walks the walk, and talk the talk", whether or not the key constructs of BtSM as outlined by Visser, J. are collaboratively shared and understood, and how we can go about setting up appropriate research and evaluation frameworks to support our activities with application.