A CORNUCOPIA OF PROBLEMS

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The importance of speculative thought and imagination

Science is among the most grandiose, the most magnificent playgrounds one can imagine. One can play with innumerable objects, turn them into composite objects, play with rules, combine rules in different ways, invent new rules, and build theoretical frameworks that reveal the essential simplicity and beauty of how different phenomena fit into a larger worldview that accommodates multiple rules and allows other law like behavior to be hypothesized. So, in science, unlike in most constructed games that we grow accustomed to playing from childhood onward, there are no fixed rules. Rather, there are meta-rules that set the boundaries around scientific research and exploration. The most basic meta-rule is that the scientific community scrutinizes itself rigorously and continually to determine whether the 'games' it engages in are indeed being played the right way, a process that Bronowski (1978) refers to as a "self-correcting activity" (p. 122). Within the rigor of this approach the scientific community allows the game(s) to be in constant evolution. It also allows its vision of how its games must be played, to evolve as a function of the ongoing dialogue among members of the scientific community. Little of this spirit is present in the attempts at science education that take place in schools around the world. Yet, science education is supposed to be one of the major opportunities created by society to develop a spirit of scientific inquiry and appreciation among its members. Thus, an important question must be raised: How can science education be transformed to reflect the ludic nature of the scientific enterprise? A related, and more practical question arises when one considers how society should organize itself to promote and facilitate human learning, namely: What kind of environments of play can be developed that are sufficiently versatile in terms of objects, rules and meta-rules to model the world of science and thus help people to experience the spirit of science and integrate it into their way of dealing with the world?

The above two questions came up in a recent email exchange between one of the authors of the current article and a colleague who is involved in the design of digital games. It is no exception, we believe, that relatively ill-structured–but nonetheless very relevant–problems of the kind alluded to above emerge from discussions among members of the professional communities involved in the study and development of human learning and those who design environments in which learning happens. What is surprising, though, is that such problems and the questions that can be derived from them are often not taken seriously enough to start informing radical change in research agendas and policy development.

Consequently, as far as education is concerned, we have continued to do much of the same for far too long. Or, as was argued during a workshop among invited members of the Book of Problems (BOP) community of scholars at the recent annual convention of the AECT in Anaheim, CA: We can no longer afford to ignore the problems of learning in a context where science and technology are allowing us to race headlong into the 21st century but where the great majority of the population is about as ignorant about human learning as it was 2000 years ago. There is thus a need to *become more speculative in our thinking and imaginative in the formulation of problems* lest serious troubles ensue due to humanity's incapacity to stay ahead of its own ingenuity. The concern to respond to the latter need drives the Book of Problems initiative of the Learning Development Institute (LDI; see http://www.learndev.org), inaugurated on the occasion of AECT's previous annual convention in Dallas, TX, in November of 2002. A short report of the Dallas workshop and panel session appeared in an earlier issue of TechTrends (J. Visser & M. Visser, 2003). The current paper aims at updating the journal's readership on how the BOP initiative continues to advance, so as to allow interested researchers, policy makers and practitioners to join the community and contribute to its work.

Ongoing dialogue

The Book of Problems has evolved into an on-going dialogue that provides testimony to key concerns and challenges that face humanity today. Across continents and disciplines the contributions to this dialogue have grown in scope and depth over the past year. Many of those who have been involved in this process have commented on its unique nature and on the potential that this dialogue has of playing a key role in fundamentally changing both the understanding and practice of learning as an individual and collective enterprise. A key question at the Anaheim workshop was thus: Where do we take this dialogue from here? As befits those who seek to perfect the art of questioning, this resulted in a lively and lengthy discussion. Consensus emerged around the fact that the dialogue needs to be extended and enriched to include further researchers and policy makers, as well as practitioners and other stakeholders, and that the most fruitful way of making that happen would be by producing a print book as a companion volume for how the on-going dialogue is reflected in contributions to the BOP Web page (available at http://www.learndev. org/BOP-AECT2002.html). Such a background reader, it was thought, would take the form of a compendium of narratives selected to reflect a variety of fields and issues, ranging from such diverse areas as brain science to belief systems, and how these impact on our understanding of learning. The narratives would be selected to reflect multiple visions and approaches to learning and the common thread in these essays would take the form of a site map of problem areas, which, rather than seeking to explicitly advance answers, would serve as a catalyst for readers to critically and creatively further their own questioning of their understanding of and involvement with learning.

Like an onion?

The Book of Problems event at Anaheim was more than just a workshop for the invited members of the BOP community. Both AECT and LDI were interested in broadening the scope of the conversation

beyond the group that had already become involved. To that effect, the six-hour workshop was followed, the next day, by an open dialogue session for interested conference attendees at large.

After a brief introduction to the open dialogue by LDI President and session chair Jan Visser, Jim Spohrer, senior manager at IBM's Almaden Research Center in San Jose, California, and former Distinguished Scientist in Apple's Learning Communities Group, took the lead in speculative thinking. What might the world look like in 50 years from now if the trend in technology growth of the past two or three decades continued? What would that mean for who we are as human beings, particularly against the backdrop of what Jim called the nano-bio-cogno-socio-techno convergence (a glimpse of what that means can be obtained from exploring the PowerPoint slides available at http://www. learndev.org/ppt/BOP-AECT2003-Spohrer.pdf) and what implications would such development have for enhancing human performance? What novel perspectives would it open to shed new light on the great unsolved problems of human learning? On the other hand, can we really get to the core of the problem if

Figure 1: Ron Burnett (right) making a point, with the chair, Jan Visser, sitting on the table.

it? No easy answers now to such questions, and perhaps we'll never develop the techniques to answer them rigorously in any foreseeable future. However, one thing is certain. Not to raise them is a sure recipe for never seeing the light. And one other thing is certain, namely that, in order to see the light, such questions must not only be raised, but continuous dialogue should be built around them and careful listening will be required to what many people with different experiential and disciplinary backgrounds have to say about them to help appreciate and elucidate their tremendous convolution.

The menace of rigidity

Both during the workshop and the open dialogue session, attention was directed to how existing educational practices seem to be a growingly inadequate antidote against the dangerous escalation of rigidity which so often characterizes the way in which many people–including large communities and even entire nations–interact with important problems. Some participants in the dialogue seemed to suggest, even, that the almost proverbial staleness of the educational enterprise as we know it, is in and of itself responsible for fostering rigid non-
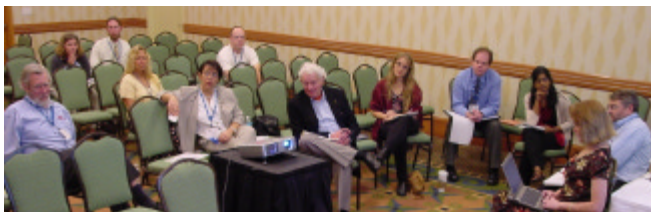

Figure 2: Attentive listening, a key element of the BOP dialogue.

we try to think that way, extrapolating beyond the current state of technology while assuming that everything evolves in a linear fashion? Isn't that, as Ron Burnett remarked, like an onion that keeps getting bigger, rather than smaller, when you peel

thinking. In many parts of the world education is the most successfully entrenched sector, being is rigidly opposed to any efforts at change. As the world grows more and more complex and convoluted, it becomes increasingly necessary to give priority to developing the ability to appreciate complex problems from a variety of different, not necessarily mutually consistent, perspectives. Whence the question: How can rigidity be overcome if major societal mechanisms responsible for the development of the human mind are themselves the product of overly rigid mindsets? Can we lift ourselves up out of the quagmire by our own bootstraps? Breaking through the boundaries of existing paradigms by those who are inside of them is no easy thing. Nonetheless, the history of the development of human thought shows encouraging and convincing examples that such breakthroughs do happen. The study of that history is thus very important. However, it's a history not only of rational thought. Isn't the assumed primacy of rationality yet another rigid belief that is in need of being challenged? Among the many facets that are gradually being covered by the Book of Problems initiative, coming to grips with the history of consciousness and mind is one that must be included as well. The challenge that we face is to combine our growing knowledge of human consciousness and how it interacts with novel visions of learning within multiple practical contexts of human development, the school being one of them. The Book of Problems is one of many different initiatives that we are undertaking to both deepen and broaden the debate on learning, creativity and change. No doubt, it will make the onion bigger. But, then, sometimes the onion must grow before it can be made to shrink.

Note

For more detail, readers may want to explore the BOP Web page referenced earlier in this article. Comments and suggestions are welcome in writing to the first author at jvisser@learndev.org.

References

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