The challenge for education in uncertain times.

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Maybe the time has come in our civilization for a period of creative suspension. True creativity appears when we stay within the tension of a question or an issue and do not rush to assuage our insecurity with easy solutions. We are all essential parts of this modern world and must exercise our collective creativity to discover orders beyond, new forms of action and exercise our ability to hold a variety of viewpoints in creative tension and mutual respect. David Peat.

The sign of an educated man is one who can hold two contradictory ideas in mind at the same time and continue to function. F. Scott Fitzgerald.

I believe we … need a revolution. We need a mindset change if we are to attain a just and sustainable future. And the revolution must be in our thinking. As Einstein has said, "We cannot solve the problems of today at the level of thinking at which they were first created." Another way of saying it is what one of my psychologist friends said, "Insanity is doing the same thing over and over again and expecting a different result." Jean-Lou Chameau, Dean of Engineering at Georgia Institute of Technology has said, "We need to change the mindsets not just the problem sets" . Anthony D. Cortese

An educated person has the ability to appreciate, learn from, and embrace contradiction, even when we might prefer closure. Peter Salovey.

Introduction

We are living in a period when foundational givens of thought are on the move and when the cosmology that has framed experience in Western societies is unraveling. This is creating a shift in our understanding of reality so fundamental that it undermines many of the bedrock assumptions on which Western consciousness is based.

After an almost 500 year march from medievalism to modernism, during which time we in the West have addressed our desires for knowledge and eased our existential anxieties

through a variously titrated mixture of metaphysics, superstition, natural science, alchemy, theory, and practical knowledge, the world is changing so fast around us that our minds cannot keep up.

It is hard to overemphasize the implications for knowledge in the conceptual revolution that is underway. In the sciences and technology, this shift from a world of Newtonian certainty and predictability to one of quantum uncertainty and chaotic unpredictability comes largely as the logical consequence of discoveries in theoretical physics at the opening of the 20th century and to the development of the mathematics of non-linear systems in 1950s. Taken together these intellectual developments represent a fundamental shift in our way of understanding the world, and as, Peat says, "puts an end to that Enlightenment dream of conquering the world through pure reason."(Peat, 2005.p.5) It also reopens the possibility of dimensions of realities not apprehensible through rationality and objectivity.

There are many ways to think about this great unraveling, with significant implications for scientific research, ethics and philosophy of science, for instance. I would like to explore it as a psychological event—and discuss the simultaneous danger of mental distress and opportunity for consciousness breakthrough or growth. Further, I would like to propose some steps that those of us in the knowledge business—whether inside the academy or outside— might take to avoid possible cultural and psychological meltdown, and instead to enhance the likelihood that humanity will find ways to embrace the learning opportunity offered by its collective existential predicament and cultivate the necessary capacities of mind to live well in an unavoidably uncertain world.

The missing elephant

In the familiar Sufi tale of the blind people groping to try to understand what they have in hand, the point of the story is that the blind seekers can transcend their own partial knowledge and understand the totality of the elephant—the mysterious whole—only if they recognize the partiality of their view point, and can pool their various local knowledge of the parts towards an understanding of the whole. The story presupposes, however, that there is a position—that of the story teller—from where it is possible to know the whole. Furthermore it presupposes that there is already a whole to be known. For reasons much more situational than ontological, we now face a world where as Donald N. Michael once observed, the elephant is missing (Michael 1999). Or more accurately, there are an infinite number of elephants, chickens, spirits, rainbows, concepts, music--potential patterns to be recognized or produced, each an emergent phenomenon of particular participant-subject relationships. And furthermore, the cosmos may well be more vast than we can ever really know.

Lost at sea

No matter the issue—global warming, terrorism, famine, avian flu, the nature of love, the location of a housing development, the existence of being after death or care of aged, once you begin to include into your thinking all the information that could potentially illuminate your subject, you find you must look at technology, science, sociology, folk lore, religion, psychology, anthropology, media, personalities, politics, big picture, up

close, history, current events, future predictions and so on out into an ever expanding universe of relevance. Before you know it, you are awash in a sea of information where the more you learn the less you understand. And despite the availability of sophisticated data- mining techniques and ever more intelligent search engines, the sheer volume of information—good, bad and ugly—coming at us from everywhere, at accelerating speed, in different languages, epistemologies, assumptive frames --sometimes contradictory, sometimes complementary—means that even if we had the most super-duper pattern-recognizing-mega-computers and data-mining techniques with which to process it, we could no longer hope to separate signal from noise to make the kind of sense we used to refer to as truth.

We experience information overload, yet at the same time there is a widening realization of how much we don't know. We need information to understand our information, we don't agree on priorities, discipline, epistemology, metaphysics, metaphors, values. Is global warming a technical problem, moral problem, or a social psychological problem—or no problem at all—and who decides? How much of the context do we include—too much and the signal disappears, too little and we can't join up the dots—in either case, we miss 9/11, and so on. Just a few years ago, the favorite metaphor for life in the age of hyper-rapid information flow was "white water rafting." Increasingly it is "lost at sea."

Uncertainty as the new existential given

Such a world is a fundamentally uncertain world. Gone for ever is the security that for every question there is a single simple answer—even one, as Mencken quipped, that is wrong. Our relentless search for new answers is itself a source of new ignorance, undermining old certainties at the same time as it creates new ones, only to have them disintegrate in turn in the face of new knowledge. Our irrepressible curiosity has brought us finally to a place where we can no longer hope to comprehend our world as a whole and to where we no longer have a basis to trust what we once trusted. Should we trust science for instance? Our doctor? Priest? Tarot reader? Fox News? Al Jazeera? Dreams? Intuition? Logic? Wikipedia? Me? And if so, why?

Powerful times.

Cultural psychologist Richard Shweder has observed that stable communities derive their stability in part from a shared "cosmology"[1], (or "grand narrative") which coherently and convincingly explains to their inhabitants why things are the way they are (Shweder and Bourne 1982). This cosmology includes the interpenetrated and culturally embedded stories, symbols, language, metaphors, beliefs, epistemologies, morality, view of reality, cognitive and emotional routines that make any particular culture. It defines what is sane and what is crazy, what is mature, smart, foolish, good, evil, beautiful, worth striving for, worth living for, worth dying for, is the right way to think, perceive, feel and act. It is the role of the socializing institutions—schools, families, churches, governments,

[1] I use the word "cosmology" to refer to the totality of world view, narrative frames, symbolic landscape, meaning frames, language, logical forms, cognitive schemas, and epistemologies that provide the taken-for-granted assumptions of life in that society.

media—to inculcate these ideas and values into the population. When the cultural consensus breaks down, societies and the individuals in them come unglued.

A shift in cosmology on a scale implied by the end of the Enlightenment dream, taken together with an awareness brought to us by ever present global media, that our cosmology is actually just one of any number of reasonable stories to live by, is highly destabilizing. In the emerging global context , where previously trusted authorities and sources of knowledge, must compete in the information marketplace with literally countless others, we are left with radical uncertainty not only as a theoretical reality, or as a technological limitation, but as an **existential reality.** For a great many of us, this presents us with a serious psychological challenge. As any psychotherapist can attest, an existential challenge can be both threat and opportunity; a source of anxiety and defeat or a spur to transformational learning.

Capacity gap.

Peat (2005) argues that the fundamental complexity and uncertainty of our times requires us to understand that, "*we are all essential parts of this modern world and must exercise our collective creativity to discover orders beyond, new forms of action and exercise our ability to hold a variety of viewpoints in creative tension and mutual respect.*" If he is right, and I think he is, we must ask if we are psychologically prepared for such a task and if we are not, what can and must we do to become so.

As a clinical psychologist and educator, my look at the evidence suggests that while some small percentage of us may have achieved the level of psychological development implied in Peat's statement—which is actually pretty sophisticated—most of us have not and by a long way. We are mostly over our heads, where many of the challenges we face every day require levels of consciousness, habits of mind, and ways of being that are beyond the level of psychological development at which most people are operating. (Kegan 1994).

And I think the evidence suggests that a great many of us are not all coping well with being out of our depth. It is generally accepted in world health circles, for instance, that we are experiencing a global mental health pandemic. The World Health Organisation reports of 2001 and 2002 reveal mounting evidence of the global burden of psychological distress and violence. WHO suggests that by 2020, depression will be second only to heart disease as a source of illness in the world (2001; Organization 2001; 2002) . This shows up in individuals in symptoms of anxiety and depression, self-destructive and violent behavior and it shows up in communities as marginalization, alienation, hopelessness and extremism. Though much of this is due to such factors as war, poverty and other problems, even in advanced and economically privileged societies, mental illness is on the rise. At the level of nations the unraveling shows up as failing states, civil war and repressive regimes (Hannah, 2005).

The Nuffield Trust : UK review of policy futures for health examined the deterioration in "the social context for healthy living", pointing out how stretched people feel when there is "no time for life, no partner for life, no job for life." (1999) In the U.S. the *9/11*

Commission Report, sees people turning to fundamentalism as a source of stability in a world in which many have lost their bearings (National Commission on Terrorist Attacks Against the United States, 2004). The report notes Osama Bin Ladin's appeal to "people disoriented by cyclonic change as they confront modernity and globalisation". Palestinian psychiatrist and human rights activist Eyad Sarraj, describes the evolution of what he calls "a paranoid culture" in the Middle East, where older cultural coherence was destroyed by colonial actions in the region and nothing coherent replaces it (Interview with Tikkun Magazine, February, 2005). In its *Readiness for the Future Index* of 2001 the World Economic Forum states that "social harmony" in a nation is necessary for sustainable competitiveness, but notes that this is deteriorating in many countries (World Economic Forum, 2001).

Perhaps, we should not be surprised about how unprepared we are for the new context of complexity and uncertainty in which we find ourselves. After all, in the West, socializing institutions, especially our educational institutions are still mostly designed with the Enlightenment dream in mind. For all the usual reasons—entrenched interests, bureaucratic inertia, established hierarchies, revered tradition, ideology, and so on, the educational establishment has been highly resistant to fundamental change in its basic commitment to the Western scientific canon and over the last decades science and engineering rule the roost. This is especially true of the universities and colleges that are often "prisoners of their own legacies…trapped in long-established procedures and norms" and where legitimate concerns for quality and accountability approached through the frames of the Enlightenment dream, has lead to an exaggerated focus on metrics, the unintended consequences of which is to freeze innovation and to overload teachers. ((Kelley 2005) p. 212.

Increasingly, higher education as a socializing institution is seen to be failing its students and the societies that support them. Smith (Smith 2004) has suggested that in large measure this is because the curriculum increasingly misses concerns of a generation already living in a post-Enlightenment world, that our schools are organized for failure and that our "industrial model" does not work for the 21st century. In the US, less than 50% of young people actually enter college and only 50% of those leave with a completed degree. The figures for blacks and Latinos are even more distressing. Even those who do graduate do not develop the needed competencies for success in today's work force or for life. In particular, according to employers, they lack the higher order mental capacities such as critical thinking, imagination, analysis of ideas, creativity, expressive skills, and social skills that are now required for success in the most jobs. This misalignment between the curriculum within the academy and the world outside it, will become all the more salient in the not so distant future in which China and India—exposed to European thought relatively recently, and after millennia of seeing the world through radically different frames—become the dominant economies. Inadequate capacity to deal with the inevitable uncertainties of life in a world where Eastern modes of thought have equal standing along side Western, for instance, will leave the West vulnerable, yet in the West, we continue to construct educational programs as if no other forms of thought even exist, let alone have epistemic legitimacy. If a student brings up questions from outside the Western canon such as questions about talking to ancestral

spirits or other non-material beings, for instance, they are still likely to be ridiculed. Singapore, in contrast, has already realized that to be successful in the emerging future, a new commitment to mental formation of its young is required where a far more expanded conception of consciousness guides learning programs. In 1997, the Prime Minister launched the *Thinking Schools, Learning Nation* initiative where emphasis is placed on the ability to function in ambiguous situations, problem –solving skills, creativity, flexibility, new literacies, and self-motivation (1997, Ministry of Education, Singapore) (retrieved at http://www.moe.gov.sg/corporate/mission_statement.htm) .

From these and many similar indicators, it seems obvious that we have come to a place in our development where the inherited ways of thinking and knowing are inadequate to the task at hand.

New minds for new times

In a recent presentation, Walter Anderson, quoted Stewart Brand, who suggested that since we now possess the power to destroy worlds or to transform them, "We are Gods, and we might as well get used to it." (Anderson 2005) If this is true—and I assume he means by this that we now have the kind of responsibility for the future of the planet that was once thought to belong to beings of a higher order-- then it seems to me urgent that we consider what kind of education this unprecedented level of responsibility requires.

Questions arise. What would ensure that enough of us across the various world cultures develop the capacity to hold not just two opposing ideas at the same but many; and to resist the desire for easy certainty and premature closure? What kind of socializing experiences can we invent so we learn to see the world through new eyes and to take in its complexity without becoming overwhelmed by it? What will help us stay "within the tension of a question or an issue" and live in the messiness for longer than is comfortable in order that creative new forms can emerge? What do we need to learn to live in peace and with respect for those we have been taught to see as the "other". In a rapidly moving technology landscape what do we need to teach so that we develop "just in time" technical and content experts who are willing to let go of obsolete information and to continuously learn? What kinds of experiences would help people steward our natural resources, protect the ecosystem that we are part of while at the same time we feed the next few billions of additional people? Can we reclaim lost capacities such as "dream time", communication with animals, and connect to the spirits of a place?

Education for uncertain times.

The mental capacities aimed at in the Western canon reflect those which generations of academicians believe are necessary for success in the industrialized world--objectivity, reason and rationality, linear logic, critical thinking, radical skepticism, secularism, a focus and clarity, either/or dichotomies, sensitivity to difference, preference for fixed categories and sharp boundaries, empiricism, analysis, quantification, self-mastery, enough certainty for confident agency. Obviously, these capacities remain highly relevant in the emerging new world, and need to remain a focus of socialization attention—in schools and outside. In the new world of uncertainty the Enlightenment culture does not evaporate, but rather becomes subsumed within the new world view. The modern,

science dominated world will be with us for the foreseeable future, and we can safely assume that as the developing nations enter the industrialized world they will ensure that some part of the acculturation will involve learning to think in these ways. (Schofer and Meyer 2005).

But the new context of complexity and uncertainty calls for the cultivation of levels of consciousness and habits mind that go far beyond this and success will require new modes of consciousness. Let me briefly, and with some trepidation describe what some of these dimensions of consciousness beyond the modern might be.

We must **learn, or rather relearn,** to view ourselves subjects in a world of other subjects. Though as part of the methodology of science and technology subject-object thought has been immensely productive, it has arguably also brought us to the edge of destruction. With its arms-length relationship to the world, it has severed the deep empathic links our ancestors had with the earth, and with their kin and with other beings. We must reconnect. We need to cultivate intuition and appreciation of the non-rational; not as substitutes for reason and skepticism, but as a complement to them. We need to cultivate both/and thinking, enhance our capacity for holistic perception, gestalt awareness, network logic and pattern recognition. Along with a capacity to focus, we need to be at home with fuzziness and a wide-angle view. We will need to balance a fear that we have not enough information with the problems of having too much. People will need to become comfortable in a world of fluid boundaries, understanding the world as a continuous web of relationally connected integrities. We will need to be able to work at the places where knowledge domains and interests overlap and interact. To make all this work, and to actually be at home in the creative tensions posed by a world in transformation, we will need to make explicit the importance of psychological self-care, emotional maturity and the nourishment of the soul. This means we must recognize *and honor* the important place in most people's lives of what is called religion or spirituality.

If these are the ends to which we strive, what might be some of the approaches to learning and knowing that could provide the means?

There are four holistically interrelated dimensions which educational institutions must rethink—a new mission, new curriculum content, new pedagogy, new modes of inquiry,

I New mission

Firstly, education at all levels needs to rethink its mission in light of the emerging connected world. This mission must go beyond simply providing workers for the global economy. We also need to make it a high priority to cultivate the kinds of people—individuals and collectives—with the necessary scope of awareness and level of mental development to create sustainable systems in which human beings thrive and can co-exist on a fragile planet. ***We must aim at an expansion of or evolution of the modal consciousness of our species***. Anything less, is whistling past the cemetery.
Unless we evolve our ways of thinking to embrace a wider sense of responsibility not only for self, or tribe, but for entire planetary system including its people and other

creatures, nature may well decide that its experiment with *homo sapiens sapiens* should be abandoned.

II New content

- It is obvious that science and emerging technologies will remain crucial. Even in the unlikely event people say no to such galloping technological innovation—which I doubt—we will still need the knowledge to maintain our tools and toys and sustain and improve our quality of life and our environment. But given the rapidity with which old knowledge becomes obsolete and new discoveries are made, curriculum must be more process focused and content needs to be "open source" updated constantly in response to feedback from a changing world.
- New literacies must be added to the existing canon--eco-literacy, information literacy, visual literacy, cultural literacy, spiritual literacy, epistemological fluency are all core capacities in the new context.
- Curriculum must be globalized. This means more than simply learning about other societies. As long as people beyond ones own national boarders are considered "other", vital perspectives on human possibilities will be hidden from view. Global citizens must enlarge who they think of as "we". This will mean learning to put local knowledge into larger perspectives, and bringing a global and multi-perspectival approach to local knowledge.
- Given the inevitability of the "law of unintended consequences", consideration of possible futures must become part of everyday thinking not just of futurists but of everyone who must make decisions—in other words most of us. Futures studies must become a core element of all education and must include awareness of, and responsibility for the short term, medium term and long term future.

III New pedagogies

Not only what we learn but <u>how</u> we learn will need to adapt to the new agendas.

- A shift from a content focus to process focus. From a focus on knowledge as a noun to a focus on learning as a verb. Expertise will still be needed, but the ephemeral nature of information, and the speed with which we must act, means that learning how to harvest information from multiple sources as needed will become more important that accumulating a body of knowledge. Discernment, critical and appreciative appraisal of knowledge all become essential skills.
- Whole person pedagogies will have to be developed that involve experiential activities where theory can emerge from practice.
- If we are to keep our heads in the dizzying world of contradiction and complexity, "inner work" that leads to psychological maturity needs to be part of all learning environments. Such mind development approaches as yoga, psychotherapy, the arts, creativity, meditation, contemplation, self-reflection, will be all be important elements in learning.
- Curriculum most make room for love, emotions, creativity, spirituality and aesthetics, because these all influence how sense is made, how priorities are

set and how the world is interpreted. The Singaporean education ministry recently mandated 30% reduction is "required curriculum" to permit learners and teachers time to think and to process their experience. They believe that if they are to remain innovative, this will require openness to unpredictable, uncontrolled, and emergent experiences.

- More attention must be given to learning about human relationships, group dynamics, and unconscious dimensions of behavior. Since most projects will require collaboration with others who are different, high levels of social competence become essential
- Education must be problem-embracing and case-based, and knowledge and learning derived from attempts to solve real problems.
- We need to provide "cognitive apprenticeships" where learners can be socialized into the tacit dimensions of emerging fields by those who are already in them.

IV New modes of inquiry

- The context of complexity means that we must wean ourselves from our overdependence on positivist science as the only acceptable form of knowledge, and reclaim qualitative, more holistic and even contemplative modes of inquiry.
- We need to emphasize systems inquiry not so that we can control systems, because most of them are too complex to be controlled, but, as Donella Meadows puts it, to "dance with them".(Meadows 2005)
- We need a new emphasis on pattern recognition, learning how to distinguish "signal from noise" and how to navigate the exploding world of "open source" information—Wikipedia, blogs etc.
- We need to go beyond quantification with expanded emphasis on the human sciences such as phenomenology, hermeneutics, appreciative inquiry, action learning, contemplation, scenaric inquiry, ethnography, reflective practice, journalism, symbology, critical inquiry, discernment, meditation.
- We need to further develop approaches to what Nicolescu has called transdisciplinary knowledge production (Nicolescu 2002; Nowotny 2003) in recognition of the fact that in complex problems research is increasingly conducted in its application and its application frequently involves teams from many disciplines, as well as practitioners and lay people. The kind of open process learning referred to as "Atelier learning" (Brown 2005) retrieved at http://ctl.sdsu.edu/pict/JSB_digital_learning.doc) can provide a safe space where errors are embraced and where practical applicability trumps theory.

Age of Innovation

My colleague Eamonn Kelly has said that the world may be entering a "Cambrian explosion" of innovation and experimentation in education and learning (Kelley 2005). We are gaining knowledge of the brain and cognitive and emotional functions at an astonishing rate and this knowledge is already being used in instructional design to enhance learning and performance. We will see "transhuman" mind enhancement

through drugs and various implanted technological mental add-ons very soon (Hughes 2005).

Announcements about innovations in educational delivery models arrive every day. Reports on new ventures--distance learning bringing classes to remote Indian villages by satellite, new business-academy partnerships, Barefoot academies, service learning that takes the academy into the world, apprenticeships and corporate training that tack back and forth between academy and workplace. The boundaries between the research universities and commerce have all but disappeared, prestige institutions band together to create joint programs to satisfy the massive appetite for learning in societies like China and sub-Saharan Africa.

At lower grade levels, educational innovation abounds. Even though hobbled by gargantuan bureaucracies and political wrangling , innovative teachers are gradually introducing systems thinking, group techniques such as "sharing circles" and creativity labs, classes in eco-literacy, digital media production, contemplation (though you cannot call it meditation!) and are increasingly employing the latest research from cognitive science in their instructional design. Adventurous youngsters too, are also part of the innovation--they are blogging, creating their own multimedia of high quality, doing simulations, participating in online role playing games with thousands of players worldwide. Many of these games expand the imagination, requiring intense participation, long attention spans, and the development of sophisticated mental strategies.

Humanity—or at least large parts of it—has faced such inflection points before, where new forms of consciousness have been called for—the shift from the medieval to the modern world for instance, and then later as a result of the industrial revolution. Some societies have thrived, and others have disappeared. The response to the present conceptual crisis must be to embrace the adventure and harness the potential for transformative learning that is implicit in such uncertain times. The stakes are high: If we fail to learn fast enough the world could, as it was in the 13th century, be cast into a *Mad Max* world of violence, craziness and despair. But on the other hand, and it is here that we must aim our efforts, the potential exists that we might use the challenge of these times to learn our way into the future.

If we can provide the supporting structures in education and other socializing institutions to permit us to live in the creative tension of unanswered questions and emergent possibilities, and if new or reclaimed capacities become integrated into our existing forms of knowledge, we may as Peat suggests, *" discover orders beyond."* This could conceivably result in a new stage of human evolution. It seems to me that this should be the goal of education for the global 21st century.

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