

Everything's Alive, The Future is Now

Redding Education Foundation

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“Everything's Alive, The Future is Now.

I'm Bob Moran and welcome to “Every thing's Alive, The Future is Now.

“Why are we here?”

- We're here to examine change and the increasing impact it is having on education, business and society.
- We're here to see how we can make change an ally, not a foe as accelerating change is inevitable, something that cannot be ignored if education is to succeed as we move further into the 21st century.
- We're here to take action, to make education a more relevant and directly responsive to the future of our children. All concerned parties: students, teachers, administrators and parents, are all in this together to shape our destiny and to create a powerful stand for our future.

What are the forces of change?

- If we are to understand the forces of change that education (and society) will that will impact our future, let's just examine the trends in technology that have made and will create the greatest impact in our development as a civilization.

Note: All things political, medical, environmental, sustainable or economic are not factored into these scenarios as no one knows how these variables will impact how tech evolves. Also note this is just a tiny snippit of what is happening in this truly huge collective entity known as technology.

2007: The web is the driving engine for nearly all significant advancements in society as it is the only environment that enables instant communications to anyone in the world equipped with a computer with connects to the web.

- Colleges and universities in 20 countries have posted a majority of their courses on the net. **MIT** has over 1700.
- **Facebook**, a socializing site, has over 34 million high school and college age subscribers and is the fastest growing site in the world.
- MMORPGs **Massively multiplayer online role player games** have over 15 million players as of 2006. Revenues topped \$500 million. And it is the largest ongoing participatory event in history.
- To the average 15 year old today, the notion of a world without the internet is something totally alien to their reality.

2012,: Five years from now, many of our children will be facing a college education.

- Flexible screen displays and solid state memory will transform the cell phone into a ultra portable computer that will be 30-60 times faster, use less power, be instant on and will cost less money.
- Immersive 3D interfaces will become the way people work with the net.
- Virtually all hardware manufactured for personal use will be linked to the net 24/7 because WiMax (a wireless protocol that will replace WiFi) and the 700 MHZ radio spectrum will wire the country (and the world) for the first time as WiMax is measured in miles and the 700MHZ radio spectrum can penetrate walls.
- Needless to say, we will all be connected to the max. (Sprint and Google reference.)

2017: Ten years from today, many of our children will begin raising their own families.

- Computers will be 1000 times faster than today.
- Systems will be embedded everywhere and will be able to talk to one another other as needs warrant.
- Immersive virtual reality and Artificial Intelligence will be ever present and wearable systems will be woven into clothes, connected 24/7 to the net.
- Individual portable computers will become an interesting artifact of the past while the Semantic web goes live.
- Robots and nanotech constructs make their grand entrance as we begin to build a smart planet.

2027: Twenty years from now, many of our children will be facing the advanced education of their own children, your grandchildren.

- Predictions get hazy as we approach the singularity, where technology accelerates so fast that predicting the future becomes virtually impossible.
- For starters, systems will be approximately a million times faster than the computer of today.
- The form factor of computers will be endless in size, shape and function and strong AI entities will inhabitant every part of cyberspace.
- The cost of personal systems will be measured in pennies and people and AI bots will communicate with each other in effortless fashion.
- In effect, the smart planet is on line and talking with us.

2037: - Thirty years from now, our children will be approaching our own age today, thinking about the futures of their own children....just as we are doing right now.

- The average personal computer will be millions of times smarter than a human being
- Fossil fuel will decline as natural supplies show evidence of depletion.
- The pace of change in technology will certainly out pace the ability of human beings.

What is the IMPACT OF CHANGE?

- After this brief window into the future regarding the direction of technology, it's time to talk about the IMPACT that this change will have on human beings and our civilization. What impact does this accelerating rate of change in technology have on our ability to shape our destiny.
- Murry Christensen,
 - an expert on technology and elearning, is a person who has successfully integrated learning with technology at the highest levels for global companies such as Goldman

- Sachs and JetBlue Airways.
- He is co-author of two books on education and
- A regular speaker as a member of the **Maisie Learning Consortium**, an organization recognized as a leader in the world of on line education
- A contributor to Siggraph, the premier conference for computer imaging.
- It gives me great pleasure to introduce my good friend, Murry Christensen – applause

EVERYTHING's ALIVE

The future is NOW

BM: Welcome Murry. Let's start at the beginning: What do you mean when you say "everything is alive." Is that just a clever metaphor?

MC: Well, it's sort of metaphor and also an onrushing reality. Let's talk about the reality first. You laid out much of the background in the introduction. It's clear that we're moving processing, data and connectivity down and down into the ecosystem. Think about it: we've got lots of smart objects, each of which is a unique individual, all connected to each other. And sitting behind that is a phenomenal amount of processing power...the new Google computing center is located near the Columbia River/Bonneville Dam complex. Why? In order to feed its huge power needs. That's the reality.

BM: And the metaphor?

MC: The metaphor goes like this: When I say "everything is alive," what I mean is we'll be pretty soon be living in a world in which any object of interest has awareness of what it is, knowledge of the context in which it operates, and some social connectivity. These characteristics used to be restricted to higher animals. We used to think of non-human actors as outside this ecosystem. That's going to change...and sooner than we think.

BM: We've talked any number of times about the ways that literature and art lead the way to technological change, both in the sense of leading the way people think about possibility and as a way of understanding where we're going. In particular, you seem intrigued by the ways in which literature has helped to define the ways we think about the future.

MC: One of my favorite quotes is from Alan Kay, one of the early designers at XEROX PARC and Apple, who said, "The best way to predict the future is to invent it." I think he meant it in a slightly more hands-on way, but I'm struck by the way that a couple of modern fiction authors have led the way to opening up new ways of thinking about technology that, you can argue, created the future we're living in today. For context, I think of it in three generations:

The first generation was defined by Wm. Gibson's novel *Neuromancer*. Won lots of awards, generated boatloads of buzz, and defined the term "cyberspace." In this generation, what we've come to think of as the data world is abstract, organizational, non-representational, what he calls a "shared hallucination." Gibson's cyberspace is a world that visual artists have to represent for us...it's a literary construct. There's no way to ground it in physical reality

BM: So it's essentially a world distinct from our own?

MC: Exactly. Generation two is defined by the idea of a *metaverse*, a kind of parallel world, one that mimics the appearance of the world we live in day to day, but that gives us control over things like the laws of physics. Neal Stephenson's novel *Snow Crash* is the model for this version of the relationship between dataspace and physical reality. There's lots of buzz right now about the virtual world called Second Life. That's almost a direct lift from *Snow Crash*...the people who built and run Second Life, Linden Labs, acknowledge the lineage. So think about what Hollywood would call the "arc" of the story. We've started with an abstract data world, disconnected from First Life. Now we're at Second Life, a manipulable mimic of our reality.

BM: So what's next? There has to be a next.

MC: Oh, there's always a next. I think to get in touch with the current state of things we have to go back to Gibson. His new novel, *Spook Country*, begins to meld the virtual and the real. He uses the term "everting the internet" to describe this new generation thinking. Now we're overlaying the two worlds, we're fusing dataspace and realspace. This is accomplished through things like GPS technologies.

BM: So this new generation internet is another way of looking at a future in which everything is alive?

MC: Yep. The two are different perspectives on a single fact: physical reality and data reality are increasingly mixed together, in ways that give us a new view of reality.

BM: OK, so let's go there. This is an educational forum. What does all this mean to the educational enterprise? Other than intellectual interest, what does this tell the audience about what to do on Monday?

MC: This is the part I get passionate about. Here's how we can change the world...by the way, the world's going to change regardless of what we do. So, as the man says, "make change your friend, you don't have a choice."

A disclaimer before we dive in: my background is in adult education, most particularly corporate education. What that means is that I get paid for making people more productive on the job. Productivity, leadership, compliance, competence: these are the topics I deal with daily. I've studied Sophocles, but I don't teach Sophocles. Beowulf, Wittgenstein, Shakespeare, Robbe Grillet, JG Ballard...all things I love, but not part of this conversation.

BM: Granted. So given what we've talked about so far, where do we go?

MC: So, if you accept the "world is alive" metaphor, what are the consequences? A drop into learning theory for a second. Apologies to the trained IDs, this is shorthand. There are two primary learning theories: pedagogy and andragogy.

Pedagogy is the theory behind childhood education. Cutting out lots of details, the assumption is that children are receivers of pre-packaged learning, with the teacher as authoritative source of wisdom.

Androgogy is the parallel theory about how adults learn. In shorthand again, the relationship between teacher and learner is more collegial. The learner is an active participant in learning activities. They

need to know that learning is important and that they have some control over the course of the learning.

All well and good and well accepted. But there's a problem buried in this articulation. One I confront more and more often. It's this: in a rapidly-evolving world, how can I, as an educator, stay ahead of the needs of my audience? How can I even know what problems they confront in job performance, forget how to help them to address them?

Here's the proposal, what all the previous has been building up to. We need a new view of how learning occurs in the context of the world we live in, today. For today's discussion, how does learning change in a world in which everything is alive...and therefore a potential partner in the learning experience?

BM: OK, I follow the argument so far, but what does that lead us to? What do we need to do differently?

MC: Simply put, we need a new theory of learning. There's no current terminology for this, so bear with me for a second.

If pedagogy provides guidance on how children learn, and androgogy helps us to engage adults in learning in a traditional setting, what can we say about learning in a radically speeded-up, decentralized environment? Especially one in which the world itself can participate in the experience?

BM: So how do we begin to think about this new learning theory?

MC: For the sake of discussion let's call it "Autogogy". Nice word, now what does it mean? For me it means radical self-sufficiency in learning. As an individual in this fluid world I'm closer to the career decisions I confront than anybody else. By the time that need gets sent up the system and the solution comes back down, it's too late to be effective...way too late. I, the learner, need to be the driver, the leader, in my personal career learning. I need to own it and I need to make the crucial decisions because I'm going to live with the consequences.

Or we could call it "Nanogogy" in recognition that the learning will be constructed out of hundreds of tiny learning vents, not large structured curricula. This is bottom-up, learner-driven, perpetual learning. If you ask corporate audiences what tool they turn to first when they need to learn about something, the answer is overwhelmingly Google.

BM: And what does this say about the educator to learner relationship?

MC: I think it means that the educator becomes a servant of the learner. It means we educators—myself included—have to think about becoming editors, not leaders. Currently, I'm drawn to the newsroom model of learning. In a newsroom, the editors provide direction, organization and quality control. They don't make judgments about what an individual reader will find important. They set an overall tone—think about the Wall Street Journal vs. the New York Times—but they report the same basic universe of news.

In the future I think learning will be consumed like news is increasingly being acquired today: grazing, self-constructed, and driven by the end-consumers view of importance. I know that bothers people,

especially people who have been trained in what they've thought of as the integrity of the learning experience.

BM: The bottom line?

MC: I'm arguing that in the next 5-20 years the educator's job is to provide resources and the meta-skills that allow those resources to be used by the learner, in service of the learner's individual goals. We need to teach people how to learn, not to learn any specific body of knowledge. And the largest and hardest of those skills will be to learn how to take responsibility for your own life as a career, living as a professional, no matter what your job description might be.

BM: That's a pretty large order.

MC: We've got pretty large problems to deal with, so the remedy ought to match the scale of the problems, don't you think?

NOTES:

Pictures should be illustrative, not literal. Except in specific cases, like the internet discussion. The real pictures don't matter, but should reinforce, support, contradict the argument.

LINKS/REFERENCES:

<http://robinsloan.com/epic/> - 2014, future of news

http://www.ksg.harvard.edu/presspol/carnegie_knight/creative_destruction_web.pdf

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