Alternative Futures

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Institute for Alternative Futures

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Upcoming Events:

Capturing the Imagination of the Digital Native, Futurist Craig Bettles to speak at the Longwood Garden Graduate Program Symposium March 9th in Kennet Square, PA.

Consumer Access to Advances in Biomonitoring and Health Coaching, IAF Founder and Chairman of the Board Clem Bezold at the conference on Consumers Direct Access to Health and Retailization May1st, 2007 in Las Vegas, NV.

Wiser Futures: Using Futures Tools to Understand and Create the Future, IAF Founder and Chairman of the Board Clem Bezold along with Futurists Craig Bettles and Devin Fidler will conduct this workshop at the 2007 World Futures Society Annual Conference on July 29th in Minneapolis, MN.

Imaging's Surprising Success, the 2006 Caldwell Lecture by IAF President Jonathan is available here as a webcast on the American Roentgen Ray Society website.

Florida Explores Technologies for Sustainability

The Century Commission, created by the Florida Legislature and appointed by key state leaders, called on the Institute for Alternative Futures (IAF) to identify emerging technologies most important for creating a sustainable future in Florida. IAF focused their report to the Century Commission on the greatest long-term threat to Florida's sustainability - global warming. IAF Founder Clem Bezold and IAF Senior Fellow Bob Olson presented their findings at the Century Commission's February 4-5 meeting.

Olson categorized the possibilities for the Century Commission by saying "dramatic technological progress to reduce energy use is possible by 2050, if it is set in motion in our generation. The fundamental scientific, technical and industrial know-how to solve the climate problem for the next 50 years either already exists or is easily in reach."

IAF's report observes that changes in behavior can play a part in meeting the climate challenge. However, technological change to use energy and other resources much more efficiently is by far the biggest element of the climate solution. The technical changes needed to stabilize the climate are much larger than most people realize, but they are feasible and taken together constitute a Next Technology Revolution that will take us to a far more advanced technology.

Many of the technologies of the Next Technology Revolution already exist and are ripe for widespread use. Some examples include smart grids and smart metering for power utilities to effectively price peak and non-peak electricity use, precision agriculture to reduce water and power use and greater use of hybrid cars. Other technologies are on the near horizon including more efficient and cheaper solar cells using nanotechnology and new enzymes for converting cellulose to ethanol.

The IAF report contained a number of conservative forecasts that show the probable impact of climate change on Florida if the technologies of the Next Technology Revolution are not adopted. By 2100, there will be a 23 to 30 inch rise in sea levels as well as an increase in the heat index by 8 to 15 degrees. Faster than expected melting of the Greenland ice sheet currently underway, methane being released by thawing tundra and other factors than cannot yet be reliably quantified could produce a rise well beyond this conservative forecast. Virtually every sector of Florida's economy will suffer if we fail to respond forcefully to limit global warming.

- Florida's coastal cities will be forced to make enormous expenditures for building seawalls and other flood control structures.
- The rise in the heat index will make Florida a less desirable place to live and will cause increases in heat stroke and other health problems.
- Florida is likely to lose significant amounts of beachfront property and suffer much greater storm damage from more powerful storm surges and hurricanes.
- Insurance costs will soar and insurance companies will increasingly refuse to provide coverage in vulnerable areas, or the state as a whole.
- Agriculture in Florida will see a short term benefit followed by longer period of drought and a loss of agricultural productivity.
- Coral bleaching from warming sea water could have devastating impacts on both sport and commercial fishing.

Olson also reviewed what other US states are doing to reverse global warming and the options for Florida. Eleven states have enacted Greenhouse Gas emission targets. Another five states have enacted either emission caps or offset requirements for power plants. Twenty-two states and the District of Columbia have set targets for renewable energy as part of their energy portfolio. As one of the leading US states producing greenhouse gases, Florida has significant opportunities to play a role in reversing global warming.

IAF's preliminary report to the Century Commission has been included in the appendix in the First Annual Report. You can read the report here at the Century Commission for a Sustainable Florida website.

WEB 3.0 Coming to a Computer Near You

IAF President and Senior Futurist visited the head spinning world of the Semantic Interoperability Community of Practice (SICoP) February 6 for a discussion of Web 3.0. This new version of the web promises even more change in the way people work, shop and interact with each other. A variety of presentations and conversations from the SICoP Conference provide a glimpse of what is coming into our world.

IAF looked at this potential during its 2029 Project: Achieving an Ethical Future in Biomedical R&D. In this report, Peck forecast a knowledge

revolution would soon transcend and include the information revolution. In many respects, this forecast is affirmed in the exciting advances already underway in Web 3.0. According to participants at the SICoP Conference, this future may be closer than IAF anticipated.

Search engines have become a familiar part of our work and social life. The next generation of search engines will be "data resource awareness engines" that help us put data into the most useful context for creating knowledge. These new engines will help to overcome the common problems of search engines giving us information we do not want or missing information we do want. These engines will place information in the context of knowledge. These new engines are the first step to "knowledge interoperability."

Projects today are showing that "knowledge interoperability" is at hand. We can get knowledge abstracted from a large number of documents; combine it with logic and language so it is then available as a knowledgeable answer to a question. The key difference between engines with "knowledge interoperability" and current technology is the creation of context. By creating context around the information received, we can create more useful knowledge for any given query.

The infrastructure for this new Web 3.0 capability has been expanding in places most of us know little about. For example, WordNet has been growing an understanding of the English language and the many relationships between words. This creates an ability to provide precise words for topics, for example, knowing whether the word "bar" refers to where we go for drinks or the metal we pry things open with. WordNet provides a large electronic dictionary of content words organized by meaning rather than sound so that they can be used for machine translation and other applications.

An educated human uses 40,000 to 60,000 words per day to express an even larger number of concepts. WordNet now has 120,000 concepts stored. Companies like CYCORP can access WordNet to add concepts--they advertise they now have 300,000 concepts and are adding more from Wikipedia, which has 1.6 million concepts. As the density of these stored concepts increases with more links and new relationships formed, WordNet can "bootstrap machine applications to approximate human intuition," according to Christiane Fellbaum, who heads up WordNet at Princeton.

The intelligence community and large companies are using WordNet with ontologies. John Prange of Language Computers explained. "An ontology provides a skeleton while semantic relations create the musculature for a knowledge base." The intelligence community can query the knowledge base his company created using axiom generators and other logic tools to select best answers to questions. It now takes twenty to forty-five seconds to get these answers due to computational speed limits, but this should change given recent developments in computer chips.

We humans are naturally curious about how computers answer our questions. Today's state of the art is to use logic, but future decision-making tools will incorporate new software capabilities that come closer to human thinking processes. Michael Witbrock from CYCORP anticipates. "In the future we will handle ambiguity with probabilistic reasoning." Humans are better than computers at dealing with ambiguity today, but we are not always so good at probabilistic reasoning. The new field of neuroeconomics, which uses brain imaging to study economic decision making, shows we humans could use the help coming from computers.

Web 3.0 can give the public access to decision support tools that can improve more than just the investment decisions we make. All kinds of decisions that need probabilistic thinking--from which route to take through congested areas to which medical treatment is best--could improve when people have direct access to knowledge. Our technologies are extending rather than replacing human intelligence. The societal and business implications will be quite large.

IAF will continue to work and gain a broader, deeper understanding of implications from the emerging knowledge revolution. This work began over two decades ago with the publication of The Information Millennium and has continued through The 2029 Project as well our most recent projects. Our 1986 report forecast fundamental changes that may come with the widespread adoption of technologies that are as powerful as the written word. These technologies can change patterns of thought as people use them. Basic concepts such as causality may expand, for example by incorporating mutually causal processes that form causal loops. Even the perception of time may change. IAF anticipates how we learn about science, health and the larger environment is entering a new phase just in time to address the problems we face in the 21st century.

IAF Internship Program Welcomes Lauren Cryan

IAF is continuing its internship program in 2007 by welcoming Lauren Cryan. Cryan is interning under the direction of IAF Founder and Chairman of the Board Clem Bezold. She will be involved in conducting research and other activities for the DRA Project - IAF's multi-year, multi-stakeholder project to identify the most promising advances for bringing health gains to the poor and underserved and accelerating the development and deployment of these advances to reduce disparities.

Cryan is currently working toward a Masters of Public Administration at George Washington University. She is a 2005 graduate of the University of Virginia with a BA in Art History. Cryan has worked as an assistant program director at the University of Virginia Art Museum, communications intern at ATO Records and research intern at the National Museum of Natural History.

Institute for Alternative Futures, 100 North Pitt Street, Alexandria, Virginia 22314
(703) 684-5880 Fax (703) 684-0640 Map to IAF

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