SAP.
R&D.
WAIT AND SEE.

When the world’s leading companies depend on your software to run their businesses, it’s not enough to know what they need today. Just as important is knowing what they need tomorrow and far into the future. That’s why SAP spends over a billion dollars each year on advanced R&D. Our commitment to meeting future customer needs is just one of the many reasons enterprises around the world turn to SAP to improve customer relationships, enhance partner collaboration and create efficiencies across their supply chains and business operations.
Dear Change Leader,

We live in extraordinary times. Scientific, technological, and business innovations have never been more rapid, and legal, social, human development, and security issues never more important. Miniaturization, virtualization, Moore’s law, networks, databases, and automation continually enable us to “do more, better, with less.” Service and intangibles are becoming the new economy. Globalization, transparency, open source, self-organizing collaboration, ERP, CRM, and continual process reengineering are redefining business. Meanwhile rising social complexity, entitlements, outmoded educational systems, and ballooning health care costs make domestic social change increasingly challenging.

Science, technology, business, and the people behind them drive accelerating change. Yet for every success there are fifty failures. Side effects to be remedied. Accidents to be prevented. Underdeveloped and premature ideas. Solutions for nonexistent problems. Technologies that are more hype than reality.

The Conference
If information overload is our greatest problem, creating strategic foresight is our best solution. What kind of world do today’s leading thinkers see emerging? What personal and institutional future are you striving to create? Where do you find the key idea, process, or tool that will take your enterprise to the next level of global value?

AC2005 is a forum for exploring our rapidly changing times. Each year we cover multidisciplinary trends and strategic implications of accelerating change, highlighting a number of today’s most dynamic and creative leaders and processes of change. AC2005 presenters and topics are likely to have great impact on our global, national, cultural, and personal futures. This groundbreaking event is a must for individuals interested in staying abreast of the most important issues of our time. *Accelerating Change* offers three main benefits:

- a community of exceptional, pragmatic, technology-aware attendees,
- foresight into present and coming accelerating developments, and
- strategies for navigating today’s complex sociotechnological landscape.

The conference is becoming nationally known as a place that networks practical, future-oriented individuals with diverse backgrounds yet a common desire to greatly improve the human condition while respecting our natural environment. Attendees have the curiosity, capital, and commitment to effect positive transformative change, and in general seek balanced, global, and inclusive paths of technology development.

AC2005 provides guidance for discriminating between chaotic evolutionary and predictable developmental change, for understanding the unprecedented speed and potential of today’s computation- and communication-driven technologies, and for choosing intelligent paths through the thicket of information, options, and technological innovation. With its high caliber of speakers, attendee networking, and the broad relevance of its carefully chosen dialogs, AC2005 has the potential to be a landmark experience.

Thank you for joining us at Stanford.

John Smart
President, ASF
## Conference Schedule

### FRIDAY, September 16

<table>
<thead>
<tr>
<th>TIME</th>
<th>ACTIVITY</th>
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<tbody>
<tr>
<td>8:00 AM+</td>
<td>Tutorial Registration at B-Level of Gates Building, Stanford University</td>
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<tr>
<td>9:00 - 4:30 PM</td>
<td>Tutorials (optional, separate fee) run concurrently at Gates Building, Stanford University (No-Host Lunch, Noon - 1:30PM)</td>
</tr>
<tr>
<td>6:00 PM+</td>
<td>General Conference Registration/Check In at SAP Labs, Palo Alto</td>
</tr>
<tr>
<td>6:00 - 9:00 PM</td>
<td>Friday Reception, Tech Night at SAP Labs, Palo Alto</td>
</tr>
<tr>
<td>9:00 PM+</td>
<td>Optional No-Host Dinners Near Stanford</td>
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### SATURDAY, September 17

<table>
<thead>
<tr>
<th>TIME</th>
<th>SPEAKER/ACTIVITY</th>
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<tbody>
<tr>
<td>7:30 AM+</td>
<td>Registration/Check In at Tresidder Union, Stanford University (bagels, coffee, &amp; tea provided)</td>
</tr>
<tr>
<td>8:30 - 9:00</td>
<td>John Smart, ASF, ASF Introduction to Accelerating AI and IA: Keynotes</td>
</tr>
<tr>
<td>9:00 - 9:45</td>
<td>Vernor Vinge, Mathematician-Author, A Fire Upon the Deep AI and IA: Signs of Accelerating Change</td>
</tr>
<tr>
<td>9:45 - 10:35</td>
<td>Ray Kurzweil, Kurzweil Technologies, Author, The Singularity is Near AI and IA: Where We Are and Where We Can Be</td>
</tr>
<tr>
<td>10:35 - 10:50</td>
<td>MORNING BREAK (coffee &amp; tea provided)</td>
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<tr>
<td>10:50 - 12:20</td>
<td>Artificial Intelligence – Panel</td>
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<tr>
<td>10:50 - 12:20</td>
<td>Prospects for AI</td>
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<tr>
<td>10:50 - 12:20</td>
<td>Neil Jacobstein, Chair, Innovative Applications of AI 2005; CEO, Teknowledge</td>
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<tr>
<td>10:50 - 12:20</td>
<td>Patrick Lincoln, Director, Computer Science Lab, SRI International</td>
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<tr>
<td>10:50 - 12:20</td>
<td>Peter Norvig, Director of Search Quality, Google; Author, Artificial Intelligence: A Modern Approach (the world’s leading textbook in AI)</td>
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<tr>
<td>10:50 - 12:20</td>
<td>Bruno Olshausen, Director, Redwood Center for Theoretical Neuroscience</td>
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<tr>
<td>12:20 - 1:40</td>
<td>LUNCH - No Host (Open Space/Birds of a Feather*)</td>
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<tr>
<td>1:40 - 2:40</td>
<td>AI - Future Maker Breakout Panels</td>
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<tr>
<td>1:40 - 2:40</td>
<td>Educating Our Machines</td>
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<tr>
<td>1:40 - 2:40</td>
<td>Bruno Haid, System One</td>
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<tr>
<td>1:40 - 2:40</td>
<td>Marcos Guillen, Artificial Development</td>
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<tr>
<td>1:40 - 2:40</td>
<td>Shrinking the Planet</td>
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<tr>
<td>1:40 - 2:40</td>
<td>Peter Barrett, Microsoft IPTV</td>
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<td>1:40 - 2:40</td>
<td>Scott Rafer, Feedster</td>
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<tr>
<td>2:40 - 3:10</td>
<td>Artificial Intelligence - Breakout 1</td>
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<tr>
<td>2:40 - 3:10</td>
<td>Harold Morowitz, Author</td>
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<tr>
<td>2:40 - 3:10</td>
<td>Living Cells and Self Replicating Bots: Nanoscience and Biology</td>
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<tr>
<td>2:40 - 3:10</td>
<td>Robert Hecht-Nielsen, Computational Neurobiologist (via videoconference)</td>
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<tr>
<td>2:40 - 3:10</td>
<td>Associational AI and Cognition</td>
</tr>
</tbody>
</table>
### General Information

#### Artificial Intelligence - Breakout 2
3:15 - 3:45
- **David Fogel**, Natural Selection Inc.; Author, *Blondie 24: Evolutionary Computation*
- **John Udell**, Info World
  *Google Maps as Expert Systems*

#### Artificial Intelligence - Breakout 3
3:50 - 4:20
- **Esther Dyson**, CNET
  *The Accountable Net*
- **Terry Winograd**, Stanford Univ.
  *Interface Intelligence*

4:20 - 4:30 AFTERNOON BREAK

4:30 - 5:00 Topics in Artificial Intelligence (Audience-Chosen)
5:00 - 5:30 Topics in Intelligence Amplification (Audience-Chosen)

#### Artificial Intelligence - Debate
5:30 - 6:15
*Progress in Search: A Conversational User Interface by 2015?*
- **Sibley Verbeck**, StreamSage (Moderator)
- **Ron Kaplan**, Fellow, ISTI at PARC; Principal, CSLI, Stanford
- **Jan Pedersen**, Chief Scientist for Search and Marketplace, Yahoo!

6:15 - 8:00 COLLECTIVE INTELLIGENCE DINNER - Provided (Open Space/Birds of a Feather*)

8:00 - 9:00 On The Tip: Audience Issues, Projects, Solutions

9:00 - 9:15 **Jerry Paffendorf**, ASF
  *Introduction to Explorations: Brave New Virtual Worlds*

### Explorations I - On the Crest
9:15 - 10:15
- **Joichi Ito**, Neoteny
  *Future of Blogging*
- **Cory Ondrejka**, Linden Lab
  *Why Gamers Will Save the World*

### Explorations II - On the Horizon
10:15 - 11:15
- **Jamais Cascio**, WorldChanging
  *Personal Memory Assistants*
- **John Smart**, ASF
  *How to Be a Tech Futurist*

### SUNDAY, September 18

<table>
<thead>
<tr>
<th>TIME</th>
<th>SPEAKER/ACTIVITY</th>
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| 7:30 - 8:00 AM | **Morning Meditation** (optional), Sequoia Room, Tresidder Union  
  Led by Sr. Denise Lawrence, Brahma Kumaris WSO (tentative) |
| 7:30 AM+      | Lounge Conversation, **Tresidder Union, Stanford University** (bagels, coffee, & tea provided) |
| 8:00 - 8:30 AM | **Mark Finnern**, ASF Board Member; Collaboration Manager, SAP Developer Network  
  *Introduction to Intelligence Amplification*              |
### General Information

<table>
<thead>
<tr>
<th>Time</th>
<th>Event</th>
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<tbody>
<tr>
<td>8:30 - 9:15</td>
<td><strong>Intelligence Amplification - Keynotes</strong></td>
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<tr>
<td></td>
<td><strong>Tom Malone</strong>, MIT Sloan</td>
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<td></td>
<td><em>The Future of Work</em></td>
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<tr>
<td>9:15 - 9:45</td>
<td><strong>Dileep George</strong>, Numenta (tentative)</td>
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<td></td>
<td><em>New Models in Neural Science</em></td>
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<td>9:45 - 10:30</td>
<td><strong>Daniel Amen</strong>, MD, Amen Clinic</td>
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<td></td>
<td><em>SPECT and the Future of Mental Health</em></td>
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<tr>
<td>10:30 - 10:45</td>
<td><strong>MORNING BREAK</strong> (coffee &amp; tea provided)</td>
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<tr>
<td>10:45 - 12:00</td>
<td><strong>Intelligence Amplification - Panel</strong></td>
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<td></td>
<td><em>Education: Rebuilding or Bypassing our institutions?</em></td>
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<td><strong>Ruzena Bajcszy</strong>, Center for IT Research in the Interest of Society, UC Berkeley</td>
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<td><strong>Robin Raskin</strong>, Digital Mom, Author, <em>Raising Digital Kids</em></td>
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<td></td>
<td><strong>Sr. Denise Lawrence</strong>, Brahma Kumaris World Spiritual Organization (tentative)</td>
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<td></td>
<td><strong>Shun-je Ji</strong>, Editor, <em>Journal of Futures Studies</em>, Tamkang University, Taiwan</td>
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<tr>
<td>12:00 - 12:30</td>
<td><strong>Intelligence Amplification - Breakout 1</strong></td>
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<td></td>
<td><strong>T. Colin Campbell</strong>, Cornell U.</td>
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<td></td>
<td><em>Changing the World one Bite at a Time: The China Study</em></td>
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<td></td>
<td><strong>Beth Noveck</strong>, NYU Law</td>
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<td></td>
<td><em>Peer to Patent: Collective Intelligence for our Intellectual Property System</em></td>
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<tr>
<td>12:30 - 2:00</td>
<td><strong>LUNCH</strong> - Provided + <em>(Open Space/Birds of a Feather</em> &amp; <em>&quot;How to Start a Future Salon&quot;)</em></td>
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<td>2:00 - 3:00</td>
<td><strong>IA - Future Maker Breakout Panels</strong></td>
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<td></td>
<td><strong>Building the Metaverse</strong></td>
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<td><strong>Philip Rosedale</strong>, Linden Lab/ Second Life</td>
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<td><strong>David Smith</strong>, Croquet</td>
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<td></td>
<td><strong>Small, Smart, Open</strong></td>
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<td><strong>Steve Jurvetson</strong>, DFJ</td>
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<td><strong>Blake Ross</strong>, Firefox</td>
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<tr>
<td>3:00 - 3:30</td>
<td><strong>Intelligence Amplification - Breakout 2</strong></td>
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<td><strong>Peter Thiel</strong>, Clarium Capital</td>
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<td><em>Financial &amp; Social Innovation</em></td>
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<td><strong>Janna Anderson</strong>, Elon U/Pew Internet</td>
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<td></td>
<td><em>Imagining the Internet</em></td>
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<td>3:30 - 3:45</td>
<td><strong>BREAK</strong></td>
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<td>3:45 - 5:15</td>
<td><strong>Plenary Semicircle - Closing Discussion</strong></td>
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<td><strong>Next Up: Take-Home Thoughts</strong></td>
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<td><strong>George Gilder</strong>, <em>Gilder Technology Report</em></td>
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<td><strong>Joichi Ito</strong>, Neoteny</td>
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<td></td>
<td><strong>Steve Jurvetson</strong>, DFJ</td>
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<td></td>
<td><strong>Rudy Rucker</strong>, Computer Scientist, Author</td>
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<td><strong>Cecily Sommers</strong>, PUSH</td>
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<td></td>
<td><strong>Beth Noveck</strong>, NYU Law (tentative)</td>
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<tr>
<td>5:15 - 5:30</td>
<td><strong>Alex Lightman</strong>, IPv6 Summit</td>
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<td><em>Globalization to the Edge</em></td>
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<td></td>
<td><strong>John Smart</strong> and <strong>Iveta Brigis</strong>, ASF</td>
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<tr>
<td></td>
<td><em>Closing Remarks</em></td>
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<tr>
<td>5:30 PM +</td>
<td>Lounge, Optional No-Host Dinners Off Campus at 6pm</td>
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*Open Space/Birds of a Feather*

<table>
<thead>
<tr>
<th>TIME</th>
<th>ACTIVITY</th>
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<tbody>
<tr>
<td>Last Half Hour of Saturday Lunch</td>
<td>Want to form your own interest or discussion groups? Schedule your own presentations? The best times for this are during the last half hour of Saturday and Sunday Lunch, Saturday Dinner, Saturday after 9pm for formal presentations, and Sunday after 5:30pm (a local restaurant would be ideal for this latter time, as the conference rooms will be disassembling).</td>
</tr>
<tr>
<td>Last Half Hour of Sunday Lunch</td>
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<tr>
<td>All of Saturday Dinner</td>
<td>You can easily form small groups at your dining table (our tables seat eight, and we will have table signs available for your use), in the lobby, on the patios, or anywhere else you choose. If you have a laptop and slides, presentation facilities (screen and LCD projector) are available in the Cypress Room on <strong>Saturday after 9pm</strong>. Email us if you’d like to schedule this room for 30 or 60 min blocks from 9pm to midnight. Feel free to simply use your laptop in the lobby or out on the patios for impromptu presentations as well, at any time—AC2005 exists for your benefit.</td>
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<tr>
<td>Saturday after 9pm</td>
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<tr>
<td>Sunday after 5:30pm</td>
<td>Post your topic, time and meeting location on the <strong>Birds of a Feather Bulletin Board</strong> in the Lobby and let the flocking begin!</td>
</tr>
</tbody>
</table>
Conference Themes & Subthemes

Artificial intelligence ("AI"), broadly defined, improves the intelligence, capacity, and autonomy of our technology. Intelligence amplification ("IA") empowers human beings and their social, political, and economic environments.

Speakers emphasize a mix of analysis, forecasting, and action plans and examples, using multidisciplinary inquiry and a synthesis of technical, entrepreneurial, and social development dialogs.

**AI subthemes addressed:**
- Algorithmic Intelligence
- Architecture Intelligence
- Data Intelligence
- Distributed/Embedded Intelligence
- Evolutionary/Biomimetic Intelligence
- Interface/Agent Intelligence
- Locational/Spatial Intelligence
- Linguistic Intelligence
- Nano/Miniaturization Intelligence
- Network Intelligence
- Robotic Intelligence
- Systems/Emergent Intelligence
- Virtual Intelligence

**IA subthemes addressed:**
- Artistic/Creative/Cultural Intelligence
- Cooperative/Collective/Democratic Intelligence
- Competitive/Enterprise Intelligence
- Economic/Financial/Investing Intelligence
- Education Intelligence
- Environmental Intelligence
- Foresight/Forecasting Intelligence
- Health and Wellness Intelligence
- Innovation and Tech Transfer Intelligence
- Intra- and Interpersonal Intelligence
- Media/Communications Intelligence
- Political/Policy Intelligence
- Security/Crime Intelligence
- Spiritual/Ecumenical Intelligence

We've done our best to curate approximately half AI and half IA speakers for AC2005. Several of our change leaders will address multiple subthemes during their presentations.

The Accelerating Change conference is a production of the nonprofit Acceleration Studies Foundation (ASF). We are a growing community of 3,100 future-oriented technologists, entrepreneurs, industry, institutional and government leaders, academics, scientists, strategists, humanists, and others interested in better understanding and guidance of accelerating planetary change.

More about *Accelerating Change*

*Accelerating Change* is the premiere conference exploring the opportunities and challenges of accelerating technological change. Our conference exists to network and inform the most broad minded, future-aware, practical and passionate change agents, both presenters and participants. Each year we collectively consider the staggering changes occurring on our increasingly intelligent planet.

In today's fast-paced technological environment, understanding and guiding accelerating change involves a new way of thinking, learning to see the most powerful and broadly applicable innovations, processes, trends, and physical efficiencies, and discovering where, when, and how to harness those to create value in the modern world.

Each fall at Stanford University, *Accelerating Change* brings together world-class speakers and attendees to discuss today's most important trends in the science, technology, business, and social development of accelerating change. Think Emerging Technologies (O'Reilly, MIT) but with a bigger picture, longer-term, strategic scope.

Speakers present a mix of analysis, forecasting, and action items, with multidisciplinary inquiry and a synthesis of technical, entrepreneurial, and social development dialogs. *Accelerating Change* meta-themes: How do we use technology to rapidly and humanely improve our world? Where does the world need to be changed, and what do we need to protect in the process?
**General Information**

*Accelerating Change* promotes high-yield, multidisciplinary, and critical understanding of accelerating technological change in service to professional and personal development. You'll meet uniquely broad minded, synthetic-thinking practical futurists and change-makers here, and the connections you make will be among the most important, productive, and informative in your life.

**What is accelerating technological change?**

Since the first stone, bone, and wood tools were used in Neolithic times, archeologists, anthropologists, and technology scholars have noted a continual acceleration in the human use of technology. When considering the history of human civilization as an average, distributed network (not the rise or fall of specific societies), with each new generation we have used more and smarter technology, adopted it faster, and generated far more productivity with it than was physically possible in our parent's time.

Why does this continual acceleration in technology use and effectiveness occur? Perhaps most importantly, new technological systems, guided by human initiative, continually use dramatically less physical resources (matter, energy, space, and time) to accomplish any degree of physical or computational change. As a result, they perennially avoid the normal limits to exponential growth that we see in any system of fixed complexity, such as a bacterial population growing in a lake, which will multiply exponentially only until it runs out of local resources.

Both human discovery and human creativity have played key roles in the drama of accelerating technological capacity, but in recent centuries it is our scientific discovery, even more than our creativity, that has driven accelerating change. Discoveries in the "physics of the microcosm" (semiconductors, lasers, fiber optics, etc.) have been particularly important to the accelerating development of computing machines over the last 120 years.

We do not yet know why our universe is so easily understood by simple mathematics, or why our technologies turn out to be so computation friendly and resource efficient when we create them at small scales, but we do know that discoveries in the microcosm (structures built and operated at the microscopic scale, like integrated circuits) have continually removed short-term barriers to computational and technological advance. We are also learning that discoveries in the "nanocosm" (the scale of molecular structures, guided by human rather than by evolutionary experiment) are continuing this breathtaking pace of change. Consider just a few recent examples:

In the late-1990's, the International Technology Roadmap for Semiconductors (ITRS) consortium, a group responsible for forecasting the future of semiconductor capacity development, projected that depositing metal on silicon for integrated circuit production would run into a process miniaturization block circa 2005. But in 2001, a University of Massachusetts team discovered that depositing metal as a supercritical fluid, rather than as a gas or liquid, was a practical way to sidestep the roadblock.

In 2003, Intel's Andy Grove noted that gate leakage current was becoming a significant problem in the miniaturization of gallium arsenide semiconductors. Then we discovered how to cheaply make lower power "multicore" chips, to significantly delay the arrival of this problem. At the same time, other researchers quickly discovered that hafnium arsenide exhibits a thousand times (10^4) less leakage than gallium arsenide, making it one of several contenders expected to keep Moore's Law healthy for many years hence.

In 2004, when looking for better ways to make lasers across the EM spectrum, a researcher discovered that when a hollow optical fiber is filled with hydrogen gas (a device known as a "photonic crystal") it converts energy a million times (10^6) more efficiently than all previous microlaser systems.

In 2005, working with new "nanostructured" absorbant lattices, Toshiba scientists discovered they could charge a standard lithium ion battery sixty times (10^2) faster than previous batteries. These new batteries will go into production in 2006.
When humanity makes advances in efficiency or productivity at the "macrocosmic" scale (such as annual GDP growth in a national economy, a new supply chain algorithm, a new business process, etc.), we will typically see advances of a few percentage points (eg. 3%, or 0.03X, for annual GDP growth), and occasionally, a few hundred percentage points (eg., 300%, or 3X, for a clever new business model). But in the microcosm and nanocosm, tens, hundreds, thousands, and even millions of times greater advances are common, as seen above. We do not yet know why this is the case, but over the 20th century we have seen a sustained record of dramatic and unreasonably effective advances in our microcosmic technologies. Today, both the pace and the globalization of these advances continue to accelerate.

Looking at the future of chip miniaturization today, even when we contemplate what may be an approaching "Moore's Law limit," circa 2015 to logic gate miniaturization, when our MOS gate sizes will be so small that electrons can no longer be kept from spontaneously "quantum tunnelling" between neighboring circuits, we can foresee further miniaturization in the realms of optical computing, quantum dots, and molecular computing. And if such alternative computing platforms do not readily emerge, we further realize that a gate miniaturization limit will simply move us into an era of system miniaturization, a process already well under way (e.g., multicore processors, systems-on-a-chip: cellphone-on-a-chip, GPS-on-a-chip, etc.).

In such an environment, the development of highly parallel and massively modular computing systems (e.g., Danny Hillis and his Connection Machine) might then become economically feasible. Today's modestly-parallel computer architectures, as seen in graphics render farms, distributed computing, and early grid computing, portend tomorrow's deeply biologically inspired, and evolutionary hardware platforms. Such "horizontal acceleration" may remain subdued until the exponential economies realized by today's "vertical acceleration" (logic gate miniaturization) reach at least a temporary plateau.

Today we find ourselves in an astonishing world where fat-fingered 21st century humans have learned how to create multi-million mirror MEMS devices (i.e., optical waveguides), to teleport light, and to run quantum computing algorithms on a single atom of calcium. How long might these physical and computational accelerations continue? How long can we continue to make astounding discoveries in the microcosm?

Rolf Landauer and others note that there is no minimum physical energy of computation. We are beginning to see, and may eventually utilize physical structure as far down as the Planck scale, the minimum dimensions of space and time as revealed in modern physical theory. As Eric Chaisson observes, today's Pentium chips already have seven orders of magnitude greater free energy rate densities than any living system on Earth. Seth Lloyd has estimated that the "ultimate laptop" has black hole-level energy densities, and there are even plans to attempt to create "extreme black holes" in tomorrow's high energy physics experiments. Truth has become stranger than fiction in many of our leading technology research environments.

Today we live in an era of continual surprise. Many serious observers now expect the capacities and intelligence of our information, sensing, storage, and communications technologies to continue their stunning rate of progress for as far as we can see into this new century.

Sustained exponential growth in our basic computational and communications capacities will predictably enable a host of new products and services that are presently impossible. If Moore's Law for microprocessors and memory, as just one of many technology exponentials, continues to double approximately every 18 months, continuing this process another 15 years will yield another 1,000X greater processing, storage, and communications capacity. And in some special domains, such as graphics processors, computational capacity has been doubling even faster than 18 months, for at least eight years.

What new emergences will such exponential growth enable? Which coming applications, enabled by accelerating change, have the greatest strategic importance? Which will be the most useful and enduring, and why? How can we best promote their balanced development?

Gaining foresight with regard to the meaning, implications, risks, and opportunities of accelerating technological change has become both our greatest lever for moving the world and our most fundamental educational priority.
General Information

We can best rise to this challenge and responsibility as a multidisciplinary and multibiased community of minds, one that champions both diversity and critical judgment. Increasing awareness of accelerating technological change is an important first step, and we believe better analysis, forecasting, and action plans must also ensue.

About the Acceleration Studies Foundation – www.accelerating.org

*Improving the way individuals and organizations look at the future.*

ASF is an educational 501(c)(3) nonprofit based in Los Angeles, CA.

**What is our mission?**

1) Research, education, consulting, and selective advocacy of communities and technologies of accelerating change.
2) Promoting a broad, multidisciplinary, and critical understanding of accelerating technological change in service to personal, executive, and professional development.
3) Helping business and society examine the potential risks and opportunities of accelerating rates of change through our conferences, publications, reading groups, websites, and sense of community.
4) Improving the way individuals and organizations look at the future by improving the field of Futures Studies.

**What is the importance of ASF’s mission?**

- Imagine you lived in the year 1800 and foresaw the transformative future of the steam engine, interchangeable parts, chemistry, electricity, and the railroad.
- Or circa 1900 and predicted the future represented by the internal combustion engine, the mechanical census computer, the assembly line, radio, and television.
- Now, imagine you live around the year 2000 and can foresee the accelerating future of certain forms of information and communications technology, automation, miniaturization, and artificial intelligence, as well as the limitations on other technological developments (including most biotechnology, space exploration, and some nanotechnology). How would you use this information to improve your world?

ASF is dedicated to helping you acquire that humane foresight – the ability to make significantly better decisions today with your limited time, energy, and resources.

Our foundation produces conferences, media, and publications on 1) the future of technology and 2) the meaning of the accelerating pace of change. We network a global community seeking to carefully investigate both of these topics, in concert. We realize that informed individuals create an informed community, thus we work hard to educate people on the future, given the expectation (a testable hypothesis) that we inhabit a world of continually accelerating technological change.

We aim to help individuals, business, and society realize (i.e., discover and intelligently choose) a future of ‘exponential promise’ (i.e., greater opportunities and benefits because of exponential growth in knowledge and technology). We attempt to do this by educating our community and the wider public on 1) near and longer-term technological futures and 2) the mechanisms and meaning of the accelerating rate of change.

**What programs and services do we offer?**

1. **Salons.** We coordinate a growing network of monthly Future Salons in Los Angeles (at UCLA), in the SF Bay Area (Palo Alto), Las Vegas, San Diego, Seattle, Washington DC, Phoenix, Brussels (Belgium), and in the online digital world Second Life. Salons explore ways to better understand, manage and profit from
accelerating changes in science, technology, business, policy, and society. These are educational, social, and resource events for local communities. Let us know if you'd like to start a salon in your area and we'll send you a link to download our Future Salon Startup Guide.

2. Conferences. We host *Accelerating Change*, the world's premiere futurist conference exploring accelerating technological change, and are debuting our Future Academy tutorials at AC2005.

3. Newsletter. We publish *Accelerating Times*, free bimonthly e-news about accelerating positive changes, choices and challenges in tech development.

4. Knowledge Base. Our website Accelerating.org provides links to online communities and leaders in futures studies and technology literacy, assessment, and policy. We are also building a knowledge base of metrics and methodologies for analyzing and forecasting accelerating change.

5. Personal Foresight. We run monthly and annual Fusion retreats that promote individual foresight, goal-setting and life process actualization in small group environments.

6. Curriculum. Starting January 2006, we will begin teaching a Foresight Development course at the University of Advancing Technology with open-source curriculum openly available on our wiki.

**What is our vision for the world?**
An informed, optimistic, and empowered world community.

**What is our long-term vision for the ASF?**

*Progress in Acceleration and Development Studies*
At present, ASF is focused primarily on sustainable growth via promotion of acceleration awareness through Accelerating Change, our annual conference. But we also seek to improve analysis, forecasting, and action plans/policy recommendations with regard to accelerating technological change. As good data and theory should inform all our actions, our greatest strategic vision is to be a catalyst in the development of personal, institutional and academic programs in Acceleration and Development Studies (ADS) in coming years.

As we envision it, students and practitioners of ADS should seek to better identify, analyze, and forecast predictable accelerating technological change in such areas as computing capacity, communications capacity, storage capacity, database sophistication, hardware and software performance, sensor discrimination and ubiquity, simulation capacity, etc. They would also seek to understand and predict progressive technological, economic, political, and social developmental trends in such areas as GDP growth, liberalization and globalization, transparency, violence minimization, energy consumption saturation, environmentalism, etc.

As general categories, any ADS program should characterize and research accelerating and apparently irreversible developmental trends in global sociotechnological: 1. Intelligence, 2. Interdependence, 3. Immunity, and 4. Matter-, Energy-, Space-, and Time- (MEST) Compression and Efficiency, within the emerging paradigm of Universal Evolutionary-Development ("Evo-Devo").

By promoting the development of ADS, we aim to catalyze the emergence of a more predictive futures studies. This would allow for better human forecasting of predictable social and technological development, for better scenario planning for unpredictable social and technological evolution, and for better ways of discriminating between predictable developmental and unpredictable evolutionary processes.

The promise of a more effective predictive futures studies has existed for more than 100 years, beginning with H.G. Wells call for a "science of prediction" in The Discovery of the Future, 1902, http://www.wnrf.org/cms/hgwells.shtml. Only recently, as we have come to understand the irreversible physical nature and predictability of a range of accelerating computational and communications capacities has this promise appeared within reach.
In the process of formulating and advancing a curriculum and practice in Acceleration and Development Studies, ASF will work to network a range of presently isolated groups, including:

- acceleration researchers
- actuaries and statisticians
- complexity researchers
- computer scientists and technologists
- economists and econometricians
- engineers and systems analysts
- evolutionary development researchers
- forecasters
- futures studies practitioners
- futurists
- information theorists and communication scientists
- innovation and entrepreneurship researchers
- operations researchers
- physicists
- political scientists and globalization researchers
- science and technology historians
- sociologists and anthropologists
- strategic planners
- systems theorists
- technology assessment and policy analysts
- technology roadmappers

Much work remains to be done. Today, most futures studies practitioners do not attempt to forecast probable developments, or to test those forecasts against reality. Few forecasters employ futures methodologies, including scenario planning. Computer scientists, who see accelerating computational trends, are not well integrated with the forecasting community. Operations researchers, who are working toward a general theory of efficiency as a "science of better," do not yet see efficiency in developmental terms, operating on more than local scales. In the biological and complexity sciences, few evolutionary and developmental theorists talk to each other, and fewer still are familiar with the emerging paradigm of evolutionary development.

As Mike Korns observes, recent scientific research increasingly demonstrates the value of modeling the universe and its subsystems in terms of information theory. Today's leading cosmologists find value in thinking of the laws of physics as analogous to computer programs and the universe as something like a computer, engaging in simultaneous processes of evolution and development.

Within this fascinating emerging paradigm, one that provides context to accelerating technological change as a universally-aided process, ASF's most personal service mission might be: "How can we profit, spiritually, financially, and emotionally, by anticipating and guiding accelerating changes within our environment, and by modeling ourselves, to some degree, in information theoretic terms?" ASF's core proposition is that somewhere within the many positive sum answers to this question, lie the solutions to our basic human needs.

How can you contribute?
1. Give a tax-deductible contribution to the ASF.
2. Co-moderate a Future Salon in your area.
3. Tell your friends and colleagues about us.
How can you contact us?
Acceleration Studies Foundation
2227 Amirante, San Pedro CA 90732
Phone: 310.831.4191
Fax: 310.732.2285
http://accelerating.org

John Smart, President: johnsmart@accelerating.org
Jim Turner, Executive Director (incoming): jimturner@accelerating.org
Iveta Brigis, Executive Director (outgoing): ivetabrigis@accelerating.org
Jerry Paffendorf, Community Director: jerrypaffendorf@accelerating.org

Local Restaurants
These Palo Alto restaurants have given all our conference attendees discounts.

Compadre Bar & Grill
3877 El Camino Real - 650.858.1141
25% discount on food purchases with conference badge
Mexican/California

Straits Café
3295 El Camino Real – 650.494.7168
10% discount on food purchases with conference badge
Thai/East Asian

The Fish Market
3150 El Camino Real - (650) 493-9188
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Conference Hotel Information

Crowne Plaza Cabana: 4290 El Camino Real – 650.857.0787
Sheraton Palo Alto: 625 El Camino Real – 650.328.2800
Super 8 Motel: 3200 El Camino Real – 650.493.9085
Westin Palo Alto: 675 El Camino Real – 650.321.4422

Local Taxi Companies & Airport Shuttles

Airport Connection (San Jose Airport): 650.401.8300
Silicon Valley Shuttle (San Jose Airport): 800.400.2365
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California Taxi: 650.630.5167
Checker Cab: 650.328.3322
Stanford Yellow Cab: 650.321.3535
Yellow Cab: 650.321.6262

Other Important Addresses

Tresidder Union (Stanford Campus): 459 Lagunita Drive, Stanford 94305
Gates Computer Science Building (Stanford Campus): 353 Serra Street, Stanford 94305
SAP Labs: 3410 Hillview Avenue, Palo Alto 94301
Local Driving Directions
The Sheraton and Westin hotels are very close to each other, both are a little north of Stanford Campus on El Camino Real. The Super 8 and Crowne Plaza are both south of Stanford Campus on El Camino Real.

From the Sheraton (and Westin) to Tresidder Union (main conference events):
1. Head southeast on El Camino Real for 0.3 miles.
2. Turn right at Galvez St. Go 0.5 miles.
3. Turn left at Campus Dr. Go 1.1 miles.
4. Turn right at Mayfield Ave. Go 0.1 miles.
5. Turn right at Lagunita Dr.

From the Sheraton (and Westin) to SAP Labs (Tech Night & Reception):
1. Drive southeast on El Camino Real for 1.7 miles.
2. Turn right at Page Mill Rd. Go 1.4 miles.
3. Turn left at Foothill Expressway. Go 0.6 miles.
4. Turn right at Hillview Avenue. Go 0.2 miles.
5. Turn right into SAP’s driveway.

From the Super 8 (and Crowne Plaza) to SAP Labs (Tech Night & Reception):
1. Drive northwest on El Camino Real for 0.2 miles.
2. Turn left at Page Mill Rd. Go 1.4 miles.
3. Turn left at Foothill Expressway. Go 0.6 miles.
4. Turn right at Hillview Avenue. Go 0.2 miles.
5. Turn right into SAP’s driveway.

From the Super 8 (and Crowne Plaza) to Tresidder Union (main conference events):
1. Head northwest on El Camino Real for 1.0 miles.
2. Turn left at Serra St. Go 0.5 miles.
3. Turn left at Campus Dr. East. Go 0.8 miles.
4. Turn right at Mayfield Ave. Go 0.1 miles.
5. Turn right at Lagunita Dr.

Tresidder Union – Local Stanford Campus Map
Local Attractions

Off-Campus

The Tech Museum of Innovation

The Tech focuses on how technology works and the way it is changing every aspect of our lives. Its people-and-technology focus and its integration of advanced technologies into visitor experiences distinguish it from other science centers and engage visitors of all ages.

The Tech has become a landmark for those seeking a glimpse of the most inventive place on earth, showcasing the latest high-tech gizmos and gadgets that put Silicon Valley on the map. The Tech is located in downtown San Jose and is open daily 10am – 5pm.

Stanford Linear Accelerator Center (SLAC)

Founded in 1962, SLAC occupies a 426-acre facility, which includes a two-mile accelerator, and is operated by the university for the U.S. Department of Energy. A visitor center is open Monday through Friday from 9 am to 4 pm, and offers displays on the laboratory’s scientific programs, a brief history of significant milestones, and construction photos. SLAC is located at 2575 Sand Hill Road, about 1 mile southwest of the campus. For tour availability and reservations, please call (650) 926-2204.
General Information

Computer History Museum

The Computer History Museum is dedicated to the preservation of computer history. It is home to one of the largest collections of computing artifacts in the world, comprising over 4,000 objects, 10,000 images, 4,000 linear feet of cataloged documentation, and gigabytes of software.

The museum is open Wednesdays & Fridays 1-4pm and Saturdays 11-5pm. Tours are available, taking you through an exhibit that spans from pre-computing to supercomputing, and reflects the astonishing development in technology from gears to vacuum tubes to exotic semiconductors. The tour lasts approximately one hour and features more than 450 artifacts, including the Honeywell "Kitchen Computer," the Cray 1, the Johnniac, and an Eniac rack. Reservations are recommended. Please contact the museum by email or by calling (650) 810-1010.

The museum is located in Mountain View, about 5 miles south of Palo Alto and Stanford University.

Hanna House

For the architecturally inclined, a visit to Hanna House is a must-see. Designed by Frank Lloyd Wright, the dwelling was commissioned in the mid-1930s by Paul Hanna, a professor in Stanford’s School of Education. The resulting masterpiece is a glass-fronted collection of hexagons whose honeycomb shapes are echoed in many of the home’s details, from the flooring to the bathroom tiles. A National Historic Landmark, the house was named by the American Institute of Architects as one of 17 buildings by Frank Lloyd Wright most worthy of preservation and exemplifying his contribution to American culture.

Tours are available on the 1st and 3rd Sundays and 2nd and 4th Thursdays of each month. Reservations are required; please call (650) 725-8352.

Hanna House is located at 737 Frenchman’s Road (off Mayfield Avenue on the southeast side of campus).

On Campus

Hoover Tower

Hoover Tower, completed in 1941 to celebrate the university’s 50th anniversary, serves as a landmark to the Stanford community. The 285-foot structure offers superb views of Stanford and the Bay Area from its observation deck.

Hoover Tower is part of the Hoover Institution, a Stanford-affiliated public policy research center founded by Herbert Hoover, a member of the university’s pioneer class of 1895 and the 31st president of the United States.
Central Campus

The heart of campus is defined by Palm Drive, The Oval, and the steps leading up to the Main Quad. The buildings that surround the Quad were designed in the Romanesque style by Boston architect Charles Allerton Coolidge, circa 1890. Featuring covered arcades, arch-spanned vistas, and detailed carvings atop stocky columns, these central-campus buildings were fashioned from rough-cut blocks of buff sandstone taken from a quarry south of San Jose. Their warm hue echoes the color of nearby hills and shows how well the architecture, in its setting of expansive blue skies, green lawns, and balmy weather, pays tribute to the California landscape.

Rodin Sculpture Garden

The court leading into the Main Quad displays Rodin’s masterpiece The Burghers of Calais. Additional bronze figures can be seen in the Rodin Sculpture Garden, a short (10-minute) walk away.

Stanford Memorial Church

The Memorial Church is the architectural centerpiece of the Main Quad. The mural on its facade is actually a mosaic that includes over 20,000 shades of colored tiles. The extraordinary interior (not to be missed, even by the most science-minded!) includes stained glass windows, intricate stonework, gold leaf decoration, and high redwood ceilings. Early-morning visitors may be lucky enough to hear an impromptu concert performed on one of the church’s three organs.

Guided tours are available Fridays at 2:00 pm and do not require reservations. Meet at the entrance to the church.

Stanford Bookstore

Carrying over 130,000 high-quality titles, the Stanford Bookstore is the largest academic bookstore on the West Coast. It is located just a short walk across White Plaza from Tresidder Union, the home of our conference.

During the conference, we will have available for purchase a hand-picked selection of books on accelerating change. If you can make time to visit the store, we have listed a recommended browsing list of approximately 125 titles in each of our Science, Technology, Business, and Humanist themes, for a total of 500 creative works for you to consider. Each of these is usually in stock at the Stanford Bookstore.
Acknowledgements

We are grateful to the world-class speakers and emcees who have lent their time and interest to AC2005. A big thank you also goes out to our sponsors, for making this conference possible and for providing their own leadership and vision. Finally, thanks to all our attendees for creating our community through your active participation.

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Thank you to Bea and John E. Smart, without whom none of this would be possible.

A special thank you to Alex Lightman for all his valuable advice.

We are privileged to be working with all of you and look forward to AC2006 East and AC2006 West!

For more about the ASF or to get involved, visit our website at www.accelerating.org
Speakers, Panels, and Debate

Speaker Abstracts and Bios (alpha order)

Daniel G. Amen, MD
Medical Director and CEO, Amen Clinics, Inc.; Author, *Change Your Brain, Change Your Life*; Monthly columnist for *Men’s Health Magazine*

**Title:** SPECT and the Future of Mental Health

**Abstract:** According to National Institutes of Mental Health director Thomas Insel, brain imaging is the next major advance in clinical psychiatry. Dr. Daniel Amen has been using brain imaging in clinical practice for the past 14 years. His clinics now have the world’s largest database of brain scans related to behavior. The work has given him many insights on better ways to improve patient care and prevent illnesses that are so expensive to our society. In this lecture, Dr. Amen will share the lessons he has learned from imaging, the roadblocks to further progress, and ways to use this technology to benefit society in general.

**Bio:** Daniel G. Amen, M.D. is a child and adult psychiatrist, brain imaging specialist, and the medical director of Amen Clinics, Inc. He oversees four clinics, respectively located in Newport Beach and Fairfield, California; Tacoma, Washington; and Reston, Virginia. Dr. Amen is an Assistant Clinical Professor of Psychiatry and Human Behavior at the University of California, Irvine School of Medicine, as well as a Distinguished Fellow of the American Psychiatric Association. Dr. Amen is a nationally recognized expert in the fields of the brain and behavior and brain imaging. He has pioneered the use of brain imaging in clinical psychiatric practice, and his clinics have the world’s largest database of functional brain scans for neuropsychiatry.

Dr. Amen did his general psychiatric training at the Walter Reed Army Medical Center in Washington, D.C., and his child and adolescent psychiatry training at Tripler Army Medical Center in Honolulu, Hawaii. He has won writing and research awards from the American Psychiatric Association, the U.S. Army, and the Baltimore-D.C. Institute for Psychoanalysis.

Dr. Amen has been published around the world. He is the author of numerous professional and popular articles, 19 books, and a number of audio and video programs. Dr. Amen, together with The United Paramount Network and Leeza Gibbons, produced a show, “The Truth about Drinking”, on alcohol education for teenagers. The program went on to win an Emmy Award for the Best Educational Television Show. In 1999, Random House published Dr. Amen’s book, *Change Your Brain, Change Your Life*, which held a spot on the *New York Times* Bestsellers List and was translated into twelve languages. Dr. Amen is also the author of *Healing ADD* and *Healing the Hardware of the Soul*. Additionally, he co-authored *Healing Anxiety and Depression* and *Preventing Alzheimer’s*. In October 2005, Harmony Books will publish Dr. Amen’s upcoming book, *Making a Good Brain Great*.

You can read Dr. Amen’s column, “Head Check”, every month in *Men’s Health Magazine*.

Janna Anderson
Assistant Professor, Elon University's School of Communications; Director, "Imagining the Internet" Predictions Database; Author of the upcoming, *Imagining the Internet: Personalities, Predictions, Perspectives*

**Title:** Imagining the Internet

**Abstract:** In the “awe” stage of the late 1980s and early 1990s, internet stakeholders and skeptics predicted the new tool would bring the death of privacy, an end to the current concept of "property," a paperless society, 500 channels of television, world peace, and the
extinction of the human race after a takeover engineered by intelligent machines. Pervasive networks are changing our lives, and smart people are motivated to act by the ideal that better social choices can be made if the coming impact of the intersecting of humankind’s knowledge is pre-assessed as accurately as possible. The more intelligent preliminary analysis we elicit, the better our chances of good outcomes. "Imagining the Internet" is an initiative led by Elon University and the Pew Internet & American Life Project to gather prescient statements into a collective repository for use by everyone concerned about the future. From the public internet’s earliest days, select theorists, philosophers and scientists saw it as merely an early manifestation of what is to become a collective consciousness, a neobiological civilization with a global mind or godmind. Even today, those concepts go far beyond what most world citizens would acknowledge as the future of artificial intelligence; most people don't understand the potential ahead, necessitating better exposure of informed predictions on as many platforms as possible.

Bio: Janna Quitney Anderson is an assistant professor and director of internet projects at Elon University’s School of Communications. Her expertise is concentrated in the fields of internet history; the future of the internet; and print/online journalism. She has directed several major studies for the Pew Internet & American Life Project, building the Internet Predictions Database (www.elon.edu/predictions ) and its various research components and completing an ethnographic study of the use of the internet by small-town families (www.elon.edu/pew/oneweek ). She is the author of the book Imagining the Internet: Personilities, Predictions, Perspective, (2005, Rowman & Littlefield). She joined the faculty at Elon in 1999, following a 20-year career as an editor and reporter for daily newspapers in Minnesota and North Dakota. She has written articles for the New York Times News Service, USA Today, Newspaper Research Journal, Operant Subjectivity and Advertising Age. She is a co-author of the 2005 Pew Internet report The Future of the Internet, and is currently working on a follow-up survey to that report.

Sonia Arrison
Director of Technology Studies, Pacific Research Institute (PRI)

Bio: Sonia Arrison is director of Technology Studies at the California-based Pacific Research Institute (PRI) where she researches and writes on the intersection of new technologies and public policy. Specific areas of interest include privacy policy, e-government, intellectual property, nanotechnology, evolutionary theory, and telecommunications.

She is a regular columnist for Tech Central Station and Tech News World. Her work has appeared in many publications including CBS MarketWatch, CNN, Los Angeles Times, Sacramento Bee, San Francisco Chronicle, San Jose Mercury News, The National Post, Washington Times, and Consumer Research Magazine. A frequent media guest and National Press Club First Amendment Scholar, Ms. Arrison has appeared on National Public Radio’s Forum, Tech TV, CBC’s The National, and CNN’s Headline News. She was also recently the host of a radio show called “digital dialogue” on the Voice America network.


Often asked for advice on technology issues, Arrison has given testimony and served as an expert witness for various government committees such as the Congressional Advisory Commission on Electronic Commerce and the California Commission on Internet Political Practices.
Prior to joining PRI, Arrison focused on Canadian-U.S. regulatory and political issues at the Donner Canadian Foundation. She also worked at the Fraser Institute in Vancouver, B.C., where she specialized in regulatory policy and privatization. She received her BA from the University of Calgary and an MA from the University of British Columbia.

**Ruzena Bajcsy**  
Former Director, CITRIS (Center for Information Technology Research in the Interest of Society); Former Assistant Director, National Science Foundation, CISE; Former Director, GRASP, U Penn

**Title:** What Should Be the Ultimate Goal of Our Education?  

**Abstract:** The goal of education is to reach every child/person at their level of cognitive capabilities. This was the basic idea behind the tutoring system at Cambridge and Oxford universities. Today Information technology (IT) promises to facilitate the Individualization of Teaching and Learning. There is no one way to teach; teaching and learning involves memorization, abstraction, problem solving, exploration and discovery. All these components must be adjusted to the individual levels of the student.

We will discuss what IT can do to help in this endeavor.

**Bio:** Dr. Ruzena Bajcsy ("buy cheese") was appointed Director of CITRIS at the University of California, Berkeley on November 1, 2001. Prior to coming to Berkeley, she was Assistant Director of the Computer Information Science and Engineering Directorate (CISE) between December 1, 1998 and September 1, 2001. As head of National Science Foundation's CISE directorate, Dr. Bajcsy managed a $500 million annual budget. She came to the NSF from the University of Pennsylvania where she was a professor of computer science and engineering. Dr. Bajcsy is a pioneering researcher in machine perception, robotics and artificial intelligence. She is a professor in the Electrical Engineering and Computer Science Department at Berkeley. She was also Director of the University of Pennsylvania's General Robotics and Active Sensory Perception Laboratory, which she founded in 1978.

Dr. Bajcsy has done seminal research in the areas of human-centered computer control, cognitive science, robotics, computerized radiological/medical image processing and artificial vision. She is highly regarded, not only for her significant research contributions, but also for her leadership in the creation of a world-class robotics laboratory, recognized world wide as a premiere research center. She is a member of the National Academy of Engineering, as well as the Institute of Medicine. She is especially known for her wide-ranging, broad outlook in the field and her cross-disciplinary talent and leadership in successfully bridging such diverse areas as robotics and artificial intelligence, engineering and cognitive science.

Dr. Bajcsy received her master's and Ph.D. degrees in electrical engineering from Slovak Technical University in 1957 and 1967, respectively. She received a Ph.D. in computer science in 1972 from Stanford University, and since that time has been teaching and doing research at Penn's Department of Computer and Information Science. She began as an assistant professor and within 13 years became chair of the department. She has served as advisor to more than 50 Ph.D. recipients. In 2001 she received an honorary doctorate from University of Ljubljana in Slovenia In 2001 she became a recipient of the ACM A. Newell award.
Peter Barrett
CTO and GM of Engineering, Microsoft TV

Title: IPTV’s Promise and Creation of the Networked Digital Home

Abstract: Mr. Barrett will discuss the continuing evolution of IPTV and its impact on content developers and distributors in providing consumer entertainment and information services in the networked digital home. He will discuss IPTV’s evolution as it helps transform the television set into a central link of the next-generation networked home; how broadband ubiquity is impacting connected consumer services; and describe the technologies underlying the digital lifestyle concept that provides consumers with entertainment and information at home, at the office, and on the go. Attendees will learn:

- IPTV – What’s here, what’s now
- IPTV’s impact on music, TV, movies, games, education, productivity, and communication.
- From chips to content – Partnering to build the networked home ecosystem
- System-on-a-chip (SOC) developments and likely trends
- IPTV’s impact on acquisition of TV channels; pay-per-view access; and instant channel changing.
- IP video content development and the current state of digital rights management issues
- The Internet as a key facilitator of distributed entertainment, notably in the delivery of TV content in the networked home.
- Accommodating the multi-TV home reality; meeting the multi-headed STB

Bio: Peter Barrett serves as chief technology officer and general manager of engineering for the Microsoft® TV Division at Microsoft Corporation. Barrett leads Microsoft TV’s strategic product development and planning and ensures the division’s ongoing innovation in the area of digital TV technologies. His technical vision and leadership were instrumental to Microsoft TV successful launch of its IPTV platform and Foundation Edition software, products that have been embraced by leading cable and telecommunication companies like Bell Canada, Comcast and SBC.

Recognized as a leading expert in Internet Protocol Television and advanced digital TV software, Barrett is a frequent speaker at industry conferences.

Peter Bishop
Chair and Professor, MS in Studies of the Future program, Univ. of Houston

Tutorial Title: Futuring 101: Successful Models In Foresight Consulting

Abstract: The faster change goes, the more acutely we need to develop foresight in our global, institutional, and personal affairs. In this intimate, daylong tutorial you'll get an overview from three different foresight leaders of the practices they use to prepare their clients for our complex future, as well as learn how to add greater foresight proficiency to your own organization and personal life. If you are interested in consulting in this growing field, either as a professional or informally within your organization, you don't want to miss this chance for small group interaction and extensive Q&A with some highly successful change leaders.

Developing strategic foresight goes beyond the conventional time horizon of strategic planning, which is typically three to five years, depending on industry. There are many methods available, and successful and questionable practices abound. Come learn the basics and best-class examples of foresight development, forecasting, and foresight
consulting from some highly successful practicing experts, and some of the history and future of this fascinating field from the founder of the leading futures studies graduate program in the United States.

Bio: Dr. Peter Bishop is an Associate Professor of Human Sciences and Chair of the graduate program in Studies of the Future at the University of Houston-Clear Lake. Dr. Bishop specializes in techniques for long-term forecasting and planning. He delivers keynote addresses and conducts seminars on the future for business, government and not-for-profit organizations. He also facilitates groups in developing scenarios, visions and strategic plans for the future. Dr. Bishop's clients include IBM, Caltex Petroleum, Toyota Motor Sales, Shell Pipeline Corporation, the Defense Intelligence Agency, the Lawrence Livermore National Laboratory, the W.K. Kellogg Foundation, the Texas Department of Commerce, the City of Las Cruces NM, and the Canadian Radio and Television Commission. Dr. Bishop is also the Executive Director of the Institute for Futures Research where he conducts research with futures students and alumni. Finally, he is President of his own firm, Strategic Foresight and Development, which offers education and training in futures thinking and techniques to the corporate market.

Dr. Bishop came to UH-Clear Lake in 1976 to teach research methods and statistics. While active in faculty affairs, he founded an organization of faculty leaders to participate in state government. Dr. Bishop first taught in 1973 at Georgia Southern College where he specialized in social problems and political sociology. He received his doctoral degree in sociology from Michigan State University in 1974. Dr. Bishop received a bachelor's degree in philosophy from St. Louis University where he also studied mathematics and physics. He grew up in St. Louis, Missouri where he was a member of the Society of Jesus (Jesuits) for seven years. Dr. Bishop is married with two children and four grandchildren.

T. Colin Campbell
Professor Emeritus, Division of Nutritional Sciences, Cornell University; Author, *The China Study: The Most Comprehensive Study of Nutrition Ever Conducted...*

Title: Changing the World One Bite at A Time

Abstract: Nutrition is a concept that focuses on the physiological activities of individual food chemicals or nutrients that function through specific reactions to effect change. Such focus specifies the quantities of nutrients to be consumed, the amounts of nutrients present in foods and food products (as in food labels), the chemical structures of nutrients and related analogues, the quantities of nutrients causing disease outcomes and other adverse effects, and the biochemical reactions that explain functionality, among others.

This scientific focus has multiple implications. In scientific research, experimental studies are designed and interpreted to identify specific nutrients and their activities (as in the conduct of randomized clinical trials of the effects of individual nutrients and as in the statistical adjustment for confounding in human observational studies). In commerce, a multi-billion dollar nutrient supplement industry encourages the consumption of specific nutrients to gain health and prevent disease, foods are fortified with specific nutrients, new drugs are sought that affect specific nutrient modified reactions, and the 'nutritional' value of food is judged by its content of specific nutrients. Many observers now consider nutrients to be 'nutriceuticals' and disease prevention by dietary and nutritional means to be 'chemoprevention'. This eviscerates nutrition as a natural biological science and turns it into something akin to a pharmaceutical science and a marketplace technology.

Such a view may make marketplace sense for the few but it does not make health sense for the many. Moreover, it seriously short-changing an understanding of nutrition
and its impressive ability to maintain health and prevent disease. This is a serious problem that assigns nutrition a very low priority among biomedical disciplines when it should have the highest. The future health of individuals, their societies, their environmental surroundings and their planet will not long survive unless this highly reductionist view of nutrition is changed.

Bio: For more than 40 years, T. Colin Campbell, Ph.D. has been at the forefront of nutrition research. His legacy, the China Study, is the most comprehensive study of health and nutrition ever conducted. Dr. Campbell is the Jacob Gould Schurman Professor Emeritus of Nutritional Biochemistry at Cornell University and Project Director of the China-Oxford-Cornell Diet and Health Project. The study was the culmination of a 20-year partnership of Cornell University, Oxford University and the Chinese Academy of Preventive Medicine.

Dr. Campbell received his master's degree and Ph.D. from Cornell, and served as a Research Associate at MIT. He spent 10 years on the faculty of Virginia Tech's Department of Biochemistry and Nutrition before returning to the Division of Nutritional Sciences at Cornell in 1975 where he presently holds his Endowed Chair (now Emeritus).

His principal scientific interests, which began with his graduate training in the late 1950s, has been on the effects of nutritional status on long term health, particularly on the cause of cancer. He has conducted original research both in laboratory experiments and in large-scale human studies; has received more than 70 grant-years of peer-reviewed research funding, mostly from the National Institute of Health, and has served on several grant review panels of multiple funding agencies, lectured extensively, and has authored more than 300 research papers.

He is the recipient of several awards, both in research and citizenship, and has conducted original research investigation both in experimental animal and human studies, and has actively participated in the development of national and international nutrition policy.

Jamais Cascio
Senior Contributing Editor, WorldChanging; Writer and foresight consultant

Title: Rise of the Participatory Panopticon

Abstract: The value of mobile phones with cameras as a way of capturing events in one's life -- as demonstrated in London in early July of this year -- will be further enhanced as these devices become more powerful, with better cameras, more capabilities and higher-bandwidth connections. Work now underway at a variety of research groups will allow close to 24/7 coverage of one's life, with the mobile phone transforming into a "personal memory assistant." This will be driven initially by personal desires, but will come to play an increasingly important role in collaborative "sousveillance" for security, environmental monitoring, and keeping watch on the watchmen. But these capabilities will not be without a cost -- from a staggering lack of privacy to an inescapable collision between what we can remember and what is controlled by intellectual property regimes.

Bio: Jamais Cascio is co-founder and Senior Contributing Editor at WorldChangin.com, a global weblog focusing on models, tools and ideas for building the "bright green" future. He has worked for the last decade as a scenario planner and futurist, consulting for groups as diverse as major computer firms, non-profit organizations, government agencies, game and toy companies, and television producers. He has written numerous articles on technology and society for both print and online publications, and is the author of two science fiction books.
Jamais has a double-BA in History and Anthropology from the University of California at Santa Cruz, and a Master of Arts in Political Science from UC Berkeley.

**Tom Conger**  
Consulting Futurist and Founder, Social Technologies

**Tutorial Title:** Futuring 101: Successful Models In Foresight Consulting

**Abstract:** See Peter Bishop.

**Bio:** Tom is a consulting futurist and founder of Social Technologies, LLC, a research and consulting firm in Washington, DC that builds the capacity of organizations to understand and influence the future through foresight, strategy, and innovation. He is a graduate of the master's program in Studies of the Future at the University of Houston and was a founding board member of the Association of Professional Futurists.

He is a generalist by choice. His ongoing studies include business, science, technology, culture, politics, demographics, the economy, and the environment. Tom's breadth of knowledge is reflected in the clients he serves, which includes Ford, GM, Shell, BP, Kraft, Kellogg, Cadbury Schweppes, Nokia, Tekes (Finnish Technology Agency), NeighborWorks America, the Society of Actuaries, the International Foundation of Employee Benefit Plans and the American Society of Mechanical Engineers.

His skills include environmental scanning, trend interpretation, scenario development, technology assessment and strategic planning. He routinely speaks and writes about the future. Tom is known particularly for his skillful facilitation work and process design, including immersive learning experiences. Much of his recent work has focused on developing new approaches for synthesizing, applying, and communicating futures knowledge and on embedding systemic, proactive thinking into everyday business processes.

Examples of Tom's work are provided below:

- studying the future of manufacturing technology
- multi-year environmental scanning programs for corporations and associations
- evaluating international forecasts in science, technology and engineering across 40 scientific fields and analyzing the implications of those forecasts for business
- studying social, economic, demographic and other broad trends in twelve Asian countries to assist a global manufacturer better produce in and for the Asian marketplace
- identifying for a European organization on an ongoing basis scientific developments in the United States with potential to create new products, services or industries

Before starting his own firm in 1999, Mr. Conger was the managing director at the Institute for Alternative Futures (IAF) and an associate at Coates & Jarratt, two of the most prestigious futures firms in the United States. At IAF, he designed and facilitated workshops and conferences to help organizations better anticipate change and to envision and create their preferred futures. At Coates & Jarratt, he did extensive studies on the future of work, world futures, science and technology, social change and emerging business opportunities.

Before becoming a futurist, Tom was a survey research manager at the M/A/R/C Group, one of the country's largest custom-market research companies. He had also been with the Public Policy Resources Laboratory at Texas A&M where he developed substantive expertise in survey research and data collection, particularly for program evaluation of state and national programs and policies.
**Esther Dyson**  
Editor, Release 1.0 and Editor at Large, CNET Networks

**Title:** The Accountable Net

**Abstract:** Some people think "the government" (or the Internet Corporation for Assigned Names and Numbers, for that matter) should be regulating the behavior of all the entities on the Net. I don't believe government (or ICANN) is up to that task, especially not on the worldwide Net. But I do believe that the entities on the Net can regulate one another, if systems are set up properly and if individuals have the information they need to choose the peer-to-peer regulatory system they prefer. Call the whole set-up "the accountable Net."

Real reputation-based and quality-controlled competition among top-level domains (TLDs) would not be a solution to everything, but it would be one more important step towards cleaning up the Net. Either those who use domain names need to be accountable to those they interact with, or those who register the domain names need to be accountable for them, in a way visible to individuals and the public. This accountability needs to be specific and granular, so that one can separate the good from the bad. Otherwise, the public will hold the Net as a whole accountable for the actions of its malefactors.

**Bio:** Esther Dyson is editor at large at CNET Networks, where she is responsible for its monthly newsletter, Release 1.0, and its PC Forum, the high-tech market's leading annual executive conference. As editor at large, she also contributes insight and content to CNET Networks other properties. She sold her business, EDventure Holdings, to CNET Networks in early 2004. Previously, she had co-owned EDventure and written/edited Release 1.0 since 1983.

At Release 1.0 and in her private investment activities, Dyson focuses on emerging technologies, emerging companies and emerging markets. Among the topics she has covered for Release 1.0 recently are social software and social networks, registries of people and things, the Internet, the transformation of e-mail to "Meta-mail," identity management, and the use of "consumer" Internet services such as Yahoo! eBay and Google by small businesses.

By 1994, she had already explored the impact of the Net on intellectual property (among other things, why many software products are now turning into online services). In 1997, she wrote a book on the impact of the Net on individuals' lives, Release 2.0: A design for living in the digital age. It includes a number of chapters about today's hot topics such as security, privacy, anonymity and intellectual property.

Dyson is also an active player in discussions and policy-making concerning the Internet and society. From 1998 to 2000, she was founding chairman of ICANN (the organization responsible for overseeing the Domain Name System). A variety of government officials worldwide turn to her for advice on Internet policy issues.

In addition, she donates time and money as a trustee to emerging organizations (Bridges.org, the National Endowment for Democracy and the Eurasia Foundation). For several years in the '90s she was chairman of the Electronic Frontier Foundation.

After graduating from Harvard in economics, Dyson began her serious career in 1974 as a fact-checker for Forbes and quickly rose to reporter. In 1977 she joined New Court Securities as "the research department," following Federal Express and other start-ups. After a stint at Oppenheimer covering software companies, she moved to Rosen Research and in 1983 bought the company from her employer Ben Rosen, renaming it...
EDventure Holdings. The daughter of an English physicist and a Swiss mathematician, Dyson started traveling in Eastern Europe in 1989 and eventually helped to fill the small but vital vacuum at the intersection of Eastern Europe, high-tech and venture capital, even as she remains active in the US and Western Europe.

Mark Finnern
Board Member, ASF; Collaboration Manager, SAP Developer Network; Blogger, O’Reilly Network; Founder and Host, Bay Area Future Salon; Co-Producer, Accelerating Change Conferences

Title: Introduction to Intelligence Amplification

Abstract: Growing up I always wished that I had a grandfather around that I could ask anything and everything. Now we have Google and Wikipedia. It takes intelligence to create a software virus, even more a biological virus. But that’s not the kind of intelligence we want to amplify. The better question is how to amplify wisdom and maybe we should also shoot for Artificial Wisdom instead of AI.

Bio: Mark Finnern manages the Collaboration Area of the fastest growing SAP Community: The SAP Developer Network. Mark is also an ASF Board member, the founder and host of the Bay Area Future Salon, co-producer of the Accelerating Change conferences, and blogger for the O’Reilly Network.

David Fogel
CEO, Natural Selection, Inc.; Author, Blondie 24: Playing at the Edge of AI; Founding Editor-in-Chief, IEEE Transactions on Evolutionary Computing

Title: Accelerating Problem Solving by Combining Machine Learning and Human Learning

Abstract: Intelligence may be viewed as the ability to adapt behavior to meet goals in a range of environments, yet artificial intelligence has focused traditionally on replicating human behaviors in software. This approach has achieved some very visible successes, including for example, Deep Blue, the chess machine that defeated Garry Kasparov in May, 1997. The approach is limited, however, to address problems for which people already have the answers. In contrast, computational intelligence methods, such as evolutionary computing, can afford a computer with the ability to learn how to solve complex problems without relying on human expertise. A synergistic effect can be obtained by combining simulated evolutionary learning and human learning. Examples will be given in the areas of games, including checkers and chess, and other real-world applications in industry, medicine, and defense. Speculation on the future capabilities of these combined learning mechanisms will be offered.

Bio: David B. Fogel, is chief executive officer of Natural Selection, Inc. in La Jolla, CA. He received the Ph.D. degree in 1992 from the University of California at San Diego. Dr. Fogel is a Fellow of the IEEE and served as the founding editor-in-chief of the IEEE Transactions on Evolutionary Computation from 1996 to 2002. He is currently editor-in-chief of BioSystems. He has over 200 publications in journals, conferences, and book chapters, and is the author or co-author of several books, including Blondie24: Playing at the Edge of AI (Morgan Kaufman, 2002), How to Solve It: Modern Heuristics (Springer, 2nd edition, 2005), and Evolutionary Computation: Toward a New Philosophy of Machine Intelligence (IEEE Press, 3rd edition, 2005, forthcoming). Dr. Fogel co-founded Digeneics, Inc., a sister-company to Natural Selection, Inc., dedicated to promoting evolutionary computing for entertainment software, which has developed two games for checkers and chess that rely on evolutionary neural network technology.
Among many volunteer efforts, Dr. Fogel served as the founding chairman of the technical committee on evolutionary computation (1996), and as vice president of publications for the IEEE Computational Intelligence Society (CIS) from 2003-2004, and serves currently as the vice president for membership activities and as series editor for the IEEE Press series in Computational Intelligence. He is also the chapter chairman for the IEEE CIS in San Diego. Dr. Fogel received the Sigma Xi Southwest Region Young Investigator Award (2002), the Sigma Xi San Diego Section Distinguished Scientist Award (2003), the SPIE Computational Intelligence Pioneer Award (2003), and the IEEE Kiyo Tomiyasu Technical Field Award (2004). He was technical program chairman for the 1995 and 1998 IEEE International Conferences on Evolutionary Computation, co-technical program chairman for the 2005 IEEE Congress on Evolutionary Computation, co-general chairman of the 2004 and 2005 IEEE Conferences on Computational Intelligence in Homeland Security and Personal Safety, general chairman of the 2002 IEEE World Congress on Computational Intelligence, held in May, 2002, in Honolulu, Hawaii, and will be the general chairman of the first IEEE Symposium Series on Computational Intelligence, also to be held in Honolulu, April 1-5, 2007.

Dileep George
Founder & Principal Architect, Numenta

Title: *New Models in Neural Science* (tentative)

Abstract: See website

Bio: Before joining Numenta, Dileep George was a Graduate Research Fellow at Redwood Neuroscience Institute, and a graduate student in Electrical Engineering at Stanford University. His research interests include neuronal coding, information processing, and the modeling of cortical functions. Prior to his graduate studies, he served as a Principal Engineer in several communications-related startup companies. George has worked closely with Jeff Hawkins (Co-Founder of Palm Computing, Founder, Redwood Neurosciences Institute, and Author, *On Intelligence*, 2005) in extending and expressing Hawkins' neuroscience theories in mathematical terms. He has created a proof-of-concept program to illustrate these concepts.

George holds a Bachelor's degree in Electrical Engineering from the Indian Institute of Technology in Bombay and a Masters degree in Electrical Engineering from Stanford University.

George Gilder
Editor in Chief, Gilder Technology Report; Author, The Silicon Eye; Senior Fellow, Discovery Institute

Tutorial Title: *Futuring 101: Successful Models In Foresight Consulting*

Abstract: See Peter Bishop.

Bio: Born in 1939 in New York City, Mr. Gilder attended Exeter Academy and Harvard University. At Harvard, he studied under Henry Kissinger and helped found Advance, a journal of political thought, which he edited and helped to re-establish in Washington, DC after his graduation in 1962. During this period he co-authored (with Bruce Chapman) a political history, *The Party That Lost Its Head*. He later returned to Harvard as a fellow at the Kennedy Institute of Politics and editor of the Ripon Forum. In the 1960s Mr. Gilder also served as a speech writer for several prominent official and candidates, including Nelson Rockefeller, George Romney, and Richard Nixon.
In the 1970s, as an independent researcher and writer, Mr. Gilder began an excursion into the causes of poverty, which resulted in his books *Men and Marriage* (original version 1972) and *Visible Man* (1978); and hence, of wealth, which led to his best-selling *Wealth and Poverty* (1981). Mr. Gilder pioneered the formulation of supply-side economics when he served as Chairman of the Lehrman Institute's Economic Roundtable, as Program Director for the Manhattan Institute, and as a frequent contributor to A.B. Laffer's economic reports and the editorial page of *The Wall Street Journal*. In the 1980s he also consulted leaders of America's high technology businesses. According to a recent study of speeches, Mr. Gilder was President Reagan's most frequently quoted living author. In 1986, President Reagan gave George Gilder the White House Award for Entrepreneurial Excellence. In 1996 he was made a Fellow of the International Engineering Consortium.

The investigation into wealth creation led Mr. Gilder into deeper examination of the lives of present-day entrepreneurs, culminating in many articles and a book, *The Spirit of Enterprise* (1986). The book was revised and republished in 1992. That many of the most interesting current entrepreneurs were to be found in high technology fields also led Mr. Gilder, over several years, to examine this subject in depth. In his best-selling work, *Microcosm* (1989), he explored the quantum roots of the new electronic technologies. A subsequent book, *Life After Television*, published first as a Whittle Communications monograph and then published by W.W. Norton (1992), and updated and republished in 1994, is a prophecy of the future of computers and telecommunications. This was followed by, *Telecosm: The World After Bandwidth Abundance*, 2000, a book on the disruptive economics of broadband networks, and his most recent work, *The Silicon Eye*, 2005, on Foveon Inc. and the emerging paradigm of neuromorphic engineering.

Mr. Gilder is a founder of and contributor to *Forbes ASAP*, and a contributing editor of *Forbes* magazine. He is a frequent writer for *The Economist*, *Harvard Business Review*, *The Wall Street Journal*, and other publications. Over the past several years, he has dismissed many of the most touted new technologies—from HDTV and interactive television to 3DO game machines and CD-I multimedia, from TDMA wireless and Nextel cellular compression to pervasive ATM (asynchronous transfer mode) networks. Embraced instead: The Netscape browser, all-optical networks, smart radios, Qualcomm digital wireless, Stratacom frame relay, mediaprocessors, and Sun's Java programming language.

**Marcos Guillen**  
Founder and CEO, Artificial Development

**Title:** Cortical Emulators Rapidly Coming to Market

**Abstract:** Artificial Development's CCortex (http://www.ad.com/tech.html), a realistic virtual brain simulation presently running on a supercomputer, will soon become a commercial product, targeting medical and cognitive research, security & surveillance, and autonomous systems. CCortex Developer Box, a custom rack-mounted system to be available during the first quarter of 2006, includes a 64 bit Spiking Neural Network Engine. Each box can represent up to 250 Million Neurons, with 11,000 synapses each. Alternatively, it can update a data matrix of 1.5 Billion synapses, 10 times per second, for real-time applications. CCortex Development Boxes can also be clustered together, increasing both the speed and the neuron count. A detailed virtual simulation of most of the human brain, excluding the cerebellum, will be available as a single rack system during the second quarter of 2006.

The CCortex project began in 2003, and is the world's first virtual brain, a 20-billion
neuron simulation of the Human Cortex running on a supercomputer. The main cluster
has been running non-stop since September 2003, and has already undergone 7 major
revisions. The data that drives CCortex is a unique synthesis of multiple AD research
projects, including the Cortical Database, which uses real neurological data from the
neuroscience literature. Each neuron is assigned hundreds of variable parameters, and
is connected to thousands of others to mimic the full extent of connectivity between real
neurons in the brain. A team of 40 researchers and programmers, headed in India by
Dr. Adity Gudi, have been updating the Cortical DB around the clock for 14 months,
extracting, analyzing, and modelling the parameter sets used in the database.

While similar projects were recently announced, CCortex has been quietly running for
two years. Three different teams of neuroscientists, engineers and programmers have
been working in the US, EU and India to improve the algorithms governing CCortex.
The wealth of intellectual property harvested during this two-year head start has
positioned Artificial Development as the first company capable of delivering the first
generation of biologically-inspired cognitive system.

Bio: Previously, Marcos Guillen was co-founder and CEO of Ran Networks and Red
Internauta, two leading Spanish Internet Service Providers. As Founder and CEO of
Artificial Development, Guillen and his team are building CCortex, a complete 20-billion
neuron simulation of the human cortex and peripheral systems, on a 500-node
supercomputer - the largest neural network created to date.

Moira Gunn
President and CEO, The Tech Nation Group; Host, Tech Nation and BioTech Nation

Bio: Dr. Moira Gunn is a Renaissance woman with advanced degrees in both
engineering and science. She is also soundly based in the liberal arts, borne out by her
membership in Phi Beta Kappa.

You might already know Dr. Gunn from her syndicated radio program Tech Nation,
which airs over such venues as National Public Radio's Satellite Radio NPR Now and
NPR Talk, and internationally to over 90 countries via Armed Forces Radio
International. Tech Nation is the sole national weekly radio program on the impact of
technology, and its new BioTech Nation segment enjoys the same position vis-à-vis
biotech issues in this same airspace. Her weekly commentaries touch all aspects of our
lives in these unpredictable times.

More than simply radio, the family of Tech Nation programs seeks to educate the public
on the issues of science and technology, to demonstrate that all important aspects of
our lives are affected, and that we must understand much, much more to make
reasonable decisions ... as individuals, as communities, as nations and as a global
society.

Dr. Gunn is not so much interested in the opinions of the day - she is more interested in
how people come to form these opinions, especially when a comprehension of the
underlying technology and science is essential. She asks her listeners to ask
themselves: "Do I know what is knowable? ... before I take a position, make a plan,
take an action."

Her guests come from every walk of life: politicians and businesspeople, scientists and
futurists, novelists and educators, members of the media and more. In her words:
"Everyone is essential. Everyone is a piece of the puzzle."

In over 2,000 in-depth interviews, numerous seminars and associations, Dr. Gunn has
engaged with recognizable people from every venue: From business leaders like Intel's Andy Grove to emergent tech guru's like Google's Larry Page and Sergey Brin, from the old guard of science like Linus Pauling and Crick and Watson to our new generation of scientists like Dr. Pam Marrone, the etymologist who created the first certified organic agribusiness pesticide and received the EPA's Presidential Green Chemistry Award for her efforts. Or Dr. Joao Magueijo, the brash young theoretical physicist from Imperial College, who controversially suggested that the speed of light was relative.

But the tech story only begins with business and science. From Senator John McCain to Ralph Nader, from the Motley Fools to Dilbert creator Scott Adams, from Alvin Toffler to Paul Krugman to every one of the over 2,000 guests who have appeared on Tech Nation, the world is a complex and interconnected place, and we have much to learn from each other.

Bruno Haid
Head of Strategy, System One, merging social software, semantic web and AI

Title: Complementing Worlds: Social Software, Protocols & Algorithms

Abstract: We currently witnessing the maturing of the web from a technical distribution and communication channel to a new, formally independent medium. Social Software enables individuals to articulate, organize and communicate themselves in a digitally addressable way, and with the rise of reasonable Semantic Web concepts this is happening in a language shared by social as well as technical systems. As more and more walls are being torn down between humans and machines, we must ask what is the role of protocols and algorithms in the emerging field of synergetic intelligence.

Bio: Bruno Haid has over 10 years experience in technology related project and interim management. Before founding System One he helped spielplatz.cc, now part of the global Tribal DDB network, to become one of the most credible mobile marketing agencies in Europe. At System One he's responsible for the development and coordination of the overall strategic alignment and outlook.

Robert Hecht-Nielsen (Live via video conference)
Computational Neurobiologist, Institute for Neural Computation; Professor in the Department of Electrical and Computer Engineering, UC-San Diego

Title: The Fundamental Mechanism of Cognition

Abstract: This talk describes the recently announced comprehensive confabulation theory of vertebrate cognition, including: the fundamental mathematical principles involved, an illustrative example of a computer implementation of these principles, and an overview of how the theory proposes cognition is implemented by human cerebral cortex.

Cognition is starkly alien in comparison with existing neuroscience, computer science, and AI concepts. For example, cognitive functions (seeing, hearing, speaking, planning, origination and control of movement and thought processes, etc.) lack any algorithm. Instead, all cognitive functions are implemented as learned spatiotemporal ensembles of simple, mutually interacting, optimizations. The interactions take place via knowledge links (of which humans have billions) established in response to meaningful pairwise co-occurrences; essentially as postulated by Donald Hebb in 1949. The optimization procedure used in cognition, confabulation, is implemented by a winner-take-all competition within a cortical module (neuronal attractor network). Each cortical module, of which humans have thousands, effectively develops, and permanently stores, a long
list of symbols, and implements confabulation when commanded by its single analog control input.

Movement and thought processes (actions, sequences of deliberate, precisely coordinated, analog, muscle and/or cortical module contractions) are themselves stored using knowledge links. Whenever any confabulation yields a decisive conclusion, an associated action (behavior) is triggered. Thus, the theory also offers an explanation for the almost continual emergence of behaviors during wakefulness.

Bio: Robert Hecht-Nielsen has been adjunct professor at UCSD since 1986. He teaches the popular ECE 270 three-quarter graduate course Neurocomputing, which focuses on the basic constructs of his theory of thalamocortex and their applications. He is a member of the UCSD Institute for Neural Computation and is a founder of the UCSD Graduate Program in Computational Neurobiology.

Professor Hecht-Nielsen is an expert on brain theory, associative memory neural networks and Perceptron theory. His theory of thalamocortex is currently being promulgated and integrated into research worldwide. An IEEE Fellow, he has received the IEEE Neural Networks Pioneer Award and the ECE Graduate Teaching Award. He received his Ph.D. in Mathematics from Arizona State University in 1974.

Joichi Ito
Blogger; CEO and Founder, Neoteny Co., Ltd.; VP International and Mobility, Technorati; Chairman, Six Apart Japan

Title: Future of Blogging

Abstract: See website

Bio: Joichi Ito is General Manager of International Operations for Technorati (www.technorati.com) which indexes and monitors blogs and the Chairman of Six Apart Japan (http://www.sixapart.jp) the weblog software company. He is on the board of Creative Commons (http://www.creativecommons.org), a non-profit organization which proposes a middle way to rights management, rather than the extremes of the pure public domain or the reservation of all rights. He is a board member of Internet Corporation For Assigned Names and Numbers (ICANN) and the Open Source Initiative (OSI). He has created numerous Internet companies including PSINet Japan, Digital Garage and Infoseek Japan. In 1997 Time Magazine ranked him as a member of the CyberElite. In 2000 he was ranked among the "50 Stars of Asia" by Business Week and commended by the Japanese Ministry of Posts and Telecommunications for supporting the advancement of IT. In 2001 the World Economic Forum chose him as one of the 100 "Global Leaders of Tomorrow" for 2002.

Ito has served and continues to serve on numerous Japanese central as well as local government committees and boards, advising the government on IT, privacy and computer security related issues. He is currently researching "The Sharing Economy" as a Doctor of Business Administration candidate at the Graduate School of International Corporate Strategy at Hitotsubashi University in Japan. He maintains a weblog (http://joi.ito.com/) where he regularly shares his thoughts with the online community.
Neil Jacobstein
President and CEO, Teknowledge Corporation, Chairman of AAAI’s 17th Innovative Applications of AI Conference, July 2005

Title: The Evolution of AI Applications

Abstract: Since the early 1980’s the systematic codification of knowledge in computer languages has enabled a wide range of useful applications in industry and government. These applications may include performing complex tasks such as planning, monitoring, design, risk assessment, diagnosis, training, process control, classification, and analysis. Applications have been developed in fields as diverse as biotechnology, space flight, manufacturing, security, paleontology, construction, energy, music, military, intelligence, banking, telecommunications, news media, management, law, emergency services, agriculture, and treaty verification. None of these systems exhibited general intelligence, but each was an incremental contribution to our ability to harness the power of knowledge. These systems also had structural limitations, both technical and cultural. Fortunately, a confluence of factors, including advances in neurosciences, the advent of large scale ontologies and the semantic web, the emerging development of nanotechnology and molecular manufacturing, and the exponential increases in computing hardware speed and memory, will eventually enable us to overcome many of the technical barriers to advances in AI. However, the cultural and organizational problems involved in the coevolution of machines and humans will still need to be addressed systematically.

Bio: Neil Jacobstein is President and CEO of Teknowledge Corporation, a 24-year-old Nasdaq small cap software company that focuses on knowledge-based computer systems and services for commercial and government applications. Neil has been a technical consultant on software research and development projects for: DARPA, the U.S. Air Force, Army, Navy, and Marines, NASA, NIH, EPA, NSF, DOE, NRO, NIST, GM, Ford, P&G, Boeing, Applied Materials, and many others. He has developed and delivered tutorials and seminars on knowledge based systems and applications of artificial intelligence techniques. Neil chaired the American Association for Artificial Intelligence’s 17th Innovative Applications of Artificial Intelligence conference in 2005.

Neil served on the Technology Advisory Board for the U.S. Army’s Simulation, Training, and Instrumentation Command, and on the Technology Board of Advisors for the Nanotechnology Opportunity Report published by CMP Scientifica. He is a co-inventor of U.S. Patent # 6,029,175. Neil has been Chairman of the Institute for Molecular Manufacturing (IMM) since 1992. IMM is a nonprofit 501(c)(3) molecular nanotechnology research group focused on the long-term feasibility, embedded safeguards, and applications of molecular manufacturing. Neil was a principal co-author of the Foresight Guidelines for the ethical development of molecular nanotechnology.

Neil received his BS in Environmental Sciences, Summa cum Laude from the University of Wisconsin, and an MS in Human Ecology from the University of Texas, in conjunction with NASA's Environmental Physiology Simulation Program. Neil was a Graduate Research Intern in the Learning Research Group at Xerox Palo Alto Research Center, and a consultant in PARC’s Software Concepts Group. Neil is a member of the IEEE, the Association for Computing Machinery, the American Association for the Advancement of Science, and the American Association for Artificial Intelligence. In 1999, Neil was selected as an Aspen Institute Henry Crown Fellow.
Shun-jie Ji, Ph.D.
Assistant Professor, Graduate Institute of Futures Studies, Tamkang University; Managing Editor, Journal of Futures Studies; CEO, Institute for National Development, Taiwan

Title: Sir, Why Futures Studies?

Abstract: I will address the most frequently asked student question at Tamkang University: why do I need courses in Futures Studies to receive my degree? Future-oriented education has a long history at Tamkang. Our founder, Dr. Clement C.P. Chang, introduced it here in 1968. It is one of the three pillars of our educational policy: globalization, information-oriented education and future-oriented education. All 27,000 Tamkang undergraduates are required to take courses to better think about personal, organizational, and global futures. Tamkang offers core futures courses in five major areas: society, technology, economy, environment, and politics.

Traditional universities offer required courses in history and current affairs, but little on the future. In a recent national review, Tamkang was rated Taiwan's best private university. Perhaps this is some reflection on our educational policy. As our founder has said, in a rapidly globalizing and technological world, we believe universities should develop and offer cutting-edge core courses in "recognizing, adjusting to, and creating the future." I will share my journey as first a Futures Studies student and now instructor, coming from a background in political science. I grew up in this field along with all of my students at Tamkang.

Bio: Shun-jie Ji is an Assistant Professor in the Graduate Institute of Futures Studies at Tamkang University. He received his Doctoral degree at Michigan State University in Political Science-Urban Studies joint programs. He is now CEO of the Institute for National Development (IND) http://www.ind.org.tw, which was founded by Vice President Ms. Hsiu-lien Annette Lu of Taiwan in 1998. He is the Managing Editor of the Journal of Futures Studies and the Editor of Taiwan International Studies Quarterly. He is one of the founding board members and the Deputy Secretary General of the Taiwan International Studies Association. (TISA) In domestic affairs, his research interests include ethnic relations, environmental politics, civic nationalism, and the future images building of Taiwan. Internationally, he has been working on issues in human rights, human security, NGOs, and the triangle of Taiwan-U.S.-China relations.

Steve Jurvetson
Managing Director, Draper Fisher Jurvetson

Title: Open Genes, Memes, and Dreams

Abstract: What is the hidden value of open collaborative exchange and network effects in biotech, nanotech, innovation, venture capital, and co-evolutionary dynamics in general? How do we recognize, collateralize, and amplify that value?

I will briefly discuss examples from the VC business, Internet entrepreneurship and synthetic genomics (reengineered life forms). The abstractions and conclusions are a work in process, and so I hope a lively discussion will ensue.

Background: Empowered by the digitization of the information systems of biology, we have entered an innovation Renaissance – a period of exponential growth in learning, where the power of biotech, infotech and nanotech compounds the advances in each formerly discrete domain. Biology is often the muse. Perhaps biology will drive the future of intelligence and information technology – not literally, but figuratively and metaphorically and primarily through powerful abstractions.
Based on people’s interests, the discussion topics may include: IA vs. AI: “augment early and often” or “find solace in symbolic immortality”, genetic free speech and the First Amendment, path dependence in evolved AI, supra-human emergence in open collaborative systems, the dichotomy of design vs. evolutionary search, or perhaps quantum computational equivalence.

Please see http://jurvetson.blogspot.com for background information.

**Bio:** Steve Jurvetson is a Managing Director of Draper Fisher Jurvetson. He was the founding VC investor in Hotmail (MSFT), Interwoven (IWOV), and Kana (KANA). He also led the firm’s investments in Tradex and Cyma (acquired by Ariba and Ciena for $8B), and most recently, in pioneering companies in nanotechnology and molecular electronics. Previously, Mr. Jurvetson was an R&D Engineer at Hewlett-Packard, where seven of his communications chip designs were fabricated. His prior technical experience also includes programming, materials science research (TEM atomic imaging of GaAs), and computer design at HP's PC Division, the Center for Materials Research, and Mostek. He has also worked in product marketing at Apple and NeXT Software. As a Consultant with Bain & Company, Mr. Jurvetson developed executive marketing, sales, engineering and business strategies for a wide range of companies in the software, networking and semiconductor industries.

At Stanford University, he finished his BSEE in 2.5 years and graduated #1 in his class, as the Henry Ford Scholar. Mr. Jurvetson also holds an MS in Electrical Engineering from Stanford. He received his MBA from the Stanford Business School, where he was an Arjay Miller Scholar.

Mr. Jurvetson also serves on the Merrill Lynch and STVP Advisory Boards and is Co-Chair of the NanoBusiness Alliance. He was recently honored as "The Valley's Sharpest VC" on the cover of Business 2.0 and chosen by the SF Chronicle and SF Examiner as one of "the ten people expected to have the greatest impact on the Bay Area in the early part of the 21st Century." He was profiled in the New York Times Magazine and featured on the cover of Worth and Fortune magazines. Steve was chosen by Forbes as one of "Tech's Best Venture Investors", by the VC Journal as one of the "Ten Most Influential VCs", and by Fortune as part of their "Brain Trust of Top Ten Minds."

**Ronald Kaplan**
Manager of Research in Natural Language Theory and Technology, PARC; Principle of the Center for the Study of Language and Information, Stanford University

**Title:** Converging on Conversation

**Abstract:** Computer interfaces are much better now than they were ten years ago. But they still aren't very good. Ordinary people count themselves lucky when a machine does what they want or a search engine actually provides useful information (cf. Google's "I'm feeling lucky" button). It isn't that the machine is incapable or unwilling to follow instructions or access relevant documents, the problem, after all these years, is a failure of communication. We can't be very subtle if all we can do is poke at a screen with a graphical user interface, walk down a menu tree of preset choices, or type in a few query terms. What we need is the full expressive power of ordinary language to tell a machine what we want—and then have the machine understand and obey, perhaps asking for reasonable clarification from time to time. Natural conversation has always seemed a distant goal, but there has been increasing investment and rapid progress on all the technologies that must converge to make it possible. The Conversational User Interface is not here yet—but it may not be that far away.

**Bio:** Ronald Kaplan is a Research Fellow at the Xerox Palo Alto Research Center and
leader of the linguistic research group at Xerox PARC. He is also a Consulting Professor of Linguistics at Stanford University. As a co-creator of the theory of Lexical Functional Grammar, he was responsible for many of its formal and conceptual characteristics and has investigated its mathematical and computational properties. He received a Ph.D. in 1975 from Harvard University.

Mike Korns
Intelligent Agent Investing Pioneer; Chairman, Korns Associates

Tutorial Title: Making the Future Work for You: A Successful Investor Teaches You How to Safely and Profitably Manage Your Own Account

Abstract: This tutorial is for anyone who wants to get significantly better at managing all or part of their own investments. Whether you are a low or high net worth individual, a beginning or experienced investor, you will learn skills to better make and manage your own investments.

Mike Korns, Founder and Chairman of Korns Associates, wants you to know the strategies he has learned over the years as a self-made investor with no prior financial education or qualification. The disciplined application of basic strategies anyone can learn has brought him wealth as a professional investor for more than a decade. Mike presently makes multi-million dollar annual returns, and regularly beats the stock market averages, including during these last few turbulent years. For many, investing is a complex and habitually difficult topic. This is a rare opportunity to gain experience on these issues directly from a successful multimillionaire investor in a relaxed tutorial environment.

If you are comfortable leaving all your investing to sales agents, large institutions, and professionals, this isn't the course for you. But if you would like to learn the inexpensive, uncomplicated strategies of successful self-made investors, this is a unique opportunity to learn how to safely grow your savings capital to where it will greatly exceed your annual income from all other activities.

Basic investment strategies explained include buying and selling equities, fixed income, safe option hedges appropriate for an IRA, and risk management to help you navigate occasional market crashes. We'll visit online resources from The Motley Fool, Value Line, and other sources, and you'll get a sense of what works and what doesn't for the busy professional with no prior financial education. Mike will also outline a few advanced strategies in agent-based trading, including genetic algorithms, that can be used by those with a technical bent to gain superior market returns.

Bio: Michael F. Korns currently serves as President of Korns Associates www.korns.com. He started his career, in 1969, working at IBM in Advanced Engineering. He has been Vice President Information Sciences at Tymshare Transactions Corporation, and Vice President Chief Scientist of Xerox Imaging Corporation. For over 36 years, Michael Korns has been an expert in converting academic research into commercial applications.

Since 1993, Mr. Korns has run Korns Associates, a privately held applied research company. Korns Associates develops sophisticated agent technology, development tools, and applications, and has pioneered the use of “intelligent agents” for securities investing, using a business model wherein its research is self-funding. In 1999 Korns Associates created InvestByAgent.com to support, incubate, and sell commercial applications of the Korns Associates technology.

Korns Associates business model is applied research powered by proprietary investing profits. As an applied research group, Korns Associates searches the academic
community looking for new Artificial Intelligence and Machine Learning technologies which might be applied to securities investing. Promising new technologies are implemented in Deep Green as investing agents which will compete for stock market profits in the virtual "survival of the fittest" environment. At each stage of its development, Deep Green is used to rank securities as investment selections in the Korns Associates proprietary investing account. Profits from this proprietary investing activity are used to fund further Deep Green application development.

Mr. Korns is currently involved in research in areas such as symbolic regression, genetic and evolutionary programming, Internet search, and the semantic web. Mr Korns can be reached at mkorns@korns.com.

Ray Kurzweil
CEO, Kurzweil Technologies; Author, The Age of Spiritual Machines; Award-Winning Inventor

Title: When Humans Transcend Biology

Abstract: Early in the twenty-first century, intelligent software will underlie everything of value. The paradigm shift rate is now doubling every decade, so the twenty-first century will see 20,000 years of progress at today's rate. Computation, communication, biological technologies (for example, DNA sequencing), brain scanning, knowledge of the human brain, and human knowledge in general are all accelerating at an even faster pace, generally doubling price-performance, capacity, and bandwidth every year. The well-known Moore's Law is only one example of many of this inherent acceleration. The size of the key features of technology is also shrinking, at a rate of about 4 per linear dimension per decade. Three-dimensional molecular computing will provide the hardware for human-level "strong" AI well before 2030. The more important software insights will be gained in part from the reverse-engineering of the human brain, a process well under way.

We are rapidly learning the software programs called genes that underlie biology. We are understanding disease and aging processes as information processes, and are gaining the tools to reprogram them. RNA interference, for example, allows us to turn selected genes off, and new forms of gene therapy are enabling us to effectively add new genes. Within one to two decades, we will be in a position to stop and reverse the progression of disease and aging resulting in dramatic gains in health and longevity.

The fraction of value of products and services comprised by software and related forms of information is rapidly asymptoting to 100 percent. The deflation rate for information technologies, both hardware and software, is about 50 percent per year, providing a powerful deflationary force in the economy. Despite this, the information technology industry grows around 18 percent per year, now comprises 8 percent of the GDP, and is deeply influential on the rest. Within a couple of decades, the bulk of the economy will be dominated by information and software.

Once nonbiological intelligence matches the range and subtlety of human intelligence, it will necessarily soar past it because of the continuing acceleration of information-based technologies, as well as the ability of machines to instantly share their knowledge. Intelligent nanorobots will be deeply integrated in the environment, our bodies and our brains, providing vastly extended longevity, full-immersion virtual reality incorporating all of the senses, experience "beaming," and enhanced human intelligence. The implication will be an intimate merger between the technology-creating species and the evolutionary process it spawned.

Bio: Ray Kurzweil has been described as “the restless genius” by The Wall Street Journal, and “the ultimate thinking machine” by Forbes. Inc. magazine ranked him #8
among entrepreneurs in the United States, calling him the “rightful heir to Thomas Edison,” and PBS included Ray as one of 16 “revolutionaries who made America,” along with other inventors of the past two centuries.

As one of the leading inventors of our time, Ray has worked in such areas as music synthesis, speech and character recognition, reading technology, virtual reality and cybernetic art. All of these pioneering technologies continue today as market leaders. Ray was the principal developer of the first omni-font optical character recognition, the first print-to-speech reading machine for the blind, the first CCD flat-bed scanner, the first text-to-speech synthesizer, the first music synthesizer capable of recreating the grand piano and other orchestral instruments, and the first commercially marketed large-vocabulary speech recognition. Ray’s web site Kurzweil AI.net has over one million readers.

Among Ray’s many honors, he is the recipient of the $500,000 MIT-Lemelson Prize, the world’s largest for innovation. In 1999, he received the National Medal of Technology, the nation’s highest honor in technology, from President Clinton in a White House ceremony. And in 2002, he was inducted into the National Inventor’s Hall of Fame, established by the US Patent Office.

He has received twelve honorary Doctorates and honors from three U.S. presidents. Ray’s books include The Age of Intelligent Machines, The Age of Spiritual Machines, and Fantastic Voyage: Live Long Enough to Live Forever. Three of Ray’s books have been national best sellers and The Age of Spiritual Machines has been translated into 9 languages and was the #1 best selling book on Amazon in science. Ray Kurzweil’s forthcoming book, to be published by Viking Press, is entitled The Singularity is Near, When Humans Transcend Biology.

Sister Denise Lawrence
Brahma Kumaris World Spiritual Organization; Post-Graduate Instructor in Values & Spirituality

**Title:** Values, Spirituality, & Accelerating Change

**Abstract:** Sister Denise Lawrence of the Brahma Kumaris World Spiritual Organization will speak about the Kumaris’ global educational programs, which emphasize Living Values, and on the benefits and importance of teaching people the human, moral, and spiritual skills to meditate, live mindfully, and “slow down” in a world of accelerating change.

**Bio:** Senior Teacher Sister Denise Lawrence specializes in teaching Post Graduate education in Values and Spirituality at the Brahma Kumaris Center in San Francisco. She is former director of the Kumaris Center in Los Angeles.

Alex Lightman
CEO, IPv6 Summit, Inc., an Innofone.com Company, and Author, Brave New Unwired World

**Title:** Globalization to the Edge

**Abstract:** As the world flattens and our horizons widen, new challenges have opened up, even as many of yesterday’s innovations are becoming commodities. China and India are rising fast, and there are strategic dangers to be avoided. Moderate forces in
Islam must prevail, and we have the ability to play a valuable role in that process. Our proliferating global networks and emerging *Brave New Unwired World* are creating unprecedented opportunities for individual empowerment. We are building an Equitocracy by implication if not yet by name, but we are still a long way from where we can be. One way to accelerate positive change is to promote better standards for future-critical platforms, a role we are playing with IPv6 on a global level. Practicing good leadership and taking personal responsibility for change are more important today than ever before.

**Bio:** Alex Lightman is a leading writer and speaker on the future of technology. He has published over 250,000 words in the 21st century, including 100 articles for business, technology, and political magazines. He is the author of the first book on 4G: *Brave New Unwired World: The Digital Big Bang and The Infinite Internet* (Wiley, 2002).

Alex is CEO of Charmed Technology and chairs the IPv6 Summits in North America, which attract the largest assemblage of Internet innovators in government, business, and academia. He is also a Cal (IT)2 scholar, affiliated with the University of California, and a visiting scholar with California State University (via SDSU). *CEO Magazine* recognized him as one of ten CEOs of the Future. He has been interviewed over 1,000 times, primarily related to wearable computers as fashion.

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**Patrick Lincoln**  
Director, Computer Science Laboratory, SRI International

**Title:** Prospects for Computing at the Right Level of Abstraction

**Abstract:** Along with the increasing value of the IT portion of products, services, and the entire economy has come increasing reliance on automated computing systems, and decreasing visibility by users and designers into the critical properties of these systems. Thus it is beneficial to provide designers and users tools and methods enabling them to understand and improve the trustworthiness of complex digital systems. Such tools are much more useful if the level of abstraction of human interaction and computational analysis are raised as far as possible.

We should enable rapid analysis and understanding of the critical properties of complex systems, even when the complex systems under study involve tight interactions with human components. We should do this before we strongly align our interests with automated systems (betting our retirement portfolio on a network of machines running fragile operating systems, betting our life on fly-by-wire aircraft, betting our national defense on networked systems). Recent rapid advances in automated reasoning make this plausible, though much more effort is required.

**Bio:** Patrick Lincoln is Director of the Computer Science Laboratory at SRI International in Menlo Park, CA. He has a Ph.D. in Computer Science from Stanford University. Before coming to SRI in 1989, he worked at the Los Alamos National Laboratory and MCC Software Technology (STP). He has published numerous articles and is currently preparing three papers: "Nonlithographic, Nanoscale Memory Density Prospects," "Interactive Proof-Carrying Code," and "Towards a Semantic Framework for Secure Agents."
Julian Lombardi (with David A. Smith)
Principal Architect, Croquet Project; Manager, Division of Information Technology, U Wisconsin-Madison; Software designer and former biology professor

Title: The Social Dimension of Croquet

Abstract: Croquet is a distributed, media rich, peer-to-peer environment that brings a powerful realtime interactive social dimension to the Internet. Every object and application is inherently collaborative from the ground up; there is no longer a separate "collaborative environment" divorced from a single-user application space, rather, every aspect of Croquet can be part of a multi-user shared experience. In removing the barriers between applications and collaboration, Croquet treats human relationships as a first class citizen. It's no longer just a network of documents and information, it's a network of people.

Croquet is totally open, totally free, works bit identical across most major platforms, and is easily ported to new systems. It is a combination of rich media and simulation capabilities and network architecture that supports deep collaboration and resource sharing among its users. Its 3D interface provides a rich social dimension that provides them with a powerful context for collaboration within which to work and play together. The rendering architecture is built on top of OpenGL.

Croquet's treatment of distributed computation assumes a truly large scale distributed computing platform, consisting of heterogeneous computing devices distributed throughout a planet-scale communications network. Applications span machines and involve teams of users, enabling broad band, media rich, persistent conference spaces. In contrast with the more traditional architectures we grew up with, Croquet incorporates replication of computation (both objects and activity), and the idea of active shared subspaces in its basic interpreter model. More traditional distributed systems replicate data, but try very hard not to replicate computation. But, it is often easier and more efficient to send the computation to the data, rather than the other way round. Consequently, Croquet is defined so that replication of computations is just as easy as replication of data.

Bio: Dr. Julian Lombardi is a former biology professor, author, and award-winning software designer with an interest in developing software systems that support the gathering, representation, processing, and dissemination of information that is distributed across many individuals. He brings his background in developmental and evolutionary biology, complex adaptive systems, complexity theory, and in the study of emergent properties in biological systems to his work in information technology.

Dr. Lombardi has long been fascinated by the transformative potential of new interface technologies. In the late 1980s, and while a professor at The University of North Carolina he began developing instructional software for biological and medical education. In 1995, he combined his interests in information technology and evolutionary/developmental biology and developed systems and methods for enabling representations of network-deliverable resources to self organize and optimize within the framework of social computing systems. Based on this work, he was awarded a patent on technologies and processes for visualizing and organizing location-based information and in 1999, he founded ViOS, Inc. He served as ViOS's CEO and then Chief Creative Officer/Chief Software Architect. Over an 18 month period, he oversaw the successful completion of the company's core technology and the company successfully launched a user-friendly knowledge management and social computing platform with an industry award-winning interface. In 2000, Dr. Lombardi was the subject of a feature article in Success Magazine, was identified as one of the nation's "Thought Leaders" in information technology by Access Magazine Online and the ViOS product won Best of Show at the Upside Magazine's prestigious Launch! event.
Julian is an independent entrepreneur who provides executive management and consulting services for emerging IT companies. He also presently manages a software R&D group at the University of Wisconsin-Madison where he helps define and lead university-wide initiatives that seek to transform teaching and learning through the use of technology. Julian is also a former professional theatrical director who enjoys performing as the comic lead in community productions of Gilbert and Sullivan operettas.

Thomas Malone
Patrick J. McGovern Professor of Management at the MIT Sloan School of Management; Founder and Director of the MIT Center for Coordination Sciences; Author, *The Future of Work: How the New Order of Business Will Shape Your Organization, Your Management Style, and Your Life*

**Title**: The Future of Work

**Abstract**: This talk will suggest that we are in the early stages of a profound increase in human freedom in business that may, in the long run, be as important a change for businesses as the change to democracies was for governments. For the first time in human history, information technology now makes it possible to have both the economic efficiencies of large organizations and the human benefits of small ones: freedom, motivation, creativity, and flexibility. To take advantage of these possibilities we need to invent new—more decentralized—ways of organizing work (such as loose hierarchies, democracies, and markets), and we need to think about how these new organizations can be designed to help us get more of whatever we really value as humans.

**Bio**: Thomas W. Malone is the Patrick J. McGovern Professor of Management at the MIT Sloan School of Management. He is also the founder and director of the MIT Center for Coordination Science and was one of the two founding co-directors of the MIT Initiative on “Inventing the Organizations of the 21st Century”. Professor Malone teaches classes on leadership and information technology, and his research focuses on how new organizations can be designed to take advantage of the possibilities provided by information technology. The past two decades of his research is summarized in his book, *The Future of Work: How the New Order of Business Will Shape Your Organization, Your Management Style, and Your Life* (Harvard Business School Press, 2004).

Professor Malone has also published over 50 articles, research papers, and book chapters; he is an inventor with 11 patents; and he is the co-editor of three books: *Coordination Theory and Collaboration Technology* (Erlbaum, 2001), *Inventing the Organizations of the 21st Century* (MIT Press, 2003), and *Organizing Business Knowledge: The MIT Process Handbook* (MIT Press, 2003). Malone has been a cofounder of three software companies and has consulted and served as a board member for a number of other organizations. His background includes work as a research scientist at Xerox Palo Alto Research Center (PARC), a Ph.D. from Stanford University, and degrees in applied mathematics, engineering, and psychology.
Harold Morowitz
Biophysicist; Robinson Professor of Biology and Natural Philosophy, George Mason University; Author, *The Emergence of Everything*

**Title:** Living Cells and the Smallest Self Replicating Robots, What Nanoscience and Biology Can Do For Each Other

**Abstract:** Self replicating robots and living cells both take up components from the environment and assemble two identical units starting with one unit. As nanorobots become progressively smaller the building blocks and energy sources also decrease in size. An experimental generalization of autotrophic life is that the inputs are molecules of less than 200 daltons. A challenge to nanotechnology is to reach that limit. If achieved the nanochemistry used will either map onto biochemistry or not. If not, contemporary earth based biochemistry is not a unique solution and the question “What Is Life?” has been generalized. This is of extreme importance to astrobiology. If no alternative chemistries can be devised, the result argues for the uniqueness of biochemistry. Other biological generalizations such as survival at zero Kelvin may be used to mutually understand life and self replicating nanorobots.

**Bio:** Harold Morowitz received his Ph.D. in Biophysics from Yale University in 1951. He worked at the National Bureau of Standards and the National Institutes of Health and returned to Yale in 1955 as Assistant Professor of Biophysics. Over the next 33 years he was Associate Professor and Professor of Molecular Biophysics and Biochemistry and Master of Pierson College. In 1988 he became Robinson Professor of Biology and Natural Philosophy at George Mason University. His books include three monographs, *Energy Flow in Biology, Foundations of Bioenergetics,* and *The Beginnings of Cellular Life*; four textbooks; and a number of trade books, including *The Thermodynamics of Pizza, Mayonnaise and the Origin of Life* and *The Emergence of Everything: How the World Became Complex.

From 1993-1998, he was the Director of the Krasnow Institute for Advanced Study at George Mason University, where he is currently Staff Scientist. He was Editor-in-Chief of *Complexity: An International Journal of Complex & Adaptive Systems* from 1995-2001. At present he is co-chairman of the Science Advisory Board at the Santa Fe Institute.

Peter Norvig
Director of Search Quality, Google; Author, *Artificial Intelligence: A Modern Approach* (the world’s leading textbook in AI)

**Title:** AI in the Middle Between Authors and Learners

**Abstract:** So far we know of exactly one system in which trillions of facts are transmitted to billions of learners: the system of publishing the written word. No other system comes within a factor of a million of this performance benchmark. This is despite the fact that the written word is notoriously imprecise and ambiguous.

In the early days of AI, most work was on creating a new system of transmission -- a new representation language, and/or a new axiomization of a domain. Well-structured data was manipulated by sound means. One near future for AI is "in the middle" between author and reader. It will remain expensive to create knowledge in any formal language but AI can leverage the work of millions of authors by understanding, classifying, prioritizing, translating, summarizing and presenting the written word in an intelligent just-in-time basis to billions of potential readers.

**Bio:** Peter Norvig has been at Google Inc since 2001 as the Director of Machine Learning, Search Quality, and Research. He is a Fellow of the American Association
for Artificial Intelligence and co-author of \textit{Artificial Intelligence: A Modern Approach}, the leading textbook in the field.

Previously he was the senior computer scientist at NASA and head of the 200-person Computational Sciences Division at the NASA Ames Research Center. Before that he was Chief Scientist at Junglee, Chief Designer at Harlequin Inc, and Senior Scientist at Sun Microsystems Laboratories.

Dr. Norvig received a B.S. in Applied Mathematics from Brown University and a Ph.D. in Computer Science from the University of California at Berkeley. He has been a Professor at the University of Southern California and a Research Faculty Member at Berkeley. He has over fifty publications in various areas of Computer Science, concentrating on Artificial Intelligence, Natural Language Processing and Software Engineering, including the books \textit{Paradigms of AI Programming: Case Studies in Common Lisp}, \textit{Verbmobil: A Translation System for Face-to-Face Dialog}, and \textit{Intelligent Help Systems for UNIX}.

**Beth Noveck**  
Associate Professor of Law  
Director, New York Law School Institute for Information Law and Policy; Director, Democracy Design Workshop

**Title:** Peer to Patent: Collective Intelligence for our Intellectual Property System

**Abstract:** The patent system is broken. The United States Patent Office, which was intended to foster innovation and the promotion of progress in the useful arts, instead, creates uncertainty and monopoly. Underpaid and overwhelmed examiners routinely approve petitions without review. They struggle under the burden of 350,000 patent applications per year. As a result, multiple patents have been given for the same invention or patents awarded for inventions discovered previously. But what if we could also make it easier to ensure that only the most worthwhile inventions got twenty years of monopoly rights? What if we could offer a way to protect the inventor’s investment while still safeguarding the marketplace of ideas from bad inventions? What if we could make informed decisions about scientifically complex problems before the fact? What if we could harness collective intelligence to replace bureaucracy?

This modest proposal harnesses social reputation and collaborative filtering technology to create a peer review system of scientific experts ruling on innovation. By using social software, we can apply the “wisdom of the crowd” — or, more accurately the wisdom of the experts — to complex social and scientific problems and bring more expertise to bear. This has far reaching implications beyond the patent process. It implies a fundamental rethinking of our assumptions about governance.

**Bio:** Beth Noveck is an Associate Professor of Law at New York Law School, where she directs the Institute for Information Law and Policy. She also founded and runs the Democracy Design Workshop, an interdisciplinary "do tank" dedicated to deepening democratic practice through technology design. Professor Noveck teaches in the areas of e-government and e-democracy, intellectual property, innovation and constitutional law. A Founding Fellow of the Yale Law School Information Society Project, her research and design work lie at the intersection of technology and civil liberties.

She is the designer of civic and social software applications, including Unchat, Cairns, the Gallery and the forthcoming, Democracy Island. Professor Noveck is co-editor of the book series, \textit{Ex Machina: Law, Technology and Society} (NYU Press). Together with the Berkman Center and the Information Society Project, she hosts the annual State of Play conference on law and virtual worlds. A graduate of Harvard University and Yale Law School, she did graduate work at the University of Oxford and earned a doctorate at the University of Innsbruck with the support of a Fulbright.
Bruno Olshausen
Director, Redwood Center for Theoretical Neuroscience

Title: Neuroscience and Future Prospects for Intelligent Systems

Abstract: See website

Bio: Bruno Olshausen's research attempts to unravel how the brain constructs meaningful representations of sensory information. Much of his work has focused on developing probabilistic models of natural images, and relating these models to the sorts of representations found in the cerebral cortex. Bruno is director of the Redwood Center for Theoretical Neuroscience, established in July 2005 as one of four research centers administered by the Helen Wills Neuroscience Institute at the University of California at Berkeley. It is funded from the Redwood Center Endowment, which was created by a gift from the former Redwood Neuroscience Institute (founded by Jeff Hawkins) to UC Berkeley.

Olshausen received B.S. and M.S. degrees in electrical engineering from Stanford University, and a Ph.D. in computation and neural systems from the California Institute of Technology. In addition to his appointment at RNI, he is Associate Professor of Neurobiology, Physiology, and Behavior, and a member of the Center for Neuroscience at UC Davis.

Cory Ondrejka
VP of Product Development, Linden Lab, creators of Second Life

Title: One Thing To Tell the World About Video Games

Abstract: Games will save the world. With technology and connectivity exposing everyone to more information and misinformation than ever before, critical thinking is the most important skill of the 21st century. In a world where Presidents consult astrologers, extremists transform the faithful into weapons, schools choose creationism over evolution, and wars are justified by faulty intelligence, games are teaching hundreds of millions of players how to hypothesize, test, and verify. Games demand action before mastery, forcing gamers to experiment in order to succeed. Gamers learn that pronouncements from authority, whether from the game manual, in-game dialog, or guild leaders, must always be skeptically evaluated in light of direct experience and the knowledge of their fellow players.

More importantly, they aren't learning these lessons alone. In online worlds like Second Life, gamers from all over the world are building communities, forming businesses, earning real money, and teaching each other. They are collaborating to solve problems and building skills that the best universities struggle to teach. Beyond the evidence linking game to improvements in IQ, spatial awareness, visual recognition, cognitive chunking, problem solving, and eye-hand coordination, games provide players with a critical toolkit that makes them better students, citizens, employees, managers, soldiers, scientists, and parents. So get ready, world – the gamers are coming!

Tutorial Title: Building the Dream: Creating and Profiting in Virtual Worlds

Abstract: Online virtual world economies were worth nearly $900 million dollars in 2003, and this number continues to grow rapidly. Second Life is the world's leading persistent online 3D world where users are encouraged to market their services and own copyright to the products they create. It's denizens (thousands online at any point in time, 24/7/365) engage in virtual collaboration, create new forms of entertainment,
and participate in social events that are in some ways richer than those available in physical space. Leading creators and developers of this world will teach you the skills you need to confidently navigate online virtual communities and to understand the economics of these new virtual economies. Both existing and emerging business models will be explored.

This is a rare opportunity to learn hands-on skills and engage in high-level discussion of the present benefits and future promise of digital worlds from some of the most highly respected innovators in the field. You will not only learn important new business skills, but we guarantee that you will have lots of fun in this unique and groundbreaking tutorial.

Bio: Cory Ondrejka joined Linden Lab in November of 2000 and brought an extensive background in software development and project management. Most recently, Ondrejka served as project leader and lead programmer for Pacific Coast Power and Light's Nintendo 64 title, Road Rash. Previous experience includes a position as lead programmer for Acclaim Entertainment's first internal coin-op title. Prior to Acclaim, Ondrejka worked on Department of Defense electronic warfare software projects for Lockheed Sanders.

While an officer in the United States Navy, he worked at the National Security Agency and graduated from the Navy Nuclear Power School. Ondrejka is a graduate of the United States Naval Academy, where he was a Presidential "Thousand Points of Light" recipient and became the first person ever to earn Bachelors of Science degrees in two technical majors: Weapons and Systems Engineering and Computer Science.

Jerry Paffendorf
Community Director, Acceleration Studies Foundation; Founder and Host, Second Life Future Salon; Co-Producer, Accelerating Change Conferences

Title: Brave New Virtual Worlds

Abstract: User-created virtual worlds like Second Life are pioneering the media-rich 3D Web, as in Neal Stephenson's Metaverse. Searchable, interactive virtualizations of our planet, like Google Earth, are opening the geospatial Web as in David Gelernter's Mirror Worlds. As an introduction to our Explorations session I'll take a brief look at these emerging platforms, building up and tearing down some ideas about their short- and long-term potential.

Bio: Now based in New York City, Jerry Paffendorf is Community Director of the Acceleration Studies Foundation where he helps curate a broad, serious dialog on the future. His personal focus is the growing landscape of media-rich 3D virtual worlds and location-based applications of search and social software. Jerry has an MS in Studies of the Future from the University of Houston-Clear Lake and a bachelor degree in Fine Arts from Montclair State University in New Jersey. Each month you can find him moderating the Second Life Future Salon within the virtual world of Second Life. Blog at http://slfuturesalon.blogs.com.

Jan Pedersen
Chief Scientist for Search and Marketplace, Yahoo!

Title: Challenges of Conversation

Abstract: Getting to a more natural, conversational user interface for information retrieval will require solving a number of difficult problems in the years ahead. There are clear inadequacies to our current search engines, and we'll consider several of
them, in particular the lack of query assists. Successful question answering would be an important step towards a more conversational experience.

As Jean Véronis notes, it would be nice if you didn't have to wade through pages of people complaining about their tedious day when the “boring” you are looking for concerns drilling techniques. There are some signs of progress in automatic language processing, and social search is an important and powerful new source of meta data. But the era of truly conversational machines may take longer to arrive than we think.

**Bio:** Dr. Pedersen began his career at Xerox PARC where he lead a research group investigating information access technologies. In 1996 he joined Verity, the leading enterprise search software vendor, as manager of the Advanced Technology Group. In 1998 Dr. Pedersen joined Infoseek as Director for Search and Spidering. In 2002 Dr. Pedersen joined AltaVista as Chief Scientist. AltaVista was purchased by Overture which again was later purchased by Yahoo!. Dr. Pedersen is currently Chief Scientist for Search and Marketplace at Yahoo!

Dr. Pedersen holds a Ph.D. in Statistics from Stanford University and a BA in Statistics from Princeton University. He is credited with more than ten issued patents and has authored more than twenty refereed publications on information access topics, seven of which are in the Special Interest Group on Information Retrieval (SIGIR) proceedings.

**Scott Rafer**
President and CEO, Feedster

**Title:** *Smart Agents are People, not Software*

**Abstract:** The dream of AI has been replaced by always-on, broadband connections. Instead of HAL, we've got WordPress. That means constant access to millions of sector experts who can and will add structured text, tags, photos, video, and links to the common store of knowledge where hundreds of no-capital-needed startups are in a race for huge financial prizes awarded to those who slice, dice, filter, and deliver the right knowledge distilled from the ever-growing pool of user-generated information.

In other words, RSS and similar formats are now letting people share preferences at a such a scale, scope, level of detail, velocity, and frequency, that AI is rendered unnecessary to generate smartness, at least for the foreseeable future.

**Bio:** Scott Rafer is president and CEO of Feedster, a fast-growing blog search engine and advertising network. Feedster delivers more relevant, and timely information by continuously collecting data from over 13 million RSS content feeds. Before Feedster, Rafer co-founded WiFinder, the Wi-Fi hotspot directory; BookBroadband, the broadband hotel finder; Fresher Information, RSS indexing way too early; and FotoNation, a creator of connected photography solutions.

Previously, Rafer led the Internet products group at Kodak Hollywood and worked in investment banking at Needham & Company. For school, Rafer graduated from the Management of Technology program at the University of Pennsylvania. Rafer's blogs are Free Wireless Soweto and at Feedster.
Robin Raskin
Consultant and author on family life in a digital world, robinraskin.com; TV Personality; Former Editor of PC Magazine

Title: Aren’t We Forgetting Something? Social Responsibility In Cyberspace

Abstract: As the pace accelerates and technology dominates both education and the workplace, it’s time to look at the effect of the tools on a new generation of screen-savvy workers. The newest hires demonstrate great dexterity on the keyboard, but have little sense of the larger implications of living in the digital world.

We’ll discuss the cut and paste mentality and the single screen-at-a-time effect on creativity and decision making. We’ll look at how students think about their personal audit trails, the need for privacy and the veracity of a digital communications. The industry has been all too quick to provide students with powerful tools; they’ve neglected to plan for the responsibility that accompanies usage.

Bio: Robin Raskin has been translating technology into consumer friendly terms for more than 20 years. Today, as a technology consultant, spokesperson, and author she spends a great deal of her time focusing on family life in a digital world. She’s been the Editor in Chief of FamilyPC, editor of PC Magazine, and columnist for USA Today Online and the Gannett News Service, winning numerous prizes for her coverage of technology. Raskin has authored 6 books about parenting in the digital age, for publishers including Random House, Simon and Schuster and Hyperion.

Recently she’s served as a consultant to both publishing and high tech companies helping them reach consumers who want to benefit from the high tech lifestyle. Clients include Nickelodeon, Intel, Microsoft, SONY, Disney Publishing, Ziff Davis Publishing and Gruner and Jahr. Projects have included everything from citywide speaking tours, to television work, to custom publishing and web production. She also serves as Director of Communications at The Princeton Review. Raskin produces her own monthly television tours on high tech living which are carried by local television stations nationwide, and appears on NBC Early Today, MSNBC, Live with Regis and Kelly, CBS Early Show, and Fox’s Good Day New York. As a freelance writer her work appeared in such magazines as PC World, PC Week, InfoWorld, Working Mother, Working Woman, Child and Newsday.

Raskin is an outspoken advocate for parental involvement in raising digital kids. She frequently addresses parents and educators, policy makers, the high tech industry on topics like Internet Safety and Raising Digital Kids. Raskin has testified before the Federal Trade Commission on Internet safety; presented research to then-Vice President Gore on parental technology; and was part of then First Lady Hillary Clinton’s series of meetings for women editors. She also served on the National Research Council's Committee, which published “Tools and Strategies for Protecting Kids from Pornography and their Applicability to Other Inappropriate Internet Content.” Raskin lives in New York City and Hudson Valley with her husband, 3 children, and a pile of ever-changing gadgets.

Philip Rosedale
CEO, Linden Lab, creators of Second Life

Title: Tipping the Metaverse

Abstract: When we all conclude that a digitally created online world inhabited by many - the Metaverse - has finally arrived, what will we say about it's history? What will we agree finally got it started? Will it have been a critical piece of enabling technology, or
some specific type of experience or content? Online games, in their striking success, have something to say about the metaverse, but certainly aren't yet there. Some science fiction has suggested that the metaverse starts as a giant analysis and storage tool for the collective data of a host of mega-corporations. This is probably as unlikely as the discovery that we are actually living in a simulated world created for us by evil machines, as another piece of popular science fiction suggests.

A critical combination of content, commerce, and community can be argued to be the minimal set of requirements for a critical mass metaverse to emerge. We'll discuss what exactly those are.

Bio: Philip Rosedale is Founder and CEO of Linden Lab, makers of Second Life. He has an extensive background in the development and pioneering of streaming technology, having built his first computer in 4th grade, and started his first computer software company while still in high school. In 1995 he developed FreeVue, a low-bitrate video conferencing system for Internet-connected PC’s, resulting in the acquisition of his company in early 1996 by RealNetworks.

For three years Rosedale served at RealNetworks as Vice President and CTO, where he was responsible for the development and launch of RealVideo, RealSystem 5.0, and RealSystem G2. In 1999 Rosedale returned to San Francisco, joined Accel Partners as an Entrepreneur-in-Residence, and began the basic research that would become the technology behind Linden Lab. Rosedale holds a BS degree in Physics from the University of California at San Diego.

Blake Ross
Co-Creator and Project Director, Mozilla Firefox; Open Source Entrepreneur; Computer Science Student, Stanford University

Title: When Hacker Met Seller: The Next Generation of Coders

Abstract: Open source. Monopolized market. Microsoftian competitor. There isn’t a VC in the world who would have taken that bet. So how did Firefox find 80 million users in 8 months without ever purchasing an advertisement?

The Internet has been removing barriers for years. Distribution, development, quality assurance—the cost problem has virtually been eliminated. As usual, the only outstanding issue is the result of human error. Although developers have everything they need to create great code, they lack the only thing they need to create great products: end-user empathy. Companies are forced to split along three lines—the developers, who create the thing; the user experience teams, who prepare it for human consumption; and the marketers, who spend lots of money. Fuse them together and you have a team constrained only by the need to eat and sleep—and you can bet that’ll be the first problem they tackle.

Firefox is built by a team of developers who find coding the worst part of their job. Fueled by an intimate connection with users, they represent a new generation of hackers who take products from “Hello World” to hello, world! and will be at the top of tomorrow’s tech companies.

Bio: Blake Ross began his career at 14 as a software engineer at Netscape. Three years later, he co-founded the Firefox browser that has since been downloaded over 80 million times. He also co-founded SpreadFirefox, the wildly successful grassroots marketing campaign that now serves as the model for dozens of other companies and has set a new standard for delivering high-impact software.

After being featured on the cover of its February issue, Blake was nominated for
Wired’s top Rave Award, Renegade of the Year, alongside Jon Stewart and the founders of Google. He is currently on leave from Stanford University, where he is a junior, to lead a new company he co-founded earlier this year with a fellow Firefox engineer. He’s looking forward to writing children’s fiction as soon as computers are easy to use—so, sometime around Harry Potter XXXIV: Harry’s Magical Midlife Crisis.

Rudy Rucker
Computer Scientist; Author of The Lifebox, The Seashell, and the Soul; Spaceland; The Hacker and the Ants, and other books

Title: The Third Intellectual Revolution: Everything is a Computation

Abstract: We’re presently in the midst of a third intellectual revolution. The first came with Newton: the planets obey physical laws. The second came with Darwin: biology obeys genetic laws. In today’s third revolution, we’re coming to realize that even minds and societies emerge from interacting laws that can be regarded as computations. Everything is a computation.

Does this, then, mean that the world is dull? Far from it. The naturally occurring computations that surround us are richly complex. A tree’s growth, the changes in the weather, the flow of daily news, a person’s ever-changing moods --- all of these computations share the crucial property of being gnarly. Although lawlike and deterministic, gnarly computations are --- and this is a key point --- inherently unpredictable. The world’s mystery is preserved.

As an application of this notion, consider the current argument over evolution vs. intelligent design. On the one hand, molecular biology tells us that organisms arise as program-like outputs from the inputs of the DNA and the cell chemistry, with the DNA and cell chemistry having been tweaked by millennia of evolution. On the other hand, some feel that organisms seem to intricately patterned to have resulted from evolution’s search of the space of all possible genomes. The synthesis is to recognize that gnarly biochemical computations are ubiquitous; fetus-like scroll patterns can, for instance, be found in a wide range of cellular automata.

Bio: Rudy Rucker is a writer, a mathematician and a computer scientist --- in that order. Born in Kentucky in 1946, Rucker moved to Silicon Valley when he turned 40. He recently retired from his professorship at San Jose State University. He has published twenty-six books, primarily science-fiction and popular science. He was an early cyberpunk and an editor at Mondo 2000. He often writes SF in a realistic style that he characterizes as transreal. His most recent books are: The SF novel Frek and the Elixir, (Tor Books, 2004), a far-future epic about a boy’s galactic quest to restore Earth’s ecology; and the nonfiction book, The Lifebox, the Seashell, and the Soul: What Gnarl Computation Taught Me About Ultimate Reality, the Meaning of Life and How to Be Happy, (Thunder’s Mouth Press, Fall, 2005.) Rucker just finished writing a novel called Mathematicians in Love, which gives SFictional life to some of his ideas about computation. His website can be found at www.rudyrucker.com.

John Smart
Founder and President, Acceleration Studies Foundation; Co-Producer, Accelerating Change Conferences

Title: How To Be A Tech Futurist: A Developmental Perspective on Accelerating Change

Abstract: Perhaps the most important thing we can do at Accelerating Change is to...
convene a wide spectrum of open-minded folks who care deeply about guiding technology as we move into an ever-faster future. Perhaps the second most important thing we can do is to discover the probable within the simply imaginable. In a world of accelerating information we need more than ever to hone our critical capacities and our access to the right data, setting our filters to stay clear-eyed, balanced, and in control. Futures studies is dangerous territory to explore. Futurists are not immune to drama, and may be more guilty of twisting the truth to fit their passions than many other groups.

This goes for tech futurists as much as any other variety. Artificial intelligence, one of the themes of this year’s conference, was oversold by the optimists in the 1960’s, again in the early 1980’s, and again as support systems for the Internet in the late 1990’s. Early innovators learned “the market wasn’t ready” for AI algorithms in the 1970’s, for virtual reality and expert systems in the 1980’s, and for web services in the 1990’s. Yet even with inflated expectations in regard to particular technologies in particular environments there is excellent evidence, from a wide range of disciplines and companies (Google, Dell, eBay, HP, Amazon, Yahoo, the list goes on...) that major constant change in the IT space is now a way of life. We are beginning to see that a profound transformation is taking place, and giving ourselves permission to discuss this in the most open and critical way we can.

In this talk I will outline what has come to be called the infopomorphic paradigm, a way to understand ourselves and the universe in information theoretic or computational terms. We’ll discuss such apparently “developmental” (not simply evolutionary, but also predictably emergent) trends as the increasing matter-energy-space-time (MEST) efficiency and density of physical-computational systems over universal, biological, cultural, and technological timescales. We can expect this “MEST compression” to continually surprise us with what Carver Mead has called our “unreasonably efficient” advances in the microcosm, such as the recent production advance in carbon nanoribbons. Here’s what may be the most important point: the very structure of our universe appears organized to drive accelerating discovery and computation in the microcosm, many orders of magnitude faster than in any other domain.

Such microcosmic acceleration in turn is enabling developments in intelligent agents and interfaces, immune systems, transparency, accountability, and an emerging computational dimension to our social space I call the Valuecosm, which I expect will dramatically improve the quality of human life, even as it brings new potential for misuse and abuse in its early years. We’ll discuss the importance of balancing both accelerating innovation and sustainable development in the history of human civilization. Along the way I’ll try to make the case that we need a lot more research into apparent developmental trends, as they make us more accurate forecasters and change agents, and as they are uniquely testable and falsifiable propositions about our future.

Bio: John Smart is a developmental systems theorist who studies accelerating change, computational autonomy and a topic known in futurist circles as the technological singularity (http://accelerationwatch.com). He is president of the Acceleration Studies Foundation (http://Accelerating.org) a nonprofit community for research, education, consulting, and selected advocacy of communities and technologies of accelerating change. He co-produces the annual Accelerating Change Conference (http://Accelerating.org/ac2005/), an annual meeting of 350 change-leaders and students at Stanford University, and edits ASF’s free newsletter, Accelerating Times, read by future-oriented thinkers around the world. He is a member of the Association of Professional Futurists, the FBI Futures Working Group, and on the editorial advisory board of Technological Forecasting and Social Change.
John has a B.S. in Business from the Haas School at U.C. Berkeley and seven years of coursework in biological, medical, cognitive, computer and physical science at UCLA, Berkeley, and UCSD. He is the author of *Planning A Life In Medicine*, 2005 (for premedical students). He's currently completing an M.S. in Future Studies at U. Houston and writing his second book, on the topic of accelerating change. John lives in Los Angeles, CA and can be reached at johnsmart(at)accelerating.org

**David A. Smith** (with Julian Lombardi)
Principal Architect, Croquet Project; CTO, 3Dsolve; Co-founder, Red Storm Entertainment (w/ Tom Clancy) and Timeline Computer Entertainment (w/ Michael Crichton)

**Title & Abstract:** See Julian Lombardi

**Bio:** David has been focused on interactive 3D and using 3D as a basis for new user environments and entertainment for almost twenty years. He created *The Colony*, the very first 3D interactive game and precursor to today's "first person shooters" like Quake... except Colony ran on a Macintosh in 1987. *The Colony* won the "Best Adventure Game of the Year" award from *MacWorld Magazine*.

In 1989, David used the technologies developed for the game to create a virtual set and virtual camera system that was used by Jim Cameron for the movie *The Abyss*. Based upon this experience, David founded Virtus Corporation in 1990 and developed Virtus Walkthrough, the first real-time 3D design application for personal computers. Walkthrough won the very first "Breakthrough Product of the Year" from *MacUser Magazine*.

The Croquet project is the culmination of David’s work on 3D component based architectures for the development and deployment of complex peer to peer environments including interactive entertainment. His first experiments in multi-user systems and interactive environments laid the groundwork for much of the architecture and user interface of Croquet.

David co-founded Red Storm Entertainment with Tom Clancy, and Timeline Computer Entertainment with Michael Crichton. He also co-founded Neomar, a wireless enterprise infrastructure company. David is CTO of 3Dsolve, and is on the board of Gensym Corporation.

**Cecily Sommers**
Strategic Principal, Unit 1; Founder and President, The PUSH Institute, producers of the annual PUSH Conference

**Title:** *Culture: The New Economy of Customer-Centric, Bottom-Up Innovation*

**Abstract:** Just as the Experience Economy is finally getting off the ground, there are now signs of an even newer trend on the horizon: The Culture Economy. The Internet revolution of the 1990s has birthed an insurrection among consumers. "The customer is king" has been deposed, and now consumers are acting more like anarchists as they hack and fashion their way into to all kinds of inventive exchanges of cultural meaning and identity through discrete social networks. The extraordinary number of variations of MasterCard’s "Priceless" campaign, independently made and distributed iPod commercials, and the rise of remixing and "mashing" (from music to web services and now to RSS feeds) are just some examples. The threat that blogs and customized shoe design represent to traditional channels of content creation, innovation and distribution
are just some of the early indicators of a deeper economic shift that is underway. Heads up: where culture leads, commerce must follow.

**Bio:** Cecily Sommers is Strategic Principal of Unit 1, Inc, an innovation think tank that directs inventive solutions for organizations facing change. Bringing together questions, thought leaders, and discoveries that help us grasp an understanding of a shifting landscape, Unit 1 engages clients in designing future-relevant positioning, experience design, and product innovation.

Cecily is also is Founder and President of The PUSH Institute, a non-profit organization that produces the highly acclaimed PUSH conference. Featuring thought leaders and luminaries from around the world, PUSH takes a deep dive into the discoveries and issues that are pushing the future in new directions.

She is a member of the World Future Society, has been nominated for the *Business Journal*’s "Woman ChangeMaker of the Year," and her “What’s Up With That?!" trend segment can be heard regularly on WCCO’s *Pat Miles Show*.  

**Melanie Swan**  
President, Cygnet Capital

**Bio:** Melanie Swan is a professional options trader and portfolio manager based in Silicon Valley. She has led an experienced career in investment management, strategic technology development, finance and entrepreneurship.

Ms. Swan formerly served as the Research Director of Telecom Economics for communications industry analyst and consultancy RHK, Inc. Prior to RHK, Ms. Swan was the Co-founder and President of the GroupPurchase Corporation, a firm that created direct input purchasing cooperatives for small businesses via the Internet and was acquired by Laguna Street Software in April 2000.

Prior to forming GroupPurchase, Ms. Swan was responsible for Strategic Alliances & Marketing Programs at iPass, Inc. the world’s leading provider of enterprise connectivity solutions. Before joining iPass, Ms. Swan was an Investment Banker at J.P. Morgan in New York, NY where she managed Merger & Acquisition transactions. Prior to joining J.P. Morgan, Ms. Swan was a Securities Analyst with Fidelity Management & Research Company in Boston, MA. At the start of her career, Ms. Swan was a Senior Consultant with Arthur Andersen & Co. in Los Angeles, CA where she designed, coded and implemented PC, client-server and mainframe based accounting solutions.

Ms. Swan holds an MBA in Finance from the Wharton School of the University of Pennsylvania and a BA in French from Georgetown University. She sits on the Board of a New York-based commercial real estate company and serves as the elected Treasurer of Equal Rights Advocates, a San Francisco-based non-profit organization. Ms. Swan is involved with a variety of science and technology projects, including participation in the Accelerating Change Conference and is a certified Master Practitioner of Neuro Linguistic Programming.
Peter Thiel
President, Clarium Capital; Co-Founder and Former CEO, PayPal; Author, *The Diversity Myth: Multiculturalism and Political Intolerance*

**Title:** Financial and Social Innovation

**Abstract:** See website

**Bio:** Mr. Thiel is Clarium's President and oversees the firm's research, investment, and trading strategies. Before starting Clarium, Mr. Thiel served as Chairman and CEO of PayPal, Inc., an Internet company he co-founded in December 1998 and that was acquired by eBay Inc. for $1.5 billion in October 2002.

Prior to founding PayPal, Mr. Thiel ran Thiel Capital Management LLC, the Menlo Park-based predecessor to Clarium, which started with $1 million under management in the fall of 1996. Mr. Thiel began his financial career as a derivatives trader at CS Financial Products, after he practiced securities law at Sullivan & Cromwell. In addition to managing Clarium, Mr. Thiel is active in a variety of philanthropic and educational pursuits; he sits on the Board of Directors of the Pacific Research Institute and on the Board of Visitors of Stanford Law School.

Mr. Thiel received a B.A. in Philosophy from Stanford University and a J.D. from Stanford Law School.

Jon Udell
Lead Analyst, *InfoWorld*; Software Developer

**Title:** Annotating the planet: Freedom and control in the new era of interactive mapping

**Abstract:** The explosive innovation triggered by Google Maps produced a shock of recognition. We always knew that our meatspace coordinates would merge with our cyberspace addresses. Now that it's really happening, familiar topics—identity and privacy, grassroots collaboration and centralized control, ownership and use of data—will be newly refracted through the geospatial lens.

**Bio:** Jon Udell is an author, information architect, software developer, and groupware evangelist. He has been an independent consultant, was *BYTE Magazine*’s editor-at-large, executive editor, and Web maven, and long ago developed business information products for Lotus. In June 2002 he joined *InfoWorld* as lead analyst. He also writes a monthly column for the O'Reilly Network.

T. Sibley Verbeck
Chief Scientist, StreamSage, a Comcast Subsidiary

**Bio:** Tim is a leading researcher in advanced computational linguistic and statistical techniques for analyzing audio, video, and text. He has received and led multiple R&D grants and contracts from leading research organizations such as NIST, the NSF, the US Army, the US Air Force, the Missile Defense Agency, and the Lemelson Foundation to conduct research into natural language understanding techniques, machine translation, and artificial intelligence. Tim is responsible for continuing to expand the state-of-the-art through StreamSage’s automated rich media indexing platform and related applications.

In January 2001, Tim received an award from the *Washington Techway Magazine* as one of the top young technology executives in the DC area; in 2003 he was selected as one of MIT Technology Review’s top 100 technology innovators worldwide under the age of 35.
Prior to joining StreamSage, Tim co-founded the Journal of Young Investigators, the first international, peer-reviewed publication for undergraduate science research which has been featured in the New York Times and the Chronicle of Higher Education. He has been an invited presenter at conferences ranging across Internet infrastructure, digital television, scientific publication, and undergraduate science education and repeated guest lecturer at the Georgetown University Department of Linguistics.

Vernor Vinge
Mathematician; Computer Scientist; Author, True Names; The Coming Technological Singularity

Title: Can We Avoid A Hard Takeoff?: Speculations on Issues in AI and IA

Abstract: Based on raw hardware trends, it's plausible that within thirty years we will create superhuman intelligence -- and so pass through a technological singularity. This is a different form of change than imagined by futurisms past. In fact, to think that we can predict beyond this singularity is a bit like expecting a goldfish to understand AC2005.

Perhaps this transition will take decades, with the exact beginning and end points the topic of much entertaining debate. But the transition could take less than 100 hours. Such a "hard takeoff" is almost certainly a Very Bad Thing. (Illustrations of this assessment will be provided!)

Is there any way to prevent a hard takeoff? Perhaps. In this talk, I will explore the virtues -- and dangers -- of Intelligence Amplification as a strategy for dealing with hard takeoffs.

Bio: In 1982, at a panel for AAAI-82, Vernor Vinge proposed that in the near future technology would accelerate the evolution of intelligence itself, leading to a kind of "singularity" beyond which merely human extrapolation is essentially impossible. In the 1980s and 1990s, he elaborated on this theme, both in his science fiction and nonfiction (http://www-rohan.sdsu.edu/faculty/vinge/misc/singularity.html).

Vinge holds a PhD (Math) from the University of California, San Diego. From 1972 to 2000 he taught in the Department of Math and Computer Sciences at San Diego State University. Vinge is the author of a number of science-fiction stories, including "True Names," A Fire Upon the Deep, and A Deepness in the Sky. The last two items each won the Hugo Award for best science fiction novel of the year. He has also won best novella Hugos for "Fast Times at Fairmont High" and "The Cookie Monster." His story, "Synthetic Serendipity", appeared last year in IEEE Spectrum: http://www.spectrum.ieee.org/WEBONLY/publicfeature/jul04/0704far.html

Terry Winograd
Professor and Director, Human-Computer Interaction programs, Stanford University; Principal Investigator, Stanford Digital Libraries Project and Interactive Workspaces Project; Founding Faculty Member, Stanford Institute of Design

Title: Teaching Innovation: Inventing the d.School (Stanford Institute of Design)

Abstract: Design is an orientation we bring to the activity of creating technological artifacts and embedding them in people’s lives. Although we can label fields of design by the kind of artifact (“product design,” “software design,” “systems design”, etc.) every successful design is more. It is an intervention in the individual and social lives of the
people who encounter it. The field of software design has often focused on the software artifact, identifying the design processes, tradeoffs, and decisions that will make the software robust, efficient, and malleable. It works in tandem (when things are going well) with interaction design, which focuses on the fit of the resulting software to human abilities, needs, and concerns.

Today, most of the challenging software design problems are not bounded by a particular application or device, but require attention to the totality of a socio-technical system. Security is one obvious example. The overall security of a network is not just a matter of well designed code, but requires understanding the ways people will interact, both individually and in the large. The design process needs to encompass knowledge that goes well beyond “computing” or “software” in the narrow sense. Today’s software architects and programmers are designing more than software-intensive systems: they are also designing people-intensive systems. The research challenge is to integrate the approach to design that has been applied in the more computer-focused aspects of software design with the broader orientation of interaction design and product design. There is a great deal of informal wisdom about designing human-machine and computer mediated-human-human interactions. Research is needed on how to make this wisdom rigorous and reusable.

I am one of eight founding faculty from Computer Science, Mechanical Engineering, Management Science and Engineering, and the Graduate School of Business, led by David Kelley of the Stanford Design Division (and founder of IDEO Design) who are working to create the d.School, the Stanford Institute of Design. See http://www.stanford.edu/group/dschool/index.html for more. This new program seeks to significantly advance interdisciplinary research and teaching and strengthen the connection between the university and industry. If successful, the ideas and people that emerge from this program will set the standard for how teams innovate, how universities integrate disciplines, and how design is taught around the world.

Bio: Terry Winograd is Professor of Computer Science at Stanford University, where he co-directs the Human-Computer Interaction Group and the teaching and research program in Human-Computer Interaction Design http://hci.stanford.edu He is also a founding faculty member of the new Stanford Institute of Design (http://dschool.stanford.edu ). He is a regular consultant to Google, a search engine company founded by Stanford students from his projects.


Winograd was a founding member of Computer Professionals for Social Responsibility, of which he is a past national president. He is on the editorial board of several journals, including Human-Computer Interaction, ACM Transactions on Human-Computer Interaction, Personal Technologies, and Information Technology, and People.
Panels

Prospects for AI (Saturday, 10:50am - 12:20pm)

Join Neil Jacobstein, Patrick Lincoln, Peter Norvig, and Bruno Olshausen (see their titles and abstracts above) for four very insightful looks at current and future prospects for artificial intelligence technologies, and heir enabling sciences. Increasingly AI enablers include, to the satisfaction of the biologically-inspired design advocates, new theoretical models in neuroscience.

Future Makers: Educating our Machines (Saturday, 1:40 - 2:40pm)

Join Bruno Haid (System One) and Marcos Guilien (Artificial Development) for two enlightening demonstrations of truly innovative AI projects on the edge of emergence.

Future Makers: Shrinking the Planet (Saturday, 1:40 - 2:40pm)

Join Peter Barrett (Microsoft IPTV) and Scott Rafer (Feedster) for a look at two very different yet complementary IT systems. Each can greatly personalize the information we receive, “shrinking” the planet by making all the world’s knowledge more accessible than ever before.

Education: Rebuilding our Bypassing our Institutions? (Sunday, 10:45am – 12:00pm)

Join Ruzena Bajcszy, Shun-Jie Ji, Sister Denise Lawrence, and Robin Raskin for four very different yet complementary perspectives on the kind of education we need in the twenty first century. Most people agree that our educational institutions need major reform. Come hear their thoughts on how to prepare our children and ourselves for thriving in an era of globalization and accelerating change.

Future Makers: Building the Metaverse (Sunday, 2:00 - 3:00pm)

Join Philip Rosedale (Linden Lab/Second Life) and David Smith and Julian Lombardi (Croquet) for a look at the current leading 3D online world community where users own copyright on their creations, and a peek at a very innovative new virtual world development project. Neal Stephenson’s Metaverse is closer than ever before.

Future Makers: Small, Smart, Open (Sunday, 2:00 - 3:00pm)

Join Steve Jurvetson (Draper, Fisher, Jurvetson) and Blake Ross (Mozilla Firefox) for an hour with two very inspiring creative minds, advocates for nanotechnology, innovation, and open source, who are also both standout Stanford success stories.

Next Up: Take-Home Thoughts (Sunday, 3:45 – 5:15pm)

We close AC2005 with brief thoughts from George Gilder, Joichi Ito, Steve Jurvetson, Beth Noveck, Rudy Rucker, and Cecily Sommers on issues and challenges for the future. They will tackle some of your tough questions and try to leave you with valuable take home thoughts for the next exciting phase of our rapidly-changing world.
Debate

Join us for a lively, mud-slinging match (we hope!) between Ron Kaplan (PARC/Stanford) and Jan Pedersen (Yahoo!), two titans of natural language technologies, as they consider the challenges to turning today’s browser into tomorrow’s conversational user interface. Mediated by NLP expert T. Sibley Verbeck (StreamSage/Comcast). I want my CUI now!

Progress in Search: A Conversational User Interface (CUI) by 2015?
Our debate at AC2005 will consider differing strategies to achieve a first-generation conversational user interface (CUI, pronounced “cooey”), in the coming decade.

Achieving a functional CUI would be perhaps the single most important and empowering artificial intelligence/intelligence amplification breakthrough we may witness in our lifetimes. It would give us the ability to talk to, be productive with, and be continually educated by our computers, cellphones, internet, and other complex technologies using simple but natural human conversation.

Moving beyond today’s early voice response and language processing systems, the first reasonably sophisticated CUIs will allow us to converse semi-naturally on an ever growing range of topics with our machines, and to develop a level of personalization and sophistication in our public and private preferences, user histories, networking and knowledge and relationship management systems that is presently unattainable. While there will be several new problems and abuses with their early use (consider for example the liability issues of humans putting too much trust in the “advice” of our early, primitive machines), CUIs also hold the promise to humanize and universalize access to all our complex technology, to help educate a new generation of continually inquisitive youth, to unite the world’s linguistic cultures in one transparent conversation, and to unleash new economic productivity in ways presently unimaginable and unaffordable using our currently less sophisticated technologies.

How soon might a useful CUI be created? What development strategies (top down, bottom up, symbolic, statistical) and "killer applications" will be most effective in its emergence? How might development be aided by the exponentiating databases of human language now emerging on the web, the growing archives of our own written and spoken personal conversations (email, blogs, lifelogs, podcasts) and the increasingly distributed, peer to peer, and reconfigurable processing, communications and storage capacities of our computing platforms?

As one central topic of debate, the panelists will also consider to what extent will new search technologies may usher in the CUI of tomorrow. Consider that average user queries to Google in 2005 are now at 2.7 words and 200 million a day, up from 1.3 words and millions a day to Alta Vista in 1998. It took both significantly faster hardware and clever new algorithms (e.g., PageRank) to achieve this impressive seven year doubling in query length. What new algorithms and hardware might take us to an average of 5.4 word queries in 2012? To 10.8 words in 2019? And once we have widespread long query interactions, how soon can we expect hundreds of millions of users to "prune the system" in the direction of human-level grammatical complexity in sentence structure?

With good fortune, seven word user queries might become common by 2015 in a range of application environments, eliciting surprisingly specific verbal and nonverbal machine responses. If the average human-to-human spoken sentence is fourteen words, a seven word CUI sentence, either spoken or typed, and conducted in any major language, might represent a whole new level of computer usability and connectedness for human civilization. If we also begin to see and expect constant improvement from personalized CUI interaction, significant new social complexity and diversity may result.

Ambiguity/contextuality problems increase rapidly as queries get longer. But with better ontologies (rule based relationship sets), exponentiating context-specific conversational databases, significantly more powerful computers, the increasing usefulness of bottom up statistical processes, and our relatively fixed set of human language responses relative to the speed of improvement of computer systems, we are now seeing powerful new forces being brought to bear on old problems. How can we best employ these to continue to deliver exponentiating CUI performance?

These and other fascinating issues and questions relative to the conversational user interface will be explored by our distinguished presenters in a spirited and friendly debate. Come learn how you can get involved in accelerating this very important AI/IA advance in coming years.
Participants

“Visions of the Future” High School Scholarship Essays
Sponsored by the University of Advancing Technology

This year, 10 outstanding high school students have been awarded scholarships to attend AC2005 courtesy of UAT. Education is an important part of ASF’s nonprofit mission and we are honored to partner with UAT to bring young, dynamic minds to our annual event.

We asked applicants to write a 200-400 word essay answering the following questions:
1. Describe the most important changes in the world you think you are going to see happen over your lifetime. Is this different than what you would ideally like to see happen?
2. How would you like your government, businesses, schools, and other institutions help you deal with those changes?
3. What things can you do personally to prepare yourself for the future?
4. What can you do to shape the global future?

Here are two of the winning essays. Congratulations, Jason and Jonathan!

Accelerating Change 2005 Essay
By Jason Gao

Our current state of technology and global society is good, but not excellent. We’ve come a long way from imperialism and exploitation, but in parts of the world, there still exist problems so easy to solve, if people simply knew, they would be appalled and surprised. During my lifetime, I hope to see a great many changes move us from good to excellent, and presently, change centers on technology. Nations now benchmark their status by what technologies they have, a dynamic condition rather than a static predicament such as a lack of natural resources. As long as people innovate and continue to think of new solutions to their individual problems, technology will continue to expand, but it will not matter where. I fully expect a global exchange of ideas and new developments that enables collective thought, instead of disparate groups of researchers coddling their technologies to themselves, competing against the rest of the world.

However, all technology has its downfalls. There will always be ways for those willing to subvert seemingly benign ideas. Sometimes, the most beneficial developments are also the most deadly: we may become so dependent on a technology that its weaknesses become our weaknesses, too. A failure of the technology may mean the failure of a nation. I also fear that people will become too focused on “high-tech” inventions. While a complex solution to a complex problem holds a certain allure, the simple and elegant solution, although not quite as impressive, is often the technology that goes on to become what all technology should be: a solution or improvement that can quickly and easily spread throughout the world, and is not limited to the wealthy or able. The recently developed portable water filter is an excellent example; it doesn’t shoot down missiles or fuse nuclei, but does provide a year of clean drinking water in Africa for only two dollars a person.

Any sort of organized entity, like a school, business, or government, is in an excellent position to secure a better future. These groups have the political and financial clout to push for change, and to increase awareness. People are more forceful when they shout in groups. As individuals, we can help by simply continuing to care and think about our world and our problems. Apathy leads us nowhere, but a commitment to ponder what we can do to change the world for the better, and a resolve to follow through on our ideas, will help us take the baby steps towards a better future.

Visions of the Future
by Jonathan Finn-Gamino

With the rapid and multifaceted advances in technology, there will be many opportunities to effect positive changes in our society. As technology becomes more complex, it correspondingly becomes smaller. Supercomputers will eventually be so tiny that they will be ever-present; embedded in walls, jewelry, etc. Similarly, the field of nanotechnology (technology at the atomic scale) will play an increasingly important role. It can potentially provide for self-replicating and assembling nano-robots (nanorobots) and nano-machines,
which could explore and assemble objects atom by atom. Such devices could provide limitless possibilities and completely revolutionize such fields as medicine, exploration, and engineering. Artificial intelligence (AI) is also evolving and becoming more autonomous, capable, and independent of human control. And, as technology becomes more interwoven in our everyday life, government, industry, and education, the phrase "at the touch of a button" will be redefined. Because of the exponential growth of technology, it is foreseeable that diseases like AIDS and cancer will be eradicated, and such problems as starvation and poverty will be mitigated.

But, what are the negative effects of these technological advances? Miniaturization and nanotechnology could be used to engineer more destructive viruses, using nanobots and other nano-weaponry, which, because of the size, would be impossible to stop and could usher in a new era of nano-warfare and terrorism. Moreover, nuclear and deadly bio-engineered devices could become more powerful, smaller, and easier to access. As AI evolves, it may grow beyond control. And, when technology is complex and omnipresent, there is the opportunity to misuse technology to tyrannize and compromise rights afforded by freedom. Because of the availability of technology through mass production and distribution, there is also a greater concern about dependence. And, there will be larger issues because of longer life spans, overpopulation, and the diminished resources on Earth.

In using technology, there must be a balance, a weighing of the benefits and the detriments. The only way to ensure a better future is to closely and thoroughly examine and monitor both the growth and development of technology and its impact on our society. Precautions must be taken; if new technology is abused, develops too rapidly to control, or our society takes a "wrong turn," the results would be devastating. It seems that we need to be constantly vigilant about our choices, motives, and applications. After all, the hydrogen bomb was conceived as a means to help mankind, not destroy it.

Global Awareness Attendees
Sponsored by the Omidyar Network

Because of the generosity of Omidyar.net, we are privileged to have two distinguished leaders in the field of Futures Studies from Tamkang University in Taipei, Taiwan here at AC2005. Tamkang is rated the #1 private university in Taiwan and all of its undergraduates are required to take courses in Futures Studies. We applaud Tamkang’s leadership and vision and hope to emulate them here in the US. If you meet either Dr. Shun-jie Ji or Dr. Chien-Fu Chen this weekend, please be sure to give them a warm welcome.

Co-Location Groups
We are also pleased to announce that three groups are co-locating at AC2005. The American Cancer Society’s Futuring & Innovation Center led by Randy Moss, the FBI Futures Working Group led by Carl Jensen, and a group of Omidyar.net members. A warm welcome to you all and thank you for participating in our event.

Participant Statements
All 350 Accelerating Change attendees are asked to submit an optional brief participant statement of Passions and Futures (topics of special interest), current Projects and Problems (for potential feedback or collaboration), and Resources to Recommend (for personal or professional development).

Those we have received are listed below. Participant statements are not required, but they do help greatly to maximize the quality of networking during our annual event.

Interested in forming your own interest or discussion groups at AC2005? Want to do your own presentations? Use our Open Space/Birds of a Feather times on Saturday and Sunday to meet others with like interests.
Participant Statements

Stephen Aguilar-Milan                      John Lobell
Jef Allbright                               Peter McCluskey
Natalie Ambrose                             Riccardo Melonaro (listed with Enrico Bertini)
Miguel Aznar                                 Cheryl Morris
Paul Baclace                                 Michael Olson
Matt Bamberger                               Frank Paynter
Robert Berger                                Ryan Rawson
Enrico Bertini                               Herwig Rollett
Phil Bowermaster                             Lee Shupp
Alvis Brigis                                 Chris Smith
David Clemens                                Keith Spencer
Maren Connary                                Sri Sridharan
Tom Esensten                                 Phil Steele
Jonathan Finn-Gamino                         Lisa Tansey
Ronald Freshman                              Allen Taylor
Jason Gao                                    Hans van Rietschote
Brenda Grimaldi                              Peter Voss
W. Thomas Grové                              Kennita Watson
Rodney Hill                                  Timothy Wilken
Mark Lenhart                                 Will Wiser
Bud Levin                                    Janet Woerner
Harold Linstone                              

Stephen Aguilar-Millan Director of Research, European Futures Observatory
stephena@euf.org

Passions And Futures
My interest is in societal futures rather than technological futures, although I have to admit that recent technological changes are reshaping society. We have an interest in the rate at which technology is changing in relation to the rate at which society - with its legal and ethical framework - changes in response to changes in technology. This has given us an interest in the sustainable - as opposed to the disposable - development of technology.

Projects And Problems
We are currently working on a project examining the social boundaries to technological development. This is examining those emerging technologies, whilst being feasible scientifically, are unacceptable socially. We operate through a global network of Interns, and would welcome any proposals to contribute to this initiative from any interested parties.

Resources To Recommend
The Association of Professional Futurists (www.profuturists.com) is always a good place to start. A general enquiry is often distributed across their Listserv for comment and assistance. I also generally attend the World Future Society conference (www.wfs.org), as this does contain some very useful nuggets at times. The content from both of these sources tends to be a bit "American".

For a "European" perspective, a good source for me is the Economist (www.economist.com) and Prospect magazine (www.prospect-magazine.co.uk). For a very different view, I take Le Monde Diplomatique (www.monde-diplomato.com), just to remind myself that most of the world doesn't speak English. Finally, for me, the upper reaches of human endeavour are reached through the BBC web site (www.bbc.co.uk), which provides both informative and unbiased news and reviews.
**Jef Allbright**  
*jef@jefallbright.net*

**Passions and Futures**
I'm passionate about the impact of accelerating technology on our quality of life near and long-term. I see the double-edged sword of knowledge enabling tremendous new capabilities for self-expression and growth—and with great freedom comes great responsibility to manage wisely.

Interestingly, an expanding environment of increasingly diverse challenges contains the seeds of increasingly creative opportunities for growth in directions of our choosing.

**Projects and Problems**
Promoting awareness of ourselves and our environment, developing increasingly effective systems of interaction, leading to actions that achieve desired results over increasing scope and are thus considered increasingly moral. I see Intelligence Amplification technologies, working through individuals to provide wiser choices at the group level, as essential to our success. I find great value in networking for collaboration, inspiration, and refinement of understanding.

I run a blog (on the web) and virtual 3D museum (in Second Life) dedicated to Empathy—Understanding ourselves and others, Energy—What drives us and provides a sense of purpose and direction, Efficiency—Tools and techniques for getting things done, and Extropy—Expanding our understanding and capabilities.

**Resources to Recommend**
Visit my weblog at http://www.jefallbright.net and the Futurist Museum (under construction) in Second Life at the following coordinates: Scafell(172,108). (Picture above is my Second Life “avatar”, Jef Ambassador). For general future-related news and discussion I recommend the extropian list and the wta-talk list though the signal to noise ratio varies widely. For stimulating conversation and making friends with like-minded people, the LA Future Salon is well worth the monthly travel from Santa Barbara.

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**Natalie Ambrose**  
*Director, Emerging Issues and Strategic Planning, The Council on Foundations, Washington, DC*

**Passions And Futures**
I am fascinated by all topics and issues having to do with the future and explore as much as I can into what is being said, written, and forecasted. I am particularly interested in and concerned about the singularity -- how our advances in science and technology are being used and managed and how people and our institutions will have to adjust and adapt.

Particularly the ethical considerations behind and the implications of various trends and new developments. I hope that in 30 years the vast majority of mankind will be more collectively conscious about their actions and impact as well as the possibilities to make this world cleaner, safer, more humane, and sustainable.

**Projects And Problems**
Through my work I monitor what is happening in and what is being said about the future of "philanthropy". Its an interesting sector, with a lot of potential for change and betterment on a big scale. More than that, I am interested in the concept of “altruism” – how it comes about, how it is expressed, and whether it’s inherent or learned.

**Resources To Recommend**
I recently launched an "Emerging Issues" blog to inform our member foundations about some of the critical issues and emerging trends being discussed by the policymaking, academic and think tank communities in Washington, DC. You can access the blog at: http://blogs.cof.org/emergingissues/. And please send ideas and feedback! Also useful starts for any budding “futurist” are the World Future Society (www.wfs.org), the Association of Professional Futurists, (www.profuturists.com), and the Shaping Tomorrow website (www.shapingtomorrow.com).
Miguel F. Aznar  Executive Director of KnowledgeContext Aznar@nowledgecontext.org

Passions and Futures
How do we understand technology? How do we evaluate it? Since the first stone tools, we have used technology to transform our world...and technology has transformed us. Did anyone anticipate how the spear, written language, or global travel would create the environment in which our surviving ancestors were fittest? Will we select and guide 21st century technology to create a future we want? Amplifying our intelligence and creating artificial intelligence may be the two most catalytic ways we create that future.

Projects and Problems
I direct an educational nonprofit corporation that teaches young people, through a classroom curriculum, how to understand and evaluate technology...any technology. KnowledgeContext's book, Technology Challenged, takes this strategy to a deeper level for the parents, teachers, and others who want our society to be able to think critically about technology, and not just learn which buttons to push. In a complementary role, I am also the Director of Education for the Foresight Nanotech Institute. In that capacity, I identify, evaluate, and promote education on nanotechnology. The context of understanding and evaluating nanotechnology is found in my efforts at KnowledgeContext.

Resources to Recommend
Our classroom curriculum on understanding and evaluating technology is available for download at http://knowledgecontext.org/. My book, Technology Challenged, is described at http://knowledgecontext.org/Reading/Technology_Challenged.htm and can be acquired from Amazon or the Accelerating Change Conference Bookstore. I am always interested in discussing the patterns underlying technology, in particular, those that explain how it changes, how it changes us, what its costs and benefits are, and how we evaluate it. If you care about education, talk to me about how we can promote technological literacy.

Paul Baclace  peb.acc@baclace.net

Passions and Futures
Understanding how the human brain creates a mind is the ultimate, interesting area of study since it can impact metaphysics, philosophy, psychology, social endeavors, economics, education, entertainment, health care, politics, etc. Artificial Intelligence is an in vitro experimental approach to studying intelligence that synergizes with the neurosciences. Along the way, Intelligence Amplification can speed up the efforts. In a broad sense, any tool (including natural languages) that helps cognitive processes go deeper, faster or wider can be considered an intelligence amplifier.

Projects and Problems
I would like to find or create a simple visualization tool that helps people understand how to make difficult but important decisions involving tradeoffs. The inspiration for this comes from various efforts to illustrate Bayes Theorem. I am interested brainstorming about the creation of something like a Bayes Theorem calculator that can be used by anyone to make a decision in the face of false positive/negative detection combined with probabilities and costs. If made easy enough to use, such a tool would amplify intelligence.

Resources to Recommend
http://www.buddybuzz.net
http://www.baclace.net
Matt Bamberger contactmatt@mattbamberger.com

Passions and Futures
I believe that within the next 30 years, barring a major biotech catastrophe, we will experience a technological singularity driven by the development of strong AI.

The technologies underlying both AI and bio-engineering are too useful and too widespread for us to be able to cancel or delay the singularity. Instead, our best course of action is to work to maximize the likelihood of a good outcome. I believe that the best way to do this is to develop an AI for that purpose. This is important—we need to get it right.

Projects and Problems
I’m interested in creating the strong AI that will drive the singularity. A number of distributed computer systems (including one that I run), now have collective computational power that approaches that of a human brain, and the next decade will make brain-level computational capacity readily available to medium-sized organizations. Clearly, the only thing standing between us and super-human AI is the problem of developing the necessary software. While that’s a hard problem, I don’t believe it’s unsolvable. I’ve worked on successful projects who object code was roughly comparable to the portion of the human genome devoted to intelligence.

I’ve previously worked in the past on desktop applications and on games, and am currently working on a massive online service. Within the next few years, I’m planning on switching to working full-time on AI.

Resources to Recommend
Jeff Hawkins at the Redwood Center for Theoretical Neuroscience and Eliezer Yudkowsy at the Singularity Institute for Artificial Intelligence are both doing very interesting work.

Robert J. Berger rberger@ibd.com

Passions and Futures
The area I have been most involved is solving the last mile problem for broadband Internet Access. The last few years has been making 802.11 wireless suitable for that application. My belief is that making Internet access an alternative to the oligopoly of mass communications is key to opening the future to many more possibilities. Renewable energy and sustainable infrastructure is another area of interest..

We need to be converting our brittle and wasteful ways of sustaining ourselves and our technology to ways that can last thousands of years. The flip side of that is the expectation that we will be seeing breakthrough in anti-aging and life extension within the next decade. How can we prepare for that and also help accelerate its dispersement in society.

Projects and Problems
As I mentioned, routing around the oligopolies of mass communication and creating new content and ways to transport that content are my main focus. I would also be interested in working with folks on ways to accelerate the development and introduction of anti-aging and life extension drugs and techniques. And of course the development of sustainable and renewable energy and technologies.

Resources to Recommend
Personal website (which of course will someday be updated): http://www.ibd.com
Life Extension / Anti-Aging: http://www.betterhumans.com/
Enrico Bertini and Riccardo Melonaro Chairman and Co-Chairman, Rick Geniale Enterprises Inc.

Passions and Futures
What fascinates us is to launch or to accept challenges, especially those that seem impossible to overcome. More generally, we think that life is a challenge. We are entrepreneurs. One of our passions is to create companies in the most innovative fields. Rick Geniale Enterprises is our new company: we are working on AI. We have multidisciplinary knowledge in computer science, biology and evolutionary biology, cognitive and evolutionary psychology, neuropsychology and neural science, linguistics, philosophy of mind. We have personally managed a broad range of technologies and applications in many areas: telecommunications, networking, search engines, expert systems, object-oriented technologies, relational databases and computer graphics, software engineering, hypertexts, manufacturing systems, medical systems, real-time systems, security systems, etc. We expect a continual acceleration of all technologies that will be able to enhance the individual acquisition of knowledge, the individual health, the individual creative spirit and the individual will to compete in everything.

Projects and Problems
The opportunities and challenges we see are in the field of AI. We firmly believe that the advent of the “Real AI” will represent the epochal event that will bring to the birth of a true “Technological Renaissance”; we also believe that this represents a “New Human Era” (not Transhuman, neither Posthuman). In that new era, in which humans will be finally able to get rid of the chains of the current “technological syndrome”, they will be able to express their “creative spirit” in all the fields of human activity (Creative Society). We think the development priorities of a “Technological Renaissance” (personal, cultural, national, global) needs a radical change in venture capitalism and investment mechanisms, with a totally new concept of “economic value”.

Resources to Recommend: PIBOT & PIBOOLE. We have recently launched a new challenge: We expect PIBOT to pass the Turing Test by 2007.

Phil Bowermaster Webmaster, Speculist.com Bowermaster@gmail.com

Passions and Futures
I believe that the future is a growth area, not only because we are moving into it more rapidly than we ever have before, but also because there’s more of it every day. Intuitively, we might expect that -- as time marches forward -- the past would get bigger, the present would stay the same, and the future would get smaller and smaller. Finally we would reach some “end” point and there would be nothing left but the past. But that doesn’t seem to be the case.

It's true that every day there are more things past than there were the day before. The past is growing. But paradoxically, the future is growing, too. Each new development spawns not one, but many possible futures. A time of accelerating change is a time of accelerating possibility.

Projects and Problems
If possibility is expanding exponentially, the greatest challenge we face in shaping the future (or being shaped by or into the future) depends ultimately on two -- initially -- human capabilities:

1. Our ability to imagine.
2. Our ability to discern and work towards the best possible outcomes.

Ancient philosophers were on the right track when they set out to try to define the meaning of beauty and the nature of the good. Today we grapple with the same basic questions. Someday soon, humanity’s progeny will do likewise. We need to teach them well. But first, maybe we need to brush up on these things ourselves.

Resources to Recommend
If the past is smaller than the future, then we must strive to create, or to be, that little piece of an age now lost that encodes what mattered most -- then or now. I recommend this poem at http://www.eecs.harvard.edu/%7EKeith/poems/urn.html.
Alvis Brigis

Passions and Futures
Like the majority of attendees at AC2005, my brain also strives at the broadest possible systems simulation/quantification. So, I’m somewhat obsessed with how the spectrum of hard and soft technology interacts with biology and universal laws to result in our present dynamic of convergence and an increasingly fluid global economy.

Specifically, I’m fascinated by the idea that as the time required for one generation of technology decreases and Flynn’s Effect (in direct correlation) propels human system IQs at an exponential rate, we can expect a splintering of human generations because children of slightly different ages encounter a drastically different technological environment during their very short critical learning periods. Is there a Generational Compression going on?

I also have a good amount of fun contemplating what new social and business structures will emerge in the near-term from a perspective rooted in entertainment. As the lines between classical and economic gaming blur, I see social/comm/tech structures as central to the autocatalytic evolution.

Projects and Problems
Reality Civil War: Imagine a reality TV show edited by international observers in which robotic probes broadcast a civil war in a geographic area with low infrastructure. This dynamic approach to an age old problem is sure to have dynamic results (positive and negative), and is just one of a bazillion new complex game solutions that will be available for execution in just a few years. Then think about the baby steps the TV and video-game industries need to take in order to get to that level of complexity, especially as technology and society continue to develop. What emerges is a developmental trajectory for programming, gaming and new business autocatalytically linked to the evolution of the broader system.

I am currently working toward playing a part in making some of those in-between shows, games and corresponding structures.

Resources to Recommend
Science Daily: Features archives of the most important scientific discoveries in recent history. It's particularly interesting to search specific fields and see the developments listed by date. You can see accelerating change and convergence at work over the past few years.

Lulu.com: On-demand publishing. Print one book at a time and make more than you would by going through a publisher. This is perfect for budding authors. Plus, imagine what this will mean for infra-structural development around the world.

David Clemens Monterey Peninsula College, Monterey, CA

Passions and Futures
My passion is teaching and positively affecting students’ lives. I devised a literature/film class that engages some of the issues of human destiny (and human definition) in terms of the way Hollywood has depicted them (such as Blade Runner, 2001, Gattaca). The next 30 years are filled with conflicting potential—I would like to see the human race focused on exploring the universe but I realize we could also become omphaloskeptics, cowed by indifference of cosmic nature.

The greatest risk is continuing erosion of human dignity from further redefinition of when and what a human being is—that is, technology proceeds blindly providing expanding opportunities for control and supposed perfectability. I would not want to live in the world of Gattaca, and I hope that sensitizing students to such a possible future will cause them to seek humanizing avenues for change rather than “inhumanizing” ones. Finally, I think that to be human involves encountering and coming to terms with mortality. In 30 years I expect to be dead, but, as Robert A. Heinlein’s character says when going into battle, “C’mon you apes!"
Projects and Problems
Primarily educational—I’m trying to put my “robot class” online even though I find online education a shadow of real education. As Martin Pawley once said, all technology acts as insulation against human contact. Futurist issues need to be more infused into the schools so that students have some sort of mental construct about the potentials inherent in the developments around them. Most students have no image of the future at all, or the past either, for that matter; they are ahistorical and cocooned. What sort of government eventuates from the ahistorical and cocooned?

Resources to Recommend
Class website: (http://www.angelfire.com/realm2/singularity) I am affiliated with the Association of Literary Scholars and Critics, the National Association of Scholars, and the Foundation for Individual Rights in Education.

Maren Connary mconnary@gmail.com

Passions and Futures
I have always had a passion for biology and design, but recently this has evolved into an all-encompassing interest in the technology that is shaping both. The term Biotechnology is no longer specific enough to describe a single technology but rather a collection with the potential to provide alternative energy sources, super-strong construction materials, environmental clean up, highly-effective therapies, vaccines, food sources and a host of other solutions. My goal is to find the bridges between these emerging technologies, become their advocate and encourage their ethical, sustainable and global application.

Projects and Problems
I believe biotechnology will continue to reshape the pharmaceutical industry by providing diagnostics and then therapies with much higher specificities and thus fewer side effects than our current pharmacopoeia. Coupled with this transition is the potential for many far-reaching ethical conflicts, economic ramifications and class discrimination.

One of my areas of particular interest is neuropsych and the pharmacological, biotech and device advances that could lead to exponential human computing power. How would society change as technology unlocks the other 90% of our brain we purportedly don't currently use? What are the ethical ramifications? Will this be a profit-driven cause? Will the military have access to the technology first, and if so how will that play into our current state of global affairs?

Resources to Recommend
I am based in NYC and work for a small specialty pharmaceutical firm. If you have similar interests, information to share and/or would like to have a lively conversation, please feel free to contact me. Some sites worth looking at:
http://techforum.org.uk. The Forum for Technology, Citizens and the Market was set up by the RSA to tackle some of the problems associated with the introduction of new technologies into society.
www.cordis.lu. The European Commission’s info service on European Research and Innovation activities.
www.acunu.org. The American Council for the United Nations University is a U.S. NGO that provides a point of contact between Americans and the primary research organ of the UN - the United Nations University (UNU) - which focuses intellectual resources from all nations on world problems.
http://gyre.org/. Tracks the breakthroughs and implications of the next military and technological revolutions.

Tom Esensten commandcollege@verizon.net

Passions and Futures
My biggest passion is government's ability to anticipate and proactively address the future. The history of lag between problem recognition and response results in non-responsive government, bureaucratic systems and costly programs. I am also concerned about a loss of human spirit in the continuing rush toward technology.
Participants

There is value in hard work, frustration, adversity and struggle. There is value in two cultures recognizing and accommodating differences. I am concerned that technology, as it has been presented, will erode opportunities for learning through doing and learning through failing.

Projects and Problems
As a consultant committed to serving the public sector, I work with clients to affect positive futures oriented change. I am under contract to run Command College, an executive training program for law enforcement managers, focusing on futures, leadership and strategic change. We constantly talk about the future and its implications for communities and public safety. Debates are energizing and, at times, controversial. Awareness is high - resources to creatively respond are limited.

Resources to Recommend
Visit CommandCollege.com and view the extensive collection of futures files posted by our participants. This section of the site should have open public access very soon.

Jonathan Finn-Gamino j_finngamino@hotmail.com

Passions and Futures
Technology is in a constant state of evolution, and I am interested in several fields, particularly nanotechnology. Because of the many technological advances that will be achieved, our present environment will seem simplistic and underdeveloped to the next generation. Great strides will be made in prolonging life, eradicating diseases, and altering innumerable aspects of everyday life. However, with the exponential growth of technology, its use/abuse, and the dependency it creates, many problems may also appear, i.e. depletion of the Earth’s resources, overpopulation, etc.

Projects and Problems
I’d like to see and work towards nanotechnology growing and expanding; a recently developed interest has allowed me to understand and anticipate its many possibilities and applications. I’d also like to see robotics, AI, and bioengineering develop and progress to assist in fields ranging from medicine and environmental science, to education and adaptation for individuals with disabilities. Finally, I believe it is important to promote and encourage technology in our society if we wish to successfully and more easily attain our goals.

Resources to Recommend
Newly found mental_floss (the magazine) has proved to be quite interesting.

Ronald B. Freshman freshman@earthlink.net

Passions and Futures
My passion is to add meaning to each individual life by establishing massive small group conversations whose goal it is to create real human scale communities that are safe, sane and sustainable. By promoting Goal Oriented Open Dialogue (GOOD) Discussions, together we can build a better society. See http://www.goodD.org for my initial attempts at defining this project.

The future depends on our spending sufficient time together to understand one another’s point of view. Better understanding is critical if we are to have a true Democracy where our lives and our ideas can be fully explored.

My own future foresees work on the implementation a solar powered mag-lev transcontinental/world train project to connect our human scale communities and transport truck cargo via packets much like how data packets move on the Internet, only larger.

Projects and Problems
The following help is needed with the GOOD Discussion project:
1) Steering Committee to refine concepts
2) Task leaders to frame Topics Of Interest to assist participants in goal fulfillment
3) Support with technical issues of maintaining and promoting blog/web resources to record and share the
open university knowledge base that small groups need to pave the path to real communities.

Resources to Recommend
3) Doreen Nelson's The Center for City Building http://www.csupomona.edu/~dnelson/doreen.html
4) David Haward Bain's Empire Express http://en.wikipedia.org/wiki/Magnetic_levitation_train

**Jason Gao** jasongao.root@gmail.com

Passions and Futures
What’s the next melding of society and technology? How will we achieve it? I fervently hope that, in the future, we will see a global collaboration on technology without any regard to borders or boundaries that ensures we have the best people working together on solving problems; the open source movement of today may very well be a precursor.

Projects and Problems
I’m currently designing and constructing an inexpensive, autonomous robot for exploring environments hazardous to humans. My goal is to make it inexpensive enough to allow widespread use by police departments and communities.

Resources to Recommend
Some of my favorites:
Slashdot: always great for keeping up on tech news.
SourceForge: arguably the best collection of open source software.
A Make Magazine subscription provides endless hours of fun.

**Brenda Grimaldi** email c/o JohnLobell@aol.com

Passions and Futures
I am an opera and classical singer and voice teacher living near Sacramento. I will soon be relocating to New York.
Participants

**W. Thomas Grové** lion@lotek.org

Passions and Futures
I am interested in ways to employ both entertainment and technology for the purposes of raising the level of consciousness in individuals and in societies.

Projects and Problems
As change accelerates, will the governing bodies of the world be able to keep up with the world around them? Will they be able to effectively cultivate those changes?

Resources to Recommend
http://www.lotek.org/ This page has links to my personal homepage and to many pages and organizations that are directly related to progressive world change.

**Rodney Hill** Eppright Professorship, Institute for Applied Creativity, Texas A&M University, College Station, TX rhill@archone.tamu.edu

Passions and Futures
I have been infatuated with the study of the future since I was in graduate school in Berkeley and another graduate student and myself taught the first independent study course on future studies there. I expect nanotechnologies, artificial intelligence, and biotechnologies to be the global engines of our economy for the next 50 years. Aging, health and retirement issues will cause chaos in many countries.

The degradation of the environment will result in a global consortium of governments to enforce standards.

Projects and Problems
Education is a major problem. It is basically age-based and content-driven. We should be looking to develop open source options to education and global consortiums of universities. Most universities are producing knowledge workers and the need for now and the future is to develop knowledge creators. Since two-thirds of the jobs that will be available in the world in 20 years have not been invented yet, universities should be creating hybrid curriculums, the ability to correlate knowledge and create knowledge. Most students' domains may not even exist in 20 years or will be morphed beyond recognition.

Resources to Recommend: World Future Society, American Creativity Association

**Mark Lenhart** singularity@lenharts.com

Passions and Futures
Most fascinating subjects: Interface of mind to machine allowing the transmission of thought into/out of the brain, altering/reprogramming long term human memory at will, super-enhanced human cognition by machine/chemical/genetic enhancement, and silicon/quantum/optical computer (self) awareness/consciousness/morality. 30 Year World Projection: If pre-Singularity - exactly the same with a few more elegant technological solutions, and a few more deeply troubling problems. If post Singularity, fallen off the bell curve - either nonexistent or on the utopic or dystopic extreme.

On Continual Acceleration: Technological advancement will be an “S” curve, but what will be laying on the other plateau is beyond comprehension. Which technologies plateau first won’t matter once Science is Singularity-controlled - most technologies will be rapidly developed to their physical/logical maximum, and will be largely indistinguishable from each other, and/or incomprehensible to us.

Personal to Global Developmental Priorities: There is no difference - they are fractal-scale mirrors of each other. Ultimately we must use morally enlightened technological means to guide or reprogram our collective primate neuropsychological development to achieve personal (and thereby global) ethical/moral mastery. Failure to do so in an age of super-technological empowerment will lead to techno-tyrannical dystopias and/or self/global annihilation.
Projects and Problems
Projects - Intellectual: Revisiting J.D. Bernal's Devil (The third element of Bernal's 1929 book: The World, the Flesh & the Devil: An Enquiry into the Future of the Three Enemies of the Rational Soul, the 'Devil' signifying our self/other destructive impulse and how it will interfere with our post-human quest for virtual immortality.) Writing a thesis on the possibility of the ethical use of technology to enhance our collective individual moral compass and ethical self empowerment. And hopefully thereby avoiding global self-destruction in the transition to post-humanity and/or Singularity.

Projects - Business: Presently working on Neurapeutic, a biomedical technology startup. Personal Issues of Accelerating Change: What becomes of our ego, identity, and humanity with the exponential increase in intelligence, awareness, and knowledge. I.e., are you still you at IQ point 500? 1000? What happens to society if everyone's IQ is doubled or tripled?

Resources to Recommend
Bay Area Future Salon, SciTech Daily Review, The Internet Archive, Bug Me Not

Bud Levin levinb@brcc.edu

Passions and Futures
Futures of criminal justice systems are my primary professional interest. Where will the world, and you, ideally be in 30 years? I expect to be dead; with luck, the world will not be.

Projects and Problems
I am Department Head/Social Sciences, Blue Ridge Community College (http://www1.brcc.edu/levin) and Commander, Policy and Planning Bureau at the Waynesboro Police Department (http://www.waynesboro.va.us/policeindex.html).

Resources to Recommend
I am a member of the FBI Futures Working Group (http://www.fbi.gov/hq/td/fwg/workhome.htm), and recommend this community to others interested in the future of law enforcement.

Harold Linstone Ph.D., Professor Emeritus of Systems Science PhD Program, Portland State University, and Editor-in-Chief (1969-present) of the international journal Technological Forecasting and Social Change

Passions and Futures
a. What subjects fascinate you most? (1) Technological forecasting, (2) the use of multiple perspectives to bridge the gap between analysis and the real world, (3) how to reduce the popular tendency to discount past and future, ie., ignore long term trends.

b. Do you expect continual acceleration of certain technologies? Nanotechnology and biotechnology (but see #2b).

c. What are some opportunities and challenges you see? What do you see as personal, cultural, national, or global development priorities? The U.S. should halt its imperial overreach and live within its means, avoid burdening the next generations with an enormous debt and environmental degradation.

Projects and Problems
a. Existing or potential projects or unsolved problems you'd like to work on or are working on. The likelihood of continuation of the Kondratieff long wave cycle in the 21st century.

b. Business, social, and personal issues of accelerating change and technological development you find challenging, and want to discuss in the group. The resurgent political power of religions (Christianity, Islam) and their potential impact on the pace of technological change, particularly biotechnology.
Resources to Recommend
I recommend the journal Technological Forecasting and Social Change which is published by Elsevier and which I edit. It deals with the methodology and practice of technology forecasting and assessment. A recent issue focused on Roadmapping and the upcoming October issue (72/8) will feature articles on the Internet future and the pace of change of technology (including comments by Advisory Board member John Smart).

John Lobell JohnLobell@aol.com

Passions and Futures
I received my architecture degrees from the University of Pennsylvania, and am currently a professor at Pratt Institute. Besides architecture, my interests include cultural theory, consciousness, art, Buddhism, mythology, information theory, post-humanism, quantum reality and quantum architecture. My focus is on the relationship of structures of consciousness to technology and the arts.

Projects and Problems
Timeship, a $300 million complex for the storage of 50,000 cryogenically preserved people traveling to the future. Consultant, Timeship.org
AlgoRhythms. Higher dimensional fabrication and information manipulation created by architect/morphologist Haresh Lalvani. Consultant, morpho-genomics.com

Resources to Recommend
My web site: JohnLobell.com
Favorite sites: ArtsAndLettersDaily.com, KurzweilAI.net, Edge.org, Quantum-mind.org (Stuart Hameroff), qubit.org/people/david/ (David Deutsch)

Peter C. McCluskey

Passions and Futures
Idea futures markets will improve on democracy (see http://hanson.gmu.edu/futarchy.html); AI creates big risks (described by Eliezer Yudkowsky); molecular assemblers will increase productivity dramatically but risk setting off arms races. Mind uploading will allow us to increase our mental capacity and to make frequent backup copies of ourselves to protect against accidents. And once we’ve solved these problems, it may be time to relax and head off towards the Far Edge Party.

Projects and Problems
I have a small investment in a nano-scale imaging startup called Angstrovision, which is looking for a larger investor. Coaststead (http://seastead.org/coast/) looks like it might be an interesting project to effectively build more land, and as a first step towards creating better governments by homesteading new societies in the sea.

Resources to Recommend
Personal web page: http://www.bayesianinvestor.com
Organizations I support: The Singularity Institute, Foresight Institute, EFF, The Methuselah Mouse Prize, Alcor
Cheryl Morris
Passions and Futures
In one year, Mars Rovers, Mars Express, Cassini-Huygens, and the Genesis Project have extended knowledge of our solar system-and raised more questions. At the smallest scale, new findings and developments at the quantum level and in nanotechnology are propelling technological advances. Most important to me is what we do with knowledge gained from that science and technology.

Projects and Problems
As a doctoral student in Information Science, my current concerns are twofold: the erosion of privacy with the offshoring of personal data and how to effect enforcement of national laws in an interconnected world and still permit citizens their freedom.

Michael Olson
Passions and Futures
My general interest is in systems thinking related to the evolution of man as influenced by his use of tools. The tools of course are our technological skills that continue to evolve at an accelerating pace - as discussed by Ray Kurzweil and numerous others. The key technologies to watch in my mind are the usual suspects, 1) computing/ storage/ graphics/ power, 2) biotechnology and 3) nanotechnology. The latter drives both of the former going forward.

The most influential book that I often recall is The Ascent of Man by Jacob Bronowski as an indicator of our species’ imperative to continue to evolve. The biggest challenge will be to allow the fecundity of Man to be expressed in useful ways that may well see the divergence of the species into various philosophies depending upon how various like-minded individuals see the “future of man”. Some will see the convergence of man and machine as indicated by the embedding of electromechanical technology to both restore lost biological function as well as to improve our abilities such as adding exoskeletons and vision augmentation. Some will see the genetic perfection as perhaps the most “natural evolution” that follows from man's long history of husbandry - in this case, upon ourselves. And some will see any tampering as “against nature” that has through the eons created the variability in our species to generate a robust gene pool to help aid survivability. In the next 30 years these trends will begin to seriously emerge, I believe, and the result is likely to create a competition of values.

Frank Paynter
Passions and Futures
I have a passion for truth. For three hundred years, euro-culture advanced an understanding of the universe in a quest for foundational truth. Then about thirty years ago, there was a retreat from the commitment to shaping a universal understanding in favor of a darker solipsistic postmodernism. While this cultural cul de sac provides fuel for its own immolation, it has also encouraged the growth of bizarre belief structures and fundamentalisms.

Ideally, the next thirty years will be spent recovering lost ground and committing to reinvestment in science, knowledge and the growth of respect for universal education. I look for an emerging global culture with broad advances in international law, health and wellness, food and shelter for the billions, and equal opportunities for creativity and interpersonal cultural enrichment.

Projects and Problems
The problem of combustion-based energy haunts us. Discarding substitutes like coal gasification, ethanol, and bio-diesel in favor of bio-electric, wind and solar will be necessary if we want to halt global warming in time. Unfortunately, combustion alternatives are the low-hanging fruit economically as we shift from the petroleum culture. Democracy is necessary to enforce the mandate world-wide against the destruction of combustion based energy. Chemical based agriculture seems to harm as much as it provides sustenance.
Closed system organic approaches that recycle bio-wastes will be needed on a broad scale to restore soil that has been sterilized by herbicides, pesticides, and chemical fertilizers. The internet promises communication and cultural integration for all. Protecting it as a commons and developing it according to standards that will prevent it from collapsing under its own weight is a challenge constantly before us.

Resources to Recommend

**Ryan Rawson** ryanobjc@gmail.com

**Passions and Futures**
Going in to our third year of ACC (Accelerating Change Conference), long term trends start to appear, and fads come and go. Here are my current passions and concerns:
- Long Term Energy Security - Still a major concern. The industrial and post-industrial world requires large amounts of energy. What technology can solve this for us?
- Environmental issues - Why isn't this a given in policy circles?
- Social Justice & World Peace - Still not solved. The future should be for everyone.

- Globalization - How do you make yourself relevant in the global marketplace? How do you keep your society competitive?
- Personal Issues - How do you stay flexible in the face of change? How do you manage multiple competing commitments?
- Software - Most places can barely complete projects, let alone on time, on budget and to specs with a minimum of bugs. How do we take software programming from the art it is to an engineering discipline? What computer science tools can leap us forward, how can we approach the problem in a fundamentally new way?

**Projects and Problems**
I have two areas of projects. First is in the personal space - how do I stay on top of everything??How do I plan for the future, while being mindful of the present? Information load is both essential and important, but also overwhelming without the ability to process and handle it. Secondly I am working on large scale supply chain optimization projects at work. How do you update, construct and solve large optimization problems as quickly as possible? Techniques include distributed computing, database technology, math optimization and related algorithms. Touching on software engineering again, what kinds of alternate computer science techniques and technology can I use to give myself a critical competitive advantage???

Resources to Recommend
Books: Getting Things Done by David Allen. The Art of the Start by Guy Kawasaki. Don't Think of an Elephant by George Lakoff.
Software: Mac OS X, Entourage 2004, Safari 2.0 RSS Feed integration.
Other: Paper and pen - still extremely powerful, freeform note and graphics technology that is portable, requires no power, and works everywhere for all time. With a good acid-free notebook, the results last virtually forever.

**Herwig Rollett** Head of Research Cooperation, Know-Center wig@acm.org

**Passions and Futures**
The topics most dear to my heart concern fundamental changes in the way we work, think, and create the future (e.g. better integration of personal, organizational, and regional knowledge management; of thinking support tools, decision making processes, and transdisciplinarity; of futures studies, knowledge management, and strategic management).

We need better ways to cope with complexity, both for the long-term survival of humanity and for short-term business reasons. In particular, instead of always just reducing complexity when feeling overwhelmed, we
have to increase our capacity for dealing with (ever more) complexity. I strongly believe in the value of different perspectives, and in the value of integrating these perspectives without losing important distinctions in the process.

Projects and Problems
My core activity is connecting the dots (needs, ideas, people, resources) - integrating strands of research/business trends generally perceived as unconnected, and then launching projects to capitalize on that. As Head of Research Cooperation at the Know-Center (http://www.know-center.at/), I am responsible for research-oriented business development, establishing international strategic partnerships, aligning projects with overall business strategy, project planning and financing. I am in a position to initiate joint research projects and am always happy to discuss ideas and funding strategies. I am also co-founder of Knowledge Region Styria, a non-profit initiative fostering regional development. Further opportunities for collaboration? You tell me!

Resources to Recommend
Abstracting services, e.g. Future Survey (http://www.wfs.org/fsurv.htm).
Visualization services, e.g. Newsmap (http://www.marumushi.com/apps/newsmap/index.cfm).
RSS aggregators, e.g. Bloglines (http://www.bloglines.com/).
And every day something a little out of your comfort zone.

Lee Shupp VP Business Strategy, Cheskin lshupp@cheskin.com

Passions and Futures
What subjects fascinate you most? Technology and culture.
Where will the world, and you, ideally be in 30 years? Healthy, harmonious, hopeful, collaborative, turning dreams into reality (both the world and myself).
Do you expect continual acceleration of certain technologies? Yes. Which? All that continue to attract development attention.

What do you see as personal, cultural, national, or global development priorities?
Personal - learning, growing, reaching, attaining, adventuring, becoming
Cultural - learning how to better collaborate with the rest of the world
National - return of reason and responsibility as core tenets of policy and thinking
Global - environmental, economic, political

Projects and Problems
1. Many technologies offer both huge hope and deep peril. How do we balance these?
2. Technology changes much faster than culture. How do we absorb rapid technological change?

Resources to Recommend: APF - Association of Professional Futurists

Chris Smith Project Manager, Artificial Development chris.smith@ad.com

Passions and Futures
Some of my favorite subjects include interactivity, cognitive systems, augmentation, and emerging technologies. I would like to see the creative and responsible development of molecular nanotechnologies, and the application of these and other new technologies towards increasing our collective knowledge.

Projects and Problems
My primary project is working on CCortex, a biologically realistic simulation of the human brain, at Artificial Development (http://ad.com). Another project I'm involved with is Kidz Magazine (http://kidzmagazine.com), an international children's publication written entirely by K-8 students.
Participants

Resources to Recommend
My personal site is Accelerating Technology (http://acceleratingtechnology.com), which includes news and resources on accelerating change, nanotech, cognitive systems, and many related subjects.

Keith Spencer  Astrophysics Student, UC Santa Cruz  keith.spencer@gmail.com

Passions and Futures
I am excited to see the fusion of nanotechnology, bioengineering and miniaturization that will take place in the next hundred years. As technology accelerates, I think we will start to see human culture grow more diverse socially, theologically and politically. Americans in particular have an apathy or phobia towards some emerging technologies such as government-funded spaceflight, nuclear power, stem cell research and other bio- and nano-tech ventures, and unless we are able to overcome these biases we will see the United States begin to fall behind technologically.

I believe fission research and nuclear power, in particular, must become more societally acceptable if humanity wishes to make it through the end of the petroleum era without an energy-spurred technological depression.

Projects and Problems
As a child, I remember thinking it incomprehensible that we would not be conversing with computers by the year 2000. Why has true AI not yet emerged? Computer processing power and storage space continue to increase exponentially, but we have yet to see much development towards artificial intelligence. Is this really an issue of computer power? I am inclined to believe that the human race has the ability to create true AI, yet it has changed from a hardware problem to a programming problem. Considering the global benefits AI would reap upon humanity (including the possibility of technological singularity), I think it’s about time we saw computer scientists, engineers and cognitive scientists from across the globe band together to work towards this common goal.

Resources to Recommend

Sri Sridharan  sri@infinisri.com

Passions and Futures
In the last 100 years, much of technology has been spawned to serve the cause of war - aircraft, radar, laser, even the Internet. Now the tide is turning - initiatives like Google, Blogger, MeetUp, CraigsList, Freecycle and Friendster are serving to bring people together, to make information open and transparent.

Open source projects have taken firm hold. Examples like Linux, Apache, Python, Firefox are changing not only how software is developed, the economics of software development and distribution, but even how governments and corporations are adopting such open source technologies. New technologies for promoting freedom, cooperation, human dignity, understanding and mutual trust are needed. Research in Information Technology, Biotechnology and Nanotechnology needs the guiding hand of humanity striving for peace and harmony. TIP plans to incubate a series of research initiatives that would spawn a new generation of technologies to serve our mutual cause. Eventually envision entrepreneurship and special investment funds for a broad range of technology initiatives for peace.

Projects and Problems
When faced with rapid and seemingly insurmountable change – like a tidal wave hitting the shore – like industrialization thirty years ago or globalization two decades ago or technologically complex change that we are witnessing now with convergence - we typically fall into three types of responses. Despair – its
Participants

consequence is inability to change – letting the world around us change without us changing. Eager adaptation – be the ones to change rapidly, striving to gain technical mastery so we may not only survive but thrive with the change. Finally, we can guide the change – this thrusts us into leadership. But no one can turn a tidal wave, I hear a wail. I am speaking of a guiding force to the change – to rouse the collective to comprehend potential scenarios and make some appropriate choices with the needs of humanity in mind. I am interested in a collective project to steer the course of technology to serve the needs of all mankind, thus paving the way for peace and prosperity everywhere, soon.

Resources to Recommend
Technology Initiatives for Peace: TIP webpage is at http://www.infinisri.com/TIP
Read Buckminster Fuller on Comprehensive Anticipatory Design Science http://www.bfi.org/designsc.htm
Visit the DARPA website to see how they guide technology development with their roadmaps and funding http://www.darpa.mil/DARPAtech2004/baa.html

Phil Steele Perfect Content, San Diego, CA

Passions and Futures
My interests include: life extension, smart drugs; philosophy, particularly objectivism; neurobiology (what is hard-wired in us, and what is not?); the arts; the singularity theory; and human evolution (past and future). In the technological realm I ponder the ethical aspects of artificial intelligence: What will be the legal status and responsibilities of AI’s as they emerge, and how do we demarcate their passage from "childhood" to "adult" legal status? How do we motivate and enforce responsible behavior in AI’s?

Projects and Problems
When I’m not earning my daily bread doing website optimization or technical writing, I’m plotting a science fiction novel involving AI and neurochemistry, and working on a book documenting people’s experiences at the Burning Man festival. I enjoy participating socially with ASF members and local futurist groups. I’m wondering how to apply my professional skills (predominantly website usability and writing/editing/copywriting) to futurist projects. I would welcome opportunities to consult in these areas.

Resources to Recommend
My business web site: (http://www.perfect-content.com/).

Lisa Tansey lisaware@aol.com

Passions and Futures
Molecular and cell biology, human behaviour (genetic and socio/anthro/political), and software development including database design are my current favorites. Ideally, in 30 years the world will have found multiple better ways to generate any needed energy for specific needs in specific places, transportation will be improved for everyone - providing both the benefits of mass transit wherever possible as well as satisfying individual needs, we'll have found a higher plane on which to solve the Lucifer Principle in human group relations, nanotechnologies and stem cell research will solve the annoying parts of aging (but people will still finally die), I'll be benefitting from all of these advances as well as helping to advance them in whatever ways I can - primarily by becoming a more globally conscious consumer & thoughtful citizen. I expect that nano and genetic technologies will continue to accelerate, as will some software technologies.

Opportunities, challenges and priorities - already listed above. I suppose I could change the original list from "Ideally" to "Really", in which case it'd all move down here & up above I'd say we were continuing to swing further & further out on the pendulum between environmental disaster and technological/social salvation.

Projects and Problems
I'd like to work on helping the U.S. and really the whole world define a "middle ground" we could all truly
agree on. I am working on this in small ways through various social organizations. I am wondering how these goals can be advanced more rapidly through effective use of technology. The accelerating change and technological development issues I find challenging in my day to day life have to do primarily with my paid employment at Northrop Grumman and my desire to find more effective ways to communicate the ideas I think are important. Are plays effective? Not too many people see plays. Movies are effective, but expensive to produce and difficult to distribute. Web pages are good, but now the web is so big that I'd need to invest time in learning how to make it stand out and be found. My biggest political quandry right now is the situation in the Middle East - how to assist those folks in coming to a peaceful resolution.

Resources to Recommend
ASF, Futurists, The World Affairs Council, Sister Cities International, Sifter (atheists social network), Morris dancing, Samba (Diaspora and SuperSonicSambaSchool), Benissimo5 improv, IEEE Siggraph, the International Dance Association of San Diego, and Mensa are all groups with which I am affiliated or promote. MIT's Technology Review, Science News, the BBC, NPR, tempest, the Washington Post, the New York Times, Commentary, Muslim World Today, the Jerusalem Post, and the national and local Mensa publications are where mostly I get my info. I also like to read Simon Funk's blog from time to time. I keep meaning to join a web community... :) & for that matter, set up a web page - for a computer geek, I've been pretty slothful on these two items.

Allen G. Taylor Editor, IEEE BEEEP

Passions and Futures
Subjects that fascinate me include: evolutionary computation, life extension, space travel, preserving Earth's environment, biologically-based nanotechnology, the opportunities that change brings, and life itself. Ideally in 30 years I will be in a place I can't even imagine now. I expect certain technologies to continue accelerating for at least another decade.

Projects and Problems
I am working on the design of communication networks that are resistant to intelligent and deliberate attack. I am open to collaboration.

Resources to Recommend
Groups: Institute of Electrical and Electronics Engineers (IEEE), Oregon Section; National Space Society; Oregon L5 Society

Hans van Rietschote hvrietsc@myrealbox.com

Passions and Futures
What fascinates me is the ability to be connected all the time, everywhere, to everyone and everything I want to be connected to at any given time. My cell phone gives me the opportunity to talk to anyone. My ultra-portable lap/palm/button-top gives me access to everything digital: all my pictures, movies, emails, files and the whole internet. The challenge will be to filter all this stuff so I can find what I want to look at it immediately, so I don't get bombarded with spam, and I don't get contacted by people or bots that I don't want to be contacted by. The challenge will be flexible privacy in a digital world and at the same time the ability "record" everything I do digitally.

Projects and Problems
Given my job in the CTO organization of Veritas I am interested in working on topics such as: can I have immediate access to all my data by carrying around something the size of a matchbook or smaller. Another topic of interest how do I find something I am looking for. I was going to write "how to organize everything" but I think we will not be able to organize all the bits we generate, so there has to be a better way...
Participants

**Peter Voss** Founder, Adaptive AI Inc., Marina Del Rey, CA  
peter@optimal.org

**Passions and Futures**
My interests include: Artificial General Intelligence (AGI), philosophy, ethics, futurism, technology, psychology, as well as radical life-extension including calorie restriction (CRON) and cryonics. Indications are that in less than 10 years we'll hit the singularity, and who knows what things will be like... AGI is the key: It will happen before full-blown nanotech, bioengineering, and before we figure out how to stop ageing – AGI will make these other advances possible.

**Projects and Problems**
Adaptive AI (a2i2) is building an AGI system: http://adaptiveai.com/ . We are always looking for additional team members & collaborators. Our AGI engine is based on a specific theoretical model of high-level intelligence developed over the past decade. Our immediate goal is the creation of a fully functional, proof-of-concept prototype of all the foundational elements of General Intelligence. We currently have seven full-time members on our team, who in a short period of time have created a significant framework of core functionality and tools for our AGI engine. For more information about our project, see our Research and Company page.

**Resources to Recommend**
Peter Voss: http://www.optimal.org/peter/peter.htm  
Longevity: CRON - Calorie Restriction with Optimal Nutrition

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**Kennita Watson** Software QA Engineer

**Passions and Futures**
What subjects fascinate you most? Space travel and colonization. The meeting of virtual reality, artificial intelligence, and psychology (for example, as they could be applied for rehabilitation of criminals or for reacclimatization of reanimated cryonics patients). Biomedical technology (neural regeneration and repair).

Where will the world, and you, be in the next 30 years? Most of the world, particularly the third world, may be held to approximately its present state by political inertia and the slow diffusion of ideas across linguistic, cultural, and ideological boundaries. For those in developed countries, death from aging and disease will be greatly reduced, as will unplanned procreation. Other than that, I really don't know, which is part of the point.

Do you expect continual acceleration of technology? Yes, although I don't know what that will look like.
What are the risks and opportunities? Risks include that technology will be used for violence and destruction, or that it will push humans out of their accustomed niches without giving them time to adapt to new ones. Opportunities include that it will be used to free up the creative energy of billions who are currently unable to use it effectively due to poverty and disease. What should be our development priorities? A general priority, not connected to any particular technology, should be safety. Many technologies are in the works or on the horizon that have the potential to get out of control, or to be purposely developed and used, to the detriment of millions or even billions.

**Projects and Problems**
I'm interested in AI-assisted psychology and education. Think The Diamond Age: or, A Young Lady's Illustrated Primer. I have long thought that grades (in both senses) should be done away with in schools; now I think that schools themselves (as we have come to know them) should be done away with. I’d like to hear others' views of how those brought up in the 20th century will deal with an economy turned topsy-turvy by coming developments, and how our social structure will integrate people who live much longer and healthier life spans. Will people retire much later? Much earlier? Not at all? Will they even have to (or be able to) work as we know it?
Participants

Resources to Recommend
Personal web page: http://www.kennita.com. Groups you are affiliated with or promote: Foresight Institute, Alcor Life Extension Foundation, Extropy Institute, Libertarian Party. Other info sources you use and recommend: The only one that comes immediately to mind at 5 AM is http://www.feelinggood.com, particularly the Tutorials section.

Timothy Wilken, MD Synergic Scientist Timothy.Wilken@SynEARTH.net

Passions and Futures
I believe that we must work together. This means we must become synergic humans. Synergy literally means working together—operating together as in Co-Operation—laboring together as in Co-Laboration—acting together as in Co-Action. The goal of synergic union is to accomplish a larger or more difficult task than can be accomplished by individuals working separately. I am committed to a world where I win, you win, others win and the Earth wins. Win-Win-Win-Win.

I believe there are three types of humans to be found in our present world. Which type you are depends on what you believe about how the world works. Adversaries believe there is not enough for everyone and only the physically strong will survive. They believe humans are coercively dependent on others, and they best understand the language of force. Neutralists believe there is enough for everyone, if only you work hard enough and take care of yourself. They believe humans are financially in-dependent and should be self-sufficient unless they are too lazy or defective. They best understand the language of money. And, finally a new type of human is emerging. Synergists believe there is enough for everyone, but only if we work together and act responsibly. They believe humans are inter-dependent and can only obtain sufficiency by working together as community. Synergists best understand the language of love.

To be successful in our present world, the synergist must understand all three languages and know when to use them. This is the essential challenge for synergists: Can we work together and act responsibly in time to save ourselves on this planet? ... My answer is: "Only by helping each other."

Projects and Problems
Currently, my primary focus is on understanding human intelligence. I know that the search to understand and accurately model human intelligence may represent the critical knowing for our species. With this knowing, every human has the potential to elevate their thinking to the level of genius. With this knowing, the majority of mental illnesses can be better understood and controlled. With this knowing, we can create thinking machines in short order, and set them to helping us solve our most pressing problems. And, with this knowing, we can put away anger, fear and conflict, and begin building a world filled with love, trust and co-Operation.

Human intelligence research reveals that whenever humans experience conflict they lose access to their full intelligence. When humans are confronted with conflict, their mind-brains shift to a very primitive and highly reactive way of thinking called the survive mode. The survive mode evolved in the jungle to insure physical survival. Its primary skills are fighting and fleeing. Its extremes are rage and terror. All humans thinking in the survive mode will find their intelligence to be severely limited. Since human efficiency and productivity are derivatives of human intelligence, conflict is to organizations as friction is to machinery.

I know it is possible to build a "system of human organization that creates a conflict-free environment for decision making and action implementation". I am seeking a co-Laborative opportunity where I can work with like minded individuals to install such an environment in a leading edge organization.

Resources to Recommend
1. Synergic Websites: SynEARTH, CommUnity of Minds, Future Positive, and The Time-Binding Trust
2. Applied Synergic Science: ORTEGRITY, GIFTegrit, and BIAS systems
Participants


William Wiser william@wiserlife.com

Passions and Futures
I am most interested in health and long life. I am also interested in technology and politics that influence length and quality of life. Ideally in 30 years the world will be a stable and peaceful place where people can pursue whatever dreams move them. Ideally I will be young and retired and off on some new fun adventure. I expect technology in general to continue to accelerate chronologically but subjectively change slowly. Particular technologies I expect to ebb and flow in ways I can’t predict 30 years out. The main opportunities and challenges I see are paying attention, trying to be involved in interesting projects and enjoying the ride. The priorities I see are taking care of people, wasting less time and avoiding major catastrophes.

Projects and Problems
Right now I am working on finding good doctors, health testing, insurances, etc. After that perhaps supplements, organizing anti-aging ideas and methods, etc. After two decades of exploring life extension I want to focus on basics, understanding and making changes to my body, building good scientific and social models, etc. I want to collaborate a lot while organizing and applying information about health and longevity. I would like to find more people to collaborate with in studying health. For this conference I will probably focus on AI, since it is the theme of the conference and the potentially dramatic technology I know least about.

Resources to Recommend
I like Immortality Institute (http://imminst.org) and Foresight Institute (http://foresight.org) especially. Aubrey de Gray’s work interests me. There are many great groups but I think there will be many other pointers to them so I will not repeat them here.

Janet Staker Woerner Principal and Founder, Converging Communications, LLC; Adjunct Professor, Illinois Institute of Technology, Dept of Social Sciences; Adjunct Professor, New York Institute of Technology, MBA Distance Program, jswoerner@convergingcomm.com

Passions and Futures
Subject areas that intrigue me are systems thinking, life-long learning, multi-disciplinary approach to education, reengineering of business education, emerging technologies and societal implications, role of the public engagement in emerging technologies.

Projects and Problems
Currently I am teaching at Illinois Institute of Technology the following two courses: a multi disciplinary course that deals with Emerging Technologies - Perception and Reality and a sociology course that deals with Emerging Technologies and Societal Implications. Other areas of interest are virtual education, virtual team organization & development, and emerging technologies used in organization development & psychology.

Resources to Recommend
Books: Collapse by Jared Diamond, University Inc., by Jennifer Washburn; No Place to Hide, by Robert O'Harrow
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**Terra Nova –** [http://terranova.blogs.com](http://terranova.blogs.com)

Terra Nova is a collaborative weblog experiment. It is about an emerging social phenomenon called "virtual worlds" -- computer-generated, persistent, immersive, and representational social platforms. Currently, the most popular virtual worlds are massively multiplayer online roleplaying games (MMORPGs), such as Everquest and Star Wars Galaxies. However, there are many other old and new varieties of virtual worlds.

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Boston Consulting Group
One of the oldest and most diverse business consulting firms. Nice publications archive.

Brint Institute
Leading knowledge management portal applying systems research to business (Yogesh Malhatra), BTexact, (and Ian Pearson, Futurologist) Acceleration-aware futures articles and conference keynotes (Ian Pearson).

Center for an Urban Future
NYC-based think-tank considering the future of cities.

Center for Strategic and International Studies (CSIS)
Nonpartisan think tank focusing on strategic insights and policy solutions to current and emerging global issues (John Hamre, Sam Nunn). They run the excellent Seven Revolutions 20 year futuring program (Erik Peterson).

Clarium Capital Management
Exceptional future-oriented global macro hedge fund with a contrarian bias. (Peter Thiel)

Institute for Global Futures (IGF)
Business strategy, outreach, and forecasts for the digital future. (James Canton)

Institute for Operations Research and Management Sciences (INFORMS)
Serves scientific and professional needs of OR/MS investigators, scientists, students, educators, and managers. OR is optimization theory and practice, “the science of better.”

Institute for the Future at AACC
Excellent example of the kind of futures organization that should exist at every institute of higher education in the U.S. Has a speakers bureau for the faculty at this Community College that like to speak on the future, not just the past or present.

Institute for Scientific Research (ISR)
Advanced research and development for NASA, DoD, govt., and commercial clients (George Pederson).

Institute for the Future (IFTF)
One of the oldest and most respected futures consultancies (Paul Saffo).

International Institute of Forecasters (IIF)
Stimulating the generation, distribution, and use of knowledge on forecasting.

Jupiter Research
Market research and analysis of the consumer internet industry.

KurzweilAI.net
Leading long-term technology and artificial intelligence futures portal (Ray Kurzweil, Amara Angelica).

Linden Lab
Creators of Second Life, the award-winning 3D online world where users create, inhabit, and own all digital content of their own design (Philip Rosedale, Cory Ondrejka)

Long Bets
Accountable long-term predictions. Staking philanthropic money to improve foresight (Jeff Bezos, Stuart Brand, Kevin Kelly).

Markle Foundation
Accelerating communications media and information technology development to improve civic life.

Max Planck Society for the Advancement of Science
Interdisciplinary and innovative research in the natural sciences, life sciences, social sciences, and humanities. 21,000 in staff.

McKinsey Global Institute
Economic research think tank of McKinsey & Co. Excellent broad reporting.
Sponsors & Community

Conferenza
News and commentary on technology's most important executive conferences (Shel Israel)

Datamonitor
Leading broad-based market research company.

DaVinci Institute
Entrepreneurship, innovation, and futurism. Membership organization.

Draper Fisher Jurvetson
Premiere IT and nano venture capital for accelerating technological change (Tim Draper, John Fisher, Steve Jurvetson).

Edge.org
Leading site for deep social, technological, and scientific commentary (John Brockman).

Extropia Institute
Increasing human choice and freedom in the future (Max More, Natasha Vita-More).

Fast Future
UK-based change management, innovation, incubation, and venturing group (Rohit Talwar)

Foresight Institute
Understanding the future of nanotechnology (Eric Drexler, Christine Peterson).

Forrester Research
Technology trends, strategy, and investment research.

Futures Group International (and Futures Group Europe)
International health and development planning.

Futures Lab
Consumer and business futures consultancy (Derek Woodgate, Wayne Pethrick).

Futurist.com
Futures retreats, seminars, and conference keynotes (Glenn Hiemstra, Brenda Cooper).

Gartner Group
Research and advice in using information technology in business.

Global Business Network
Scenarios and risk management for the longer term future (Peter Schwartz).

Global Change
Trends analysis and conference keynotes (Pat Dixon)

Global Vision Consulting Ltd.
Helping organizations understand and respond effectively to accelerating change (David Forrest).

Glocal Vantage
Innovation, futures, and systems consultation for business, nonprofit, and municipalities.

GLOCOM, International U. of Japan
Social science analysis of the information society.

IBM Almaden Research Center, IBM Research
Developing visionary products and platforms for intelligent technology.

Institute of Business Forecasting (IBF)
A full-service provider of business forecasting and operations planning services.

International Data Corporation (IDC)
Leading information technology market research firm.

IEEE (Institute of Electrical and Electronics Engineers)
"Eye-triple-E" is a non-profit, technical professional association of 380,000 individual members in 150 countries.

Millennium Project (American Council for UN University)
Global participatory research think tank of futuroists, scholars, business planners, and policy makers (Jerry Glenn, Ted Gordon).

National Institute of Advanced Industrial Science and Technology (AIST)
Japan's largest public research organization. Bleeding edge.

National Intelligence Council of the CIA
The U.S. intelligence community's center for mid- and long-term strategic thinking. Excellent futures publications.

Nanotechnology Now
Good coverage of the emerging nanotechnology sector (Rocky Rawstern).

New England Complex Systems Institute (NECSI)
Multidisciplinary educational and research institute, advancing the study of complex systems.

PARC (Palo Alto Research Center)
Xerox subsidiary. Interdisciplinary R&D in physical, comp., and social sciences.

Pardee Center for the Study of the Long Range Future, Boston U.
Exploring the world's long-term political and social future.

Principia Cybernetica Project
Leading portal for exploring concepts in cybernetics, systems theory, and complex adaptive systems (Francis Heylighen)

Program for the Human Environment, Rockefeller University
Exploring how long-run technical change relates to productivity and efficiency of energy, materials, land, and other resources, and the consequences for human populations. Elucidating our progression toward a micro-emissions society.

RAND Corporation (and RAND Pardee Center)
Trend extrapolation, policy studies and tech assessment pioneers.

Rocky Mountain Institute
Innovation and technology oriented sustainability organization. Natural capitalism paradigm (Amory Lovins).

Santa Fe Institute (and SFI Business Network)
Leading quantitative complexity studies institution (George Cowan, Murray Gell-Mann).

Shaping Tomorrow
Subscription-based trend analysis and futures database community. Free newsletter. (Mike Jackson).

Shell Scenarios Group
Scenario planning pioneers. Long term energy and technology futures.

Social Technologies
Corporate and institutional futures consultancy (Tom Conger).

SRI International (and SRI Consulting (Chemical and Health))
Consulting and strategic planning for the longer range future.

Stratfor
Private intelligence for global business, economics, security, and geopolitics.

Technology Administration, U.S. Department of Commerce
Maximizing technology's contribution to economic growth, high-wage job creation, and the social well being of the United States. Includes NIST, NTIS and OTP.
Industrial Research Institute
Association of business leaders in R&D, working to enhance the effectiveness of technological innovation.
INEER (International Network for Engineering Education and Research)
A networking professional organization (engineers, educators and researchers in 98 countries) to help advance global engineering education and research.
Infinite Futures
Foresight consulting, futures research, and strategic planning (Wendy Schultz).
Information Technology Association of America (ITAA)
Trade association representing the broad spectrum of the world-leading U.S. IT industry.
In-Stat/MDR
Leaders in market research and forecasts for semiconductor and digital devices.
Institute for Alternative Futures (IAF)
Health care futures, governance and public policy consultancy (Clem Bezold, Jonathan Peck).

TTI/Vanguard
Five conference/year forum for evaluation of emerging and breakthrough information technologies for Fortune 500's and top institutions. $30,000/seat.
U.S. Air War College - Future Studies
Futures perspectives on security, warfighting, strategy, science, technology, counterproliferation, innovation adoption, and other topics.
Woodrow Wilson International Center for Scholars (WWICS) and Foresight and Governance Project at WWICS
Center is a living memorial for President Wilson, the only U.S. president with a Ph.D., who believed public service and scholarship should be unified. Acceleration-aware "policy dialog in a Moore's Law World." (David Rejeski)
Woodside Institute
Complexity-inspired (resilience and innovation) strategic planning (Gary Hamel, Liisa Valikangas).

Worldchanging.org
Models, tools and ideas for building a better future. Very politically green. Successors to Whole Earth Review.
World Future Society
Seeking out the world's preferred cultural and political futures (Ed and Jeff Cornish, Cindy Wagner, Sue Echard).
World Technology Network
Multidisciplinary association of scientists and technologists creating new technologies and business processes. Invitation only.
World Transhumanist Association
Considering technological changes to the human condition in the near and longer-term future (Nick Bostrom)