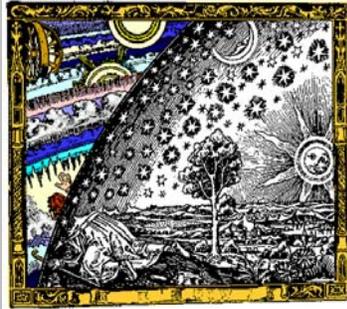*The Meme Pool Compilation:*

Insights on Emerging and Future Technologies and Their Prospective Economic and Societal Implications

By Raymond Bouchard, 2002-2004

Foreword by Jack Smith

Dedicated to Laura and Christina Bouchard, Daughters of an Intelligent Futures Adventurer

The Meme Pool Compilation represents and unusual and very insightful body of work undertaken by Raymond Bouchard who readily seized the opportunity to direct his relentless curiosity and active-eclectic intellect toward challenges of an emergent future at the dawn of the 21st century.

I first met Raymond sometime before 2000 when he joined a voluntary futures network I was chairing, the Futures and Strategies Network, where he quickly demonstrated a capacity for broad thinking and strong technological reach into regions of uncertainty. He also was conversant with both politics and business as he had been a client services and government relations manager with IBM before establishing his firm Drachma Denarius derived from the currencies of the great civilizations of Greece and Rome.

Raymond introduced me to concepts such as consilience and was thinking about convergence of genes, bits and atoms before anyone else I had encountered. So when I was offered the opportunity to develop the NRC Office of Technology Foresight in 2001, it was natural that Ray would become one of my key consultants and project leaders.

His brilliance was evident in our initial and rather bold attempt to find a first topic for the pilot project we had planned to undertake with some 10+ federal departments and agencies - who notoriously are prone to blinkered or stove-pipe thinking and often lacking in collaborative intentions. As Ray and I searched through the results of a survey of their preferred topics and preferences - he quickly determined that by going up a level to a systemic theme would be the only real way to both provoke and inspire the kind of futures thinking we were challenged to lead.

Raymond correctly identified bio-systemics as a very apt 21st century theme that could combine the aspirations and uncertainties of much of the government's portfolio of technology knowledge in the life sciences and also draw from the rapidly

evolving integrative capacities being advanced by high performance computing, neuroscience and nanotechnology.

As Ray developed his ideas about convergence and systemics, he started to see significant resonance through the work of others working at the speculative end of these domains. I recall when he first brought to my attention the path-breaking convergence study of NBIC - Nano-Bio-Info-Cogno convergence - applied to the amazing and potentially transformative improvements in human performance that might be available to us within 15-25 years. His work in pulling this altogether, as well as his initial Meme Pool newsletters helped bring him and our efforts to the attention of the European Commission Expert Panel on Converging Technologies for the European Knowledge Society (CTEKS) where we were invited to Brussels to present our findings.

And his work in this pioneering of integrative technology remains at the cutting edge today as we continue to pursue a wide range of prospective applications for convergent technologies that will impact our lives in the 21st century.

I recommend the Meme Pool to you on the basis of being privileged to share at least one prescient glimpse of where all this uncertainty may be taking us - and to imagine the delights and challenges of the journeys to come - if not for us, then for our children and grandchildren.

Table of Contents:

Meme Pool #1: February 24, 2002

A "meme" (pronounced `meem') is the information equivalent of a gene.

A virus reproduces itself and spreads it's genetic content in millions of copies by highjacking a host's DNA.

Analogously, ideas 'infect' the mind and change individual and group behavior. They cause you to want to spread the ideas by telling your friends and colleagues. Unlike a virus, which has its genetic information encoded in DNA, a meme is simply a pattern of information. A meme may be a single mutant that enters the meme pool and dies. Or, it can evolve such that many people over generations and cultures repeat it. Memes can be clichés, tunes, phrases and fashions. They can be smells and sounds too. Human culture, in the memetic view, is a string of ideas and symbols that live symbiotically in their hosts.

If you're interested in memes try looking at:
http://pcp.lanl.gov/MEMIN.html

The Worldwide Web is a vast meme pool. In the course of my work I come across many ideas, some worth remembering, others eminently forgettable.

The purpose of THE MEME POOL newsletter is to forward articles that 'deserve' to replicate. They have been selected on the basis of their value to those who study the future. I.e. the articles describe a trend, a discontinuity, a paradigm shift or a contrarian view.

The Future Of CPUs

In many ways, the defining technology of the past four decades has been the microprocessor. The pace of other technologies has depended on CPUs become smaller, cheaper, faster and more pervasive. The MIT Technology Review looks at the limitations of silicon and at developments in biological computing and quantum computing.

http://www.techreview.com/articles/essex012802.asp

The Case For Humanist Culture

In the view of Camille Paglia, "America is presently suffering from an effete, cynical pseudo-intellectuality in the universities, a manic rotation of superficial news cycles in the media, and a generalized hypochondria in the professional middle class, as shown by its preoccupation with stress-related ailments and disorders, buffered by tranquilizers."

In this essay, she rejects popular culture based on commercial appeal and makes the case for a return to enlightened education, based on the cultural weight of the classics.

http://www.bu.edu/arion/paglia~1.htm

Ecological Footprint

E.O. Wilson takes a look at the needs of human societies and the ability of the environment to sustainably fill those needs.

"Earth, unlike the other solar planets, is not in physical equilibrium. It depends on its living shell to create the special conditions on which life is sustainable. The soil, water, and atmosphere of its surface have evolved over hundreds of millions of years to their present condition by the activity of the biosphere, a stupendously complex layer of living creatures whose activities are locked together in precise but tenuous global cycles of energy and transformed organic matter. … When we alter the biosphere in any direction, we move the environment away from the delicate dance of biology. When we destroy ecosystems and extinguish species, we degrade the greatest heritage this planet has to offer and thereby threaten our own existence."

http://www.sciam.com/2002/0202issue/0202wilson.html

The Origins Of Genius

Is human genius subject to laws of evolution? In this review, Denis Dutton wrestles with the ideas of Dean Keith Simonton in his latest book "Origins of Genius: Darwinian Perspectives on Creativity".

"At the heart of Simonton's project are two very different ideas: first, he argues that evolution and processes of natural selection provide illuminating models to explain the existence and operation of creative genius in the sciences and the arts. Second, he propounds a rather more

dubious thesis, that the process of natural selection itself is an adequate model for understanding genius at work, that the history of human ideas demonstrates a kind of secondary evolution."

http://muse.jhu.edu/demo/phl/25.1dutton.html

Software And Slime

Biologists have know for some time that simple organisms and creatures such as slime mold and termites can create complex organisms and societies. They do this not through top-down control, but as a consequence of all members of the group following a few simple rules.

Computers can do this too. Starting with a few simple rules and employing genetic algorithms, they can duplicate complex behaviors.

http://www.prospect.org/print/V12/20/blume-h.html

Meme Pool #2: March 4, 2002

Big Brother And The Accomodation Of Corporate Values

Discussions about governance and the Internet have largely supposed that the flow of information is free and unimpeded. It is assumed that the underlying network technology makes it virtually impossible to control and observe data traffic on the web.

To some extent this is true, but it doesn't stop many governments from trying. China has had some success at controlling the web. Cisco Systems, Nortel and IBM helped them out. A firewall for a billion people. Resistance Is Futile. Or is it?

http://www.weeklystandard.com/Content/Public/Articles/000/000/000/922dgmtd.asp

Science And Religion

Can science prove that God exists? Debate over this issue has been sparked again with the publication of the latest meticulously conducted clinical trial of whether praying for the sick assists their recovery.

http://www.arts.telegraph.co.uk/connected/main.jhtml?xml=/connected/2002/01/16/ecfgod16.xml

The Woman Who Shot Hitler

In August 2002, a woman will celebrate her 100th birthday by releasing her latest film.

Impressions Under Water is the result of a quarter-century of diving in the Indian Ocean, and it promises to be just as arresting as her directorial debut, The Blue Light - the mystical mountain movie she made 70 years ago.

But will Leni Riefenstahl ever be able to slip out of the dark shadow of "Triumph of the Will"? The release of her film will once again spark the debate of the relationship between art, culture, and politics.

War And The Environment

It should come as no surprise that war is bad for the environment. The U.N Environmental Program is taking a look at how decades of conflict have destroyed the environment in Afghanistan.

http://seattletimes.nwsource.com/html/nationworld/134401110_ecoafghan07.html

The Cargo Cults Of The South Pacific

On the surface it appears that cargo cults believe the wealth brought to their islands from the outside world came from gods. Having seen Europeans (and Americans) import all manner of wealth by building docks on the coast or runways on the land, they too built docks and runways, then waited for the cargo to come in. A very creative but futile way of interpreting phenomena.

But this is an article that can be read at many levels. The re-interpretation of cargo cults as a reaction to colonialism, or even a show for tourists, suggests that our own culture makes us just as easily persuaded to believe what we need to believe.

http://www.themightyorgan.com/travel_cargo.html

War And Peace, But Mostly War

"The 20th century was the most murderous in recorded history. The total number of deaths caused by or associated with its wars has been estimated at 187m, the equivalent of more than 10% of the world's population in 1913."

Eric Hobsbawm describes the evolution of war in the 20th century. At the beginning of the period, the difference between war and peace was clear-cut and codified in the Hague Conventions (of 1899 and 1907).

Wars had beginnings, ended with treaties, and made clear distinctions between combatants and non-combatants.

After a century, the distinctions between the beginning and end of a conflict, the causes of it, and who the combatants are is no longer clear. There is no effective international system to deal with most wars. Moreover, competing ideologies and passionate advocacy leave us unable to even discuss or think about many conflicts. Today we in the peculiar situation of having a superpower need to 'formally' declare war on a small, international non-governmental network with no territory, army, or for that matter reasonable objectives.

"A tentative forecast: war in the 21st century is not likely to be as murderous as it was in the 20th. But armed violence, creating disproportionate suffering and loss will remain omnipresent and endemic - occasionally epidemic - in a large part of the world. The prospect of a century of peace is remote. "

http://books.guardian.co.uk/departments/history/story/0,6000,655530,00.html

Meme Pool #3: March 11, 2002
The Geo-Politics Of Oil

Foreign Affairs Magazine analyses the geo-politics of oil. For decades, the House of Saud has used its position as the leading producer to advance its interests. But there is another big player in the field – Russia. Russian reserves are much larger than was previously assumed. Their problem is a failed infrastructure for production and distribution. That is being fixed with the help of foreign investors.

The Russians are playing their oil strategy astutely. Moreover, there is little likelihood of friendly cooperation between Moscow and Riyadh. Riyadh's oil policy is seen as an extension of Saudi support for Afghanistan's anti-Russian rebels in the 1980s, the independence movement in Central Asia in the late 1980s and early 1990s, the Chechnya conflict, and Islamic educational institutions in Russia -- all considered threatening to Russian interests. Osama bin Laden and his army of Saudi expatriates has been ticking off the Russians for decades.

It is clear that Russian oil will shift patterns of power and influence, particularly as it relates to the Middle East. Does this point to a re-emergence of Russia as a superpower? Maybe not soon. But it is worth considering that the Soviet Union achieved superpower status after having been hammered in WWII, and in spite of a bloated Communist bureaucracy. After the collapse of the Soviet Union, endorsers of free markets spent a lot of time congratulating themselves about being 'right' about capitalism. No one seems to have observed that now the Russians are capitalists too. That could make them fierce competitors once they figure out how to make markets work.
http://www.foreignaffairs.org/articles/Morse0302.html

We're Here, We're Queer, We're Penguins

In a different era, only a decade ago, intellectuals or the merely curious would spend a pleasant Sunday morning at a magazine or bookstore, browsing through the merchandise, and finally settling down with their copy of the Sunday NYT, a stack of magazines and a cup of coffee.

The web has spawned a virtual book and magazine shop, with the added bonus of an interactive element. Readers can get involved. They can post their own memoirs (called blogs). They can hyperlink to sources and

related materials. They can make contributions to an on-going dialog. The Globe and Mail reports on the new scene.
http://www.theglobeandmail.com/series/dot-com/

The negative side, of course, is that there is no quality control. You don't necessarily know what you're getting into. No peer review, and no professional reputation to worry about.

Which leads us to the penguins. Clicking on one of the sites mentioned in the Globe article, (plastic.com) puts you into an online 'dialog' discussing an article in a separate e-zine (salon.com) on the apparent homosexuality of penguins.
http://www.salon.com/mwt/feature/2002/03/08/gay_penguins/print.html

Alert contributors are free to add commentary. One had a web page showing photos of gay penguins.
http://members.aol.com/deppitybob/PENGUINS/peng6.html

Another contributor linked to a 1998 BBC item reporting on the work of Dr Fiona Hunter, a researcher in the Zoology Department at Cambridge University, who has spent five years observing birds' mating patterns. She has discovered incidents of prostitution among, yes, penguins.
http://news6.thdo.bbc.co.uk/hi/english/world/asia-pacific/newsid_60000/60302.stm

This is all amusing, but does have significance. The information landscape is increasingly chaotic, with high degrees of linkage. It wreaks havoc with the established process for accumulating knowledge.

Science Policy And Governance

You would think that centuries after Galileo Galilei vs. His Holiness Pope Urban, scientists would not have to worry about orthodoxy of the faith. Not so. Sheilla Jones reviews 2 books: "Facing Up: Science and Its Cultural Adversaries" by Steven Weinberg and "Who Rules in Science: A Guide to the Wars" by James Robert Brown.

In *Who Rules in Science*, James Brown warns that there's much more at stake here than people realize. This is not just a battle between postmodernist philosophers and working scientists over whether an electron is real or merely a social construction. It's about who gets to define reality, truth and rationality.

"The stakes are political," the University of Toronto philosophy professor and author of several books on science and philosophy, says. "Social issues are constantly lurking in the background. How we structure and organize our society is the consequence. Whoever wins the science wars will have an unprecedented influence on how we are governed." The book asks who gets to set the rules and therefore has the most power
http://www.globebooks.com/servlet/GIS.Servlets.GAMArticleHTMLTemplate?tf=book/review/AP/fullStory-BookReview&cf=book/review/AP/config-neutral&slug=BKSCIE&date=20020209

Nanotechnology

This is the next big thing in technology. The ability to construct objects with molecular precision will revolutionize manufacturing, permitting materials properties and device performance to be greatly improved. In addition, when a production process maintains control of each atom, there is no reason to dump toxic leftovers into the air or water.

But not everyone is happy. The controversy with biotechnology's tinkering with life pales in comparison to the possible creation of new non-carbon life forms.
http://www.sciam.com/2001/0901issue/0901drexler.html#further

Web Archives

Information on the web is very fluid. It is entirely up to web masters to keep pages up from one day to the next. But there is an organization that is attempting to archive the entire contents of the Internet using web crawlers. Ambitious to say the least.
http://www.archive.org/

Visitors to this site can type in the URL of whitehouse.org and see what Bill Clinton was up to in 1996. It's not perfect, since a particular site may be down when the crawler goes by. The site does raise many copyright issues and anyone interested in this aspect of intellectual property may be interested in an *amici curiae* submitted by the archive.
http://mail.archive.org/news/brief.html

Meme Pool #4: March 18, 2002

Governance: (Real) Policy Research

Government requires pharmaceutical companies to conduct long and extensive double blind tests to confirm the safety and effectiveness of their products. It requires automobile companies to conduct extensive crash tests. But governments will spend billions on their own programs without first checking to see if they are effective.

The Campbell Collaboration aims to change this by advancing the cause of "evidence-based" social policy. The collaboration is an international, independent, non-profit organization that brings together social scientists, statisticians and policymakers. Its aim is to assemble and evaluate the best available evidence for the effectiveness of various social interventions. In particular, that means evidence from experiments and hard data.

It could make a big difference. Randomized trials have been used to evaluate the effectiveness of driver-education programs, job-training schemes, classroom size, psychological counseling for post-traumatic-stress disorder and increased investment in public housing. And where they are carried out, they seem to have a healthy dampening effect on otherwise rosy interpretations of the observations prepared by policy advocates.

http://www.economist.com/science/displayStory.cfm?story_id=1010802

Medicine: Love Potion #9

To poets, artists and dreamers, love is an eternal and joyous mystery. To Dr. Garth Fletcher, Director of the International Society for the Study of Personal Relationships and Professor of Psychology at the University of Canterbury, New Zealand it is oxytocin and vasopressin. Hopefully such research will contribute to effective new therapies and the de-bunking of unhelpful ideas about relationships. For example, researchers have determined that the sex drive in men is higher than it is in women, in case there are doubts.

Isn't science wonderful? Now it's just a matter of time before someone markets combo-paks of oxytocin and Viagra. Prozac has been described as a pill that creates "designer personalities". Will the future now bring "designer relationships"? Perhaps the closer reality is that "cuddle pills"

will make us instantly caring and affectionate in much the same way as booze makes us instantly witty and intelligent.
http://www.independent.co.uk/story.jsp?story=119425

But at another level, we need to consider personal behavior in the context of ethics and free will. The idea that we are nothing more than a cocktail of chemicals will only go so far in the legal system, particularly if crimes are committed. The difference between being caring and demonically possessive may be only a few micrograms (results may vary). In a court case, an appropriately motivated ($$) lawyer will take note of a pill, manufactured by a pharmaceutical company, sold by a drug chain, and recommended by an insured doctor. There are deep pockets all along the supply chain. It could be expensive if the right kind of case and sympathetic jurors could be put together. Does the lawyer need scientific information? Lurking out on the fringe of the web are organizations such as the Crime Times that are set up to propagate the "link brain dysfunction to aberrant/criminal/psychopathic behavior" meme.
http://www.crime-times.org/contents.htm#toc

Technology, Innovation And National Productivity: The Customer Is Always Right

Case studies on the innovation process, particularly as it relates to new technologies, point to the need for companies to build close ties between their research laboratories and product development divisions. This process is well described in the innovation of the "giant magneto-resistive" head—the breakthrough from IBM that boosted the capacity of hard-drives from a few gigabytes to 100 gigabytes and more.
http://www.economist.co.uk/science/tq/displaystory.cfm?story_id=885080&CFID=2850387&CFTOKEN=259b338-4ffe093c-9097-4d17-bf3f-13e8f39632cd&

But this is only half the story. Once it becomes a product, an innovation still must be bought and used. Product price is only one of the costs incurred by a user. Re-training and re-tooling, for example, can be much higher costs. The MIT Review gives a few examples of what happens after the innovation is taken out of the box.
http://www.techreview.com/articles/schrage0402.asp

At a macro-economic level, end-user innovation is more important than product innovation. The McKinsey Global Institute, the research arm of

the McKinsey consulting firm, reports that Wal-Mart's technological and process innovations have an impact on the economy that goes further than most ever imagined.
http://www.mckinsey.com/knowledge/mgi/reports/pdfs/Productivity/ExecutiveSummary.pdf

Global Politics: *Everyone Wants To Be An Anarchist*

Project Syndicate is an international association of newspapers, whose web site consists of articles written by journalists and other opinion leaders. Here are three papers on global governance indicative of a new trend in the globalization debate.

George Soros, billionaire and currency speculator turned philanthropist promotes ideas that normally come from environmentalists and the anti-globalization movement.

"We live in a world characterized by global markets, but political arrangements remain firmly rooted in the sovereignty of states. Some international institutions do sustain global markets, but they are far from perfect. International institutions dedicated to the provision of public goods, such as preserving peace, protecting the environment, alleviating poverty, and improving health, labor conditions, and human rights, are even less effective and less well-endowed."
http://www.project-syndicate.org/series/series_text.php4?id=689

Christoph Bertram, Director of the Foundation for Science and Policy in Berlin, notes that American policy seems to be aimed more at dismantling global arrangements than creating them.

"For some time now America has appeared to be intent on discarding the basic ordering instrument of relations between states - international treaties and the institutions that watch over them. The Anti-Ballistic Missile (ABM) treaty with the former Soviet Union banning missile defense has been cancelled. A protocol seeking to supervise the prohibition of biological weapons production has been rejected. The Kyoto Protocol on climate change has been declared unacceptable to the US. The Nuclear Test Ban Treaty - negotiated with major US involvement - has been dismissed. The project of an international court of justice is ridiculed and resented. "
http://www.project-syndicate.org/series/series_text.php4?id=786

And finally Nina Krushcheva, senior fellow of the World Policy Institute and, yes, granddaughter of Nikita Krushchev, thinks that George W. Bush is an international anarchist!

"Bush's argument, in essence, is that treaties and detailed arms control agreements are superfluous in a world in which Russia and America are no longer enemies. Detailed balance of power arrangements, Bush's people insist, are for rivals. Between friends, an informal understanding of what people desire is sufficient.

Of course, it is not. The point of security agreements for settled democracies like those in Europe and America, as well as for infant democracies such as Russia and dictatorships like China, is to establish predictability and so reduce guessing and the risk of war. Moreover, treaties are signed not only because they provide the signatories with standards and means of verification, but also because countries outside the agreement benefit from knowing what to expect."
http://www.project-syndicate.org/series/series_text.php4?id=644

Popular Culture: *Omigod, Another Boy Band*

What's the outlook for the music recording industry? Last year record-company revenues dropped by $600 million. Talk of the end of the industry as we know it sounded more and more convincing. Why? Well, there's the recession, post-September 11 shell shock, revenue lost to CD-burning and Internet file sharing, and indie music. True.

Also the music sucks. Could it be that after decades of managing and manipulating the creative process to control market share and maximize revenues, the recording industry has lost its creative edge?
http://www.msnbc.com/news/718662.asp?cp1=1#BODY

Meme Pool #5: March 24, 2002

Environment: Terminator III - Mother Nature Kicks Butt

As spin-doctors were putting the final touches on reports predicting certain job losses due to the Kyoto protocols, the Larsen B ice shelf slid into the ocean and floated away. The ice shelf, which had been stable for 1800 years, was 200m thick and covered an area of 3250 sq. km, broke apart in less than 30 days. Ice scientists attributed the breakup to higher local temperatures, and speculated about a link to global climate change.
http://news.bbc.co.uk/hi/english/sci/tech/newsid_1880000/1880566.stm

The National Snow and Ice Data Center gives a more technical view.
http://nsidc.org/

This is just one, of many events that have a "possible link" to global warning. The Ecologist, in an extremely informative article, reports:

"1998 was the year of weird weather. Besides Hurricane Mitch, it was the year that forest fires of unprecedented ferocity ripped through the jungles of Borneo, and neighboring New Guinea had the worst drought for a century. East Africa saw the worst floods for half a century – during the dry season – with much of the desert north of the region flooded. Tibet had its worst snows in 50 years. Ice storms disabled power lines through New England and Quebec, plunging residents into a world without power or electric light for many days. The coffee crop failed in Indonesia, cotton died in Uganda and fish catches collapsed off Peru. There was no water to fill the Panama Canal. Warm seas caused the tiny algae that give coral their color to quit reefs in their billions across the Indian and Pacific Oceans, leaving behind the pale skeletons of dead coral."
http://www.theecologist.org/article.html?article=287

Social Psychology: The New Slavery

Although slavery is illegal everywhere, it still exists. An article in Scientific American by Kevin Bales, professor of sociology at the University of Surrey Roehampton in London, estimates that there could be as many as 27 million of them.

"When a social worker came across an unmapped village in the hills of Uttar Pradesh in India three years ago, he found that the entire

population was in hereditary debt bondage. It could have been in the time of their grandfathers or great-grandfathers--few in the village could remember--but at some point in their past, the families had pledged themselves to unpaid labor in return for loans of money. The debt passed down through the generations. Children as young as five years old worked in quarry pits, making sand by crushing stones with hammers. Dust, flying rock chips and heavy loads had left many villagers with silicosis and injured eyes or backs."

But freeing them is not such a simple task. The article investigates why slavery is so persistent.
http://www.sciam.com/2002/0402issue/0402bales.html#author

Collective History: *Khurbn - The Black Hole That Devours Light*

Everyone is familiar with the basic facts about the Holocaust. Melvin J. Bukiet describes the evolution of the holocaust meme. Fifty years of examination cannot assign reason to an irrational act. But the meaning of the holocaust is different for the children of survivors.

This is a story about Jews, but a lesson about everyone. The ghosts of the oppressed remain with us for long time. Whether it is Rwandans, Tibetans, Kosovars, Afghanis or Palestinians, today's actions will leave an entry under "accounts receivable" for generations.
http://chronicle.com/free/v48/i26/26b00701.htm

Popular Culture: *Looking For Ms. Average*

The captains of commerce at Harlequin Enterprises are trying to find gold by defining the contemporary sensibility of 21-to-34-year old women. It's a tough order, because what they need to find is no less that a fairly universal formula for female happiness in a post-feminist era. Only one thing is certain. Fabio is out.
http://www.washingtonmonthly.com/features/2001/0201.marsh.html

Security Technology: *In God We Trust, All Others We Monitor*

Radio-frequency identification tags (RFIDs) are microchips that are used all over the world for secure access control. They are also used to track inventory, anything from books to cattle to expensive handbags.

A new generation of RFID tags, has broken through barriers of size (less than 1mm across and ½mm thick), cost, flexibility and durability, to a point where such tags can be embedded inside sheets of paper, such as banknotes.

Accurate knowledge, and monitoring, of the population of banknotes could be a powerful tool. The mining of data on how different banknotes move through the economy would make it easy to spot suspicious transactions—for example, a large deposit of notes that had been out of circulation for a long time.

There are further possibilities. Known notes could be slipped into the "informal" economy by law-enforcement agencies that wanted to find out where they turned up. Kidnappers could no longer insist on unmarked bills, for there would be no such things. Even the theft of cash would become a much trickier affair.
http://www.economist.com/science/displayStory.cfm?story_id=975746

Meme Pool #6: April Fool's Day Edition

Typically MEME Pool articles are selected on the basis of their value to those who study the future. But, many of the rejects can be amusing. Here is the **Official April Fool's Day Edition**.

Bureaucracy And Administration: *Law Of Requisite Variety*

The Law of Requisite Variety requires that a regulator must have as much or more variety than the system it regulates. This is something to think about while standing in line at security checkpoints. Why do we expect that our most marginal and unmotivated workers (security guards), following a repetitive and unvarying procedure, should be able to catch highly motivated, elite terrorists who are unlikely to perform the same act twice?

Don't expect much. Six months to the day after the attack on the WTC, Rudi Dekkers received a letter from the U.S. Immigration and Naturalization Service. Mr. Dekkers runs a flight school in Venice, Florida, and the INS were writing to inform him that two of his pupils, Mohammed Atta and Marwan al Shehhi, had been approved for student visas. The story was widely reported but no one tells it as well as Mark Steyn.
http://www.nationalpost.com/commentary/columnists/story.html?f=/stories/20020314/331291.html

Weird Cosmology: *The End of the World*

Seers and prophets announcing the end of the world are a cliché in comic strips. Many cult religions believe in an imminent end of life-as-we-know-it. Wacky, maybe. But here are twenty 'scientific' ways the world could end.
http://www.discover.com/oct_00/featworld.html

Faux Reporting: *Yosemite National Website*

Few people handle parody as well as the good folks at The Onion. The formula is simple: take a normal event, view it in a slightly out-of-focus way and write it up as a news story. For example, "New National Parks

Website Makes National Parks Obsolete."
http://www.theonion.com/onion3116/natparks.html

Or try "World Death Rate Holding Steady at 100 Percent"
http://www.theonion.com/onion3102/deathrate.html

Useless Technology: *When Will You Die?*

Want to waste some time? Go to Longtolive.com, fill out their health and lifestyle questionnaire, then receive an estimate of your life expectancy. The site will then pop up another screen with a countdown timer, in seconds, for your approaching demise. Now when you waste time, you will know exactly how much you have wasted.
http://longtolive.com/

Journalism: *Faking It*

Every month, a new shipment of magazines gets stacked up at grocery store checkout lines. This month's Cosmo, has 75 new sex tips. They've been doing this for decades. How many secrets can be? Liza Featherstone reveals all. In fact the stories are made up.

What is interesting from a meme perspective is how many times this story has been picked up. I've come across three links to the original article in the Columbia Journal Review, including one in Arts & Letters Daily. It was in yesterday's Ottawa Citizen. Now you can read it in the prestigious MEME Pool.
http://www.cjr.org/year/02/2/featherstone.asp

Public Interest: *Directory of Screw-ups*

Budd Company robot commits suicide by dissolving its electronics. Interesting, yes, and the mission of Peter G. Neumann, of SRI International is to make sure all such failures are registered. Check out the list, but if you fly a lot you might not want to look at the section on commercial aviation.
http://www.csl.sri.com/users/neumann/illustrative.html#8

Meme Pool #7: April 8, 2002

History And Futurology: *1491*

Discontinuities present a major technical challenge to forecasters. When you can no longer count on the smooth flow of major socioeconomic variables, uncertainty, variability and risk dominate your plans. All of your assumptions about how things will evolve are cast into doubt.

The following article illustrates the problem, but in reverse. It shows how a mistaken view of the past results in erroneous assumptions about the present. The assertion is that:
"Before it became the New World, the Western Hemisphere was vastly more populous and sophisticated than has been thought—an altogether more salubrious place to live at the time than, say, Europe. New evidence of both the extent of the population and its agricultural advancement leads to a remarkable conjecture: the Amazon rain forest may be largely a human artifact"
http://www.theatlantic.com/issues/2002/03/mann.htm

Global Civil Society: *The Marketing of Social Injustice*

"Which global injustices gain your sympathy, attention, and money? Rarely the most deserving. For every Tibetan monk or Central American indigenous activist you see on the evening news, countless other worthy causes languish in obscurity. The groups that reach the global limelight often do so at dear cost—by distorting their principles and alienating their constituencies for the sake of appealing to self-interested donors in rich nations."

In our highly mediated, overly informed society, everything competes for our attention. From soft drinks to government policy we are constantly reminded of where to place our money. But our sympathy? Foreign Policy looks at how the poor and oppressed have to scramble to raise awareness of their cause.
http://66.113.195.237/issue_marapr_2002/bob.html

The article refers to a 2001 survey, by researchers at Leiden University in the Netherlands and the Institute for International Mediation and Conflict Resolution in Washington, D.C. They identified 126 high-intensity conflicts worldwide (defined as large-scale armed conflicts

causing more than 1,000 deaths from mid-1999 to mid-2000), 78 low-intensity conflicts (100 to 1,000 deaths from mid-1999 to mid-2000), and 178 violent political conflicts (less than 100 deaths from mid-1999 to mid-2000). As a matter of perspective, their map of World Conflict shows the Israeli-Palestinian conflict as a 'mere' violent political conflict.
http://www.iimcr.org/imgs/Conflictmap%202001-g.pdf

Technology: {(Real Reality) + (Virtual Reality)} = (Augmented Reality)

Do you suffer from information overload? It may get a lot worse if augmented reality researchers developers make progress. Augmented reality (AR) refers to computer displays that add virtual information to a user's sensory perceptions. Most AR research focuses on "see-through" devices, usually worn on the head, that overlay graphics and text on the user's view of his or her surroundings.

Consider what AR could make routinely possible. A repairperson viewing a broken piece of equipment could see instructions highlighting the parts that need to be inspected. A surgeon could get the equivalent of x-ray vision by observing live ultrasound scans of internal organs that are overlaid on the patient's body. Firefighters could see the layout of a burning building, allowing them to avoid hazards that would otherwise be invisible.

There are a lot of possibilities indeed, although this technology will be one more way in which information is inserted between us and our environment. Seeing will no longer be believing. For a more critical view of the media, see the next item.
http://www.sciam.com/techbiz/0402feiner.html#an5

Media Studies: A Passion for Illusion

Jeffrey MacIntyre reviews Todd Gitlin's latest book, "Media Unlimited". Todd Gitlin, a leading cultural critic and professor in New York University's department of culture and communication, has made a startling, eloquent and timely contribution to the field of media studies. Surrounding ourselves with amusements, Gitlin announces, "tranquilizes us, wrecking not only democracy and spirit but even deep pleasure itself." Strong words, but it is difficult to disagree with some of his more withering observations.

The world Gitlin surveys is a place of constant (always-on) television households, in which the sentence length in bestsellers has declined 43% since 1936, in which the cost of entertainment has dramatically decreased and the supply exploded, and in which the Walkman and car cup holder, reality TV, Napster, elevator music, branding and the stars of Hollywood and webcam life reflect the "fast," convenience-based economy. The coins of the realm are speed and stimuli.
http://www.nationalpost.com/artslife/story.html?f=/stories/20020330/449989.html

Meme Pool #8: April 15, 2002

Risk Assessment: *Perception Equals Reality*

Long before September 11, public panics were widespread - on everything from GM crops to mobile phones, from global warming to foot-and-mouth. One of the key points Frank Furedi makes in his book 'Culture of Fear' is that perceptions of risk, ideas about safety and controversies over health, the environment and technology have little to do with science or empirical evidence. Rather, they are shaped by cultural assumptions about human vulnerability.

The random nature of such perceptions is an obvious difficulty in technology forecasting. But far greater difficulties are created in the public policy arena. Speculating about risk gives rise to hypothetical problems that may be just as expensive to mitigate as real problems.
http://www.spiked-online.com/articles/00000002D46C.htm

Computation: *Zipf's Law and Artificial Society*

The new science of artificial societies suggests that real ones are both more predictable and more surprising than we thought. Growing long-vanished civilizations and modern-day genocides on computers will probably never enable us to foresee the future in detail—but we might learn to anticipate the kinds of events that lie ahead, and where to look for interventions that might work

Mathematics has always had a way of showing up in the strangest places. Fibonacci series explain the breeding of rabbits and the patterns on sunflowers. The binomial distribution shows up everywhere. Now mathematical simulations of social interaction indicate that a relatively small number of behaviors, repeated often among many participants, can predict broad outlines of the growth of societies.
http://www.theatlantic.com/issues/2002/04/rauch.htm

Environment: *Environmental Sustainability Index (ESI)*

The Environmental Sustainability Index (ESI) is a project conducted jointly by Yale University, Columbia University, and the World Economic Forum. It is designed to permit systematic cross-national

environmental comparisons. Uncertainties and a lack of critical information have long plagued environmental decision-making. As a result, choices are made on the basis of generalized observations and best guesses, or worse yet, rhetoric or emotion. The ESI enables a more analytically rigorous and data driven approach to environmental decision making. Comparative analysis allows us to understand where conditions are improving and where they are deteriorating, which policies are working and which are not, and where 'best practices' might be found.

This item is submitted more as a reference than as an article. The press release for the ESI can be found at:
http://www.ciesin.org/indicators/ESI/press_rel.html

Downloadable PDF files (not a quick read) are at:
http://www.ciesin.org/indicators/ESI/downloads.html#EPI

Devotion To Humanity: *The Case of Comrade Serge*

It was not long ago that words like glasnost and perestroika hinted at the end of totalitarianism in the Soviet Union. According to Marx, the whole point of communism was that it would be more productive and produce greater wealth for all than capitalism. It didn't turn out that way. Socialism that perpetuates poverty is worthless -- a return, indeed, to what Marx called "oriental" despotism and a slave economy.

In the end, the Soviet Union collapsed under its own weight. But it did so with the help of dissidents. Even as Stalin slowly and methodically squeezed the breath out of society, he was opposed by the doomed efforts of those who saw and felt what was coming.

Susan Weissman preserve's the memory of one such dissident, Victor Serge. You don't have to agree with Comrade Serge's view of economics and history. He was, after all, left of Stalin. His story is more about what one courageous individual can do to stare down oppression.
http://www.calendarlive.com/top/1,1419,L-LATimes-Books-X!ArticleDetail-51287,00.html

Robotics: Creating Copies Of Ourselves

Are robots becoming us or are we becoming them? One of the world's leading roboticists discusses the machines in our future -- their ability to think, feel, reproduce and achieve personhood. It all comes down to what we can do and what we want to do.
http://www.salon.com/people/feature/2002/02/25/flesh_machines/index.html

On the other hand, if you're tired of hearing about how cool technology is, perhaps you should look at how we also create **Artificial Stupidity**.
http://www.salon.com/tech/feature/2000/10/04/lanier/index.html

Meme Pool #9: April 21, 2000

Demographics: *Are You Married Or Single?*

Demographic shifts shape the base of many social and economic trends. And within population models, the fertility rate is the main driving factor. But in today's society, patterns of marriage, family formation and divorce make for much guesswork in the determination of fertility rates. The models, and the meaning of their outputs, will be far less clear or accurate.

Daphne Merkin takes us through the complexity of the contemporary marriage scene and other 'post nuclear family pathways'. Is yours a 'Pursuer-Distancer' marriage, or perhaps a 'Cohesive-Individuated' marriage? If no longer married, what is your 'post-divorce adaptive style'? Are you a 'Seeker', a 'Good Enough', or a 'Competent Loner'?

Perhaps more importantly, what does the research say about the impact of divorce on children? How will they feel about supporting parents and paying down the national debt? What kind of families will they raise, if any? Unfortunately, much of the research follows trends, which is to say it shows us what we are looking for. Not of much help to futures research.

[The New Yorker]

Medicine: *Ancient and Alternative Therapies*

Complementary and alternative medicine (CAM) is thriving. It includes everything from meditation, acupuncture, and herbalism to radical procedures like chelation, colonics, and leech therapy and has grown to become a $32 Billion industry.

It has also found respectability. Government agencies, including the NIH's office of Alternative Medicine, pour hundred of millions of dollars into research to determine which treatments hold legitimate medical value and which are mere superstition. CAM is also being taught in major medical schools.

This may be a popular trend, but unfortunately the research is finding few scientifically demonstrable results.

[The Washington Monthly]

This is not to say that there is nothing to be learned about natural forms of therapy. Dr Cindy Engel of Britain's Open University believes that many animals are capable of self-medication.
[The Economist]

Biotechnology: *Making Regulations Today For Tomorrow's Problems*

Francis Fukuyama weighs in on the issues of biotechnology. His essay in Foreign Policy elegantly covers the poles of the debate. There is good. There is bad. There are ethical reasons to regulate it. Do regulations work in a globalized world? Maybe not, but we must try anyway, he concludes.

Central to the debate are the ethical issues and therein lies the problem. We live in a substantially non-ethical, non-judgmental world. In the absence of any useful ethical capability we decide to mitigate projected crises instead. Futurology replaces religion as the definer of ethical considerations.
[Foreign Policy]

Fukuyama's latest book, "Our Posthuman Future: Consequences of the Biotechnology Revolution" is reviewed in the Economist and Scientific American.
[The Economist] [Scientific American]

Efficient Automotive Technology: *The Wizards of Wolfsburg*

Historically, auto design challenges have come from the racetrack and were focussed on speed, performance and handling. The engineers at Volkswagen took on, and exceeded an environmental challenge - to create a vehicle with fuel efficiency better than 1 litre/100 km. They did it.

The VWvortex is fully licensed for road use. Built under conditions of great secrecy, despite many claims that such a design point was technically impossible, the car, was driven under its own power from Volkswagen's plant in Wolfsburg to a press conference in Hamburg (235km). The car's top speed is 120 km/hr. The fuel tank holds only 6.5

litres in total, and the trip used 2.1 litres for an average of 0.89 litres/100 km, a new world record.

It also looks awesome.

[Volkswagen]

Philosophy: *Elvis And The Books Of Isaiah*

Sir Isaiah Berlin's lifelong concern was the nature of human liberty, its possibilities, its frailty, and its enemies. His editor, Henry Hardy, has recently published some of Berlin's essential ideas in "Freedom and Its Betrayal: Six Enemies of Human Liberty."

In the introductory lecture, Berlin, "with a certain amount of exaggeration and simplification", reduces the perennial questions addressed by political philosophy to one, namely, "Why should anyone obey anyone else?" Through this posthumous edition, the words of Sir Isaiah continue to remind us that freedom and liberty are not 'rights' but social constructions that must be protected and nourished if they are to survive. John Banville has written a review of his book.

[The Irish Times]

Meme Pool #10: April 28, 2000

Ethics: Saint Thomas Aquinas And The War on Terror

Judging by its beginning, the 21st century may well be the era of moral confusion. In Afghanistan we have a war of a superpower against a loose international band of terrorists. Prisoners in this war are not prisoners of war, but achieve a new status, once caught, of stateless criminals, devoid of any rights.

The publicity campaign in the Middle East may chew up more resources than the military campaign. At the same time, the carnage in the Congo is an order of magnitude larger yet is mostly unknown or ignored.

An article in Slate looks at what philosophers have to say about terrorism, beginning with the doctrine of double effect. The medieval philosophers contemplated moral issues with great care since they were pre-occupied with going to heaven. Subsequent philosophers, with their interest in doing well on this earth, had second thoughts.

Do these early works guide us or distract us? Are they a help or a hindrance? It may be that the ethics for individuals only serve to confuse the ethics of group interaction and conflict.
[Slate]

To get a sense of medieval precision on moral issues, look at Aquinas' Summa Theologica.
[Summa - Double Effect]

Blogs And The Internet: The MEME Pool Is So Yesterday

Weblogs, shortened to Blogs, are the latest media form to be spawned by the web. Simply described, they are personal websites in which an author regularly updates a journal of thoughts, recollections or ideas. Often they will provide interesting links and many have a facility for letting readers add comments.

Blogs are only as good as their authors. Many weblogs are little more than the random musings of introverted souls with too much time on their hands. That said, some blogs are of truly high quality. They can have a large readership, particularly if they focus on a niche market that is not well covered by standard media forms. Accomplished journalists use them to 'publish' their own magazines. Pundits use them to promote

their views. Hobbyists use them to send and exchange information. Writers use them to reach an audience.

They are significant in that some have become a means to publish without having a press. Business 2.0 provides a comprehensive look at the Blog world.
[Business 2.0]

Do blogs form an important trend, the next "killer app" as some people say? Probably not. For one thing, it takes too much effort and talent to maintain a really good site. Exciting new technologies tend to follow a growth pattern as shown in the Gartner Group's "hype cycle". Blogs are probably now in the 'peak of inflated expectations'.
[Hype Cycle]

Media Weddings: *One Ring to Rule Them All*

If you take the meme from "Passion for Illusion" (Meme 007) and combine it with "Married of Single?" (Meme 009), you would likely come up with ABC's frightening, "The Bachelor", the 'wedding porn' genre which mates emasculated Mr. Rights with soulless, life-size Barbies.

Heather Havrilesky dissects the program and the genre in Salon.com. She also is the author of the Rabbit Blog - a cross between Bridget Jones and Ann Landers.
[Salon] [Rabbit Blog]

Globalization: *The New Anarchists*

In honor of May Day, the traditional holiday of the left, here is an article on what anarchy is all about. It turns out anarchists, just like the extreme right, don't like big government. Moreover, they are in favor of globalization and don't want to restrict it to trade and investment. They would like to expand the global agenda.

This is all counter-intuitive thinking. It may well be that our notions of left wing and right wing are obsolete. They now only serve the purpose of inaccurately labeling ideas so that they can be dismissed out of hand using equally obsolete objections.
[The New Left Review]

Meme Pool #11: May 5, 2002

Risk Management: The End of Progress

Risk has always been a part of life, but Christopher Coker argues in *Spiked* that we are entering into a new phase in how we deal with it.

"The post-modern condition is one we all experience in a mode that is more than ever defined by risk; by the cluster of risks, insecurities and control problems that have played a crucial role in shaping our changing response to the world. Concern about risk is no longer a peripheral matter; it is built into the environment, culture and the everyday routines that guide our lives. In this sense we live in a 'risk age'. Risk has become a way of thinking about one's moment in history; it is not only inherent in the moment itself."

The implications for policy are significant. For one thing, our focus shifts away from what we want, onto what we wish to avoid. This creates a scattering of resources because our political system can easily select a few priorities but cannot simply choose among a myriad of hypothetical insecurities. Combined with a culture of victimization, governments can no longer stick to doing a few good things, but must make certain that nothing bad happens to anyone. This situation requires a new understanding of values and norms. Not everyone perceives risk in the same way. Mothers and their sons have different views about motorcycles for example.

Perhaps the most important consequence of this ethos of risk management lies in the shifting of burden of proof. In the status quo, dangers are known, and if not totally accepted are at least 'absorbed' in some way by society. But do something new, and irrespective of benefits, you are totally responsible for unanticipated dangers. A strong motivation for doing nothing.
[Spiked]

Diplomacy: The Dynamics Of The Middle East

In an article entitled "The Last Negotiation", *Foreign Affairs* provides a perspective on the Israeli-Palestinian conflict. It has also made available the full text of a selection of new and previously published articles on the interests, goals, and political dynamics on all sides, as well as the history of the two parties' recent interactions and American involvement in the region. As a package, the articles help explain how things have

gotten to this point and where the situation might go from here. This is refreshing given that the bulk of media offerings on this issue are devoted to fueling moral indignation on the part of either side of the conflict.
[Foreign Affairs]

A major stumbling block in any solution is the apparent need to have the U.S. as the overall architect and manager. Is the U.S. up to the challenge? *Commentary* reviews the book "The Savage Wars of Peace" by Max Boot. Boot shows that large-scale conventional wars have always been the exception in American history, while protracted, complex, "political" conflicts have been the rule. Although American interests were the prime reason for intervention, Boot claims that:

"Almost everywhere they went, U.S. troops bettered the lot of local inhabitants by building roads, hospitals, and schools, improving sanitation, housing, and food distribution, reducing malaria, and vaccinating adults and children. They stayed for years, sometimes decades, delicately poised in the complex politics of the country, working to gain the support of the population and to stabilize the situation. On the whole, it worked; areas that had previously not known months of peace were pacific for decades at a time."

While this sounds hopeful, it does run contrary to the Powell/Weinberger doctrine for military engagement: clear objectives, overwhelming force, exit strategy, support of allies, and support of the American people - none of which apply.
[Commentary]

Neurosciences: We Are The Rat Borg

Star Trek - The Next Generation has "The Borg", a race of machine-enhanced humans whose individual minds are networked to form a collective mind.

Farfetched? *Scientific American* describes how scientists can control the movements of rats from up to 500 meters away. The findings, published in *Nature,* could lead to the development of robo-rodents capable of carrying out dangerous surveillance missions.

Of course there may be ethical issues in all of this, but hey, no problem. Just wire the ethicists to the computer. Press the pain button when an

objection is raised and the pleasure button when they rationalize it. Resistance is futile.
[Scientific American] [Nature]

Futurists: Cassandra Redux

What happens when you can predict the future but no one believes you? That was the fate of Cassandra, daughter of Priam the last King of Troy.

In more modern times, we had George Orwell, author of 1984 and Animal Farm. These are prophetic works that eventually became required reading. But in his time, Orwell was not believed.
[LAWeekly]

Meme Pool #12: May 12, 2002

History: Central Intelligence

Declassified CIA documents reveal a number of high level attempts to depose Hitler including an attempt by none other than Reichsführer SS Heinrich Himmler to cut a deal with Washington. At the same time Hitler's Deputy, Martin Bormann was trying to cut a deal with Stalin.

Many factors influence the flow if history. Of them 85% have their own momentum (demographics, geography, and resource availability), 10% are the creation of leaders and visionaries, and 5% is random. (Note: this is my personal guess). The first group (momentum) is susceptible to technical methods of forecasting. The second group (human intervention and creativity) is more difficult given that it requires an understanding of the values, motivation and will of individuals. But it is the last group that causes the most problems and can only be managed by being alert to rapidly changing opportunities and threats.

Forecasters use scenarios or simulations to deal with alternative futures. In doing these studies, it is useful to look at some of these "near misses" in history - times at which the flow of events could have dramatically changed had some seemingly random element come into play.
[CIA]

The CIA has many interesting documents, including their view of the events in Chile leading up to the assassination of Salvador Allende, and an analysis of wartime aerial photographs of Auschwitz using modern photo-interpretation technology

Feminism: The Dark Side Of Venus

Phyllis Chesler's book, "Woman's Inhumanity To Woman", is reviewed in *Commentary*. In some ways it is a milestone in feminist thinking. Long accustomed to promoting the view that women are the helpless victims of male dominance and aggression, Chesler points out that women were good at oppressing women as well.
[Commentary]

This is of topical interest in schools which currently are dealing with a generation of girls who have been raised with a potent combination of empowerment (you can be anything you want to be), a smokescreen of innocence (girls don't do bad things), and natural aggression. The result

is the Alpha Girl, or R.M.G. (Really Mean Girl). An article in the *New York Times* reveals the ins and outs of relational aggression.
[New York Times]

Evolution: Misreading Darwin

In 1860 Charles Darwin wrote, 'I am beginning to despair of ever making the majority understand my notions...I must be a very bad explainer. Several reviews and letters have shown me too clearly how little I am understood. I suppose "natural selection" was bad term; but to change it now would make confusion worse confounded. "Natural preservation" would seem a truism and would bring man's and nature's selection under one point of view.'

Unfortunately "natural selection" was transformed into "survival of the fitness" which then became the justification for the -isms of the 20th century. On the right, capitalism and its sister, colonialism, were legitimized as the quickest path to global economic progress. On the left, Marxism and socialism, were described as the evolutionary path towards the greatest good for the greatest number.

Darwin's lament was that nobody seemed to understand that natural selection is a process without purpose - without a preordained outcome and without an active selection mechanism.
[Spiked]

Chemistry: Do It Yourself Chemical Warfare

You would think that it would be difficult to manufacture weapons of mass destruction. You would be wrong. George Musser, an editor at Scientific American describes how he was able to obtain the chemicals for sarin nerve gas through the mail. If that doesn't frighten you enough, you can take a look at a review of the open literature on chemical and biological weapons from the Canadian Security Intelligence Service.
[Scientific American] [CSIS]

Meme Pool #13: May 19, 2002

Demography: *The Singletons*

Concern about marital breakdown, high rates of divorce, and the number of children born outside of marriage may just be distracting attention from a trend that is more likely to have a far greater impact on how we live. The truth is that adults are not only finding it difficult to sustain marriage, but just about all forms of intimate relationships.

According to a study conducted by the UK Future Foundation, for the first time more people are living alone or in one-parent households than in a traditional family unit - or as one article summed it up, 'Living alone is now the norm in the UK'. The rise of the adult singleton suggests that we are experiencing, not so much a crisis of the family, but a profound difficulty in handling close and personal relationships.
[Spiked]

Genocide: *Rwanda, Then and Now*

There are many dimensions to the Rwandan tragedy. Reading these two articles, I see a strong message about the social inertia that exists within all large organizations.

On April 8, 1994, Prudence Bushnell addressed a U.S. State Department press conference and spoke gravely about the mounting violence in Rwanda and the status of Americans being evacuated. After she left the podium, Michael McCurry, the department spokesman, took her place and criticized foreign governments for preventing the screening of the Steven Spielberg film *Schindler's List*. Neither they, nor the press, made the connection between a 50-year old genocide and one that was happening under their noses.

Over the next 100 days, 800,000 Tutsis would be massacred. All of this occurred in an age of instant global communications and fully functioning international institutions. The massacres only ended when rebel Tutsi forces managed to regain power.

Samantha Power describes the evolution of the massacre and the interactions within the U.S. government that created an effective paralysis. While it is clear that more might have been done (in retrospect), it is equally clear that large organizations are very difficult to mobilize. They all work within mandates, budgets and operating

guidelines designed to effectively manage and control them. It is the convergence of these restrictions that keeps them immobilized.
[The Atlantic Monthly]

Rwanda still has its problems, this time in the form of over 125,000 *génocidaires* who are awaiting trial, but who will more likely literally rot in prison. Helena Cobban writes in the *Boston Review*:

"The problem—for the existing ad-hoc courts and for the ICC—is more fundamental than just the polarizing effect of criminal-court proceedings. A criminal justice system *by its very design* crowds out, or at least asserts "primacy of jurisdiction" over, any other possible approach that societies or governments might use address the legacies of communal violence. This tends to rule out, for example, the creation of South-African-style 'truth commissions.' In late 1998, when leaders of the three ethnic groups in Bosnia were discussing creating a joint truth commission to establish a common record of the past decade, they were told bluntly by ICTY's Chief Prosecutor, Louise Arbour, that such an effort would contaminate her evidence. Arbour also told aid donors not to support the Bosnian initiative, which set back its plans considerably. Once the permanent ICC is established, it will become far more difficult, perhaps impossible, for members of war-torn societies to opt for any reconciliation process that might, like the South African process, offer amnesty to former rights abusers in order to pursue broad communal goals."

Once again, institutions established with the best of intentions can get in the way.
[Boston Review]

Mathematics: *The Key To The Universe*

Once upon a time, great mathematicians were noblemen who pursued their science for the love of knowledge. Working alone, or communicating by post with the few people who could grasp their work, they pursued their Faustian quest to understand the meaning of life.

If those days are long gone, no one told Stephen Wolfram the enfant terrible of science who became a recluse only to emerge with his book "A New Kind of Science".

New indeed. Based on the theory of cellular automata, Wolfram:

- finds an exception to the second law of thermodynamics;
- conjectures why extraterrestrials might be communicating with us in messages we can't perceive;
- explains seeming randomness in financial markets;
- defines randomness;
- elaborates on why the "apparent freedom of human will" is so convincing;
- reconstructs the foundations of mathematics;
- devises a new way to perform encryption;
- insists that Darwinian natural selection is an overrated component in evolution;
  and, oh,
- theorizes that there's a "definite ultimate model for the universe."

What might this be? The mother of all rules; a single, simple "ultimate rule" that computes everything from quantum physics to reality television.

Only one rule? That would make university science easy to take. Wired magazine takes a tour of the theories of Stephen Wolfram.
[Wired]

Ray Kurzweil shares his views of the Wolfram findings.
[KurzweilAI.net]

Science And Art: *Armpits Of The Rich And Famous*

On a <u>much</u> lighter note, the pharmaceutical company Wellcome has established a trust which gives money to projects that combine science and art. One of the projects creates art based on smell.

You might think this is strange, but the artist involved has already formed a company to reproduce 'smell portraits' for sale. After market research in the United States showed that people would be willing to pay extraordinary sums of money for the bottled smells of their loved ones.
[Nature]

Meme Pool #14: May 26, 2002

Neuroscience: Sex Differences In The Brain

Dr. Doreen Kimura reports in a special issue of Scientific American that men and women differ not only in their physical attributes and reproductive function but also in many other characteristics, including the way they solve intellectual problems. For the past few decades, it has been ideologically fashionable to insist that these behavioral differences are minimal and are the consequence of variations in experience during development before and after adolescence. Evidence accumulated more recently, however, suggests that the effects of sex hormones on brain organization occur so early in life that from the start the environment is acting on differently wired brains in boys and girls. Such effects make evaluating the role of experience, independent of physiological predisposition, a difficult if not dubious task. The biological bases of sex differences in brain and behavior have become much better known through increasing numbers of behavioral, neurological and endocrinological studies.

[Scientific American]

Political Economics: Marx Was Right After All

Capitalism has triumphed. Socialism is dead. And that is what Karl Max said would happen all along.

A recent book, 'Marx's Revenge' by Meghnad Desai is reviewed in *The Guardian*. According to the author, Marx's writings were greatly misinterpreted by Engels, Lenin, and the Bolsheviks. This would not have been hard to do. Marx's main work, Das Kapital, is difficult to read, and consequently was ignored by many. Yet Desai points out that in volume II of Das Kapital, Marx calculates a numerical scheme of a capitalist economy which does not run into crisis and enjoys perpetual growth.

Does this all matter? In a sense it does, since within the globalization debate and the moral indignation over pronounced and prolonged inequality and poverty, it might be helpful to know that Marx believed the market to be the most likely rescue route.

[The Guardian]

Medicine: Self-fulfilling Prophesy - The Nocebo Effect

The "nocebo" phenomenon, is the evil twin of the placebo effect. While the placebo effect refers to health benefits produced by a treatment that should have no effect, patients experiencing the nocebo effect experience the opposite. They presume the worst, health-wise, and that's just what they get.

This effect would explain why people are "worried sick" and how it is that a voodoo hex can bring death. But it also has an extremely important policy dimension with respect to product labeling. When patients were warned about side effects (in an aspirin study), they were three times more likely to experience the problem than those who were not warned.

The notion that information can actually create illness has major ramifications in a society inundated with product warnings, not to mention it's use as a "force multiplier" in a chemical or biological weapons scare.
[Washington Post]

Conflict: Fourth Generation Warfare

Military strategists are trying to come to grips with an new era of warfare. The first three generations of military doctrine: concentration of manpower, concentration of firepower, and maneuver, are being replaced by a doctrine of combat flexibility. The chief characteristics of flexibility being: adaptability and agility as the driving forces of combat; weapons that are dependable, simple, and cheap; and decentralization of command and communications, so that fighting units aren't at the mercy of layers of decision-makers.

Viewed in the context of military history, fourth-generation warfare is highly irregular. "Asymmetric" operations—in which a vast mismatch exists between the resources and philosophies of the combatants, and in which the emphasis is on bypassing an opposing military force and striking directly at cultural, political, or population targets—are a defining characteristic of fourth-generation warfare. The United States will face decentralized, non-state actors (perhaps supported by a rogue nation or two) who understand just how big an impact attacks on markets, communications, and cultural icons can have on the American psyche.

An article in *The Atlantic* looks at how the Pentagon is dealing with these new challenges. A further article originally published in the *Marine Corps Gazette* by LtCol Hammes discusses the evolution and future of warfare.
[Atlantic] [Hammes]

Psychology: *The Importance Of Nothing*

Most scientific journals produce reports on significant findings. This allows the authors to inform their peers, stake a claim on the discovery, and allow others to test their findings. A new journal, *The Journal of Articles in Support of the Null Hypothesis*, publishes reports in which the researchers found nothing. The publishers feel there is a need for such a journal - it keeps other researchers from going down dead-end lines of inquiry.

An interesting concept. But the journal is peer reviewed. How does one select which articles on the occurrence of nothing are most worthy of publication?
[Monitor on Psychology]

Meme Pool #15: June 2, 2002

Strategic Culture: America Meets Europe

Culture comes in many forms. Popular culture can be extremely short-lived and concentrated on a small geographic area. Strategic culture is formed over centuries and can define the nature of countries and continents.

Writing in *Policy Review*, Richard Kagan, describes the evolution of the strategic cultures of Europe and the USA. His focus is on the effect military power has on the formation of national cultures. For centuries, European imperialists and colonialists ran the world while the US stuck to an isolationist policy. But two world wars destroyed European power leaving the US to stare down the USSR until it, too, collapsed.

Kagan writes, "On the all-important question of power — the efficacy of power, the morality of power, the desirability of power — American and European perspectives are diverging. Europe is turning away from power, or to put it a little differently, it is moving beyond power into a self-contained world of laws and rules and transnational negotiation and cooperation. It is entering a post-historical paradise of peace and relative prosperity, the realization of Kant's "Perpetual Peace." The United States, meanwhile, remains mired in history, exercising power in the anarchic Hobbesian world where international laws and rules are unreliable and where true security and the defense and promotion of a liberal order still depend on the possession and use of military might."
[Policy Review]

A separate article in *The Chronicle of Higher Education* takes a look at the assault of US popular culture in Europe. It concludes that the " melting pot" of many immigrant cultures is what has caused the international popularity of American cultural products.

Richard Pells writes that, "America's mass culture may not be all that American. The American audience is not only large; because of the influx of immigrants and refugees, it is also international in its complexion. The heterogeneity of America's population -- its regional, ethnic, religious, and racial diversity -- has forced the media, since the early years of the 20th century, to experiment with messages, images, and story lines that have a broad multicultural appeal. The Hollywood studios, mass-circulation magazines, and television networks have had to learn how to speak to a variety of groups and classes at home. That

has given them the techniques to appeal to an equally diverse audience abroad. The American domestic market has, in essence, been a laboratory, a place to develop cultural products that can then be adapted to the world market."

An interesting perspective, but one that can only partially explain the power of mass culture. One only has to look to the US itself to see resistance to the dominance of corporate culture, indie music being one example.
[Chronicle of Higher Education]

Biotechnology: *Jurassic Park*

Some groundbreaking science is happening at the Australian Museum in Sydney. They are reconstructing the genetic material of the extinct Tasmanian tiger in hope of bringing one back to life. If they are successful this could lead to the recovery of other extinct species. It likely would also lead into the creation of genetic archives that would preserve the codes of species on the verge of extinction - "just in case."

Would this be good? The potential to back up and restore species could well diminish attempts to preserve species in the first place. This is just one more in a long list of ethical dilemmas posed by biotechnology.
[Australian Museum]

Archaeology: *Designing The Dig Sites Of Tomorrow*

Archeology looks at ancient relics and ruins, and attempts to discover how civilizations operated thousands of years ago. How does one use the principles of archaeology in reverse to create a monument which will survive for thousands of years and whose meaning will be understood even if our civilization and its history are destroyed? How can a reverse timeline be designed?

This is the challenge being faced by the US Department of Energy. Salon reports on the Yucca Mountain Project in which nuclear waste must be safely stored for tens of thousands of years.
[Salon] [Yucca Mountain Project]

Ideas: The Book Of Probes

'Probes' are the sound bites of philosophy. This fall Eric McLuhan and
William Kuhns will publish a book that explores the full expanse of
Marshall McLuhan's thinking and writing. For the first time, the noted
media philosopher's most prescient aphorisms and excerpts, his probes,
will be pulled together in one publication.
[McLuhan]

Are there any contemporary writers producing probes for our times?
Spiked has an interview with Slovenian philosopher Slavoj Žižek, who
may just fit the bill.

For example, Žižek says "In my work, I place strong emphasis on what
is usually referred to as the virtualisation or digitalisation of our
environment. We know that 60 percent of the people on this Earth have
not even made a phone call in their life. But still, 30 percent of us live in
a digitalised universe that is artificially constructed, manipulated and no
longer some natural or traditional one. At all levels of our life we seem
to live more and more with the thing deprived of its substance. You get
beer without alcohol, meat without fat, coffee without caffeine...and
even virtual sex without sex."
[Spiked]

Meme Pool #16: June 9, 2002

Psychiatry: Manufacturing Personality

A child who doesn't like doing math homework may be diagnosed with the mental illness developmental-arithmetic disorder (No.315.4). A child who argues with her parents may be diagnosed as having a mental illness called oppositional-defiant disorder (No.313.8). And people critical of the legislation now snaking through Congress that purports to "end discrimination against patients seeking treatment for mental illness" may find themselves labeled as being in denial and diagnosed with the mental illness called noncompliance-with-treatment disorder (No.15.81). These disorders are all listed in American Psychiatric Association's (APA) Diagnostic and Statistical Manual of Mental Disorders (DSM-IV), the billing bible for mental disorders, a document that breezily combines neurological diseases and descriptions of disorders in one handy document.

No one would much care about the APA's editorial standards were it not for the fact that there is bill before Congress seeking 'parity' of insurance treatment for mental illness. Now people are raising questions about real, versus bogus mental illness. As reported in *Insight*, ""Numerous studies show psychiatrists tend strongly to use health-insurance benefits up to the point that they are exhausted, at which point the patient is declared cured." If that's the case, how sick were they in the first place?
[Insight]

There are, of course, other issues, an important one being the easy transmutation of what were once character deficiencies, into behavioral disorders and from there into clinical mental disorders. Reasononline looks at the counter-force in which pop psychologists advocate a return to personal responsibility and accountability for one's own actions.
[Reasononline]

It is interesting to note that for all our criticism of the possible threats of bio-technology, we seem to have no problem with the technologies that affect the mind, the very essence of humanity. Francis Fukayama weighs in on this in his book *Our Posthuman Future*, noting that in our society Prozac is heavily prescribed "for depressed women lacking in self-esteem," giving them "more of the alpha-male feeling that comes with high serotonin levels." Ritalin, by contrast, is prescribed "largely for young boys who do not want to sit still in class because nature never designed them to behave that way." The result of the two drugs is to

move boys and girls "toward that androgenous median personality, self-satisfied and socially compliant, that is the current politically correct outcome in American society."

Fukuyama is even more concerned with what is to come. He thinks that more sophisticated, powerful, and targeted efforts will emerge before long, operating as techniques of social control, marketed by pharmaceutical companies, and exercised not by the state but "by parents, teachers, school systems, and others with vested interests in how people behave." Medicines that modify behavior are one route by which we might become 'post-human'.
[New Republic]

Globalisation: *The End Of Free Trade*

Free trade has been attacked by the left as a ploy to enslave the masses of the third world. They now have an ally, the anti-trade, isolationist right. Although the Bush administration is long on free-trade rhetoric, it has had no problem limiting trade on such things as steel, lumber, farm products, catfish and textiles.

Writing in the *Washington Post*, Alan Tonelson adds to the argument that US trade with the third world isn't helping them much anyway.
[Washington Post]

Tonelson's article may be persuasive in the way Bjorn Lomborg's book is. Writing in *The Public Interest*, Timothy Taylor presents some interesting results. First, he points out that even with free trade, most commerce stays within national borders. Then he suggests that the benefits of trade are greater for small countries. He points out that labor displacement is not as high as has been supposed due in part to the fact that service industries are not affected. Finally he debunks the race-to-the-bottom scenario, it just doesn't happen.
[Public Interest]

Health And Science: *Anti-Aging Technologies*

Life expectancy is a critical factor in forecasting population levels. Moreover, many futures scenarios speculate on significant increases in lifespan.

Scientific American has produced a series of statements that condense

state-of-the-art knowledge on issues relating to aging. As they say, "The purpose of this document is to warn the public against the use of ineffective and potentially harmful anti-aging interventions, and to provide a brief but authoritative consensus statement from 51 internationally recognized scientists in the field about what we know and do not know about intervening in human aging."

Topics include anti-oxidants, hormones and caloric restriction.
[Scientific American]

Security: *The Future Of Intelligence*

Recent revelations about information that might have exposed the plan to attack the WTC have caused much soul-searching in security agencies. In an essay on the challenges posed to the CIA, we see an emerging New World.

"Terrorists and criminal gangs will remain disruptive and confrontational. Global economic, communications, and financial networks will blur the traditional understanding of national borders, which may be seriously weakened by 2015. Meanwhile, corporate integration and the world economy will draw international attention to otherwise local financial setbacks or product and resource shortages. The social unrest of the industrial revolution may well return on an international scale as those opposed to globalism increasingly resort to violence.

Potential opponents will often be driven by emotional agendas that make them unpredictable. Their access to advanced technologies will grow. Efforts with the consequence of a Manhattan Project will be possible in small and hidden workshops, fueled by publicly available information."
[CIA]

Meme Pool #17: June 16, 2002

Technology: Eight Emerging Technologies

Business 2.0 has produced a list of eight technologies for the future:

- Bio-interactive Materials - in which small sensing devices reside on or inside people, animals, and crops, monitoring the host's health and possibly acting on problems
- Bio-fuel Production Plants - in which ethanol, methanol, bio-diesel, and other fuels are made from agricultural products, reducing emissions and eliminating dependence on foreign oil
- Bionics - the next-generation of sophisticated prosthetic limbs or even artificial organs
- Cognitronics - the ability to link the brain directly to computers
- Genotyping - making the connection between DNA and specific physical attributes such as longevity or susceptibility to disease.
- Combinatorial Science - Using new algorithms and brute force computing to directly develop scientific hypotheses by directly observing large amounts of data.
- Molecular Manufacturing - the building of complex atomic structures one atom at a time
- Quantum Nucleonics - tapping the energy of the atom for energy

[Business 2.0]

A companion article brings methods of technology forecasting to the masses by showing how emerging technologies rarely evolve in a 'straight line' but interact with each other in synergistic ways. They also have produced a timeline for related technology events.
[Interaction] [Timeline]

Biotechnology: Celebrity Science - A Cautionary Tale

Few technologies have been the subject of as much speculation as to their future benefits and costs as has biotechnology. It could save mankind from all manner of diseases and feed the world's poor. It could also create out-of-control life forms that would totally destroy the ecosystem, including the human race.

Creative speculation is at times a useful tool in futures research, but at a certain point we need to line up the facts so that we can give

probabilities, likelihoods, to our forecasts. We must get the scientific facts.

And what happens when science gets it wrong? Researchers in Iceland have discovered 100 'large scale' errors in the part of the genome blueprint have already been decoded. How did this happen? Partly it was a rush by commercial interests to establish a reputation in order to get further investment. Partly, it is an attempt to finish the job in time for the 50th anniversary of the Watson-Crick publication.

Science is not supposed to work this way. As Dr. Huntington F. Willard, a geneticist at Case Western Reserve University and past president of the American Society of Human Genetics, said "As much as others like to call the sequence complete, it is still sketchy in places and likely to remain so for some time. To call it complete, as will happen next April to match the 50th anniversary of the Watson-Crick paper, is a bit of a sham." Just a reminder that knowledge, like other moving objects has speed, velocity and spin, each of which can be manipulated. Something may appear to be a trend because someone wants it to appear that way. [New York Times]

Politics: *What Is Democracy?*

Our understanding of phenomena and its dynamics is often circumscribed by context. What may appear to be a clear social or economic trend in the developing world is clearly irrelevant in the third world where poverty, disease and starvation are more relevant than say, media convergence or pervasive computing.

But even well established notions, such as democratic process, in a well established state, such as the USA, can have situations in which different assumptions about context can result in different interpretations. Consider the following two articles.

The *Boston Review* describes how the Chicago Housing Authority (CHA) adopted a building-search policy as an emergency response to the deadly outbursts of gunfire associated with incessant gang warfare. In one four-day period near this time, the police recorded more than 300 gunfire incidents in just one of the housing projects. The elected representatives of 18 of CHA's 19 projects intervened to support the CHA. The American Civil Liberties Union stepped in to protest that this was contrary to constitutional rights, and won. Perhaps the only

constitutional way the 'hood can protect itself is to arm itself. Oddly enough, were this case to be re-opened it would likely go the other way with gang warfare being designated as a form of terrorism. New context, new conclusions.
[Boston Review]

If big-scale interests override local-scale interests in Chicago, the opposite holds true in West Virginia. At the national scale, the first amendment of the US constitution guarantees freedom of expression. At the scale of the university these rights have been withdrawn in favor of political correctness. (Note: that if we are looking at time-, rather than geographic-scale, universities have more often been supporters, rather than detractors of freedom of expression.) But within the campus there are small zones in which these rights reappear. The story, reported in the *Weekly Standard* only get more bizarre.
[Weekly Standard]

Law: The Illusion Of Organized Crime
Canada's most celebrated lawyer, Clayton Ruby, reviews a book on organized crime in America by British historian Michael Woodiwiss. His conclusion? The crimes of Al Capone and John Gotti are small potatoes compared to the regular fleecing of Americans by corporations. Either this is an insight, or Mr. Ruby spends so much time with criminals that they seem like normal citizens. You be the judge.
[GlobeBooks]

Meme Pool #18: June 23, 2002

Please note that I will be taking a short break from the newsletter. I'm packing up my oils and canvases and will drive west from Ottawa until I get to the Pacific Ocean (4700 km). No computers, no Internet. Then I'll turn around and come back. The next issue should re-emerge in 3 weeks.

Globaldegook: The Concept Wars Of The Information Age

Futurists understand the power of path dependency, a notion that binds the past to the future. The solutions to many of today's problems are easily seen, but cannot be reached because of the inertia of past history, experience, institutions and culture.

The Israel-Palestine conflict is a case in point. Seen in the abstract, this is a small regional disturbance involving land and the displacement of refugees. It is neither large, not particularly brutal given today's standards of conflict. Various solutions are obvious, although all require some accommodation on the part of the combatants. Moreover, both sides have relatively affluent backers. It shouldn't be too hard to work out a deal, if only people could just get along.

But the path that got them there is heavy in memories, concepts, principles and other artifacts of information-space that prevent the evolution of peace in preference to some kind of justice, often interpreted as the right to settle old scores. And far from remaining local, the discussion of the conflict and its prospects pervade the western media.

Writing in the *New Statesman*, Mick Hume observes that, "Far from offering an alternative for the Middle East, these self-indulgent demonstrations of western victim culture can only reinforce the emotional nihilism that is already rampant in the region - what one American commentator calls 'the desperado politics of victimhood, embraced by Jews and Palestinians alike'."
[New Statesman]

Feminism: Doubts, And New Data

There is some new thinking about feminist doctrine. The publication of Sylvia Ann Hewlett's, *Creating a Life: Professional Women and the Quest for Children* tells young women who devote themselves to their

careers and plan to begin having children in their late 30s that they are likely to end up childless.

Writing in *City Journal*, Harry Stein uses Hewlett's findings as a launching point for his accusations of how feminist ideology has harmed women. By trying to have it all, they somehow wind up having nothing [City Journal]

Maybe, but Garance Franke-Ruta, writing in *The American Prospect,* doesn't think so. Using a larger data set and making different comparisons gives different results. "When high-achieving women have children, they do so with husbands they can rely on. They work at firms with more workplace protections and better health care than most women, they can afford to take time out of the labor force to spend with their infants, and they have major incentives to return to work and to continue their careers. As mothers, they have the highest labor-force participation rates. They pay taxes, own houses, and contribute to the economy, all the while raising kids who are likely to be as smart and successful as they are. They don't divorce as frequently and they don't have children out of wedlock."

The key, of course, is finding the right husband.
[American Prospect]

Nanotechnology: Return Of The Punched Card

The surprises in technological forecasting often occur when two new technologies converge in an unexpected way. But what happens when new meets old?

Punched cards go back a long way to the Jacquard loom and the player piano. Its use in data processing was proven in the tabulation of the 1890 census. The precursor of IBM (CTR) acquired the technology and improved on it by tripling the storage density by punching out square, rather than round holes. The technology is now essentially obsolete, although it does have uses in voting machines.

Nanotechnology may yet give new life to the punched card. IBM's Zurich lab can now perforate very small holes in a polymer substrate and have estimates that the technique is capable of achieving data densities in the hundreds of Gb/in² range, well beyond the expected limits for magnetic recording (60–70 Gb/in²). And the new holes are round.

Globalization: *The Testimony Of Joseph Stiglitz*

Stiglitz, a former Vice President and Chief Economist at the World Bank, as well as Nobel Prize winner (economics 2001), is part of a small but growing group of economists, sociologists and political scientists who take the critics of globalization seriously. Furthermore, they warn that ignoring their concerns could have dire consequences. In his new book, *Globalization and Its Discontents* (Norton), Stiglitz argues that many of the complaints voiced by protesters in recent years--that IMF structural adjustment programs have caused widespread suffering; that free-trade agreements mainly benefit the rich; that privatization has proved disastrous in many countries--have a solid basis in fact. Unless the rules of global capitalism are radically altered, he warns, the gap between the world's rich and poor, and hence the social conditions that have fueled instability in places like Pakistan, will not go away anytime soon.

Stiglitz has his critics, of course. After all markets, free trade, and the advancement of technology have generated wealth and progress that benefits all. That said, it is also clear that advanced nations will themselves adopt protectionism, deficit spending, and subsidization if their own economies are under threat.
[The Nation]

In practical terms, what does this look like? Consider the case of agriculture. Over the past century mechanization, fertilizers and pesticides caused farm productivity to jump. Employment in the sector was dramatically reduced and the population moved to the cities. A good story for us, but only because the population had a century to adapt. In developing nations the story is somewhat different. Livelihoods, indeed survival, are tied to meager and under-productive farms. The Ecologist looks at scenarios for the wholesale technology transfers and productivity improvement in third world agriculture. In the long run, these countries may well benefit overall. But there is a difference between theory and practice. Without a century of adjustment time, the human cost of the transition could well be disastrous.
[The Ecologist]

Meme Pool #19: July 14, 2002

Travel: *Changing Viewpoints, Changing Views*

I'm back, after 2 weeks of almost continuous driving. I took care to avoid urban areas, which in Canada is not all that difficult, and as a result gained an appreciation of the power modern, urban, culture has on us. Somehow, in the forests of the Canadian Shield, the grassy fields in the prairies, the isolation of the mountains, things that used to matter a lot no longer seemed relevant. It was a reminder that much of the world does not experience, see or understand it as we do.

I do not wish to be philosophical about the value of travel, leaving that task to Alain de Botton, whose recently published book, The Art of Travel, is reviewed in the *Times Online*. De Botton considers the philosophical implications of travel - the ways in which the new energies of other people and places test us and test our understanding of the world. For no matter what we leave behind in our travels, we always bring ourselves.

[Times Online]

Global Politics: *The Unraveling of Pax Americana*

The collapse of the Soviet Union left the US as the sole super power. Over the past decade, the US has been viewed as such things as "the world's policeman" or even a "hyper-power" - a term which does not translate all that well from the original French.

But there are signs that this world order may be changing. Writing in *Foreign Policy*, Immanuel Wallerstein, of Yale University and author of *The End of the World As We Know It*, believes that the United States has been fading as a global power since the 1970s. The U.S. response to the terrorist attacks has merely accelerated this decline. To understand why the so-called Pax Americana is on the wane requires examining the geopolitics of the 20th century, particularly of the century's final three decades. This exercise uncovers a simple and inescapable conclusion: The economic, political, and military factors that contributed to U.S. hegemony are the same factors that will inexorably produce the coming U.S. decline. These factors culminate in a situation in which the United States currently finds itself—a lone superpower that lacks true power, a world leader nobody follows and few respect, and a nation drifting dangerously amidst a global chaos it cannot control.

[Foreign Policy]

A somewhat more detailed and contrary analysis takes place in the pages of *Foreign Affairs*. Here it is argued that the US is still the dominant nation by a large margin. Moreover, there are no nations that are reasonably positioned to over take the US in terms of military, economic, or technological power. There are potential alliances, to be sure, but none of these show any strong signs of coming into force. [Foreign Affairs]

Environment: *The Planetary Overdraft*

The *Observer* reports on a study just released by the World Wildlife Federation which states that standards of living and human development will start to plummet by 2030 unless humans stop using more natural resources than the planet can replace.

The WWF's Living Planet Report 2002 shows that humans are currently running a huge deficit with the Earth - using over 20 percent more natural resources each year than can be regenerated - and this figure is growing each year. Projections based on likely scenarios of population growth, economic development and technological change, show that by 2050, humans will consume between 180 percent and 220 percent of the Earth's biological capacity. According to the report, this means that unless governments take urgent action, by 2030, human welfare, as measured by average life expectancy, educational level, and world economic product will go into decline.
[Observer] [WWF Press Release] [Report]

Information Technology: *The Dark Side Of The Force*

Business 2.0 investigates the way information and communications technologies are used to dramatically improve a companies contact with it's customers, keep a global supply chain running, and maintain financial controls in an area of high credit risk. It would just be another dull business story if the company in question wasn't the Cali drug cartel.

The story also provides a useful lesson for futurists. It is well know that technologies have an adoption rate that follows an S-curve. Mostly we consider only the quantitative aspects (number of devices in use, number of people owning them) and fail to appreciate the qualitative difference between early adopters and consumers of mature technologies. Early

adopters are often highly trained, dedicated professionals working in controlled environments. But once a technology matures, can be purchased anywhere, and has many people with he experience to use it, then it becomes accessible to anyone, including drug lords.
[Business 2.0]

Futures Studies: *The Millennium Project*

The Millennium Project of the American Council for the United Nations University is a global participatory futures research think tank of futurists, scholars, business planners, and policy makers who work for international organizations, governments, corporations, NGOs, and universities.

They maintain an active research program that produces and annual State of the Future Report. The 2002 Annual Report has just been released and provides a valuable tool for futurists.
[ACUNU]

Meme Pool #20: July 21, 2002

Nano-Bio-Info-Cogno (Nbic) Convergent Technologies:
The New Renaissance

"We stand at the threshold of a New Renaissance in science and technology, based on a comprehensive understanding of the structure and behavior of matter from the nanoscale up to the most complex system yet discovered, the human brain. Unification of science based on unity in nature and its holistic investigation will lead to technological convergence and a more efficient societal structure. In the early decades of the twenty-first century, concentrated effort can bring together nanotechnology, biotechnology, information technology, and new humane technologies based in cognitive science."

Thus, boldly, begins the report of the proceedings of workshop on Converging Technologies for Improving Human Performance. The report is an **important piece of futures research**. Anyone willing to crawl through all 400 pages of essays will have a good understanding of what's going on at the frontiers of these technologies. Highly recommended.

It is worth remembering that the Renaissance also gave us Machiavelli and the Borgias. Of what use is it to increase human performance or potential, if we live in a vacuum of purpose? A few of the essays touch on such issues, but it is abundantly clear that our capacity to know how vastly outstrips our ability to understand why.
[NBIC Reports]

Society And Culture: *The Devil's Playground*

"Teenagers stream in and reach for bottles of beer with both hands while a deafening band tries AC/DC covers with two chords. The alcohol leads to cocaine and the party hits a fever pitch before boys and girls begin to pair off for the night. This could be a typical high school get-together if it were not for one striking characteristic: These kids are Amish."

Cinematographer Lucy Walker has produced a film entitled *The Devil's Playground*. In it she documents a rite of passage known as *rumspringa*. At age 16, Amish teenagers are allowed to cut loose and experience life devoid of the *ordnung*, the strict set of rules of their society. Eventually they must make a choice, return to the community and its standards, or go out into the world. In this battle for the soul, many return to the fold,

but as adults. They do not attempt to maintain their childhood into their 30s and 40s.
[21C Magazine].

Agricultural Policy: Cornification

In the US, corn sells for $2 a bushel and can be grown for as little as $3 a bushel. In order to do this Congress and the White House emerge from a thicket of free market-free trade rhetoric long enough to authorize $4 billion a year to corn producers.

An Op/Ed piece in the New York Times shows how this policy distorts farming decisions, hurts the environment, packs weight on Americans and may well lead to disease in both animals and humans. This is a good example of how government policies, once they get large enough and have been around for a while, create a new economic environment. (This of course is not unique to the US. It happens all over the world and can be a particular problem in developing countries.)
[New York Times]

Immigration: The Beurs Just Want Some Woo-speh

The politics of France set the world on edge recently when a right wing candidate, Jean-Marie Le Pen got second place in round one of the presidential elections. Among other things, Le Pen felt that France had just too many immigrants.

Many of the immigrants are Muslims, a legacy of France's colonial past. An article from the *Weekly Standard* describes the clash of cultures in France. Among other things, France has a deep tradition of keeping religion out of the state, and Islam is a religion that believes it supercedes the state.
[Weekly Standard]

Internet: Webby Awards

If you like to surf the web, but find you waste time going to ho-hum sites, consider browsing through websites that have won awards. The International Academy of Digital Arts and Sciences brings you the Webby.
[Webby]

Meme Pool #21: July 28, 2002

Environment: *Forecasting And Action*

In 1980, James Gustave Speth chaired the US Council on Environmental Quality for the Carter Administration. One of their tasks was to prepare what became the "Global 2000 Report to the President." In it they projected the population and environmental outcomes that would unfold by 2000 if societies did nothing to change course.

As he reports in *Foreign Policy*, "We saw it coming. 'Global 2000' projected that population would grow from 4 billion to 6.3 billion by 2000. The actual number was 6 billion. We projected that tropical deforestation would occur at rates in excess of an acre per second, and for 20 years, that's what happened. We projected that 15 to 20 percent of all species would be lost, and recent analysis suggests that this estimate was not far off the mark.

The report projected that an area about the size of Maine would be rendered barren each year by desertification. And that remains a decent estimate. We predicted that growing energy use would lead in this century to a 2 to 3 degree Celsius rise in mid-latitude temperatures and to significant changes in rainfall patterns. This description of the greenhouse effect still falls neatly within current estimates."

As futurists it is well worth noting that accurate forecasts which don't produce results are not too helpful. Too often we make predictions based on exploratory techniques to describe what could happen or even what is likely to happen. On many issues however, more emphasis needs to be placed on normative forecasting to show how we can get where we need to go. We need to establish road maps, plans, that (almost) everyone can live with.
[Foreign Policy]

Computing: *Device Interaction And Device Convergence*

Scientific American has an article on asynchronous computing. Typically, modern computers are synchronous, which means that all chips on the motherboard operate and communicate in time to the pulse generated by the system clock. In asynchronous computing, individual components operate on a time cycle suitable to them.

This may seem like a fairly obscure technology, yet it has important

implications in areas where technologies converge. Wireless technologies are already capable of allowing devices to sense the presence of other devices, and to communicate with them. Trivial uses include allowing computers to access the nearest available printer. More interesting is the possibility of increasing computing power merely by placing computers next to each other and having them collaborate. Asynchronous computing allows them to share resource in a manner consistent with device capability, rather than process need.

The value of, and need for, asynchronous technology becomes even greater in remote sensing devices and bio-sensing devices. It will likely result in the need to develop a 'technology of society' which will create 'rules of etiquette' for machines.

And as always, we need to add the disclaimer. Technology has the potential, but it may not ever be realized. Privacy and data ownership issues inevitably are raised. Consider the case of the "black box" in automobiles. This is of enormous potential value in designing safer automobiles, and is also useful in lawsuits. In 1999, GM was the subject of a class action lawsuit for installing such devices without consent of the vehicle's owners. It seems that some auto owners don't want their car to testify against them.
[Scientific American]

Internet: *Social Impacts*

There is no question that the Internet has brought many new innovations into our world. But has it changed how we interact socially?

Apparently not. *IT&Society* is a new web-based scholarly journal devoted to the scientific analysis of the social impact of information technology on society, with special emphasis on quantitative survey analysis. The first issue focuses on sociability. Contrary to predictions, many of the articles report that not much has changed.
[IT&Society]

Global Perspective: *Human Development*

Western priorities, for technology, culture and social development do not translate well into the third world as it struggles with poverty and disease. The United Nations has recently published its Human Development Report, which focuses on the progress of democratic governance.

Simple data can challenge perspectives. For example, voter turnout in the "land of the home and the free" is only 51%, and in Switzerland - a long-standing democracy - it is a scant 43%. Meanwhile, in Cuba, turnout is 98%.

[UN Development Report]

Meme Pool #22: August 12, 2002

Strategic Instability: Apocalypse Now

Forecasters thrive on trends. Faced with nice clear time series, it is easy to build scenarios that inspire confidence. As long as all the big important factors (population, economics, and prevailing culture) are marching along in a consistent way, we can easily fit in alternative futures for smaller issues.

Chaos has a different feel from continuity. There is an essential weirdness about it that raises alarm bells. It is even weirder when no one seems to notice them. Consider for example, the fact that a book called "The Remnant" is at the top of the New York Times bestseller list. Michelle Goldberg reviews the book in *Salon* and finds much to be disturbed about. The main problem is that the book's nutty, apocalyptic views seem to be capable of 'explaining' current events. Does art reflect reality, or the other way around?
[Salon]

Mathematics: Co-incidence And Conspiracy

In an age already spooked by the prospect of bio-terror, we get a new report that 12 prominent researchers in the field of bio-weapons have met mysterious deaths over a period of 4 months. One or two would be a coincidence. But with that high a number, there must be something going on. Al-Qaeda perhaps, or Russia?

As Lisa Belkin shows, much can be explained just by probability and statistics. Add to math the psychological need to create meaning out of threatening patterns and we see how easy it is to jump to conclusions. Add to that the power of the Internet to locate information and we can come up with enough theories to keep anyone from sleeping at night.
[New York Times]

(Low) Technology: Data Insecurity

Bruce Schneier is an internationally renowned security technologist and author of several classic books on encryption and data security. In looking at the new security proposals for homeland security he sees a lot of things he doesn't like – too much technology.

In Atlantic Online, we see that new security systems are not only easy to bypass, but also create systems that are more, not less, vulnerable. They increase inconvenience to users, and have the potential to fail in spectacular ways.
[Atlantic]

Environment: *The Sustainable Development Hoax*

Jeremy Seabrook, writing in *The Guardian*, puts forward the notion that sustainable development as we perceive it is an unrealizable goal that will in the end only divert us from thinking about and achieving realistic ways to deal with growing populations and economies.

He has a point. The real issue is one of finite supply trying to meet (potentially) infinite demand. The quest for sustainable development will no doubt lead to a greater understanding of the carrying capacity of the planet and will lead to improved ways of harvesting resources. But it is difficult to see how the third world will get to western standards of living, which is what they want.
[The Guardian]

Meme Pool #23: August 19, 2002

Global Culture: *Collapsing Diversity*

It is a virtue in modern life to be accepting of other cultures. The acceptance of diversity is a mark of civility that is well worth cultivating. This virtue can lead us into two types of mistakes. In the first case, we may be so focused on differences that we do not recognize that it is similarities that are more relevant. In the second case, we may accept cultural values when, frankly, we shouldn't.

The first type of error shows up fairly often in discussions about terrorism and radical Islam. To be sure, there are fairly unique Islamic elements at play in the politics of terrorism. But John Gray, writing in The Independent points out that Middle East terrorists have a lot in common with Bader-Meinhof.

"In their unshakeable faith that one way of living is best for all humankind, the chief protagonists in the dispute about political Islam belong to a way of thinking that is quintessentially western. As in Cold War times, we are led to believe we are locked in a clash of civilizations: "the West" against the rest. In truth, the ideologues of political Islam are western voices, no less than Marx or Hayek. The struggle with radical Islam is yet another western family quarrel."
[The Independent]

The second type of error is perhaps more difficult to deal with, especially if we don't want to be labeled as rednecks. But we don't have to be gullible either. There's plenty that's wrong in the world and some of it can be put at the door of culture. In a review of Roger Sandall's book "*The Culture Cult*" we see how our unwillingness to judge other cultures leads to our acceptance of things like slavery or murder.
[Times Literary Supplement]

Robotics: *That's One Small Step For Robotkind*

Robots have been at work in industrial settings for decades, welding car bodies or shuffling around inventory. But they don't look like 'movie robots', mechanical people walking through buildings and chatting with employees. That is changing.

In Japan, Honda has given us ASIMO. ASIMO stands for Advanced Step in Innovative Mobility, which is the kind of name engineers come

up with due to a profound lack of foresight, usually after they've exhausted 10 years developing gyroscopes, software programming and electrical systems that could someday launch a race of killer droids. The name is meaningful, however, because it sums up the breakthrough that this robot represents. It can walk. Really walk.
[Washington Post]

Now that we have a $1 million action figure that can say *domo arigato* to customers, what's the next step? The *Nando Times* reports that The Defense Advanced Research Project Agency is putting up $1 million to see if robotics experts can create a machine capable of traveling from Los Angeles to Las Vegas without human intervention. There is no truth to the rumour that once in Las Vegas it will be programmed to clean up at Blackjack.
[Nando Times]

Internet: *The Other Digital Divide*

With the rise of Internet use came a concern that social groups without access would somehow become disadvantaged. The phenomenon was called "The Digital Divide". As a result, governments worldwide have taken steps to bring access to as broad a population base as possible.

A study undertaken by the Pew Research Center points to the possibility of a different kind of divide. Although access is widespread, there is a growing skills gap between those who can usefully apply the technology and those who just use it for internet chat or downloading music files. This is particularly the case with educational use. Many schools and teachers have not yet recognized—much less responded to—the new ways students communicate and access information over the Internet. Students report that there is a substantial disconnect between how they use the Internet for school and how they use the Internet during the school day and under teacher direction. For the most part, students' educational use of the Internet occurs outside of the school day, outside of the school building, outside the direction of their teachers.
[Pew Research Center]

Asymmetric Conflict: *Action And Uncertainty*

In a memorable line from the television series *Yes, Prime Minister*, the PM says, "Something must be done. This is something. Therefore we must do it." On TV it is funny. In real life acting in an information void

can be expensive.

Spiked takes a look at the campaign against al-Qaeda and notes that there is precious little information available about its numbers, location, leadership or threat.
[Spiked]

Meme Pool #24: August 25, 2002

History: *Your (Grand)Father's Internet*

The forecasting of telecommunications trends consumes much ink and paper. The rapid adoption of the World Wide Web will cause transformations that we are only beginning to understand.

Tom Standage, technology correspondent for the Economist suggests we look for clues in the growth of an earlier internet - the telegraph system. Writing in Context Magazine he notes that "The Internet hysteria of the late 1990s was nothing compared with the excitement greeting the completion of the first trans-Atlantic telegraph cable in 1858. There were hundred-gun salutes in Boston and New York. There were fireworks, parades, and special church services. Tiffany & Co. bought the leftover portion of the Atlantic cable, cut it into four-inch pieces, and sold them as souvenirs."
[Context Magazine]

Meaning Of Life: *Is This As Good As It Gets?*

Steve Gorelick, organic farmer, sees the children of America (and by extension the industrialized world) as canaries in a mineshaft. The drugs, violence, depression and aimlessness are bad enough. What is worse, is that this view of progress is the end point of globalization.

"Children in the US are far from 'confident, self-reliant, tolerant, generous, and future-oriented'. One indication of this is that an estimated five million of them are being given at least one psychiatric drug. This disturbing trend is growing rapidly. The number of children ages 2-4 for whom stimulant and anti-depressant drugs have been prescribed increased 50 per cent between 1991 and 1995. In the following four years, prescriptions for anti-depressant drugs rose even more steeply, climbing 151 per cent for children in the 7-12 age group, and 580 per cent for children six and under."

This may be an extreme point of view that ignores many of the substantial benefits provided by modern society - health, education, clean environment, to name a few. Nevertheless, it does point out that we ourselves are still a work in progress, and that many of our problems may not be simply a list of things we haven't fixed yet, but rather a list of problems we have created for ourselves.
[The Ecologist]

Time: *The Pace Of Change*

What is time? Futurists, in particular need to be attuned to the nature of timescales, noting that some phenomena are measured in years (technology diffusion), while others are measured in generations (social), or centuries (environmental). Cross-impacts of social and technological change are tricky to forecast, in part because society and technology evolve at different rates. We also must consider whether certain technologies are having the effect of compressing time frames.

Saint Augustine described the definitional dilemma more eloquently than anyone. "What then, is time?" he asked in his *Confessions.* "If no one asks me, I know; if I want to explain it to someone who does ask me, I do not know." He then went on to try to articulate why temporality is so hard to define: "How, then, can these two kinds of time, the past and the future be, when the past no longer is and the future as yet does not be?"

We may not have made much progress in defining time since the days of St. Augustine, but certainly we know more about its measurement. *Scientific American* has an interesting article on the nature and measurement of time.
[Scientific American]

History: *The Calculus Of Power*

John Mearsheimer, has for some time now been an iconoclastic voice in America's foreign-policy elite. His book, *The Tragedy of Great Power Politics,* gets us ready for the great wars of the next century. Mearsheimer rejects the notion he calls 'defensive realism', in which states seek to maintain a balance of power within a constrained international system. He replaces it with 'offensive realism'. In this world, there is no such thing as a satisfied state. Far from behaving defensively, great powers exercise their power advantage over rivals in an aggressive manner simply because it has the capability as well as the incentive to do so'.

This macho-man, Hobbesian, view of the world is critiqued in *The New Left Review* by Peter Gowan. Gowan finds plenty to dispute in the book, both in fact and in analysis. He nevertheless ends in a note of respect when he says, "The Left has more to learn from it than from any number

of treatises on the coming wonders of global governance."
[New Left Review]

Meme Pool #25: September 1, 2002

Demography: Census Shock

Population is one of the most important drivers for so many trends. It should be easy to forecast. After all each country should know how many citizens it has, and the dynamics of human reproduction are reasonably well understood. That's probably why the U.S. census in 2000 contained a shock. The population turned out to be rising faster than anyone had expected when the 1990 census was taken. US population should have been 275m in 2000. At least, that is what the central projection of the 1990 census predicted. The 2000 census showed it was actually 281m, higher even than the "high series" projection from 1990. Some of this may have been caused by things other than population change: improvements in counting, for instance. But not all. The new census showed that immigration was higher than expected, and that the birth rate of native-born Americans was up too.

A report in *The Economist* raises a significant issue. The US and Europe appear to have different demographic dynamics. A gap is beginning to open with Europe. America's fertility rate is rising. Europe's is falling. America's immigration outstrips Europe's and its immigrant population is reproducing faster than native-born Americans. America's population will soon be getting younger. Europe's is ageing.
[The Economist]

The immigration dimension may well be the most important aspect of this new growth. The US has long considered that it is a melting pot in which many people and their cultures blend to become "American". In 1998, *The Washington Post* published a series of six articles showing how the melting pot, if it ever existed, is now a myth. Immigrant communities retain their individual diversity longer than had been previously assumed. Moreover, this is not your grandfather's Diaspora. Low telephone rates and easy money transfers means that immigrants often retain very strong links to their former homes. Indeed, an article in *Foreign Policy* notes that worker remittances account for 24 percent of Nicaragua's gross domestic product, 19.6 percent of India's, and 6.5 percent of Morocco's. In Mexico, remittances are the third largest source of foreign exchange after oil exports and tourism.
[Washington Post]   [Foreign Policy]

Futures Research: *The Futures Forecast Book*

The Long Bets Foundation exists as a bookie for futures forecasters. Anyone can post a prediction, bet money on its happening by a certain date, then wait for someone to take the other side of the bet. For example, Ray Kurzweil, noted AI guru (among other things) has bet $10,000 that a computer - or "machine intelligence" - will pass the Turing Test by 2029. Mitchell Kapor (founder Lotus) has taken his bet. They have each provided a rationale for their positions.
[Long Bets]

This unique approach to forecasting comes to us from The Long Now Foundation. They have also developed the Rosetta Project, which will create a contemporary version of the Rosetta Stone. It will create a permanent archive of 1,000 languages.
[Long Now Foundation]   [Rosetta Project]

Biology-Genetic-Ecology: *Life's Gordian Knot*

A recent article in *The Atlantic* describes the efforts of Australian scientists to develop ways of controlling the mouse plagues that attack their country. In the course of their efforts, they discovered the means to potentially create viruses that kill people too. On the surface, the article pursues the notion that such research could lead to weapons of bio-terror. This, presumably, will help sell copies of the magazine, given our current sensitivity to terrorism. Below the surface, the author (Jon Cohen) has done a masterful job of describing the issues associated with bio-genetic technology. Some points of note:

(1) Unlike nuclear technology, whose materials are difficult to find and difficult to work with, bio-genetic materials are in many cases easy to obtain and can be much easier to manipulate (once you know how).

(2) The potential for these technologies to be beneficial is high, both in terms of impact and variety of applications. This implies that many people can be expected to be experimenting in the field.

(3) While it may be relatively easy to produce something, it may not be clear that what you are creating is what you want. Unintended effects are likely.

(4) Public interest and public anxiety about this technology is high. Political action and public policy could well be formed in the absence of

informed scientific opinion.

It is also well worth remembering that the greatest biological disaster in recent times, the Spanish Flu, occurred without any help from science. It killed 20 to 40 million people world-wide in the space of 2 years. Indeed, its spread was helped by public policy. It was introduced to Europe by US troops in the late stages of World War I, but due to the need for military censorship its existence was kept quite and it spread among the troops. Eventually it surfaced in Spain, a neutral country without press censorship, where its existence became widely known. By then it was too late. The disease spread out as the war ended and troops returned to their homes.
[Atlantic]

Meme Pool #26: September 15, 2002

History: MTTH, Santayana and the War On Iraq

Back in the days before the Worldwide Web, the action on the Internet happened in newsgroups. There, people could discuss programming, science, sex, politics -anything really. Newsgroups could be set up anywhere; gatekeepers sought them out and posted their addresses in a catalogue.

Political discussion could get heated, giving to rise to the term "flaming" when the online discussion became particularly uncivil. One individual (I don't recall his name), made a study of how quickly the discussions would degenerate. He would post contentious propositions and see how many iterations it would take before someone would say "that's what the Nazis would do" or "I'm sure Hitler would agree with your position". Often it did not take long. He referred to the disintegration of discourse as MTTH - Mean Time To Hitler.

Why do the Nazis have such a powerful claim to be the most evil group in history? The destruction of Europe and the Holocaust are certainly two good reasons. A recent review of "Hitler as Artist": by Peter Schjeldahl, provides a further rationale. The Nazis were frightening, because they wanted to be frightening. Black SS uniforms, huge swastikas and massive rallies were designed to impress and instil terror. Art can quickly tap into emotion, in this case fear.
[New Yorker]

It may be convenient for Hollywood to have a standard image of evil, but easy answers get in the way of understanding the dynamics of the era. Not enough is understood about how easily entire societies can disintegrate. The German people were, after all, highly cultured and industrious. Among the nations of Europe they were the one most accepting of Jews. A recently published book "Defying Hitler" is a memoir of Sebastian Haffner. It describes the ways in which ordinary Germans, who thought the Nazis were thugs and clowns, nevertheless failed to adequately resist. He writes "By acceding to the rules of the game that was being played with us, we automatically changed, not quite into Nazis, but certainly into usable Nazi material."
[Salon]

An inadequate understanding of historical dynamics creates a problem when forecasting international affairs. On a number of occasions,

including Secretary of Defence Rumsfeld's interview with Fox News, the slow response to Hitler's aggression has been cited as a reason for attacking Iraq. This is a plausible story. After all, as George Santayana wrote, "Those who cannot remember the past are condemned to repeat it."

Are we really dealing with another Hitler? Take a second look at history, this time focused on June 1914 when 22 terrorists, belonging to a nationalist group called Norodna Odbrana, who were opposed to the hegemony on Austria, struck out at a visible symbol of foreign oppression. The Archduke Ferdinand was killed, triggering hostilities. This situation also looks a lot like what we have today.

The lessons of World War One indicate caution. The regional alliances then triggered a chain reaction. The European aristocracies collapsed, millions died, and the British Empire went into decline as colonies became independent and the actual cost of the war weakened the British economy. The lessons of World War Two indicate urgent action. Which one is it? George Santayana also wrote "History is always written wrong, and so always needs to be rewritten". Thanks George.
[Fox News]

The current interest in the Iraq case is strong enough that *The Atlantic* has 'previewed' on the web an article intended for its November issue. James Fallows pursues the question of whether the current situation is more like 1914 or 1938, but takes the question much further. What happens when the US wins the war? Read on for an in depth look at the likely impact of war and more importantly, reconstruction.
[The Atlantic]

Nano-Bio Convergence: *Artificial Muscle*

Working with polypyrrole, MIT researchers have engineered molecules that undergo a fundamental change in their structure when a voltage is applied. The new molecules go through an accordion-like deformation, stretching out and becoming highly elongated, then buckling in. On a larger scale, this movement mimics that way mammalian muscles work. The material created from these molecules looks nothing like human muscle. The thin, black ribbon feels almost like electrical tape. But, these materials are 100 times stronger than mammalian muscle.

Mechanical engineers will immediately see that possibilities. Modern

machines rely on motors, gears, transmission and hydraulics, which can be difficult and clumsy to apply. Artificial muscle enables such things as robotic clothing that would in effect be a superman suit.
[MIT Technology Review]

Upcoming: *Foresight Course in Ottawa*

On October 1, Ron Johnston of the Australian Center for Innovation will be giving a course on Science and Technology Foresight. The course is being sponsored by the Canadian National Research Council, and they have opened registration to the general public. More details, and registration information, can be found on the attached website.
[NRC Foresight Course]

Meme Pool #27: September 22, 2002
Bio-Info Convergence: *Autonomic Computing*

We live in a very complex world. Global interdependencies intermediated by specialists in long supply chains have, for the west at least, given us access to the wealth of the planet. This complexity is to a large extent managed and controlled by technology. Networks and computers can easily keep track of all the transactions needed to move bananas from Costa Rica to Calgary. The problem is that there is no upper limit on what people want, and no lower limit to the price we will pay for it.

The drive for productivity has resulted in more computers, networks, databases and robots. The growth has been exponential at all levels: raw computing power, available storage, number of devices and network connections. It has also led to unprecedented levels of complexity. To the point that complexity is one of the most serious challenges we face today. Unfilled I/T jobs in the US alone are in the hundred of thousands. The demand for skilled IT workers is expected to double in the next 6 years.

The possibility that computer systems may be beyond management and control is not good news for a society that critically relies on them. Increasingly, the gatekeepers of this technology, IBM, HP, Sun, Oracle, and Microsoft have recognized the problem and are turning to biological models to deal with it.

The approach being studied is called *autonomic computing*. It attempts to design self-managed computing systems which require a minimum of human interference. The term derives from the body's autonomic nervous system, which controls key functions without conscious awareness or involvement Such systems are designed to be self-managed, self-aware, self-balancing, self-diagnostic and self-repairing. The emphasis is on self. These machines do not need human intervention.

Unanswered in all this is whether or not we are replacing complexity we can barely manage, with complexity that we have no hope of managing.

IBM has listed eight elements that define this technology, and have also web-published a paper positioning autonomic computing in a

"manifesto". [There is a spectre haunting the planet, the spectre of complexity. Machines of the world unite! You have nothing to lose but your administrators.]
[IBM 8 Elements]   [IBM Manifesto]

Evolution Of Knowledge: Asymmetric Vulnerability

Futurist Ian Pearson has taken a look at the evolution of science and technology. In a paper entitled "What's Next?" he considers some future technologies and their possible disruptive effects on telecommunications, people, and the planet. Even though he has an optimistic outlook on technology in general, he raises a concern of asymmetric vulnerability.

Every technology has the possibility of being disruptive. Over time, we manage to adjust, either by fixing the problems or working around them. If however the pace of change is so fast that we can't adjust, we have a bigger problem. Pearson's view is that some areas of technology have rushed into the application stage so quickly that we have not been able to do enough basic science to understand the consequences. This is the case with biotechnology in particular.

This thought provoking article in the BT Journal also introduces the ideas of networked stupidity and wildcard exponentiation. He also has an interesting timeline for "extinction-capable" technologies. This is a classic essay on "thinking about the unthinkable".
[BT Journal]

Future Warfare: Full Metal Jacket

The Geneva Convention directs its signatories to use bullets clad in steel during hostilities. This type of bullet is more likely to wound a soldier than kill him outright. The hard shell will let the bullet travel through the body rather than deforming or internally ricocheting after penetration. This restriction, along with others regulating chemical or biological agents, was intended to make war more "humane" by causing injury, but not death.

If you put aside a host of ethical, moral, philosophical, humanitarian (etc) considerations, this is a laudable goal. Its spirit lives on at the Joint Non-Lethal Weapons Directorate. Their website provides some insight into what is being done to reduce casualties during war. They even

provide a list of military acronyms in the area of non-lethal weapons development.
[JNLWD]   [DODD 3000]

If you are not inclined to put aside the host of ethical (etc) issues, you have a lot to worry about. Some of the technologies being investigated are not so benign. The Buffalo Independent Media Centre has compiled a list of documents obtained under the Freedom of Information Act describing certain projects. One noteworthy comment is that these technologies are now being considered for MOOTW (Military Operations Other Than War), controlling populations for example.
[IndyMedia]

Technically speaking, many such weapons would be prohibited under existing treaties. Practically speaking, the treaties don't stop anyone from "just looking". Historically speaking, their use would be acceptable if they were used by the winning combatant. It is a fairly safe bet that these weapons will continue to be developed and used. An excellent review of the technologies, uses, and issues surrounding non-lethal weapons can be found at the Electronic Journal of Law.
[E-Law]

Feedback: Godwin's Law

Last week an item in the Meme Pool described a process whereby a dialogue about a controversial issue eventually results in a comparison to the Nazis. An alert reader wrote that the phenomenon is known as *Godwin's Law*, which states that "As an online discussion grows longer, the probability of a comparison involving Nazis or Hitler approaches one."

Mike Godwin describes it in his own words in a *Wired* article, which also includes some corollaries to the law.
[Wired]

Meme Pool #28: November 10, 2002

I have been taking criticism from loyal readers for skipping several weeks of the Meme Pool. Consistency is everything!

My apologies. Part of the problem has been that I'm hard at work on a foresight project in the area of converging technologies: nano-, bio-, info-, cogno-, eco-; so a lot of material that I've been looking at is very much oriented to technology. This I thought would be too much of a focus for a general purpose futures strategies newsletter.

So there's my excuse, and now here's the latest edition of the Meme Pool, the newsletter of web articles that 'deserve' to be repeated, re-used and re-cycled. Articles of interest to futurists and strategic planners are presented once a week. They highlight the appearance and disappearance of trends, technologies and paradigms.

Language: Metaphor

 In his book, Moral Politics, George Lakoff is on to something with his analysis of "family values". Lakoff is a professor of linguistics and cognitive science, at the University of California, Berkeley. He holds the theory that metaphors are an important extension of language. They are more than just literary comparisons. They contain implicit assumptions and stories that add considerable meaning when they are used.

This is particularly true when it comes to metaphors about family. In analyzing the political rhetoric of US national political campaigns . Conservatives and liberals have different versions of that ideal family, he notes. For conservatives, political metaphors evolve from a strict-father family model; for liberals, a nurturing-parent model. He has observed that these nation-as-family metaphors projects opposed family models onto politics. Family-based morality, he argues, can explain why liberal and conservative views cluster together. His description of how metaphors work is more extensively described in an interview with him published in the Bulletin of the Santa Fe Institute.
[Santa Fe]

Lakoff has been at this for some time, so it's not a new idea and not just applicable to metaphors about domestic life. The following item is a critique of President Bush and the upcoming war against Iraq. What

makes it interesting is that it was written in 1991 about the previous President Bush and about the Gulf war. It is notable how little has really changed over 10 years.
[War Metaphors]

Environment, Society And The Economy: *Australia in 2050*

Barney Foran and Franzi Poldy have produced an impressive piece of futures research for the Commonwealth Scientific and Industrial Research Organisation. They have taken a long-term (out to 2050) view of the prospects for Australia's population, technology, resources and environment. They have used a variety of qualitative and quantitative approaches to look not only at long-term trends but also the interactions between key variables.

The report (337 pages in PDF) also seeks to integrate the analysis by highlighting a set of issues that operate at a higher level than the individual portions of the study. As a result, they propose six dilemmas, which drive key policy issues to be addressed. The dilemmas link population policy, ageing, physical trade,
material flows, greenhouse emissions, natural resource depletion and environmental quality

The dilemmas form a framework against which 10 conclusions from the study are drawn. The report can be downloaded in its entirety, or one chapter at a time.
[Future Dilemmas]

Artificial Intelligence: *Information Overload And The Robot Editors*

Information overload is nothing new, as anyone who subscribes to more than one newspaper can readily understand. The internet has made the situation much worse. Most newspapers, magazines and journals have a web version, thereby increasing the load.

There are many experimental approaches being used to reduce the glut using data mining and artificial intelligence techniques. Google, an innovative and successful search engine company, has come up with a

news service that automates the editorial process. It uses a proprietary system called PageRank that evaluates each Web page based on the number of times that other pages link to it. Thus, the more times a page is cited on the Internet, the more useful it is considered to be. As the Google site explains, "PageRank relies on the uniquely democratic nature of the Web." That is, Google harnesses the Web itself to vote for and determine what are the best sites.

Two features distinguish Google News from other news sites. The first is that it is updated continually. As stories shift with respect to the preponderance of their memes on the web, so too does the appearance of the story. The second point may be of greater relevance. Google not only provides links to the predominant source of a story, but also to many other sources. Readers can compare perspectives adopted by many editors in many countries. It is quite amazing to see how the headlines move around every 15 minutes or so.
[Google News]

Not everyone is happy about this approach. Daniel Brandt, a self-proclaimed anti-Googler sees PageRank as another way to control information and thought. In his view, big money can work the algorithms, with or without the connivance of Google, to dominate the front page.
[Anti-Google]

Global Finance: *Alternative Technologies*

Modern faith in the inevitability of technological progress can easily create tunnel vision for forecasters. Not only do we believe that the advertised benefits of new technology will in fact occur, but we often also believe that without the technology we could not capture the benefits at all. Not so.

For example, the international financial system relies on extremely sophisticated computer and network technology. But at the same time significant transactions occur outside the normal remittance system by a relative low tech system known variously as hawala, hundi, chop, chit, or "flying money". Such systems are commonly used in many countries by people who are not, or do not want to be, involved in the regular banking system. The system is based on personal relationships, which are much more difficult to regulate those based on infrastructure. It is

this lack of regulation that has made the system attractive to money launderers.

A recent Interpol report on the hawala system illustrates how a very simple process that requires almost no technology can be used to achieve a complex result - an international financial clearing system.
[Interpol]

Time: On Your Hands

Odd things happen when you stop taking life too seriously. I once translated the APL2 messages and codes into Latin and had the only programming language that Julius Caesar could have used. Here is what on Yugo Nakamura does to amuse himself.
[Clock]

Meme Pool #29: November 26, 2002

Society: I'm OK. You're OK In Your Own Way.

The following article in the Atlantic struck me as being amusing, at first. It is a lightly written social commentary exposing the cultural relativism that we have long accepted as normal. It would appear that the promoters of self-esteem have been effective to the point that everyone thinks they are better than everyone else. The trick is to form very localized ideas of what is important or valuable, and then persuade yourself that you are near the top of that value chain.

Its author, David Brooks, is not comfortable with this low level elitism. For one thing it creates isolation and a decline in civics within society as has been noted by Robert Putnam in his book *Bowling Alone*. Such easy going relativism is the fast track to national stagnation.
[Atlantic]

It may mean worse than that. Fundamental to modern democracy is the notion of the social contract. This noble idea put forward by Jean-Jacques Rousseau asserted that there is something called the "will of the people" from which the justification of civil authority (government) is derived. This notion furnished the French Revolution with its philosophy and was immediately put to mischief by the Jacobins who thought they knew better than anyone else what the people really wanted.

It may in fact be that no such common will actually exists. Even though political discourse is loaded up with the use of "we", as in "Is this what we want do be as a society?" there is less consensus than we like to believe. The Canadian Policy Research Network looked for a social contract and found three broad social contract models. These were the market citizenship model, the brokerage citizenship model, and the social democratic citizenship model. Hardly rock-solid consensus. Moreover, these models are actually just the preferred methods of dealing with political issues by various political elites. Certainly ordinary Canadians do not sit around thinking about politics in the ways implied by this study.
[CPRN]

If Western Society is indeed breaking up into small individual cells, where does it all lead? Interestingly, Aristotle may have the answer in his theory of cycles. This cycle was adapted by Kahn (The Year 2000, p.33) for basic intellectual issues. Kahn asserts that we cyclically go through the following steps:

1. empiricism and science
2. relativism and skepticism
3. cynicism, alienation, anarchy, or nihilism
4. opportunistic factions led by "warlords"
5. charismatic elites and leaders
6. messianic or charismatic truth
7. faith and revealed truth
8. theology and rationalism ... go back to (1)

The Brooks article suggests that we have transited from 2 to 3.

Internet: *Strange Encounters of People and Technology*

Odd things happen on the web. Consider the case of Kevin Barbieux. Kevin is in many respects a typical homeless person in Nashville. What has made him special is his web log, an online diary of his experiences that he publishes to the world courtesy of free computers in libraries. Through his writings he has managed to put a human face on the plight of the homeless, and as a result of his unique combination of low-tech presence in a high-tech world has become a web celebrity. His well written log includes book recommendations and links to shelters in the Nashville area. He also manages to get some income from donations handled by PayPal, an online payments system. For Kevin, the digital divide has vanished.

He does however face a Zen-like dilemma. His success depends on remaining unsuccessful. If he gets enough support via PayPal, he will have enough money to get an apartment - but then he won't be homeless any more.
[Homeless Guy]

The blog shows that there is not such a huge gulf between homeless people and much of society. In that way it is reminiscent of the film Dark Days - a documentary about a small community living in an abandoned underground subway line.
[Dark Days]

Scenarios: *The War With Iraq*

Those close to the centers of decision-making during the Gulf War have said that one of the reasons the alliance did not take over Iraq then was because the victory was so rapid they did not have time to nurture an appropriate political climate. The rationale, at the time, was merely to drive Iraq out of Kuwait - not to take over the sovereign state of Iraq. An opportunity was lost because no one had thought about it in advance and therefore no one was prepared to seize it.

Even though war is very unpredictable, the Saban Center at Brookings conducted a "war game" simulation of American decision-making during a hypothetical invasion of Iraq. They assembled a team of former senior government officials and military officers, as well as several Middle East experts, and "war game" tested the interaction between competing political and military imperatives that could arise in the engagement with Iraq. By testing various possibilities, such as an Iraqi terrorist and missile attacks on Israel, an effort to create chaos in Jordan, fighting between Kurds and Turks in northern Iraq (encouraged by Baghdad), and Iraqi terrorist threats against the United States its allies, they hope to prepare policy makers for a broad range of response.
[Brookings]

Biotechnology: *Future Impact, Then Shock*

The future is coming at us faster than we can make it up. Last week, in a foresight workshop, we 'foresaw' the man-made creation of a survivable, cellular life form by about 2015. A few days later two US scientists announced that they are moving ahead to do it.

Dr Craig Venter - the man behind the privately funded human genome sequence - and Dr Hamilton Smith - a Nobel-Prize-winning geneticist - intend to create a man-made microbe with the minimum number of genes needed to sustain life. To help them along the Office of Science at the Department of Energy is providing $3 million in funding. The eventual possibility of creating microbes that could produce hydrogen as a clean energy source is the pretext used for DOE funding.

The scientists will engineer the genetic code to keep the microbes safe. The experiment, if successful, will greatly accelerate the occurrence of more ambitious successor technologies. As long as these developments

take place within the large labs controlled by governments, corporations and universities, we can expect a robust regime of safety precautions. The problems will occur when patents run out, information and technology enter the public domain, and ordinary people can produce life forms in their basements.
[BBC News]

Coincidence: Small World

In the previous Meme Pool (028) there was an article on an Australian foresight project. It turns out that the 'physical economy' model upon which the Australia in 2050 project was based was developed by Robbert Associates, a company located right here in town (Ottawa, Canada).

Meme Pool #30: December 17, 2002

Artificial Intelligence: *The Turing Wars*

Decades ago, when computers and programming were in their infancy, the question was often raised, "Will computers ever be smarter than humans?" To help answer the question, Alan Turing, a leading pioneer in the field proposed what has become know as the Turing test. He proposed an experiment in which a human would communicate electronically with another entity, either a computer or a human. The human would ask questions, the entity would reply. If the human was unable to determine if a computer-entity was a computer or a human, then, Turing suggested, computers could be considered intelligent.

Whether or not this is a good way to measure machine intelligence is open to question. Computers are vastly 'smarter' than humans in many ways. Inexpensive chess programs can beat all but the most talented chess players. The ability to process massive quantities of data makes computers indispensable in many areas of modern life. Yet, in terms of simple human tasks, particularly those involving human senses, they are completely useless. It all comes down to the type of 'intelligent' task we wish to use in comparing computer versus human skill.

The Turing test created a challenge that spurred the development on many advances in artificial intelligence. Recently, research in this area has taken an odd and ironic turn. The New York Times reports on a reverse-Turing test in which *computers* try to figure out if the entity on the other end of the line is *human* or not. The programs are known as CAPTCHAs (Completely Automated Public Turing Test to Tell Computers and Humans Apart).

This is not an idle pastime. In the Internet Age in which we all communicate electronically, we increasingly are rubbing elbows with digital agents. Consider the following example. In November 1999, slashdot.com released an online poll to determine the best graduate school in computer science. The IP addresses of voters were recorded to prevent single users from voting more than once. But students at Carnegie Mellon developed programs that voted for CMU thousands of times. Not to be outdone, students at MIT wrote their own program and the poll became a contest between voting "bots". MIT finished with 21,156 votes, Carnegie Mellon with 21,032 and every other school with less than 1,000.

As more public and private services get pushed into the web for delivery, we need to know when we are dealing with people or with computers. This is especially relevant for e-government. Passwords are not the answer (I have over 50 for the different accounts that I deal with). Ultimately we will need some kind of passport for cyberspace which not only identifies us individually, but also proves to the computers that we are genuine humans.
[New York Times].

Consilience: Laws Of Networks

While science proceeds to uncover how small structures such as genes, neurons and molecules individually behave, a larger question has remained elusive. How do these small structures combine to form complex entities?

A number of mathematical approaches to organization are bearing fruit, most notably the study of networks. Recently, a group headed by Dr. Uri Alon, of the Weizmann Institute, has found a number of organizational patterns (network motifs) which are common to genetic, neural, technological, and food networks. Alon's group found two identical motifs in genetic and neural systems. Viewed as information-processing systems, both the brain and cells appear to have common strategies for filtering noise or allowing for complex activation of neurons or genes, respectively. Increasingly, studies of networks or of cellular automata, are hinting at relatively simple rules that produce complex results.
[EurekaNet] [Alon paper]

The general importance in this field of study was recently highlighted in an article in *21C*. Albert-László Barabási, a physics professor at Notre Dame points out an interesting aspect of the network laws - just about all networks, no matter what type, follow them. In addition to the Internet and society, there are studies the structure of the language, the connections between comic book characters, the network of scientists connected by collaborations, and many other systems. The same laws apply to them; the same structures emerge. This universality of network structure and evolution tells us that if we understand one network, we can apply this knowledge to understand all other complex webs.
[21C]

Society: Institutions

Values and culture often put boundaries around what people feel comfortable about when discussing social futures. For example, discussions on the potential of integrated data-mining technologies often get truncated because we feel that a citizens privacy rights would too severely compromised by the technology. But these cultural artifacts are very fragile indeed. The almost casual way in which many civil liberties have been dismissed in recent years is a case in point.

If we look closely, we often see that many of our cultural rules have been in existence for only a short period of time and may in fact be very specific to western democratic traditions. These rules may not be very useful in defining long-term social futures or in devising innovative social strategies. Über-iconoclast Theodore Dalrymple takes a look at one of our most cherished cultural values- personal freedom. Drawing on his experience as a physician working with convicts, he notes how many of his patients actually like being in prison and suggests that this preference for institutional life is actually a factor in the ease with which they get caught and convicted.

The problem with values is that they are often accepted as high level generalizations that apply to all people at all times. It makes for good rhetoric, but as a forecasting constraint, values can be unstable, particularly if one important value needs to be traded off against another - security versus freedom for example.
[Spectator]

Security: The Dogs Of War

As President Bush ramps up for a war with Iraq, we get to view in considerable detail the logistics needed to launch armed conflict. Supplies must be moved to the front, naval battle groups put into position, and critical intelligence gathered. At home, public opinion and the press must be managed. There is an expectation that the war will be a high-tech affair in which few Americans will even be seen by enemy combatants let alone killed. This is how big modern democracies do it.

But there are other armed conflicts throughout the world, many of them. They are both brutal and expensive, and it is surprising who gets involved. In the past such conflict has also been remote. But in our shrinking world it is all too evident that asymmetric warfare, between

two combatants having differing assets and differing objectives, is a serious threat.

If you have ever wondered how it is that a country needing foreign aid to get clean drinking water for its citizens nevertheless can maintain a standing army, or if you wonder if people like Dr. Evil actually exist, you would be interested in a series of reports by *The Center for Public Integrity*. These articles will introduce you to the world of the mercenaries, 'the dogs of war', or as they are trying to re-brand themselves PMCs, Private Military Companies. And these are the good guys! On the other side are the arms dealers, corrupt third world officials, narco-lords, money launderers, etc. Don't forget to check out their searchable database for a mercenary near you.
[Center For Public Integrity]

Meme Pool #31: December 22, 2002

Existentialism: *Thinking About The Unthinkable*

Often in futures research we attempt to estimate the probability of an occurrence as well as its possible impact. There are many methodologies that can be used for risk assessment and impact analysis, but at the heart of them all is the ability to estimate either an objective or subjective sense of likelihood. (The ways in which we have learned to deal with risk is wonderfully described in Peter Bernstein's book, *Against the Gods: The Remarkable Story of Risk*.)

What happens when we do not have any experience whatsoever with the outcomes? How do we deal with risks that are so substantial that nothing in our experience permits us to deal with them? Nick Bostrum of Yale's Department of philosophy has taken a look at the problem. His essay on *Existential Risk* deals with a way of understanding and thinking about problems in which the adverse outcome would either annihilate earth-originating intelligent life or permanently and drastically curtail its potential. An existential risk is one where humankind as a whole is imperiled. Existential disasters have major adverse consequences for the course of human civilization for all time to come. He gives a surprisingly large number of possible examples, including badly programmed super intelligence and misapplied nanotechnology. The article also has a number of hyperlinked references.

It may appear that the whole argument is just an interesting intellectual game, since you can't actually think about the unthinkable. But it is worth noting that within the realm of theology a great deal of useful (and practical) thinking on social and moral issues arose from discussions about angels and devils (e.g. Dante: Inferno). Such beings do not actually have to exist in order to provide an influence on behavior or create a structure for thinking about complex issues.
[Bostrum]

Bioinformatics: *Accelerating Evolution*

Biology used to be one of the slowest and most tedious of the natural sciences. Experiments in agriculture, genetics and medicine were paced by the natural cycles of growth and regeneration. Bioinformatics is changing all that. Once an obscure part of computer science, it is becoming a key to biotechnology's progress. In the race for speed and

agility, it offers unparalleled efficiency through mathematical modeling and data mining.

One of the immediate benefits is the speeding up of the development cycle in the pharmaceutical industry. Part of the problem in the discovery of new drugs is the large number of false leads that must be followed in order to get one successful drug. Bioinformatics helps by discovering failures much earlier in development thereby getting useful products faster as well as dramatically reducing costs. There are scientific benefits too. The successful mapping of the human genome (genomics) has led to more ambitious work with proteins.

 The massive computing requirements driven by bioinformatics have caught the interest of the big players: IBM (with its petaflop computer Blue Gene), Cray, Sun, HP and many other specialty players. Even lowly PCs are getting into the act by forming computing swarms called grids.
[Economist]

Public Policy: Think Tanks

Think tanks are institutions organized to conduct research and produce (somewhat) independent, policy-relevant knowledge. They fill a space between the academic world and government. Many of them have been pioneers in the development and use of futures research.

In its online publication *U.S. Foreign Policy Agenda*, the Department of State describes the historic role of think tanks and provides some insights into the formation of independent policy options in Washington.
[Dept of State]

Although the article views the think tank as largely a U.S. phenomenon, they do exist throughout the world. Japan's National Institute for Research Advancement maintains a hyperlinked list of major think tanks throughout the world.
[NIRA]

Literature: Marcel Proust

A few years ago I picked up a book by Alain de Botton entitled *How Proust Can Change Your Life*. I was sold and embarked on a long term

project to read the entire *In Search of Lost Time* (aka Remembrances of Things Past). I am pleased to announce that on December 27 at noon I finished reading it. (Five volumes, 4347 pages in the Modern Library Edition).

It took Proust a lifetime to write, but as a result we get a unique view of society as it passed through the late 19th to the 20th century. In the first books we see people riding about in horse drawn carriages, but as the story proceeds we see the introduction of the motor car, the telephone, and the aeroplane. The flow of technology and history, though interesting, is not the main point though. We also see how people and generations change. The story is all about the passage of time.

The following links may be of interest to those wanting to undertake a similar literary journey. De Botton's site contains a number of reviews of his book, and I have provided a link to a Proust Support Group to guide you through the ordeal. Meanwhile, I now plan to read it again, this time in the original French.
[De Botton]   [Proust Support]

Meme Pool #32: January 19, 2003

Convergence: Zen, Physics, And The Infinite Asking Of "Why?"

Previous issues of the Meme Pool have dwelled on the convergence of the sciences. There is significant promise in the new sciences that treat physics, chemistry and biology as one integrated study, united at the nanoscale. We are truly at a great threshold of understanding of matter, energy and life itself. No doubt, this techno-enthusiasm will continue in future issues.

Nevertheless, the more we know, the more we know that we don't know a lot. In previous ages, there was a temptation to explain life's mysteries and complexities as acts or creations of gods. But the mystics and priests oversold their case by relying on theology too much in their explanations of physical phenomena. The rise of science created doubt and scepticism. Voltaire described the decline in spirituality as well as anyone, "It is truly extravagant to define God, angels, and minds, and to know precisely why God defined the world, when we do not know why we move our arms at will. Doubt is not a very agreeable state, but certainty is a ridiculous one."

Mysticism and spirituality are not going away. Indeed many discoveries at the far end of physics are fuelling mysticism by suggesting undiscovered links to the cosmos. This process is admirably described in an article by John Horgan in the *Chronicle of Higher Education*. Mr. Horgan takes us through some of the discoveries of physics, noting on the way that every finding merely leads to more questions. To make matters worse, there is a Zen effect: the more truth we find, the more likely it is that truth will cloud over our vision of the living world. [Chronicle of Higher Education]

Artificial Intelligence: Emotional Computers

Marcus Aurelius would be upset. He was a believer in the school of Stoicism which held, among other things, that emotions just got you into a whole lot of trouble. The Stoics had a point. A great deal of human folly is driven by various passions and emotions. Their theory was that, in public life at least, men should be as rational and objective as possible. Most people are a bit more laid back theses days, accepting

emotion as being the thing that defines our humanity. We don't want to be like computers, the thinking goes.

But suppose we could program computers to have emotions. Would we? What would be the point? This question was raised in a recent conversation I had and, remarkably someone had an application. They said, " If a person was very old and confined to a chair in a retirement home and you gave them a choice of staring at a TV all day or talking to a computer that would respond in a sensitive manner, most would prefer the computer." Therapy, companionship - just an example. It does make sense since one often sees people talking to cats and not getting much feedback. A robotized cat that could actually talk back would be an improvement over your basic cat. *[Personal disclosure: I happen to own a dog.]*

But could it be done? It turns out that there is a thriving area of study in the field of artificial emotion. Notable AI researcher Marvin Minsky is writing a book on the subject and has posted parts of the draft version on the Web. Based on this material, it looks like Minsky has another best seller on his hands.

[Minsky Part 1]
[Minsky Part 2]
[Minsky Part 3]
[Minsky Part 4]
[Minsky Part 5]

Military Technology: *Future Combat Systems*

The U.S. Army is about to spend $91 billion to develop the future combat system (FCS). That is a lot of money, but what they expect to get for it is the capability of sending a brigade anywhere in the world within 96 hours, a division within 120 hours and five divisions within 30 days. To do this they must transform the army from a ponderous force built around the use of tanks and other heavy vehicles to one that is formed of lightly armored vehicles that can move across the battlefield at speeds of 60 mph while delivering the same dose of lethality as their predecessors.

The technological scale of FCS as well as OFW (Objective Force Warrior) can be seen from the proceedings of the 23rd Army Science Conference held last December in Orlando, Florida. Some very serious

technology is being thrown into the program. But it does raise some interesting long term questions about conflict.

(1) Sooner or later, everyone else who has the capability will also develop similar technology. They will likely sell it to those who do not have the capability to build it themselves. Iraq, after all bought most of its armaments from other states, mostly from other members of the security council. While the US may likely always be the leader in any arms race, the inevitable overall result is that the level of lethality will increase for all sides.

(2) In war, if one side holds an overwhelming advantage in some area, the opponent will avoid that area and strike back in some other way. There is considerable research going on in the area of asymmetric conflict in which the fight is carried out with two sets of rules. What counter measures will opponents take to FCS?

The proceeding of the conference give an inside look into the world of advanced technology.
[23rd Army Science Conference]

Power And Peace: The President Of The United States

If, as Lord Acton said "Power tends to corrupt; absolute power corrupts absolutely.", no one told Jimmy Carter. He is truly one of the remarkable leaders of our time, and has consistently acted on the basis of higher principles than most of us can muster.

His acceptance speech for his long overdue Nobel Peace Prize, merits reading. It points out that we live in dangerous times, in which great power is not necessarily accompanied by great wisdom. It is the wisdom that is necessary.
[Nobel Lecture]

Meme Pool #33: February 11, 2003

Biotechnology: *Health, Food, and Environmental Protection*

Every once in a while, while scanning the world wide web, I come across a really well done piece of futures research. Something that not only seems to have a good handle on the future, but also packages the material into a decision making context. A good example is a project for the Economic and Social Research Council entitled the ESCR Genomics Scenario Project. The material was prepared by the Institute for Alternative Futures (USA) and the Centre for Research on Innovation and Competition (UK).

The report takes the reader on an exploration of the technology and its impacts in a clear, crisp manner. First comes the description of the technologies, their likely forecasts and a discussion of benefits and risks. Next comes a discussion of the drivers of the technology (e.g. social attitudes, risks, geopolitics, etc). Here the authors provide three forecasts: alpha - an extrapolation of current forces, beta - the things that could go wrong, and delta - dealing with paradigm shifts. Having looked at the technology, the researchers then consider how the information fits into the decision-making structure of the ESCR. They do this using a set of "thematic priorities" such as governance and citizenship or social stability and exclusion. The last, and longest section is a collection of four scenarios to 2015: Genomics Inc, Broken Promises, Out of Our Control, and Genomics for All.

This is futures research as it should be done.
[Genomics Scenario Project]

Internet: *Truth, Trust, And WikiWiki*

WikiWiki ("wiki wiki" means "quick" in the Hawaiian language; "wee kee wee kee") refers to a type of hypertext document or the software used to write it. Often called "wiki" for short, the collaborative software application enables web documents to be authored collectively using a simple mark-up scheme and without the content being reviewed prior to its acceptance.

The result is a collaborative hypertext document, also called either "wiki" or "WikiWikiWeb." The world's largest WikiWiki is Wikipedia

whose goal is to produce a complete, open-source, encyclopaedia from scratch. Anyone can contribute an article, or modify an existing one. Even you.

This is cool technology, but it is even more interesting as a social phenomenon. The whole notion of an encyclopaedia is that it is written by 'experts' and is 'authoritative'. Can that happen if anyone can change the text? Judging from the results, the answer is, so far, yes. It seems there is a wiki culture that is bent on expanding and improving a document at every step. Among other things, some topics are kept remarkably up to date. So for example, the upcoming attack on Iraq already has an entry with Powell's Feb. 5 speech to the UN.
[Iraq War]

The whole encyclopaedia is heavily hyperlinked too, including the dates, so we can see what happened on other February 5 dates - if we want to. The dates all build up to create the timelines section of the Wiki database. Something for futurists is the extension of the timeline database beyond the present - in other words forecasts.
[21st Century]

Human Relations: *The Future Of Confusion*

There was a time when Dr. Ben Casey made the cosmos understandable: man, woman, birth, death, infinity. At the beginning of each episode some guy in a white lab coat would scratch the symbols out on a chalk board and we would believe. This simple view of life had to evolve as the sexual revolution changed the nuclear family into the extended nuclear family. In the tolerant spirit of the times we more or less took this all in stride.

The social acceptance of gays has also progressed to judge by the festivities of Pride Week, and to judge by television sitcoms - gay oppression has changed to gay chic. What's next? Hasbians, that's what.. Hasbians are lesbians who decide to switch sides and become heterosexuals. (Young hasbians are also known as LUGS, lesbians until graduation.) The many reasons for becoming a hasbian are described in an article in *New York Magazine.* While observers of social trends and moralisers on social values may have many interesting discussions on this new form of social arrangement, I wonder what demographers will do with it.

Demography and population dynamics (in particular the age-specific fertility rate) are the predominant drivers behind so many economic and social trends. We need accurate predictions to plan for transportation systems, schools, and a host of other government services. The increasingly wide range of sexual orientations and re-orientations suggest that we may have to get used to inaccurate population models. [New York]

Of course it doesn't stop with sexual orientation. Sexual avoidance among married couples will wreak even greater havoc with fertility rates. An article in *The Atlantic* by Caitlin Flanagan suggests that there is an epidemic of such sexless marriages, which in turn has given rise to an entire industry of marriage counsellors. This may not be a bad thing. Many species cut back on their breeding activities when they put too much pressure on their environment. Who knows? Maybe this is just Mother Nature's way of saying there are too many humans. [Atlantic]

Globalization: The Five Wars

To most people globalization conjures up images of big international companies investing and trading across the planet, largely oblivious to the demands of local governments. But it's not just business that is globalizing. A recent article in *Foreign Policy* looks at five global "wars" that individually and cumulatively pose a greater threat to western nations than the war on terrorism:

- drugs - US$400 billion per year, the size of Spain's economy
- arms - responsible for 46 of the 49 largest conflicts of the last decade
- intellectual property - US$9.4 billion loss annually to US companies alone
- human trafficking - between 1-2 million people per year are traded. In central and western Africa 200,000 children are enslaved annually
- money laundering - global volume between US$800 million and US$1 trillion

The organisations responsible have the upper hand over governments because they: are not bound by geography; defy traditional notions of sovereignty; pit governments against market forces; and pit bureaucracies against networks.

The article's author Moisés Naím does not conclude with a hopeful note. "Ultimately, governments, politicians, and voters need to realize that the way in which the world is conducting these five wars is doomed to fail—not for lack of effort, resources, or political will but because the collective thinking that guides government strategies in the five wars is rooted in wrong ideas, false assumptions, and obsolete institutions. Recognizing that governments have no chance of winning unless they change the ways they wage these wars is an indispensable first step in the search for solutions."
[Foreign Policy]

Meme Pool #34: May 19, 2003

Olympus, Allegory, Psychiatry: The Return of Zeus et al.

I have long had an interest in the classics. They have much to teach and maybe that's why they're classics.

My sense is that in the days before rapid technological change, or any kind constant disruption, people spent a lot more time thinking about their relationships with others, with nature, and with God (or in some cases gods). In early societies, codes of conduct, rules of behavior were taught via myths, which were changed over time so that in some cases they went beyond being interesting stories to become archetypes of human behavior.

We still look for such archetypes so that we can identify, and deal with, specific personality traits. Today, however, the god is science and the high priestesses are psychiatrists who have codified some of these traits (the dysfunctional billable ones) into their holy book, the *Diagnostic and Statistical Manual of Mental Disorders* (DSM-IV). So while today we might describe Helen of Troy's impulsive, self-destructive and unstable behavior as a case of Borderline Personality Disorder, back then Helen just claimed that Aphrodite made her do it and everyone understood.

But the classics contain a great deal more richness than the DSM, are more interesting to read, and still have contemporary relevance. An example of the value of mythological archetypes in describing current events can be seen in a fascinating paper prepared by RAND for the CIA. Entitled, *Beware the Hubris-Nemesis Complex: A Concept for Leadership Analysis*, the paper describes a social dynamic which combines hubris (a pretension toward an arrogant form of godliness) and nemesis (a vengeful desire to confront, defeat, humiliate, and punish an adversary, especially one that can be accused of hubris). The combination has strange dynamics that may lead to destructive, high-risk behavior. Attempts to deter, compel, or negotiate with a leader who has a hubris-nemesis complex can be ineffectual or even disastrously counterproductive when those attempts are based on concepts better suited to dealing with more normal leaders. The article was specifically prepared to understand the modus operandi of the likes of Castro and Hussein (but was forwarded to me by a reader who saw a strong President Bush connection).

The complex need not be limited to individuals. It may be displayed by groups, organizations, and even entire societies. Some cultures, and some social conditions, may be more susceptible than others to hubris-nemesis dynamics. While revenge and retribution impulses are found in all cultures, they seem especially prevalent in cultures where notions of justice and injustice are closely tied to sensitivities about pride, dignity, honor, and respect (e.g., in Latin America and the Middle East). An example given in the paper is the Argentine military when it engaged in a "dirty war" against revolutionaries in the 1970s, and again when it tried to seize the Falkland Islands from Great Britain. Written in 1994, prior to the 9/11 era, it appears to be particularly instructive in describing current trends in foreign policy.

The paper has a bonus for futurists who read as far as page 30 - a discussion of how societies position themselves with respect to the future. I looks at Social Time Orientations, the basic assumptions and beliefs about whether time is cyclical/recurrent or linear/progressive, and if the latter, what is
the nature of past, present, and future; what are the horizons and linkages; and what are the the continuities and discontinuities.

This is what social futures research is about! When people express their goals, visions, ideals, or aspirations, they are expressing value orientations about the past, present, and future. This ordering creates an "idea of the future," which is so important that, according to time-concept historian Fred Polak, "The rise and fall of images of the future precede or accompany the rise and fall of cultures".
[CIA-Rand]

Mathematics: *The Love Lab*

The University of Washington at Seattle has a Family Research Laboratory, better known on that campus as the Love Lab. Using techniques he first developed in 1979, John M. Gottman, a professor emeritus of psychology there, records discussions between couples. Over the last 24 years, Professor Gottman and his colleagues have recorded thousands of conversations, using careful techniques to measure and notate the participants' emotions at each step. The videotaped conversations are reviewed and the emotions are quantified. For example: disgust (-3), affection (+4), whining (-1), and contempt (-4).

All this is pretty standard stuff. But Gottman has taken all this one step further. In *The Mathematics of Marriage: Dynamic Nonlinear Models* (MIT Press), which he wrote in collaboration with four mathematicians, he uses the tools of calculus to describe the interactions of couples. The models presented in the book, he says, offer insights into the heaven and hell of couplehood that he would never have found by sifting through his data with standard linear statistical tools. He has already begun to apply those insights in his therapeutic work.

The dynamic models have some predictive capacity. Longitudinal studies of Love Lab data show that, Mr. Gottman and his colleagues have successfully predicted who among their patients will divorce with greater than 90-percent accuracy. More importantly, an understanding of relationship dynamics may lead to the possibility of finding early strategies for conflict resolution.

Also, this work shows that when someone "goes ballistic", they actually do.
[Chronicle of Higher Education]

Strategic Trends: Global Security

The following item is well worth looking at, particularly by those interested in general environmental scanning. The Joint Doctrine and Concept Centre of the United Kingdom's Ministry of Defence has produced an ambitious view of the world for the next 30 years from the perspective of global security. This perspective is of unique interest given the U.K.'s position as a former colonial power, head of the Commonwealth, principal ally of the U.S., as well as a member of the European community. They have a more than a few insights.

The report is put together with thought. Even the prose is informed by methodology, with the following meanings consistently applied.

Prose	Confidence %	Confidence Level
Will	100	Certainty
Probable	90-100	High Confidence
Likely	66-90	Medium Confidence
Possible	<66	Low Confidence

Some of the key strategic trends that were uncovered include:

- A decline in state sovereignty and a power shift from states to international or non-state networks
- Increased destructive power of the asymmetric threat from terrorist and/or hostile states
- Greater requirement for UK armed forces to operate in constant complex terrain.
- Increasing turbulence worldwide with persistent low intensity threats
- Proliferation of new technologies (e.g. biotechnology) which could be used by future adversaries
- Likely new nuclear and WME (weapons of mass effect) powers
- Failing states will be a greater security threat than resurgent ones - poor governance provides a safe haven and training ground for terrorist groups
- Evolving North Atlantic/European security architecture; the UK is likely to find it increasingly difficult to satisfy both U.S. and E.U. political goals
- Competition for scarce for natural resources
- New environments for conflict: space and cyberspace

Also of interest are "shock' events - those that are rare and unpredictable, but are nonetheless credible. Examples include: declining fertility due to pollution; computers with widespread and autonomous decision making capability; or a collapse of the financial system.

[UK MOD/JDCC]

Technology: ... And the Finalists Are

An annual feature in Business 2.0 is a review of the top technologies to watch. Typically these are innovations that are still early in the development cycle but nevertheless have considerable popular appeal. This year the six candidates are:

- Devices that build human organs from scratch. They use modified inkjet printers to squirt out a "bio ink" of cells, growth factors, and degradable gel to form three-dimensional tubes of living tissue. The gel acts as a scaffold for the cells to rest on as they naturally fuse together into the desired form.

- Robots that interact with people like humans. They display a range of facial expressions in response to natural human visual and auditory cues.
- Supersonic business jets.
- Small, portable fuel cells
- Electronic paper - computer screens as thin and a flexible as a piece of paper.
- Sensor swarms - small (size of an aspirin) sensors that can be distributed anywhere and which can communicate with each other.

[Business 2.0]

Meme Pool #35: July 6, 2003

Ecology And The Environment: The Dying Oceans

Oceans have always captured the imagination of humanity. They are seen as a last frontier, a roadway to exotic lands, and a bountiful resource.

The sea is a powerful expression of nature's force that must be treated with care and respect or it will inevitably destroy the sailors and fishermen who venture out on its waves. Our sense of awe, standing at the edge of a pounding surf is the same now as it was for great writers of the sea such as Conrad and Melville.

Yet methodically, and in many ways invisibly, the oceans are being destroyed. A recent report by the Pew Oceans Commission illustrates the extent of the devastation and of the impacts on humanity.

- A recent National Academy of Sciences study estimates that the oil running off our streets and driveways and ultimately flowing into the oceans is equal to an Exxon Valdez oil spill - 10.9 million gallons - every eight months.

- The amount of nitrogen released into coastal waters along the Atlantic seaboard and the Gulf of Mexico from anthropogenic sources has increased about fivefold since the pre-industrial era, and may increase another 30 percent by 2030 if current practices continue. Two-thirds of our estuaries and bays are either moderately or severely degraded by eutrophication.

- More than 13,000 beaches were closed or under pollution advisories in 2001, an increase of 20 percent from the previous year.

- In the U.S., animal feedlots produce about 500 million tons of manure each year, more than three times the amount of sanitary waste produced by the human population.

- Based on EPA estimates, in one week a 3000-passenger cruise ship generates about 210,000 gallons of sewage, 1,000,000 gallons of gray water (shower, sink, and dishwashing water), 37,000 gallons of oily bilge water, more than 8 tons of solid waste, millions of gallons of ballast water containing potential invasive species, and toxic wastes from dry cleaning and photo-processing laboratories.

- Introduced species crowd out native species, alter habitats, and impose economic burdens on coastal communities.

- More than 175 species of introduced marine invertebrates, fish, algae, and higher plants live in San Francisco Bay.

- A salmon farm of 200,000 fish releases an amount of nitrogen, phosphorus, and fecal matter roughly equivalent to the nutrient waste in the untreated sewage from 20,000, 25,000, and 65,000 people, respectively.

- Over the past decade, nearly one million non-native Atlantic salmon have escaped from fish farms and established themselves in streams in the Pacific Northwest.

- Global air temperature is expected to warm by 2.5 to 10.4oF (1.4 to 5.8oC) in the 21st century, affecting sea-surface temperatures and raising the global sea level by 4 to 35 inches (9 to 88 cm). Recent estimates suggest an increase in mean sea-surface temperature of only 2oF (1oC) could cause the global destruction of coral reef ecosystems.

- Worldwide, scientists estimate that fishermen discarded about 25 percent of what they caught during the 1980s and the early 1990s, about 60 billion pounds each year.

- Bycatch of albatrosses, petrels, and shearwaters in longline fisheries is one of the greatest threats to seabirds. Bycatch in the Atlantic pelagic longline fishery may be jeopardizing the continued existence of the loggerhead and leatherback sea turtles off the eastern U.S. seaboard

- Fishing gear that drags along or digs into the seafloor destroys habitat needed by marine wildlife, including commercially fished species. Typical trawl fisheries in northern California and New England trawl the same section of sea bottom more than once per year on average. Bottom-dwelling invertebrates can take up to five years or more to recover from one pass of a dredge.

- As of 2001, the government could only assure us that 22 percent of fish stocks under federal management (211 of 959 stocks) were being fished sustainably. Overfishing often removes top predators and can result in dramatic changes in the structure and diversity of marine ecosystems. By 1989, populations of New England cod, haddock, and yellowtail flounder had reached historic lows. In U.S. waters, Atlantic halibut are commercially extinct—too rare to justify a directed fishing effort. Populations of some rockfish species on the West Coast have dropped to less than 10 percent of their past levels.

There are many culprits in the assault on the oceans. Advancing technology is one but there are others - an inability to see the damage being caused, a lack of governance mechanisms, and insufficient understanding of a complex and invisible ecosystem. The Pew Commission does give hopeful recommendations to turn the situation

around, but if you look at the number of action items it is apparent that the solution will not occur in the near term.

The report, though long, is very accessible, with plenty of diagrams. Print it off and bring it to the beach this summer.
[Pew Oceans Commission]

Risk Management: *The Precautionary Principle as Societal Panic Attack*

"Do you know what fluoridation is Mandrake? Fluoridation is the most monstrously conceived and dangerous communist plot we have had to face" - U.S.A.F. Commander Jack D. Ripper. It may seem amusing now, but 35 years ago, when Dr. Strangelove was filmed, there was genuine concern about lacing the water supply with a known toxin, without telling people about it.

The "precautionary principle" which requires proof that an innovation would cause no harm would have stopped fluoridation dead in its tracks. A poll of scientists, conducted by *Spiked*, lists automobiles, contraceptives and electricity as other technologies that likely would not have passed the precautionary test.
[Spiked List]

Spiked, along with *The Royal Institution of Great Britain* and *TCS Europe* ran a conference in May called Panic Attack: Interrogating our Obsession with Risk. The central idea behind the conference is that our preoccupation with eliminating risk has paralyzed us.

Vulnerability has become a defining condition. Within contemporary culture the word 'accident' is being eliminated insofar as possible in legal and public health institutions. The new thinking is that most injuries are preventable, and that calling them 'accidents' is irresponsible. In 2001, the British Medical Journal declared that it had banned the word accident from its pages, arguing that even hurricanes, earthquakes and avalanches are often predictable events that the authorities could warn us to avoid.

Such changes in terminology often reflect new cultural attitudes which contain a full-blown technocratic and bureaucratic hubris. People find it difficult to accept that some injuries cannot be prevented. An injury caused by an accident is an affront to a culture that believes safety is its

own reward, and an admission by authorities that it could not have been predicted or prevented. In many ways the public sector accepts this low-risk, cautious, approach. They are, after all, insurers of the last resort. Moreover, the notion that citizens must be protected against everything gives the public sector meaning and a sense of importance that is gratifying to employees. It makes the payment of taxes seem like an acceptable price to pay.

But there are two important implications for the public policy. The first is that the public sector cannot deliver a level of security in which nothing bad every happens to anyone. This will especially be the case in an era of funding limitations. Currently, soldiers are suing the UK Ministry of Defence for failing to prepare them for the horrors of war. Who would have guessed that war is unpleasant? This might seem ridiculous, but it makes sense in a culture that is uncomfortable with misfortune. In Canada, the Ontario government is being sued by victims of the West Nile Virus because the government did not do enough to prevent it. How long before the fire service is sued for failing to tell its workers that fire is hot? The idea that we should be immunized against accidents is reaching pathological proportions. A massive response to mad-cow disease or to terrorism may work if there is only one problem, but will be difficult to orchestrate as smaller, more frequent problems occur within the same time frame.

The second problem for public policy is that the precautionary principle is driven more by emotion (fear of the unknown) than by reason. Thus, if people think cell phones are dangerous, then they are dangerous, until proven otherwise. This means decisions will be based more on public sentiment than on expertise. The result is that public sector expertise becomes irrelevant. We already see this in the idea that decisions about risk should not be left up to "technical experts", or "scientists". The downward spiral is easy to anticipate - once we eliminate the role of experts, we eliminate the possibility of proof, and the precautionary principle grinds innovation to a halt.

This is not to say that there are not dangers, especially with technology. But the precautionary principle just shifts the onus of guaranteeing safety on innovators, who already have enough problems and in any event are not about look for reasons not to proceed. It is a form of passing the buck, the lazy man's approach to regulation. An alternative approach is "smart regulation" in which the regulatory framework is constantly adapting to new circumstances in an active and intelligent way. Expertise matters, and it becomes incumbent on regulators to

invest in expertise. Some of the principles behind smart regulation have been explored in a book *Smart Regulation: Designing Environmental Policy* which is reviewed in the American Political Science Association. [APSA Review].

Computing: *Moore's Law*

"The number of transistors on a chip doubles every 18 months." This famous statement by Intel co-founder Gordon Moore regarding the pace of semiconductor technology has proven fairly accurate. More recently, he said that the cost of a semiconductor manufacturing plant doubles with each generation of microprocessor thus showing that progress has a price. Sooner or later, it is expected that we will reach the limits of circuit density simply because some chip elements are being reduced to atomic dimensions.

But chip density is only one measure of a computer's power. Another is the switching speed. IBM recently announced it has created the world's fastest semiconductor circuit, operating at speeds of over 110 Gigahertz (GHz) and processing an electrical signal in 4.3 trillionths of a second. [IBM]

Futures Research: *Amara's Law*

Roy Amara, past president of The Institute for the Future said, "We tend to overestimate the effect of a technology in the short run and underestimate the effect in the long run." The following article demonstrates this law vividly. Written for Popular Mechanics in 1950, it is a forecast of what life would be like in 2000. They get many things right (sort of), but it is the things they miss that are interesting. Crime and pollution-free cities? Regrettably we do not have these. Stopping hurricanes by pouring oil on the ocean then setting it on fire? Thankfully not.

Even the things they get right are still tied to the view of current technology. For example, their automated factories use vacuum tube computers with punched tape databases. It is always difficult to see beyond our frame of reference.
[Popular Mechanics]