

## Futurewatch

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New Zealand Futures Trust  
New Zealand

An information service on current, international perspectives on our futures, prepared by futures scanner, Jennifer Coote. Annual dates in last two digits.

### SOCIAL

#### Does Population Matter?

Debate has oscillated regarding the effects of population growth on economic development. High fertility is viewed as a hindrance to development by social scientists while economists argue that human capital and technical change are the growth drivers. **UN Population Fund's (UNFPA) report State of the World Population 2002: People, Poverty and Possibilities: Making Development Work for the Poor**, highlights the importance of a changed age structure rather than population growth itself. Provided the labour market can absorb more workers and increase production per head, a demographic dividend is created, where parents enhance the workforce by investing in education and health for their fewer children. Growth suffers in phrases when the population is increasing rapidly and in the later transition stage. Other research supports the view that fewer children alters the consumption pattern to favour the poor. E. Asia exemplifies the argument. South Asia's transition should peak after 2015, poorer Latin American nations will be later still and only eleven African nations will reach it even by 2050. *The Economist*, 7 Dec, 02, p78.

**The Future of Population in Asia, East-West Center Research Program, Population and Health Studies (Honolulu)**, or PDF version, <http://www.zewc.hawaii.edu/pop/59000.htm>, explores recent trends and future dynamics, based on the ongoing research of the Center, with graphics.

The dismal future of Russia's population prospects is described by academic **D. E. Powell**, *Current History*, Oct

02. The deathrate exceeds the birthrate by 70%, excluding migration. A once functioning health system is decayed. Infant mortality is increasing and male mortality is astonishingly high, with life expectancies of 57 years. Sharply rising TB, AIDS and sexually transmitted disease levels, drug abuse, and other plagues have been aggravated by the Chechen war. The main culprit is high, continuing level of alcoholism, especially among men.

The US 2000 census revealed a surprising level of rising fertility in the population, partly resulting from immigration levels with high fertility rates and partly because so many native-born women had postponed childbearing until the 1990s. Similar patterns, though not so extreme, were noted in the Nordic countries. Europe, by contrast has an ageing and declining population, though there may be a slight recovery as some of the European countries shift out of the "postponed childbearing" phase. If current projections prove correct, by 2050 Europe's population will be 360 million and falling, while the US should be 550 million and rising, a bonus of half a billion. A fundamental long-term transAtlantic shift in economic and political preponderance should favour the US, whose economy will be advantaged by its hospitable environment for immigrant workers, a dynamic mix of cultures. *The Economist*, 24 August, 02, pp18-20.

According to a number of values surveys conducted in US, Europe and internationally over two decades, the US stands out markedly from the industrialised, western nations in its overall support for "traditional", moral, faith-based values, even though it affirms self-expressive ones. This trend appears to be growing. *The Economist*, 4 Jan 03, p18-20.

**J. Wilson**, *American Outlook*, Fall, 02, quotes a number of US studies on the faith-based and largely Christian culture of the swell of immigrant US residents which is constituting the new social landscape. This is largely

ignored by secular-minded scholars and elites.

## A Sense of Place

*Development*, March 2002, explores women negotiating globalisation through Place, **Politics and Justice**, with **W. Harcourt**, **A. Escobar** leading on the **Politics of Place**. Globalisation may be an all-encompassing, no-alternative development, but women internationally are organising around a 'sense of place'. 'Glocal' occurs when local concerns transform the global. Key areas for hitherto silenced, 'other', female expression are the body (reproductive issues, dress), the environment (linked with survival), the home (violence, homelessness) and the public arena (women's rights, participation, women's alliances and networks for political action). Identifying one's 'place' is part of the paradox and challenge for women on the fringes. Basic tools for this are networks/meshworks, and 'glocalities'. Meshworks could be considered oppositional to the dominant globalised networks, linking a diversity of groups and growing in unplanned directions. 'Glocalities' are inherently strategic: they may be potentially transformative or oppressive, and are both global and place-based. As actors in their own lives women internationally are leading place-based activities, creating new structures of power, new forms of culture and alternative economies.

**A. Dirlik**, *above*, notes that politics which can be both transformative yet respectful of 'place-based difference' has yet to find its way onto the liberal and radical agendas. The politics of everyday life has been abandoned to the most conservative forces. The revival of "civilisational" claims suggests that it is no longer possible to view power relations in colonialist or neo-colonialist terms. A place-based politics, founded on women's experience may provide new frameworks.

Maori educationalist **E. Rata** utilises research and theory to reinterpret the way by which indigeneity, as revived in the 1980s under the Bicultural project, has categorised the relationship of the Maori and European settlers in New Zealand to each other, and of both to "place"-the land, with Maori as senior partner. Increasing

impact of globalisation into the local, and the drive to realise Maori social and economic aspirations have led to a retribalisation which favours neotribal capitalism. In this process, urbanised, ethnic Maori who are not tribalised have become a separate group excluded from the benefits of "indigenisation". The traditional tribe of the past is linked to the contemporary tribe within an historical continuum despite the fundamental difference, benefiting those who established claim to it. *Review, Fernand Braudel Center, XXV/2, 02.*

**I. S. McIntosh** examines the various layer of "truths" about the status of Aboriginal Australians, highlighting a fundamental layer mostly ignored, "indigenous wealth", their rich cultural and spiritual lives:- in social relationships, sacred practices and attachment to land embellished with cultural meaning. A new partnership of reconciliation should affirm this 'wealth', sovereignty and spirituality, rather than welfare. *Cultural Survival Quarterly, Summer, 02, p5-6.*

## Urban Affairs

**The Castells Reader on Cities and Social Theory**, Ed. **I. Susser**, Blackwells, 02, presents a selection of the writings of eminent urban sociologist M. Castells, over three decades. This study on culture of cities in the information age explores the 21st century urban environment, the paradoxes of IT, ecological crises and feminists impacts in the 'hypercommunicated city.'

**S. Sassen**, urban sociologist globalisation and cities, introduces her **Global Networks, Linked Cities**, Routledge, 02, in *Environment and Urbanisation*, Vol 14/1, 02. The intensification and complexity of financial, productive and market systems results in new geographies and hierarchies of cities. Many of these are more closely linked to each other than to their national or regional economies. There are harsh local consequences, while the intercity linkage can also intensify crises.

**T. Fisher**, *Urban Studies*, Vol 40/3, 03 examines the growth patterns revealed in peri-urban development in Adelaide, which exemplify other major city surroundings. Four growth processes, suburbanisation, counterurbanisation, popula-

tion retention and centripetal migration each act in different ways on particular population sub-groups.

## The Immigrant Question

*International Migration Review*, Vol 36/4, 02, provides six international, researched studies on host societies and the reception of immigrants, Ed J. G. Reitz. The collection arises from a larger series by Canadian and US scholars, due to be published, 03, W. A. Cornelius et al, **Controlling Immigration: a Global Perspective**, Stanford Univ. Press. Besides examination of research themes, emerging theories and methodological issues, there are specific studies, plus Oxford academic S. Castles on **Migration and Community Formation Under Globalisation**. This widens the traditional dyad of assimilated settlers and temporary migrants, as new technologies of communication and transport allow frequent and multi-directional flows of people, ideas and cultural symbols. This transforms the material and cultural practices relating to migration and community formation and the blurring of boundaries between different categories of migrants. Case studies on emerging transnational communities, multiple identities and multi-layer citizenship.

80,000 mostly Chinese, Japanese and Korean students are swelling N.Z.'s English language schools, most of them in Auckland. Besides the economic dividend, the city itself is changing and becoming more cosmopolitan, as services for this new clientele mushroom, from radio stations to food. Wellington, and even Christchurch may follow the trend. *The Independent*, 4 Sept, 02, pp 20-21.

**Phobic Did/Orders: the Decline of Hope and Rise of Paranoid Nationalism**, G. Hage, 02 is a controversial but insightful Australian social scientist's research-based analysis of new migrants in societies where fear and insecurity in the host nation is stifling the hope which is essential for them to feel welcome. The migrant 'problem' may become one where the hosts need help to assimilate to the reality of the multicultural mainstream. See also his **Arab-Australians: Citizenship and Belonging**,

Melbourne Univ. Press, 02, on citizenship and "honourability" issues in belonging to Australia.

## Youth Affairs

**My Generation**, W. U. Wimsatt, *Utne Reader*, Sept-Oct, 02, pp47-48, visionary, media creative and social activist, outlines the new twenty-somethings, who are emerging as student activists. They reject rampant commercialism, focus on the widening, rich- poor divide, and the interconnection of race, class, gender and sexuality, accompanied by new cultural and spiritual currents. They recourse to the Web naturally to organise. Individual leaders are discredited: young visionaries are group activists. But they need the older generations to mentor them in furthering their visions.

**State of the World's Children 2002: Leadership**, C. Bellamy, UNICEF, 02 assesses the goals set by the Summit for Children 1990 against present achievement and targets for 2010. Considerable failure in meeting the previously set targets is attributed to lack of leadership, especially in the political arena. Future targets will depend on the leadership shown by the most economically powerful nations.

## ECONOMICS/BUSINESS

### Asian Casino

**The Weakest Link**, A Survey of Asian Finance, *The Economist*, 8 Feb, 03 questions optimistic forecasts for the economic potential of E. Asia, which are partially based on the demographic dividend of the rising generation of workers. The region's financial systems, unless radically transformed, are likely to undermine these prospects. S. Korea, with Hong Kong and Singapore, form the exceptions, the former having taken the initiative after 1997 to remove bad loans from the banks and sell them off, drastically slimmed down the banking sector, opening this to foreign investment, and liquidating some of the most indebted national companies. Consumer demand has risen, with jobs, growth, foreign investment.

Other countries, notably giants Indonesia and China, are lagging for a number of reasons

and reform is patchy, which could erode the advantages of the region's population dividend. The region, from S. Korea to Malaysia and Indonesia, urgently needs to develop regional banking and capital markets, focusing savings where most needed, at best returns. Today, these are fragmented, parochial, illiquid and poorly policed. The region as a whole has yet to develop a taxpayer's culture. China's \$600 billion of non-performing loans equals all that of emerging Asia, its equity market is dysfunctional, but it is making attempts to reform its banking system by welcoming more foreign capital and management skills.

See also **N. Lardy, Integrating China into the Global Economy**, Brookings 01, a sceptical but balanced earlier warning, and **Dangerous Markets: Managing in Financial Crises**, **D. Barton et al**, John Wiley, 03. The latter, by McKinsey consultants, examines the warning signs of crises in the global economy, especially China, Japan and India. **Japanese Phoenix: the Long Road to Economic Recovery**, **R. Katz, M. E. Sharpe**, 03, examines closely the structural reforms, or lack of it, in Japan. The political system is the biggest hurdle, but more of the electorate are supportive of change if short term pain proves worthwhile.

## On Capitalism, Finance, Markets

An eminent US economist is pessimistic about the long-term **Future of US Capitalism**, **F. L. Pryor**, Cambridge Univ. Press, 02. His overview offers some forecasts:- a stormy economic environment, following prevailing trends; declining economic competition with international, industrial concentration; mixed prospects for regulation, and a decline in savings; much of the global labour force employed in huge multinationals, little scope for small business; much more share ownership held by financial intermediaries; increasing proportion of GDP spent by government as population ages; by 2050 economic life will be more pitiless, with limited intervention by government.

**George Soros on Globalisation**, **G. Soros**, *Public Affairs*, 02, contributes to reform of the global financial system, suggesting Special

Drawing Rights (SDRs) to increase international aid. These reserve assets, convertible into various currencies, would be issued by IMF in proportion to countries' Fund quotas. Donor countries could then donate their quota as additional aid. The scheme would be managed by a special board set up by IMF but independent of it.

**WTO on Trial**, **S. Esserman, R. Howse**, *Foreign Affairs*, August, 02, senior US ex bureaucrats examine the workings of WTO and its decisions, finding that while overall it is operating satisfactorily, there are a number of areas for fine-tuning.

*A further report by Foreign Policy*, Jan/Feb 03, **A.T. Kearney, Carnegie Endowment for World Peace**, on the **Globalisation Index**, with four quadrants of political engagement, technological take-up, personal contacts and economic integration for the post-Sept 11 period. Of twenty countries, New Zealand is 16th overall with Ireland Switzerland, Sweden, Singapore, Netherlands the top five.

## Business Issues

The balanced scorecard has its critics. Strategic expert **G. Kenny** suggests that it is not necessarily a one-type fits all model to use and many using it do not really understand it. Five key suggestions are:- categorise measurements by key stakeholder; link measurement activity to corporate direction; develop measures of objectives; choose a short list of performance measures for your scorecard; set targets on your key performance indicators. *Management (NZ)*, March, 03.

**What's Business For?**, asks **C. Handy**, *Harvard Business Review*, Dec, 02. The wave of corporate scandals in US is evidence of the new rules of Anglo-American capitalism, shareholder value expressed by share price. Stock options have aggravated the problem. The Europeans are hesitant under pressure to move to the American capitalist model. Increasingly a company's assets lie in its employees. Shareholders (or rather investors/gamblers) matter, but as the means, not the end. The intellectual creativity of employees should give them some rights of ownership, and they should be recorded as assets, not costs. In both the European and

Anglo-American models some things need to change to restore confidence in the wealth creating possibilities of capitalism. Outcomes need to be measured in social terms.

A third way between the balanced scorecard and shareholder value, is the focus on customer service, according to US business teacher, **R. R. Ellsworth**, *Leading with Purpose*, Stanford Univ Press, 02. This, together with prioritising employee development, will dominate 21st century corporate purpose.

### Doing Business with IT

The net is a powerful medium for going business and serving customers worldwide, but management academic, **M. F. Guillen**, *Business Horizons*, May/June 02, considers that the local, rather than the global focus, is essential for success. This includes examining differences in the local infrastructure, currencies and regulations, logistics of supply, buyer behaviour and cultures, demographics and branding issues. Four useful broad strategies for global Internet business depend on the nature of the goods and services being sold, in a framework of local responsiveness/global integration.

An economic analysis, **S. Liebowitz**, *Rethinking the Network Economy*, AMACOM, 02, discusses what the Internet has, and has not, changed. The greatest mistakes were made in the area of lock-in theory, whereby a product early to market retains dominance. Two types of lock-in need to be considered; a weak one where the cost to the consumer of purchasing a newer model outweighs any benefit, and strong if consumers can move to a new product en masse. Quality matters for this to occur.

Though small and medium Australian businesses are moving increasingly into e-commerce, it has yet to become fully integrated in company operations. CRM (customer relationship management) systems are increasingly popular for their power to capture customer data to improve products, services and marketing. *BRW*, 5 Dec 02, p 70-71.

A new, very cheap version of an old tracking technology, Radio Frequency Identification, (RFID) is being developed in retailing microchips. If successful, these cheap tags for "smart shelves"

will be widely used to record and report when shelves need restocking or when theft occurs, and to track pallets of products in transit, saving time and costs. *The Economist*, 8 Feb, 03, pp59-60.

### Listing

**Cradle to Cradle: Remaking the Way We Make Things**, **W. McDonough, M. Baumgart**, North Point, 02. This is the handbook for 21st century innovation in sustainable systems design. Practical examples illuminate how waste can be completely eliminated, while business can make profits and humanity and the environment benefit.

## ENERGY /MINERALS

### Around the Mining Mountain

Increasing industrial applications for gold arise from its high corrosion resistance combined with good electrical conductivity. PC and mobile phone markets have enlarged uses for plating contacts. Europe and UK are developing recycling directives for electronic equipment, despite resulting cost, thus encouraging moves to design for recycling, which will give gold an advantage over other coatings. Gold's other major application in electronic bonding wire will increase as applications involve denser components and higher sensitivity to heat. Where performance and cost are important, gold will remain a long-term performer in many technologies. *IEE Review*, May 02.

China is moving to secure Australia as preferred supplier of raw materials, especially minerals and gas. China's industrialisation is having a discernible effect on commodity prices similar to that experienced in the mid 20th century reconstruction of Europe and Japan. Gas, palm oil, iron ore and gold are key resources. *B.R.W.*, Jan 20, 03, pp 44-45.

**D. Humphries**, Rio Tinto economist, *Mining & Energy*, Vol 17/4, 02, contrasts the traditional economic development model, involving mining, with modern best practices. The long-term benefits upstream and downstream were less than beneficial, raising questions about whether

national economies would have gained more with no mining. Tax revenues from mining have frequently not been used for social wellbeing and economic diversification, while the regions hosting mining received no back flows. Mining has limited value in promoting development in countries where the nature of the activity is little understood, where markets do not work and government is ineffective. A modern best practice model for sustainable development works bottom-up, focusing benefits into the host region, with emphasis on upstream and downstream linkages. Rio Tinto is developing this approach in Madagascar.

**Moving Mountains: Communities Confront Mining and Globalisation**, Ed G. Evans et al, Otford Press, 01. A critical analysis of the globalisation context for mining companies, company structures and their impacts on host communities, challenges from political and social movements and concluding with alternative visions.

### Fuels... King Coal

Coal is likely to increase in importance over the next decade, according to the Australian Bureau of Agricultural and Resource Economics, because it is deeply entrenched in the global energy system, especially in China and India. Coal is a secure energy source for those with reserves, it is cheap and abundant and modern technologies produce 'clean coal'. At current consumption levels, coal reserves will last another 216 years compared with 40 for oil. *BRW*, 17 Oct, 02.

'Clean coal' has varied meanings but three technologies predominate:- pre-combustion coal processing; combustion processes to burn coal more cleanly; and post-combustion processes that scrub exhausts. The latter are most widely used to remove sulfur dioxide and nitrogen oxides as they have become cheaper and more efficient. Research into refining and treatment are being commercialised. Of these, the big prospect is integrated gasification combined cycle (IGCC) whereby coal is converted into gas which is then cleansed and burned in a combustion turbine. Carbon dioxide can be captured easily in this process. *The Economist, Technology*

*Quarterly*, 21 Sept, 02, p 4-5.

Coal is a significant resource in NZ plans for a 'clean, green' hydrogen energy economy by 2020. Major research centres have funding to develop such a 'technology platform' as part of the Government move to implement the Kyoto protocol. NZ coals are well suited to hydrogen rich gas production. *Newsletter, Coal Research Association*, June 02.

### ...Hydrogen

**J. Rifkin, The Hydrogen Economy**, Tarcher/Putnam, 02, argues that ultimately hydrogen will be a major fuel because of its potential to integrate with renewable energy sources, a scenario whose realisation will profoundly reshape our energy distribution system to one utilising decentralised energy webs, based on individual households. The US oil focus is an old-world approach, while Europe is struggling towards a new future.

Australian experts expect that hydrogen will become the country's ultimate viable energy source, utilising natural gas, coal, or methane hydrates and water. Until viability is achieved gas is likely to be the national mainstay as demand soars. Renewables provide less than 10%. Natural gas can be reformed with oxygen for syngas to convert into liquid fuels. *Australasian Science*, August, 02 pp 22-24.

Disposal of the carbon dioxide poses problems since the gas must remain sealed away for centuries. Three types of repositories are possible:- carbon sequestration in the oceans, which already contain the gas. Deep ocean storage could pose hazards. Depleted gas and oil reservoirs provide many sites, at reasonable cost while very deep or uneconomic coal seams or saline saline aquifers are further possibilities. *The Economist*, 6 July 02, pp77-78.

### ...Deep Heat

Several countries are exploring deep heat from Earth's lower, hotter levels where granites hold radioactive elements such as uranium, thorium. German and Australian companies are attempting to develop deep geothermal-heat exchangers. These are bores sunk over 2 kilome-

tres into the Earth, into which cold water is poured. Super-heated, this water returns via an inner pipe and is used to produce a vapour to power an electric turbine. Simple in principle, the process will take years to perfect and many more for operating systems to pay a commercial return. *New Scientist*, 22 Feb, 03, pp 40-42, *BRW*, Jan 16, 03, p36.

### ...Fuel Cells

The ever increasing range of electronic devices impose an enormous challenge to find batteries with adequate, efficient storage. Micro fuel cells that convert chemical fuels such as hydrogen or methanol directly into electric power, by 2007 should be a commercial reality. Many of the problems the larger types of fuel cells pose will need to be overcome first. *Science*, 17 May, 02, pp1222-1224.

### ...Light Emitting Diodes (LEDS)

The end of the incandescent and fluorescent light bulbs is close, as the lighting industry prepares for LEDS, durable and low cost. These are two layers of semiconductors sandwiched together charged in such away that they emit light if a current is applied. Recent developments have are close to achieving the higher level of light required for white lighting. *The Economist*, 5 Oct, 02, p71 -72.

### Listings:

**People and Connections: Global Scenarios to 2020**, Shell International, 2002, download free [www.shell.com/scenarios](http://www.shell.com/scenarios)> Also **Energy Needs, Choices and Possibilities: Scenarios to 2050**. Two outstanding series covering much more than energy.

**Small is Profitable: The Hidden Economic Benefits of Making Electrical Resources the Right Size**, A. Lovins, Rocky Mountain Institute/ Earthscan, 02. A well-researched argument for micropower from the guru of the business.

## FUTURES THINKING

### Thinking about Timespace ..

### Peace

**C. Rank, A. Rigby, Eds, Forgiveness and Reconciliation**, *Peace Review*, Sept 02, see these as essential elements of peacemaking in societies as well as between people. A wide range of cultural and personal perspectives are presented, around the political dimension of forgiveness and reconciliation. Contributions and case studies range from Northern Ireland, Uganda, Korea, Cambodia, Middle East. The personal in the political is explored along with the need to acknowledge history in these processes. Forgiveness brings healing but it cannot be demanded from victims. Whereas forgiveness relates to the past, reconciliation relates to the future and sharing this. 'The challenge facing those who seek to promote reconciliation between people who have been divided is to expand the space within which these values can be approached in a creative, future-oriented and forgiving manner'.

**K. Terlouw**, *Review, Fernand Braudel Center*, Vol XXV/1, 02 explores further the Wallenstein approach to Timespace in world systems analysis, including a third, the semi-periphery. This is a blurred category, an intermediate on an interregnum. Two types of exploitation are part of the core/periphery relationship. The core exploits the periphery, while the middle class exploits the labourers. In the core, the class conflicts are ameliorated by redistribution drawn from the (semi)-periphery working class. The semi-periphery has much stronger tensions because of the pressure of the exploitation by the core and greater ethnic tensions. Conflict within borders of semi-peripheral states is matched by external pressure which can be both developmental and destructive.

It is a dynamic part the word-system with some influence over the core, though requiring a greater need for smart, efficient processes. The semi-periphery has, over time been a region of development, some countries move into the core even though others decline. Some semi-peripheral regions eg N W Europe, Mesopotamia in Neolithic times, have a slight edge, which over a time period can feed major disparity. In Timespace, semi-peripheral areas can become the transforming developmental areas between

world systems, especially during marked economic downswings as old core areas stagnate.

### Are We Predictable?

J. Casti, *New Scientist*, 31 Aug, 02, pp29-31, argues that there are deeper patterns in our behaviour, reflecting those found elsewhere in nature. Among the various proposals which have been applied with mixed success to modelling and predicting, the most powerful yet combine a couple of old mathematical ideas. Elliott waves originated with studies of the Great Depression, identifying the financial market cycles as the product of human behaviour. Human emotions are rhythmical. Elliott waves are patterns of ups and downs, with a reaction following an action. The waves can be subdivided, usually into eight waves, and the wave principle is fractal, with each wave having component waves and itself being part of a larger wave. These can zoom in and out over short periods or centuries. Elliott waves also have close connection with a series of numbers called Fibonacci sequences where each number is the sum of two previous ones, 1, 1, 2, 3, 5, 8, 13, 21... Elliott waves form a total cycle following the Fibonacci sequence, which itself is found endlessly in nature, connecting this to all human behaviour.

### Sophisticated Stuff

**What's Next? Exploring the New Terrain for Business**, E. Kelly et al, Perseus, 02. Members of the **Global Business Network**, practitioner, businesspeople and other thinkers, explore the new realities and challenges of the decade ahead. Their ideas are arranged in "The New Terrain Map" under four primary categories:- power; people; potential; planet. Eight subcategories offer with fresh ideas and insights, especially on thinking about issues.

**Creating Better Futures: Scenario Planning as a Tool for a Better To-morrow**, J. A. Ogilvy, OUP, 02. Global Business Network leader reflects on the foundational rethinking needed for the creation of better futures, from the thinking itself to the insight into trends and shifts in the postmodern age and the process of scenario planning.

## SCIENCE/TECHNOLOGY

### Science in Society

Professor Lord May, Royal Society, speaking in Wellington 6 March, 02, *NZ Science Review*, Vol 59/2, 02 commended the increasing public awareness of the unintended consequences of scientific discoveries. This could be aided by principles based on the UK government **Code of Practice for Scientific Committees**. The scientific advisory process must be open, inclusive and consider dissenting views. Worries about safety issues should be handled in proportion to the risks, referring to the very best scientists for issues beyond the currently known. Scientific facts and uncertainties should be clearly separated.

There are problems:- Value-driven decisions can be undermined by hidden agendas, objective assessment of safety risks may differ greatly from subjective feelings, compounded by the public equation of science with certainty and lack of ambiguity. This is particularly difficult when scientific advice to policy makers has to work beyond the frontiers of present knowledge. Lastly, bureaucrats prefer to avoid public controversy, while science is best served by open contention of opinion.

Ultimately the answer to these hugely difficult questions will be resolved by a convergence of science and the humanities, where studies of human interaction, especially cooperative behaviour and the evolution of language are furthering understanding of our mechanisms of social cohesion. Current international developments challenge our assumptions that beliefs and values are amenable to reasoned understanding.

Researcher R. Hipkins reports on studies on the NZ public trust in science and scientists. Most people are interested in science especially where it impacts on their lives directly. Lay people have difficulty in bridging the gap between application of commonsense in scientific issues, and the scientific approach where theory and practice intertwine in the design methodology and interpretation of outcomes. Virtuous spirals of trust between scientists and the public need two way communication. *NZ Education Review*, 11-Sept, 02, p6.

**From Certainty to Uncertainty: the Story of Science and Ideas in the Twentieth Century**, F. D. Peat, Joseph Henry Press, 02. An essential survey for futurists and policy analysts, covers:- quantum uncertainty; incompleteness; Blackfoot physics; language; the end of representation; from clockwork to chaos; revisioning the planet; pausing the cosmos

### Leading Edge Stuff

*Science*, 20 Dec, 02, pp 2296-2297, heralded the discovery of the significance of small RNA molecules in genomic expression as its Breakthrough of 2002. A string of recent discoveries indicate that these operate many of the cellular controls, turning genes on and off, shaping genomes by selecting and discarding. RNAi is a function which inhibits the genes generating RNA, while an enzyme, Dicer, generates small RNA molecules by chopping double-stranded RNA. Recent discoveries have also shown that RNAi helps a peculiar change in gene expression, epigenetics, which persist across at least one generation without change in the DNA code. Much more remains to be explored, with hints that they may be different in plants and animals.

An Australian scientist J. Mattick offers a startling interpretation of introns, regarded as 'junk' RNA, discarded in the RNA transcription of genes. In the more complex lifeforms from yeast upwards, he considers the introns play an essential part in gene-to-gene communication. *New Scientist*, 8 June pp30-33.

Meanwhile mouse genomes are being reexamined for hitherto discarded 'junk' sequences called transposons which 'jump' back and forth as genes are copied on to new locations. This activity appears significant for sculpting the genome. *Nature*, 5 Dec, 02, pp 458-459.

Complex networks have exploded as a field of research interest over recent years. In **Linked: the New Science of Networks**, A-L Barabasi, Perseus, 02, a practitioner presents an entertaining view of this field. Networks can be social, heterogeneous, with "traffic" resembling airline route maps, while lattices comprise networks of atoms with identical environments. The patterns, their discovery, and their wide variety of applications, including the propagation of computer

viruses, are explored.

**The Extravagant Universe: Exploding Stars, Dark Energy and the Accelerating Cosmos**, R. P. Kirshner, Princeton Univ. Press, 02, is an insider's view of the development of the recent understanding of the origin, structure and future of the universe. This is expanding at an ever faster rate, as a cosmic anti-gravity force repels stars outward. Space becomes a 'lonely place'. 70% of the total is occupied by a mysterious substance called dark energy.

Cold dark matter (CMD) which is thought to comprise much of the universe is discussed, S. Battersby, *New Scientist*, 25 Jan 03, pp 28-31. It must be a material which will not undergo nuclear fusion. CMD is a gas of heavy subatomic particles individually called WIMPS (weakly interacting massive particles) The search for WIMPS is part of multinational Projects Nestor and Antares which are primarily focused on finding neutrinos in the depths of the Mediterranean. Neutrinos are fundamentals in astronomy, and space is full of them. A deep water telescope can see them more clearly because the water screens out the radiation from above. *The Economist, Science and Technology*, 26 Oct, pp75-76.

**Exploring Unconsciousness/ Consciousness**, R. Carter, Univ California Press, 02, a handsomely presented introduction to a difficult topic covering philosophical views, emotion and cognition, the theory of mind, and much more.

### Technology Issues

*Technological Forecasting and Social Change*, Dec, 02, presents studies from the European Commission's Institute for Prospective Technological Studies, part of the Commission's **Joint Research Centre** [www.jrc.es](http://www.jrc.es). The collection includes the perspective of a panel of distinguished economists; a long-term user perspective; large area studies on education links to human resource underemployment; sustainable growth, and innovation policies for transport.

UK and African researchers N. Clark et al, *Futures*, Nov/Dec, 02 explore **Biotechnology and Development, Threats and Promises**, with suggestions about utilising the precautionary principle as an operational tool for government policies linking biotechnology to sustainable

development.

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## STYLE

The Journal of Future Studies is an English-language revue published in Taiwan for the global futures community. Due to the transnational nature of the publication, JFS will accept either British or U.S. orthography and conventions consistent with objective article and essay composition (as opposed to business, letter, promotional, etc...) usage. For details concerning this usage, authors are urged to consult The Chicago Manual of Style. Parts of this manual and questions about it may be accessed on-line at: <http://www.press.uchicago.edu/Misc/Chicago/cmosfaq/>

Articles must include: title, author's name, author's institutional affiliation, abstract, main text, end-notes (as necessary, see below), and optional correspondence information. Essays follow the same format, however, an abstract is not required.

Manuscripts must be submitted in Microsoft Word document format. Paragraphs should be unjustified and spaced without bias. Sentences should be single-spaced after periods.

JFS utilizes a simplified convention for reference notes. Quite simply: All notes and citation of sources should be given in the form of end-notes. In order to observe this rule, certain conventions must be applied:

- 1) Complete bibliographic information should be given in the end-notes.
- 2) No additional bibliography is required, and bibliographies of referenced material will normally be deleted.
- 3) Authors should take care that important reference information is given in appropriate end notes. Please be aware that parenthetical citation (such as [Chang, 1990]) is unacceptable and must be replaced by end-notes.
- 4) End notes should be conventionally sequenced.
- 5) For books:
  - Elise Boulding and Kenneth Boulding, *The Future: Images and Processes*. London, Sage Publications, 1995, 153.
  - Eleonora Masini, "Rethinking Futures Studies" in Ziauddin Sardar, ed., *Rescuing All Our Futures: The Futures of Futures Studies*. Twickenham, England, Adamantine Press, 1999, 36-48.
  - Johan Galtung, *Essays in Peace Research*. Vols. 1-5. Copenhagen, Christian Elgers, 1978.
- 6) For journal articles:
  - Yongseok Seo, "From the 39th Parallel to a Border: Exploring Alternative Futures of Korea," *Journal of Futures Studies* (Vol. 6, No. 4, May 2002), 5.