

# Keynote Address

## New Intelligence: Fact and Fiction

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There is a lot of talk about the new economy, knowledge based work, knowledge workers, learning organisations. It seems right that at this forum that I talk about the importance of knowledge and quality thinking as the success factors in what we call the new economy.

However immediately I take two opposite positions. The first position is the bleak and depressed side of my mind – the Australia you are standing in it scenario – where the brilliant possibilities of the knowledge economy ‘transmogrify into cow manure’ to steal a quote from yesterday’s Financial Review.

### **Australia you’re standing in it**

I want to talk first about intelligent systems –complex systems that enable us to capture knowledge and use it to get better and better at what we do. From this discussion I think you will see that despite the huge body of theory and recent excitement in recognising knowledge as a key resource for business and community advantage, in practice there is little to show that we have a clue.

Last week I went by train to the city and there were two young men begging and making a nuisance of themselves with passengers and in particular an elderly couple who were visibly upset. I decided to report this when we reached our destination. I found a ticket seller at the station and duly reported the incident. I was told I would need to report it to the train driver by pushing the emergency button, which would stop the train, and then the driver would report it to police. But I said, this is not a criminal issue, it is a customer service one and I would like to give you the opportunity to improve your customer service. She advised there was no other way and she couldn’t report it to anyone because the event happened on a Connex train and she works for one of the other companies.

This is a simple customer/supplier system but with no feedback loop... no ability to hear from customers and improve services – an incomplete and dumb system.

Some things should not be taken apart. I am not an opponent of change but I am an opponent of poor thinking, and a proponent of systems thinking. Systems are complex, they are living organisms; they are frogs - not bicycles, in the words of Alistair Mant.

In the UK they broke up the rail system and separated tracks from trains and guess what? In the port of Melbourne we have separated dredging the channel from the bit of port management that is about servicing customers and guess what? And then guess what happened when Docklands – another separate authority closed the train track feeding the Port?

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The health system is a further example of a system that needs to be viewed and managed as a system. People, especially politicians want to polarise around a public system versus a private system – but sorry... complexity rules – we need both public and private – they are mutually dependent. We try to distil simplicity, derive order by making things discrete and simple, but the truth is that systems are complex, cannot be dismantled and need to be nurtured systemically.

I have used examples of systems of organisations, but in fact organisations themselves are systems – systems of people.

I joined a newly formed government department some years ago. We couldn't organise to get a car from the car pool because the corporate memory had left when they cut staff numbers, leaving no systems and rule books behind. Someone had cut off a leg of the frog without knowing it.

Now the right response is, there should have been a rule book. But sometimes embedded in the organisation is knowledge and values that go beyond the simple documentation of what the organisation does – and what the people in it are motivated to do. This tacit knowledge, and as importantly, the organisation culture and values is handed on to the next generation and this is a positive thing when there is goodwill and a culture of challenge and change.

How can we think about learning without understanding how to design organisations that can capture organisational learning – the smarts that make an organisation get smarter over time, plus, very importantly, the culture that motivates and rewards, that invites loyalty and performance beyond the call of duty.

Every time there is change of government the bureaucracy is thrown out. Good, motivated and experienced people are removed from office because of some perceived political affiliations and as a result we lose the knowledge base of our government departments; we start out again as if there had been no pre-history. Government reinvents, wastes time and resources and frustrates.

A well functioning system has some essential components. One crucial element of an effective dynamic and improving system is a well-informed and motivated consumer, however when we look at the system within which government operates we may have a missing ingredient.

Polls show that people trust politicians less than they trust banks and only slightly more than they trust the media... In a sample of 1200 Australians controlled to represent the population of Australia – 7% agreed that politicians can be trusted, 21% were indifferent and 70% said politicians cannot be trusted. Yet we vote to elect them!! What is happening! Why aren't we exercising our part of the deal – to exercise our power as consumers of our politicians' services?

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I suggest that we have little expectation of government. Issues are too complex, we do not get the full explanation nor, as we saw from the refugee farce pre election last year, the full picture. Does the children overboard event illustrate a commitment by government to an informed society making wise choices for its future?

## **The Dream**

I said I held two positions on this issue of the knowledge economy. My second position is the Roy and HG scenario – The Dream. In this scenario knowledge is applied and a new perspective is introduced that causes innovation and excitement and enables us to see something quite ordinary in a completely new way.

A textbook example is the automotive industry that from its outset created value through volume production of a car – the value was in the car and what it did for you. The next stage of value creation was development of distribution, sales, services functions which, as the car itself became more of a commodity, assumed the greater proportion of the value created by the company. About 10 years ago GM claimed that more than 60% of the value they created was from services elements of their business.

Now GM claim that within the next 5 years they will be giving away the car and reaping the financial benefits from on-board transactions, advertising and benefits from Intelligent Transport Systems

Toyota, already behind one of the most successful websites in Japan, Gazoo.com, claim to be approaching the time when they are in the business of on-board computers, not cars. As they launch the Toyota Card for Toyota drivers – after sales, spare parts, trade-ins – your record as a customer and the service history of your car on the card - then why not Toyota Bank?

A second example is the Agri-chemical industry – a mature industry in which major players had worldwide dominance. The Agricultural chemicals industry was considered a sunset industry only a few years ago.

From mass destruction approaches through insecticides and pesticides - the next generation is genetics and the agri-chemical companies are reinventing themselves as geneticists. Intimate understanding of individual plant genes enables us to synthesise ever more targeted compounds attacking very specific cell functions in order to protect crops. Advanced genomics plus IT leads to far less toxic and far more effective pesticides.

It makes a sunset sector into a leading high tech sector.

These examples are illustrations of the movement from production of ‘things’... substances... to use and sale of ‘knowledge’. Most of the value of an aircraft is now tied up in the on-board avionics and electronics instead of the airframe... There are many more examples, and there are challenges – perhaps the future for the construction

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industry is in the advanced electronic and knowledge systems that could give us 'smart' buildings – the dinner cooked by your oven before you get home – that sort of thing.

Why are we seeing business pushing this new envelope? This emphasis on commercial leverage of knowledge and skills is not a fad or fashion – there are real and tough reasons why we cannot be in the business of making 'things'.

Perhaps the automotive industry has signed its own death warrant – the global car, shared technology developments, the same v8 engine in all v8 cars, Jaguar made by Ford. These have quickened the pace towards the car becoming a commodity and higher value needing to be found elsewhere in the deal to warrant profit margins.

Another reason why we must leverage knowledge is that in some Asian nations there is now a massive supply of low cost manufacturing, fed by never ending supplies of low cost labour and fuelled by over-investment in me-too industrial economies emulating the Japanese model. In several of these countries there is also little ability and endeavour to control and manage IP.

If you are a manufacturer it is the \$2 economy - \$2 shops abound and there is a very quick time line from the first fashion item and the copy's appearance in the shops. In electronics, for example, a radical innovation can become a commodity product in a matter of months

With the market as driver, costs have to be driven down quickly but customers are accepting absolutely no compromise on service. That is the new reality – low costs, low margins **and** high levels of customer service

There are other forces at work – environmental forces, the pressure of time, dematerialisation – because it saves costs initially and in handling, shipping, recycling...

And changes in consumer behaviours are astonishing. JIT, 24 hour, up with the latest, short fashion life – this is a temporal generation, driven by desires not needs. You can assume needs are already met.

If the market is driven by wants not needs, by personal calculations of what an individual wants rather than necessities, the market has no boundaries. It can explode exponentially.

We have devised business and technology systems that seem to offer unlimited ways to satisfy these wants.

These new consumers didn't come from nowhere – a significant shaper of their expectations is technology:

- *The telephone* - when we did Telstra 2000 futures study a few years ago we forecast 90% penetration of mobile phones by 2000 – we were certain but it was still a big number when we forecast it – and we did better than that and now Australians want WAP, SMS....

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- *The email* - stream of communications – like a daily conversation over any distance and irrespective of time zones, helps manage time, pushes out the 8 hour day – truth be known we probably now work longer and take more home, but it does beat waking up at 4am to make a business call overseas.
- *CNN* – another stream of communications – why did we think that the news only happened at 7pm on the ABC?
- *The internet* – any time, anywhere, anything – displace what had to be done between 9am and 5pm and let me do it anytime that suits me.

Changed consumer behaviour, technology and competitive pressures are forcing organisations to learn and innovate – and the theory tells us the result will be:

- Brain based versus command and control
- Able to hear the ideas of employees, suppliers and customers
- Able to anticipate what is on the horizon
- Part of a ‘system’ – the interrelating activities that make the whole thing succeed or fail

Perhaps what I have described here is the near future – the ‘US in ascendancy future’ – the future of wired magazine, Don Tapscott, Kevin Kelly and Thomas Friedman. But I can’t help myself...It is very difficult not to be excited by what the scientists are doing.

Recently I played with the heptic work bench at CSIRO’s Discovery Centre in Canberra. This is multimedia – virtual reality of sensory perceptions such as site, touch, weight, balance, force, 3 dimensions/depth of field. The development of this sort of technology has the potential to do heart operations without breaking open the human chest promising overwhelming benefits in terms of cost, health, time, etc. Also across distances – your heart operation done by a surgeon at his holiday house have appeal? This is remarkable stuff, but we shouldn’t be blindsided by the hype, nor ignorant of the implications for society.

What is fundamentally shifting is that the new rules are globally competitive, commercially oriented and it is on this base – the new and unique driving role of the market in bringing them about, that we maintain a failing hold on ethics, national, ethnic, cultural and social considerations, and we now enter one of the most important periods in our history

Science and technology can do wondrous things. Last year I met and talked with Dr Stuart Bunt, Uni of Western Australia – his area is neuroscience. His work is in the areas of medical imaging and he runs a neuroscience laboratory researching ways of repairing spinal cord injury –how to place nerve cells on the silicon chip. He is working at the leading edge of the future in biological sciences where scientists cease being *observers* of life and become *creators*.

Science can grow prosthetics, can make the spinal cord grow back. Scientists are no longer reading the genome, but changing and manipulating it. Tissue engineering is about

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organic replacements of tissue, growing tissue, replacing organs. This science has the potential to alter fundamentally our world.

- Cigarette burn in you fabric of your chair – it will grow back itself
- Worn out heart – grow another...
- A new youthful skin – easy – buy now, pay later.....
- A vision of near immortality? 200 years ok?

With these we can create self-replicating species. Add to this the potential capabilities of microelectronics, nanotechnology, robotics and there is the potential to create new beings with superior capabilities than humankind as we now know it.

Science fiction? Perhaps! Bill Joy co-founder of Sun Microsystems talks of robots, engineered organisms and nanobots sharing a dangerous amplifying factor – they can self replicate. In a considered and thoughtful piece on the Wired site, Bill follows a line of inquiry with leading scientists on the possibility of sentient robots and comes to the conclusion that they are a realistic and imminent scenario.

He suggests that there could be a supreme being created out of this science that is superior to humankind as we now know it – that the superior self-replicating race is technologically possible – and practically possible – in a world where scientists see themselves as creators of matter and in which there is this new and unique driving role of the market I spoke of earlier.

### **Ethics and Equity**

Even if you don't buy this as a possibility of unleashed and unconstrained human folly, there are other 'right now' examples that raise all sorts of questions about whether this is good for society and whether we have the capacity and institutions to answer the ethical and equity questions

My first example is 'pig parts'. We have had the debate as to whether we can accept growing and transplanting pig organs as replacement parts in human beings. We rejected the technology, however when I was involved in discussing and thinking about the possibilities for this application, one of my colleagues was very quiet. When quizzed he said – his wife was dying of cancer and he would do *anything* to save her. Working with the Office of Strategic Crime Assessment I found out that one particularly horrible crime in third world countries involves sacrifice, indeed murder of young humans, perhaps held for minor offences in jails, for the very lucrative trade in human parts for wealthy individuals. Pigs or humans? Your world view or that of someone in the third world?

A second example is a recent announcement by scientists that they can take the egg of a young women in her reproductive prime, keep it and when she has chosen her partner – regardless of her age, have the egg fertilised in a test tube and the foetus brought to term in the womb of a sow. Worrying? Yes but for some women who suffer early surgery this could be their only chance to have a child.

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What is ethical – to deny life to someone when it is possible to save that life; to give that opportunity only to someone who can pay for it; or to deny everybody. Whose ethics? Yours or mine?

The Genetically Modified Organisms debate has shown us that we do not have effective mechanisms to consider the implications; decisions are being taken by companies not countries. These are the issues demonstrated against at the World Economic Forum – they are issues of equity and social wellbeing.

Certainly self-replicating robots are a manifestation of humankind's search for brilliance in the application of science. Certainly use of animal parts and genetic engineering are brilliant science and offer targeted and effective interventions. The very nature of these technologies also means that there does not need to be large capital expenditures to invest in the factories for their creation – these are lab top technologies – perhaps between life as we know it and some new forms, there is only an 'oops' in the lab.

Perhaps Dr No will have his day – and Sean Connery will have to make use of some quick genetic makeovers to come to the world's rescue.

Whether we create constructive uses or destructive uses of our brilliant science and technology raises the question – 'Will we survive our technologies?'

In your lifetime, this has ceased to be science fiction.

In this era of the new and unique driving role of the market I spoke of earlier, linked to a US hegemony, where consumers have new power but choose not to exercise it in ensuring an effective political system, where we are unable to apply intelligent thought to complex problems.....where are the checks and balances and who is making sure we have the best voices at the decision table?

This gives us all, as privileged educated people very new, very important decisions to make and an important role in ensuring that we as a society make good, well informed, widely and intelligently discussed choices. We need to design and implement intelligent social systems to achieve this in an ongoing fashion

We can no longer hide behind the skirts of government and the church – they do not know any more than we do. We don't trust the politicians anyway and the Church is taking a battering for present and past sins.

Because nobody else is taking it, the responsibility for our future must rest with us.

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