

## PINE IN PERSPECTIVE

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*“An intelligent-looking little old man wanders down the Arbat and into the Prague to do some shopping; a quiet, subdued little man bothering nobody. “Aha”, he says to himself, “the sun is shining, the bloody sun’s grinning its head off again. They’ll be calling that a socialist achievement next.” He hates the sight of the sky, that Soviet sky. Even the green leaves look as if they’ve come off a May Day poster. There’s a fresh newspaper pinned to the wall. “What claptrap are they blathering now?” He knows its claptrap and it sickens him to read it, but still he stops and scans it, if only to feed his rage. “Aha, the harvest! Unprecedented, as usual, in record time, as usual. So we’ll be importing grain from Canada [as usual]...”* Vladimir Bukovsky: *To build a castle: my life as a dissenter*. Viking Press NY, 1979, p 72.

### HONEST ILLUSIONS

It is dangerous to believe one’s own propaganda. The incongruity of Napoleon’s troops in Moscow, encumbering their baggage-carts with booty for their mad career back to Paris... Or the claptrap of the Forest Industries Council *“that forestry could move from 4% of New Zealand’s GDP to >14% by 2025”* while our forests groan under the Sisyphean weight of low-value pine logs. Revisionists do not need to twist facts.

The simplicity of the original idea, of pine outgrowing everything and transformed by pruning, carried a sense of liberation, purposefully supported by Government. By the end (in the early 1980s) it had moved from honest hope to hubris, such that in their studies students at the School of Forestry were simulating internal rates of return of 12% for the Canterbury forests whereas 6% would be acceptable today – too many optimistic assumptions. That is not to deny the singular achievement of mass plantings, but the taste for pine is long gone.

In the opening-up of New Zealand in the early 1980s, viticulturalists pulled their commodity vines and replanted whilst, ironically, the NZ Forest Service, having advocated enthusiastically the production of clearwood, when transformed to a self-funding State Owned Enterprise drastically reduced the number of stands being pruned (down 46% in its first year of operation) and being thinned (down 20%) in order to generate a positive cash flow and provide a skinny dividend for Government. All past expansion had been paid for by Treasury and not out of income. The eventual sale of the state forests was a brilliant exercise in pass-the-parcel. A luckless private sector was left to endure a long, slow rot of shareholder value. Forestry shares have been held by perennial believers who hoped things

couldn't get any worse, and by big institutions that had to hold portfolios approximating to the 'index' and so were obliged to buy CHH and Fletchers. What remained were anorexic organizations, populated by managers who kept their jobs by being extremely – and commendably – cautious.

The refusal to doubt was self-inflicted. Descartes' favourite phrase *de omnibus dubitandum* (doubt everything) is not doubt for the sake of doubting but by way of doubt to reach down to what can be known with certainty – to explore and rebuild. The notable achievements were an enormous forest estate (even if we don't know what to do with it!) and – what was recognised at the time, but with awful timing – the advantages of forests and lumber in an energy-scarce insecure world. Today's certainties, of world oil production peaking and a poverty of cheap energy, will favour the forest grower for the foreseeable future.

#### NEW REALITIES

*“Three years ago, Tenon was a poorly capitalized, integrated Australasian-focused forest products company, with financial results largely determined by Asian market commodity log prices. Today, we are a financially strong wood products distribution-based business, focused on the large and high-value North American markets, and sourcing products for our customers not only from our own Taupo manufacturing operation but also from other producers in New Zealand, Brazil, Chile, China and the USA.”* And *“...Empire and AWM [American Wood Moulding] source the vast majority of their extremely wide product ranges from suppliers other than Tenon.”* Tenon Annual Report, 2005.

Tenon's future is as a distribution and warehousing operation in the US, with its NZ operations as an important supplier of radiata as a substitute for ponderosa pine in the U.S. for mouldings, millwork and joinery.

*“CHH is a family of some 17 different businesses built around wood-fibre manufacturing... ...subject to uncontrollable factors such as foreign exchange and freight rates.”* CHH Annual Report, 2004.

For a nation that sees its future in trade it is surprising how brittle and undeveloped are corporate strategies toward currency, energy and shipping.

#### MAGNIFICENT MEDIOCRITY

Like an indulged only child, radiata has fulfilled its potential without fulfilling the parents' dreams.

Radiata is a competent all-rounder – a bit like NZ cricket, not much good at batting, bowling and fielding. But they're OK, especially when they win. We are not alone. Sitka spruce in Britain is another example of 'product push' with low-valued pallets, packaging and fencing absorbing two-thirds of production, so we haven't done as badly as some. Radiata is an unexceptional wood and even exports of

structural lumber to Australia are increasingly problematic. There is nothing wrong with mediocrity. Indeed a nation's health is not judged by its Olympic athletes, nor is it judged by health of the majority of its citizenry but by the draining cost of its depressed and obese. NZ forestry was given an unambiguous warning (Table 1), that it ignored – perhaps because of a naff belief that only clear outerwood mattered (Figure 1). Today radiata pine breeding involves a paranoid culling of the truly awful. Even so, if we want elite trees then we should look to other species. A failing of NZ forestry has been the unwillingness to diversify – its compulsive betting on pine – over-investing in an uninspiring under-achiever. New Zealand has been too quick to celebrate the perceived success of yesterday's trite answers.

Table 1. Grade recovery for *Pinus radiata*, compared to those from traditional forest practices in Canada and Sweden (van Wyk, 1990): unimproved pine generates a huge amount of low grade wood. Upgrading that material is the immediate challenge, but it is also a distraction.

	Canada	Sweden	NZ
Finishing (clears, dressings, cuttings)	35%	30%	10%
Construction grades	50%	40%	40%
Industrial/utility	15%	30%	50%

With intensive silviculture the proportion of finishing could rise to between 15 and 20% early in the next decade – but it won't!

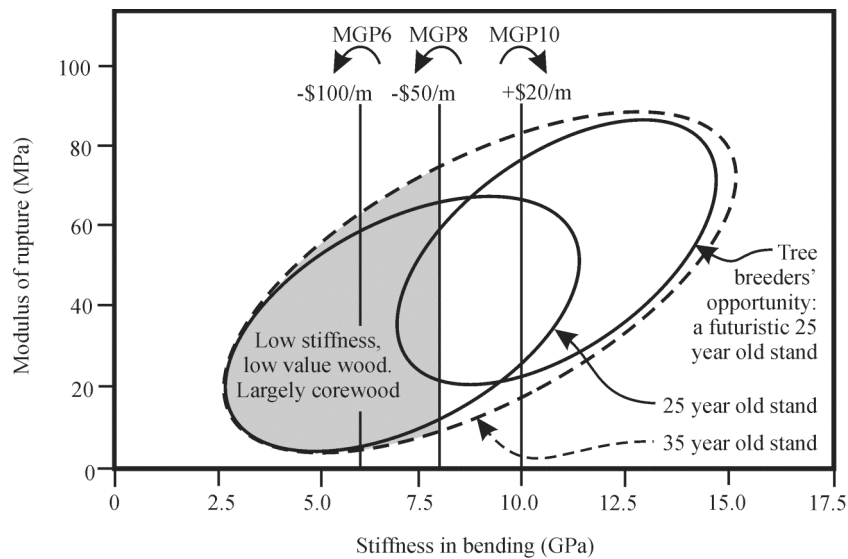


Figure 1. Wood quality envelope for *Pinus radiata*. Unimproved pine has a surfeit of low quality wood, but note the threshold has been set at 8 GPa. The failure to meet threshold values devastates profits. The area within the envelope is not equally populated: the right hand side (or top-right quadrant) is much less strongly represented. Tree breeding has the realistic potential to transform profitability, as would serious investment in superior species.

New opportunities are rarely embraced by old societies, which are paralysed by the weight of distant success. Don't expect bleeding-edge forestry companies to reinvest their unassuming profits in new forest developments. *"It must be remembered that there is nothing more difficult to plan, more doubtful of success, nor more dangerous to manage, than the creation of a new system. For the initiator has the enmity of all who would profit by the preservation of the old institutions and merely lukewarm defenders in those who would gain by the new ones"* (Niccolò Machiavelli). However, such discontinuities are not breaks with the past but the logical consequences of preceding events. The changes that are demanded will come from those most resilient to past failures – the small grower with land and labour; and regional or local government forest owners distant from the Central North Island.

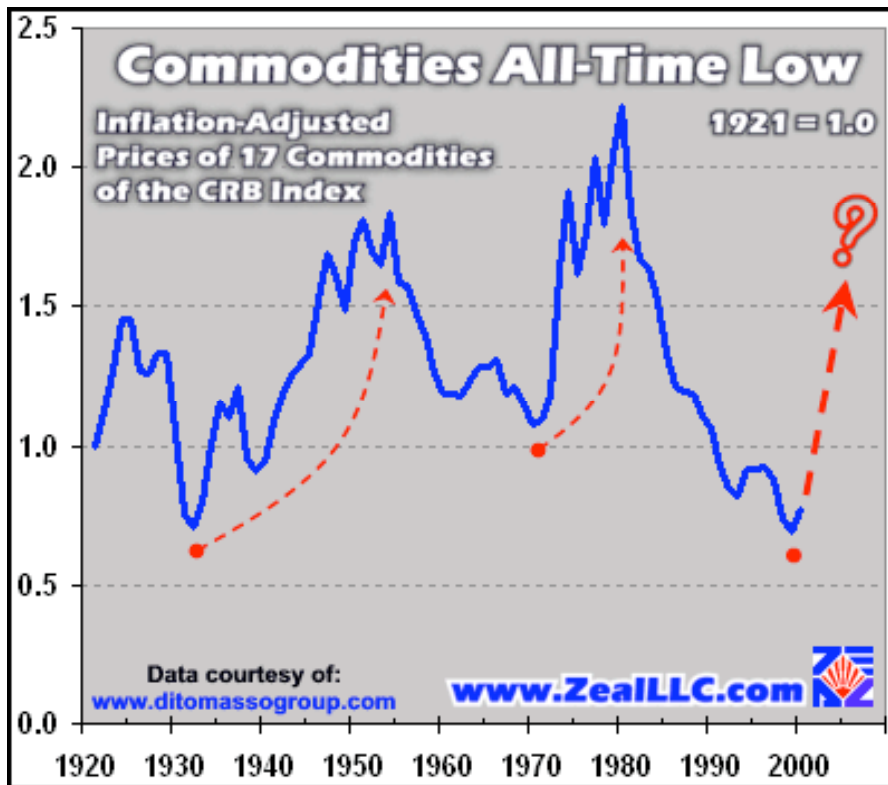


Figure 2. One of two well respected, but differently weighted indices of commodity prices. Both show the same 'big picture'. This inflation-adjusted, *equally-weighted* grouping of markets shows occasional and dramatic counter-trends when prices can double. Both indices are grossly underweight on oil. The equally-weighted commodities are: cocoa, coffee, sugar, orange juice; corn, soybeans, wheat; cattle, hogs; cotton, copper; platinum, silver, gold; crude oil, natural gas, heating oil.

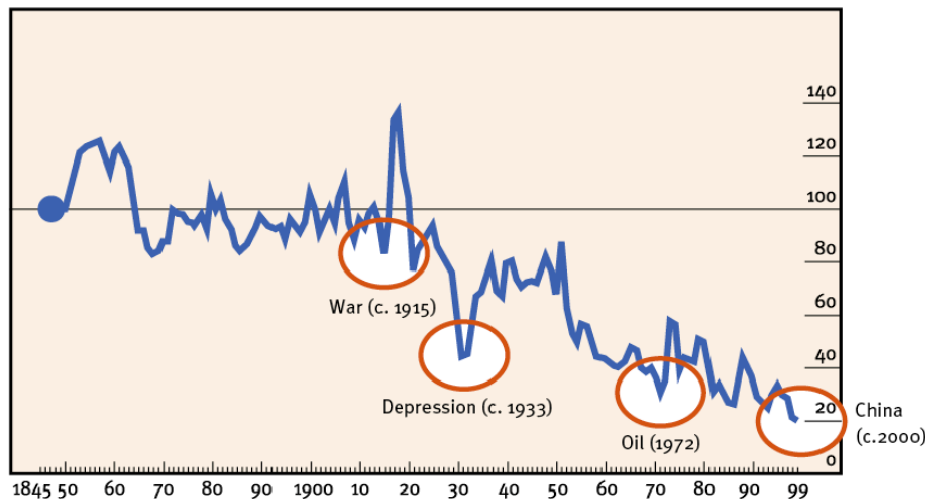


Figure 3. *The Economist* commodity-price index, in real dollar terms adjusted by US GDP deflator (1845-1850 = 100). The long-term trend is down (inflation adjusted). Superimposed on this are significant periods – 10-20 years – when prices go counter-trend.

### MISPRICING THE FUTURE

A key to understanding radiata pine, and the forest products industry generally, lies in the context of commodities – industrial commodities and agricultural commodities. Both Figures 2 and 3 were published in early 2000 and from these one could make three suppositions: (i) that it is better to produce what Asia wants than to compete over what it produces, (ii) that all commodities are due for sustained resurgence, and (iii) that includes forest products and NZ forestry in particular.

Since then industrial commodities have done extremely well. Cash flows for metals and oils are at their highest in decades; but companies find it cheaper and preferable to obtain new reserves by takeovers rather than by looking for more in remote and politically insecure parts of the world.

Unfortunately most agriculturals have fared indifferently, and for NZ forestry such optimism proved to be completely wrong. Descartes' axiom "*De omnibus dubitandum*" is there to bite you! Current world subsidies for agriculture of about \$300 billion may explain some of the soggy in soft commodities.

First some history: the 1970s, when we fell in love with pine, was a time of inflation and anticipated resource shortages. Gloomy predictions by the Club of Rome drove massive over-investment. In 1982 commodity stocks were over-represented on the New York S&P index, at 36% by value. At their nadir in 2000 they were under-represented at 6%. Instead of shortages the world got two decades of ever-cheaper food, fuel, lumber, metals, paper and plastics – exaggerated by the peace dividend as, for example, gigantic Soviet era mines dumped their military

stockpiles on world markets. One would have been nuts to build a new refinery, open a new mine or plant a new forest. Few did. Industry consolidation replaced capital investment as the path to survival. In this strategy forestry was not alone.

Today it is hard to find an industrial commodity that isn't in tight supply and at much higher price. The industrial resource sector is at the beginning of sustained secular growth eclipsing even that of the early 1950s, yet disillusionment – and rising demand – guarantee that the good times will last a while. Across commodities, there is no rush to invest. Foresters – like miners – know what failure *feels* like.

Oils and mining stocks have reserves like forestry, and for oils with few exceptions their reserve life indices are in the low teens (and have declined every year for the last 7 years). As with forests, analysts attach little value to long-life reserves such that you would be crazy to go out and find a resource, prove it up by drilling, go through all the regulatory hurdles to develop and bring it into production – it is a 10 year development cycle during which time only costs appear in the company ledger. It is wiser to buy existing capacity by way of a takeover. Or even – like BP and RioTinto – return capital to shareholders rather than try to find new resources.

The mispricing of industrial commodities – despite oil moving from \$10/barrel to \$60; copper 60c/lb to \$2; gold \$260/oz to \$520; uranium \$8/lb to \$36 – has contributed to the sudden wealth of producers and is why Asian interests are keen to participate in both sides of the trade, scouring the world for investments, partners and long-term contracts. China's ambition must be to manage overseas supply lines, and in the long-term to hold down prices. The failed CITIC–Fletchers partnership offered a NZ producer a place in a dominant supply chain: in other industries the connections are being made or deepened, e.g. Codelco in Chile and Campanhia Vale do Rio Doce (CVRD) in Brazil. Sadly, our absence is not good for NZ Forestry Inc.

The near-impossibility of getting quick approval to drill for oil, or open a mine, or build a refinery means that existing companies benefit because there is limited opportunities for new entrants – and strong competition from national entities in CNOOC and China Minmetals *etc.* to gain control of resources.

Although the West is de-industrializing (akin to the decline in agriculture in the 20<sup>th</sup> century?), it is a misconception that Asia is merely displacing production elsewhere. The rising price of industrial commodities is driven by massive infrastructure investments and housing for an emerging middle class throughout Asia, and by their people's desire for consumer goods. The boon in commodity prices is squeezing Asia, which pays the full US dollar increase for oil, metals and wood whilst being unable to pass on those price increases in finished goods – because of intense local and intra-regional competition. China imports commodity inflation and exports finished goods, disinflation and deflation: one up for Wal-Mart and general prosperity! For the next few years this duality of price settings ought to be great for NZ forestry. We are on the right side of the new rule: to produce what Asia needs to buy rather than what Asia produces. There is more competition in semiconductors and computers – threatening shrinking profits – than there is in commodities.

Everywhere production and services are being outsourced to China and India with these countries growing at average compounded rates of 9% and 7%

respectively. This growth is a mix of exports, infrastructure and internal consumption. In developed countries marginal consumption is largely partying – video games, gambling, travel – decorating and manicuring the house and garden, and health care. In developing countries marginal consumption is a home with basic appliances and air-conditioning, electricity and plumbing, and later the family car: anecdotally this equates to 180 kg of copper/home and 20 kg/car. “...in these two countries whose combined population is 2.3 billion there could be more than 300 million new middle class inhabitants by 2015. That is something of the order of four times the size of the new middle class formed in North America, Europe and Japan between 1948 and 1963 – the time of the greatest mining boom in history.” Don Coxe, *Footprints in the sands of time*; and *little footprints of fear*, Harris Nesbit, 2005. Later this century GDP of these two countries will exceed that of the rest of the world.

Thus, oil is a bet on the global economy; steel sustains capex and infrastructure development in China and India; copper is a bet on the newly emerging lower middle-classes of China and India; gold is a bet on a falling US dollar. What is lumber a bet on? On multiple-home ownership in the demographically ageing First World? On a low-cost, disaster-proofed 100 square metre dream home, so offering a decent life in Asia? Or... what (any ideas)? Whatever its uncertain market, unlike metals and oils, it like the soft commodities is unconstrained by availability and production bottlenecks.

Is NZ forestry Cinderella, doomed to miss the party? Forests differ from industrial commodities in that abundant spare capacity can cool prices. There is no real shortage of timber. Forests are part reserves part inventory meaning that demand can be met rapidly and opportunistically any time anywhere from fragmented owners throughout the world.

Three other hurdles that NZ forestry faces - exchange rate, transport and energy costs - are inter-related.

The high NZ dollar has taken much of the benefits that would have accrued to forest exporters and redistributed them to provide a comfortable cushion for consumers and importers. Forestry might recover at 60c exchange rate, less so the Labour Government!

Log freight costs are likely to remain high for the foreseeable future because of strong demand for bulk carriers. Many were built in the early 1980s in response to the last commodity boom and are due for decommissioning – at the turn of the century a third of bulk shipping was more than 20 years old. Shipping and shipbuilding have not been stellar businesses in the last decade and these industries need higher margins and need to pass on higher material costs.

The failure to address rising energy costs has been a lost opportunity. Richard Branson (August 2005) is looking to invest in a new refinery to cover the ‘crack spread’, as well as in exploration and production: “*Virgin Oil came up in the last few months, when oil prices went through the roof. A lot of people hedge products, but hedging only works if oil prices go up and down. So my thought was: Let's hedge in the very business that is damaging us so much. If oil prices collapse, then Virgin Oil's exploration won't go so well, but we'll be compensated by the profits we get from our various airlines. If they go the other way, the oil-exploration and refinery*

*business will be fine. It's quite a good hedge. We would almost rather damage the oil price and see it come down."*

Whether or not oil is supply constrained, the world is definitely at the limits of production for light, sweet oil. Most refineries run on traditional Brent, Saudi and Texan light, sweet (< 1% sulphur) oils. However, any further supplies will be heavy and sour. Those few refineries that are able to process these heavy, sour crudes make their profits on the 'crack spread' (there is dim parallel between buying box lumber and finger-jointing rather than buying clearwood).

Last August Pierre Lassonde, CEO Newmont, reviewed their strategy. *"Eighteen months ago we took the view that oil would go past \$60 and stay there for ten years. We asked how to insulate Newmont from these high prices. We burn three million barrels a year, which represents about 20% of our production costs. We elected to hedge by purchasing 7% of Canadian Oil Sands. Their reserves were valued at \$26/barrel. At \$50/barrel oil, we anticipate a dividend of about \$10/share; at \$65/barrel about \$14/share. The dividends will cover all increases in our oil-related production costs, providing us with a hedge for the next 50 years, because their reserve will last that long. We've taken very aggressive action to hedge our long-term operations against the adverse cost impacts of rising oil prices"*.

Did CHH/IP or Fletchers fail from lack of investment or for a more fundamental reason? There is a smorgasbord of business models: conglomerates, vertical integration, a functional business model *etc.* ... and a synthetic or hedged company with business security through energy, or shipping? That policy would be more secure than investing in further wood processing plant. Consider CVRD with its own hydropower, forests, mills, rail and port infrastructure to sustain its iron ore business. Such hedges provide a long time horizon that is lacking in a currency hedge.

It is not too late to implement such a strategy. The conservatism – or negativism – of CEOs in oil and mining is palpable. To be fair, the largest western corporations have little room to manoeuvre and few opportunities for company-making strategic investments: for Big Oil these have been seen to lie in Angola, Russia and Venezuela. No wonder they are cautious. A further requirement has been that new investments be profitable at \$25-35 a barrel of oil or \$0.80-1.00/lb copper over the full 3-4-5 year business cycle (the little blips on the declining trend in Figure 3). They do not recognize a new paradigm ('this time it is different'). Big Oil has a \$100 billion in cash earning 4% - which screws their profitability. BP expects the price of oil to fall, but even if BP didn't BP can't spend faster than BP can spend well. The one exception is BHP Billiton with its purchase of WMC in Australia last year.

'This time it is different' does not mean that the business cycle which is due to turn down in 2006 will be avoided, merely that China and India might grow more slowly at 4-5% for a year or two.

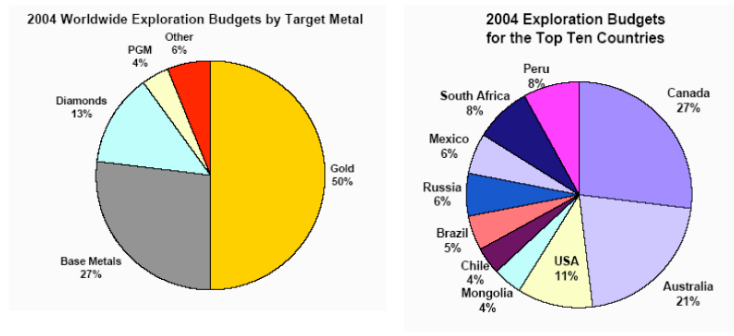
While it is not too late to implement such a strategy this won't happen in New Zealand because forestry is a branch office affair.

All is not lost. There is a hopeful sign – a 'get out of jail free' card – in that the industrial resource boon should lift other ships. One of the largest exports from the U.S. to Asia is scrap – metals, minerals and recovered paper. Some 13.4 (net) out of

49.2 million tons of recovered paper were exported in 2004, with 8.4 million tons going to Asia including 5.9 million tons to China. Effectively Asia is buying energy and reduced pollution. This trade implies that stock and scrap inventories will no longer provide a supply cushion.

### SUPERIOR SPECIES

*'Forestry will thrive as long as it is not dependent on long-transport distances. We'll grow a much wider variety of higher-quality timbers, which can be sustainably managed and don't need treatment. Wood wastes and low-quality fast-grown logs will become an important fuel source for industry and transport.'* The State of the Planet speech by Jeanette Fitzsimons (Waiheke Speech 16/1/05).



SOURCE: World Exploration trends, Metals Economics Group

Figure 4. There are two interesting features. (i) High-value metals get the exploration budgets, and (ii) Exploration is largely confined to safe and stable parts of the world.

The oil crises of the 1970s arose from political events. You can negotiate with unpleasant politicians, but you cannot bribe or blockage Planet Earth. Future shortages of cheap oil, metals and fibres will be a consequence of geology and soils. For example, the world's most profitable copper mines average less than 1% copper and require gigantic, energy-intensive, oil-hungry machinery. Even recycling the leftovers of industrial civilization requires cheap energy.

Biomass – a good call by the Greens – to produce biogas, methanol or electricity from biomass avoids the need to export even more logs or to increase production of energy-intensive mechanical pulp. The export of aluminium, mechanical pulp and recovered paper is selling the purest of all commodities – electricity – and such businesses ought to be evaluated on the basis of their power-supply contracts or, at least, the electricity 'stored' in their products. Furthermore, biomass offers a good fit with pulp and paper – the best small logs for biomass conversion are the worst logs for chemical and mechanical pulping, and *vice versa*.

Higher-quality timbers – another call by the Greens. There isn't a single forest company in New Zealand today that would make a serious investment in planting high-quality timbers. In looking for analogies, Figure 4 is the most provocative.

With metals the greatest investment occurs in secure parts of the world and is predominantly looking for gold. If one were to revisit the early 1980s with the knowledge of today, it is obvious that New Zealand would not have continued expanding the pine resource. However, it is unclear which species should be the equivalent of *Pinot noir* or the precious metals. Any species to be trialled today will be marketed in a world with 500 million, probably many more, new middle class Asians – at a time when the GDP of China and India will be greater than that of the rest of the world. NZ forestry can hardly be more complacent if it expects to remain unchanged by its encounter with the ambitions of the rest of the world.

The earliest European visitors to China were all agreed that it was the richest country in the world: that what was described was not a Third World, but an alternative First World. The following is a paraphrase of Sam Adshead's commentary of China (Material culture in Europe and China, 1400-1800: the rise of consumerism, St Martin Press, 1997). *...For the Chinese, clothing and housing formed a continuum. For Europeans, they formed a polarity, especially when fashion began to distinguish indoors and outdoors, wear and overwear. If textiles were a bigger rival to bricks and mortar in China than in Europe, so too was furniture. In the sixteenth century, European furniture was still comparatively primitive and cumbersome. In China, on the other hand, the period 1550 to 1735 has been described as the golden age of classical furniture. Light and elegant, it made use of new, imported tropical hardwoods, notably the huang-hua li, Dalburgia, from Vietnam and Hainan. Craig Clunas, in his account of Chinese connoisseurship in this period, notes that, 'fine clothes and fine furniture were an important part of the presentation of an upper-class persona of the world.' Chinese furniture of this period anticipated not only Chippendale, Hepplewhite and Sheraton in its sophistication, but Maples, Heals and Habitat in its functionalism. In China, furniture was an alternative to fabric. In Europe, the priority of masonry had been set before quality furniture appeared to rival it.*

Bascuñán and Lasserre, two Chileans at the University of Canterbury, have shown that where pine trees are planted widely apart (so typical of current forest management), and especially in the deep edge/fringe around the edges of woodlots, the timber produced is significantly less stiff and stable (sub-mediocre mediocrity) – probably a response to wind-sway. Farm foresters, with their shelterbelts and pocket-plantings, are the most vulnerable. Fortunately MAF statistics show that pine is no longer so pre-eminent in new plantings and the small grower is trying to diversify: a hard task when only a trivial percentage of forest-related research funds are spent on anything but pine.

Today the tragedy is that the mediocrity of pine and the sheer quantity of that resource prejudice the imagination to new ideas. The Black Caps don't stuff the team with all rounders and neither should NZ forestry. Currently we have pine, more pine and still more pine. Douglas fir, the only other widely planted species (a mere 6% of our forests), is pine's half-brother – too similar to be considered really different. Although it is unquestionably stronger and more durable, the leaky homes review excluded untreated but naturally durable fir from framing in the critical perimeter walls. It couldn't differentiate itself even on the basis of durability which,

naïvely I thought was its strong point! A realistic goal of a proposed rebalancing of forestry might result in a split 70:30 for pines/Douglas fir vs. superior species.

The pine industry has to put aside aspirations to glamour rags, acknowledge past failure and reconcile itself to a life of mediocrity: this is not a gratuitous insult: remember mediocrity is the norm. Canterbury has argued long the mundane merits of a very high volume straight-through chop shop for knotty logs: a low-cost scragg mill with circular saws, unrestrained continuous dryers producing modular, standardized, edge-glued, laminated clearwood/fingerjointed panels – with serious attention to odour and colour, both white wood and textured lacquered wood.

In the 1970s ‘higher-quality timbers’ were kept on a short leash. Scientists at the Forest Research Institute and Hort. Research made a beginning at diversification but industry had its hopes on pine. In reality many candidates were ‘superior species’ which might have driven NZ forestry where no pine has been before.

Management at the Forest Research Institute has offered – at best – half-hearted support for continuing such research. There is no urgency, no ownership except by enthusiasts. There is a daunting indifference to the need to find and deploy select species – a disregard of necessity – by industry, research funders, and government. It is painful to admit that the Green Party’s vision for rebalancing forestry is more coherent than any non-strategy within the sector itself.

Fortunately short-term the prospects for NZ forestry are good. The industrial commodity boon offers New Zealand some 10-15 fat years before Asia sorts its resource supply lines and imposes a Wal-Mart like discipline on producers. That is the window of opportunity during which to find and develop those superior species that will ease NZ forestry during the downward leg of the next, inevitable, commodity cycle.

The small grower has provided around half a million hectares of new forest plantings that carry Kyoto carbon credits so contributing to the Government’s Kyoto billion-dollar (?) windfall. New Zealand needs a balanced forestry portfolio, with say 30% of the resource in superior species. New Zealand has failed to progress any hardwoods – eucalypts (quality sawlogs in 12-15 years) or the New Zealand red and silver beeches (denser, stiffer, stronger and more beautiful) – and has done little for the cypresses and redwoods (light, stable and durable), where the research has been too slow and miserly. Having failed to anticipate the limitations of pine – and *all* species have their limitations – it has been too easy to reel off the limitations in specific eucalypts, cypresses... while neglecting to acknowledge that the shortfalls of one are complemented by the virtues of the others. It has taken 40 years to crystallise the opportunities and limitations of pine. With today’s science – funded generously by a smidgeon of those appropriated carbon credits – within 10 years New Zealand would be able to select, transform and start planting a diverse forest team of exciting players to work alongside the grunting pine pack. Even ‘pine tree Mead’ might give it grudging approval.

It is time to stop over investing in an uninspiring under achiever. But if we did, those Greens would be insufferable!

Presented at the University of Canterbury’s Wood Technology Research Centre Workshop 2<sup>nd</sup> February 2006.