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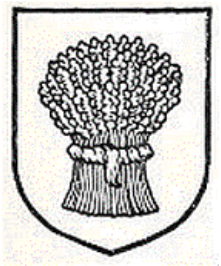

HALLGARTEN & COMPANY

Think Piece

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Super Cycle?
Or the Endgame of Cheap?

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Or the *Endgame of Cheap*?

- + Sustained recovery in base metals prices is providing a Spring-like moment after 30 years of marginal profitability from around 1970 until the first years of the new millennium
- + The recovery has stood up well to the assault of 2008 when the global financial meltdown dragged many metals back to below cost levels for miners, with most bouncing back to attractive levels
- + The extended upswing is enabling base metals projects to evolve through the cycle of discovery/financing/construction that was perpetually cut short in recent decades by downswings in metals prices and thus the market's mood
- ✘ Talk of a "Super Cycle" beginning in 2003 implies a somewhat longer boom than seen in recent times but still would seem to hint at an eventual downturn
- ✘ The supply situation has deteriorated in some metals to a level at which some metals may be "not available at any price"
- ✘ The financial sector in the US still sees mining as a passing fad as the number of listed stocks remains low.
- + Its all a matter of perspective as the transitory aspect of metals history may be the "down" period from 1970-2003 rather than the "up" period for most of 1850 until the current day.

Endgames

Back in late 2005, we were asked by the esteemed journal, The Banker, to write an op-ed piece and we chose the topic "China and the End of Cheap." Memory of this came back to us recently with talk rising about how production costs and wages were rising in China prompting manufacturers to shift production elsewhere (with the dilemma of where else to shift that was so absolutely cheap and yet could get the task done). We had posited in our note that China would follow the path of Japan, Korea and Taiwan in ceasing to be the "cheap and cheerful" production sites for the world's knick-knacks (and the object we used to illustrate this was the price trajectory of teddy bears).

Since we wrote that piece a new factor has been introduced in the form of the soaring shipping costs in 2008 that focused minds on the disadvantages of such distant sources in the age of *Just in Time*[f1]. Now we are back with soaring oil prices in 2011; and the word "near-shoring" has been invented to shorten supply lines and it telegraphs a warning to China that it is not the only fish in the sea. Alas, though it is pretty much the only whale in the "cheap and cheerful" category. It would take more than a few countries like Bangladesh or Vietnam to make up for China's getting too expensive or too ornery to deal with. Whatever pans out, it is almost certain that the price of the world's cheap goods is going to rise, reversing the deflationary trend that the flood of cheap products has brought over recent decades. We are nearing the *Endgame of Cheap*.

Implication for Commodities

There is a relevance of this Endgame to the metals space, particularly the base metals. While the public rarely thinks of such matters (and seemingly politicians overlook it, too) the base metals space has laboured until recent years in an essentially thankless and profitless (or thin at best) environment since the late 1960s. Outside observers rhapsodize about the "boom" in base metals, but by historical standards (and we reach back here through all the years since the 1850s and the onset of the Industrial Revolution) we hold to the opinion that the base metals are still at giveaway prices. The solution that mining companies had to the relentless downward pressure on prices until around 2003 was to exploit only the biggest mines and do so by brutal high-grading. In the heyday of the 1890s though there were no mega-mines and yet metals prices were good enough to support tiny mines clinging to the sides of the Andes, far-flung operations in the Australian and Canadian wilderness (when it was really wilderness), one-horse mining towns in the American West, and outposts in darkest Congo.

Enhanced productivity and changes in technology meant the West didn't need the same amount of base metals per capita as it did in the Golden Age before the First World War. But then, in the 1945-1970 period, the West went on an infrastructure binge that ran into a brick wall with the 1970 slump (itself linked to the selective rise of one hitherto undervalued commodity – oil), and spending on bridges and freeways dropped precipitously leaving us with the very dated and worn infrastructure of current times (the most typical example being the bridge that collapsed in downtown Minneapolis several years ago). [f2]This story is repeated on a larger-scale across the Western World.

The reasons for Western demand decline do not matter much anymore as prices have moved up, and this is widely attributed to China alone. Some are happy to call it a "supercycle," imagining that it is a trend that will last longer than past smaller cycles (read boom and busts) , and believe at some point the "Supercycle" will trend down.

Going the Extra Light-Year

One of the favorite themes of science fiction films (e.g. Avatar, the Alien series, to name but two) in recent decades has been grotty planets in nether regions of the universe where mining operations are carried out because Earth is either mined out or can't be mined any more (NIMBYs rule!). This is an interesting scenario, which has not been regarded as outlandish (at least from the point of view that we might eventually run out of metals on the Mother Planet). This extra-terrestrial mining phase may happen at some point several hundred years from now when even Galore Creek and KSM have become viable and been mined out! The need to travel light years in order to obtain some copper, for instance, may make some of the projects in the higher altitudes of Chile seem attractive.

Phases

Anthropologists "get" mining. They, after all, have pegged the moment that cavemen transitioned from the Stone Age to the Bronze Age as a key leap for civilisation. We might also call this the dawn of mining. From that time on, mankind has scrabbled in the dirt to find the means to better itself. Mining scarcely evolved much over the subsequent millennia until the Californian and Australian gold rushes of the 1850s, which happened to coincide with the most expansive phase of the Industrial Revolution when demand for metals increased exponentially. Mining technology advanced from the "Paint Your Wagon" methods to the ever-deeper gold mines of the Rand and the extensive coal mines of Britain by the 1890s. The key difference was pump and lifting technologies that allowed mining at depth. The cheap

labour of artisanal and cooperative mining (with its low tech and thus low capital nature) of the 1850s was replaced by more expensive skilled labour and capital-intensive operating styles by the 1890s.

From this point, big scooping machinery and improved haulage (i.e. trucks) were added to the mix enabling the development of open pit mining to scales hitherto unseen. This is where the Zambian Copper Belt, the American West and the early mines of Northern Chile and the Dawn of the *Age of Megamines* [f3]could be deemed to have started. However the massive pits in Northern Rhodesia (now Zambia) and the Belgian Congo were unique until after the Second World War. At that time in Australia, the largest mines (at Broken Hill) were still underground. Moving mountains of iron ore only began in the 1960s. It was this transition to mass tonnage operations that resulted in the start of the *Age of Cheap* in base and bulk metals.

The unremitting eighty good years from the 1850s to the 1930s were sustained first by the Industrial Revolution, followed by World War I, and then the US boom of the 1920s. The 1930s not only brought sharply lower demand, but the precious metals space was hemmed in by the Gold Standard, making gold largely uneconomic to produce. Major and minor mines fell victim to the slump in the '30s. The Second World War then brought a surge in demand that followed through into reconstruction and the post-war economic boom of the 1950s and '60s. Megamines became the norm rather than the exception. Most bulk commodities came from bulk mines. This period was the high tide of mineral commodities in our time (though not for precious metals which remained locked in the 1930s price regime of the untenable Gold Standard until the 1970s).

Now we arrive at the sad and delusional[f4] part of the story. The 1970s became a commodity disaster zone on a global scale. We should clarify. We still hear investors talk of the price rises of the 1970s for metals, but they fail to realize that not only were these price increases in many cases no better than the inflation rate, but they took place in a scenario of soft industrial demand and stagflation. The economic boom had ended pretty much everywhere except in a couple of Asian nations (Taiwan and Korea) that were still catching up to the pack. The exigencies of the 1970s led to the on again/off again economic mood swings of the 1980s. The 1990s were much better for the global economy with China finding its feet. However, we can see in hindsight that China came into the global mining mix as a spoiler and loss leader more than anything else.

If the 1970s were delusional on commodity price rises, then the last few years of the 1990s were the nadir for commodities. The 1970s had at least seen the world's oil producers finally get a fair price for their product. It should also be pointed out that the last years of the 1990s were, not uncoincidentally, concurrent with the *Monopoly* money era of the US economy and the Tech Bubble. The true moment of horror was when the US beggared the commodity producers as oil dropped to $13 per barrel and most other commodities were at levels that were barely profitable. This translated into minimal profits from long-term high grading, which meant that the financing environment was impossible, and thus many megamines were depleting rapidly.

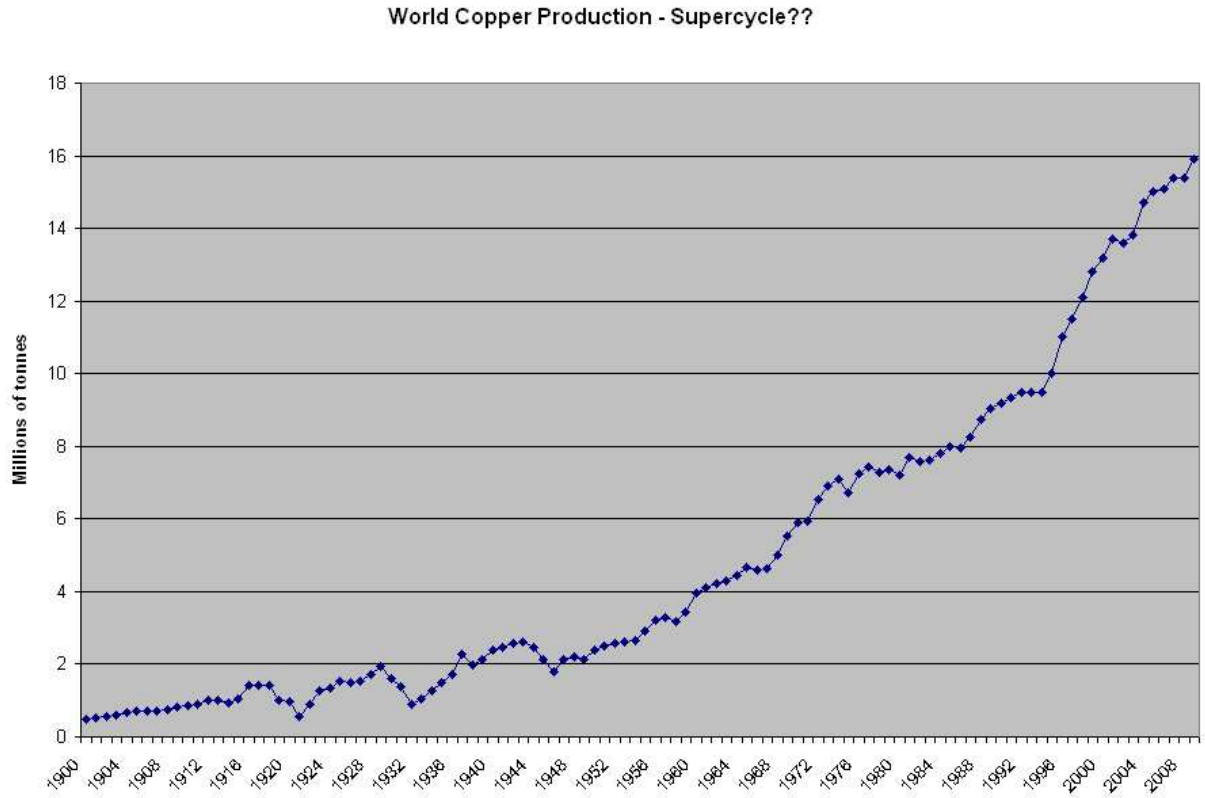
This drastic moment was the last gasp for the mining down cycle since the early 70s. It had taken as it victims virtually all the listed US base metals miners (and if you need reminding – AMAX, Cyprus, Magma Copper, Utah Corp, Kennecott, Anaconda, St Joe, Asarco, etc) and led to the closure of virtually every megamine in the US as well as the vast majority of smaller mines.

As tumbleweeds blew across this scorched earth in the early years of the new millennia with the global economy again in the dumpster, metals started a rebound. This rebound had its only setback in 2008 but to varying degrees this setback was shrugged off. The new players in the mix during this period were hedge funds which pumped Nickel, Zinc and Uranium in turn to unsustainable levels and then let them slump.

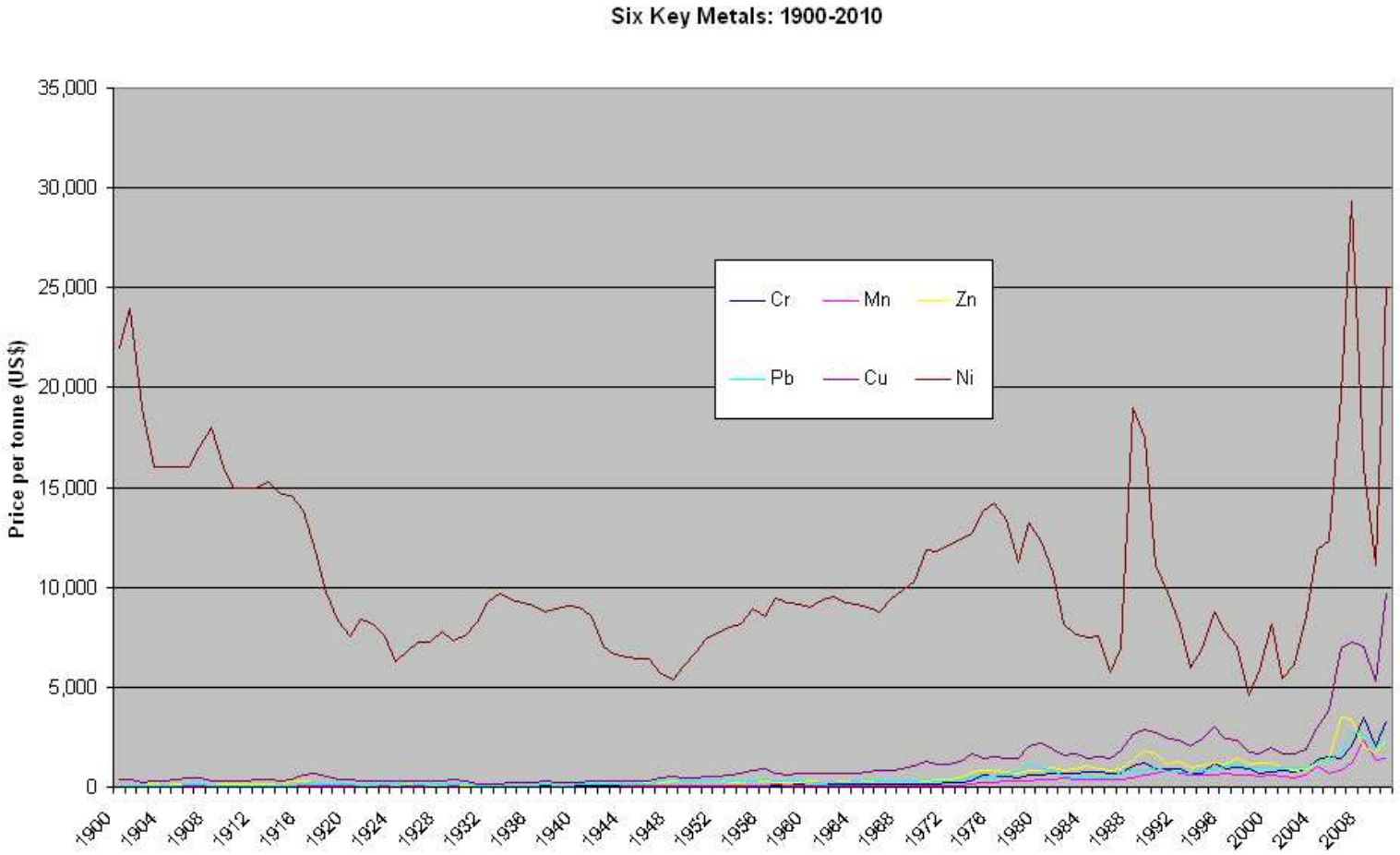
Those using the term *supercycle* for the metals uplift over the last eight years might be excused, for their terminology does show various ups and down in fortunes that look like smaller cycles. However, the price of metals has not necessarily reflected the underlying economic activity of the times. It is hard to think of a more ebullient moment than the late 1990s, and yet that was a dire time for metals. And while the 1970s saw a steep rise in metals prices in the generalized inflation of those times, the global economy was suffering from economic stagnation for most of that decade.

Super Cycles

Let's start by some narrowing down. The word "supercycle" is thrown around more by those who have just arrived on the minerals scene than those who have been around the block a few times. Let's look at the world copper production chart below:



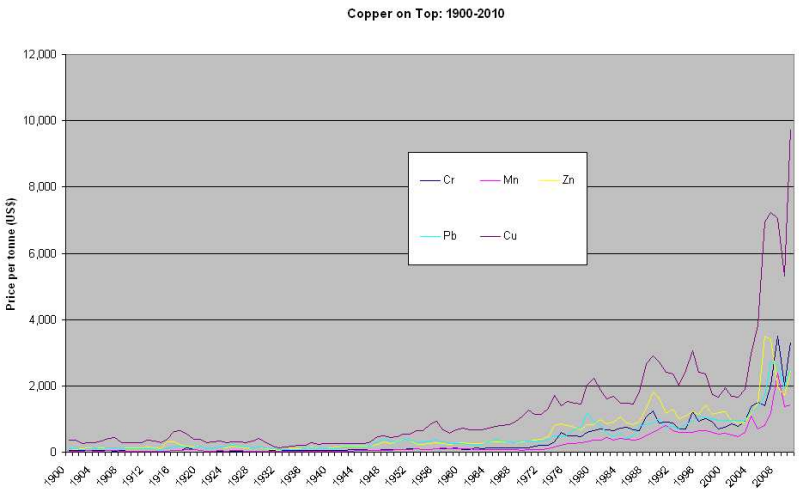
If we have been in a "supercycle" since 2003, then why does the steepest rise in production begin in 1998? And where is the "non-supercycle" downturn? How was 1998 a low point for anything about copper (except price)? In reality, pundits are talking about a *price* supercycle not a *production* or *demand* supercycle.


Six Key Metals: 1900-2010
Price per tonne (US$)
35,000
30,000
25,000
20,000
15,000
10,000
5,000
0
Cr
Mn
Zn
Pb
Cu
Ni
1900
1904
1908
1912
1916
1920
1924
1928
1932
1936
1940
1944
1948
1952
1956
1960
1964
1968
1972
1976
1980
1984
1988
1992
1996
2000
2004
2008

The only downturns of note that we can see were after the First World War, during the Depression and after the Second World War, with a couple of downticks in the late 1970s and mid-1980s. The Super Cycle is not from 2003 until now. It is from 1850 until now. The anomaly is that prices have been at their weakest at times that were not necessarily the times of lowest demand.

Our chart on the preceding page, based upon metals prices from the USGS database, shows the prices of six key industrial metals from 1900 until 2010 (with the steep down-dip in 2008 followed by the steep rebound in most, but not all).

Nickel (Ni) is the outlier here (as it was very much an exotic mineral in 1900) much to our surprise and had very small production (9,200 tpas then versus 1.4mn tpa now) and a very high price ($22,000 per tonne) back at the start of the series. As nickel became less scarce it inevitably declined in price but was still able to provide a wild ride with boom days recurring during the late 1960s and some severe price spikes. This is very much a metal that has been dominated in recent decades by megamines, with more coming down the pike (Ambartovy and Goro) and seems destined to remain that way (for instance if the Duluth Complex ever escaped the political doldrums). These mines cost so much to build that they are few and far between and by a Darwinian process seem to succeed each other as masters of the nickel universe. Where they overlap in their lifecycles there are price tumbles, and when one is in decline another arrives to replace it; and when that happens, the prices spike. Such is life in nickel.



Before we confected the chart with nickel, we had copper (Cu) riding high (see right) above the other "lesser" base metals. It was patently clear that copper had managed to have itself reclassified as some sort of super base metal (and a few years back, we had even heard someone rhapsodizing about it as a "money metal" in the same breath as gold and silver). However, the real test of its superiority failed in 2002 when copper was as unprofitable to produce as Lead (Pb) or Zinc (Zn). The US majors that were taken by the grim reaper (Magma, Kennecott, ASARCO, Anaconda etc) were more copper-oriented than Lead & Zinc oriented, which only goes to show that being a "money metal" counts for little. Australian and Canadian base metal producers were just able to hang in there due to their currencies sagging under that of the US (the A-dollar being under parity for 28 years), while the Chileans could continue to produce due to the curious economics of the State miner Codelco, and the Zambian and DRC producers succumbed to the perma-rot of their respective political regimes. Now, the copper space does not "enjoy" the same stream of replacement megamines as Nickel, and its upwards trend appears to be going secular.

There are good reasons to be less enthusiastic about Lead, what with much of the West running (literally) on recycled lead batteries, and new technologies like Lithium nipping at its heals. Zinc, however, faces a dire production outlook that makes it look like the true sleeper of the base metals space. Manganese (Mn) does not face any imminent shortage and neither do Molybdenum nor chromite. Who can say that low prices might not choke off development and cause sudden-onset shortages in production at some point in the future.

Conclusion

So our thesis could best be put this way: the current upswing in base metal values is actually a return to a normal state of things. The aberration was that prices were depressed for slightly over 30 years from the early 1970s to the start of the new millennium.

The corollary of this is that an imminent (or inevitable) decline in prices does not seem to be in the cards. Bust does not necessarily follow boom…and anyway can we really with all seriousness say that Lead and Zinc, for instance, at just over $1 per lb are at boom levels when breakeven in the West is 80cts per lb and in China may be as high as $1.20 per lb? If this were really a boom, then why are the many Antimony deposits in the West untouched, while China's production goes into possibly terminal decline? And why are feet still dragging in the West on Rare Earth production? Molycorp managed to lose money extracting Rare Earths last year from a stockpile (so no mining cost in the equation). A lot of metal mining is still marginal in profitability; and given the capex required, some older mines would not be built today in light of higher capex and costs than when they were originally built. Malaga's Pasto Bueno Tungsten mine in Peru is an example.

As it is, mining still remains a business subject to the ebb and flow of markets. Each downtick, no matter how brief, brings permanent closures (such as happened to various Zinc mines in Europe in 2008) even though the dynamic for the metals they mine may be strengthening. Megamines are going the way of the dinosaur but without a meteorite to help them on their way. For every two or three that close down a new one may appear (i.e. Toyu Olgoi in Mongolia), giving the illusion they are not dwindling, but in fact they are becoming an endangered species. No amount of money will produce new megamines if the mega deposits are not there to be exploited. Falling production appears to be inevitable with some of the most critical metals suffering the steepest potential declines, thus copper, lead and zinc will face secular declines in production over the next twenty years, even if not over the next two years. Other more exotic metals like Antimony and Rare Earths are facing supply crunches as China has skewed the market with cheap prices eliminating ALL competition, and then found it cannot (not does not want to) supply the market it created through predatory pricing. The West is now scrambling to fill those gaps.

And what of the *Endgame of Cheap*? "Once only never-to-be-repeated offer,"--we have heard that before. We didn't think we would see 50ct per lb Zinc again when we were in 2007, and yet we did in 2008. The arc of history is long and a certain tipping point in the supply and demand of minerals has been passed in which demand will have to shrink to accommodate shrinking supply. The mechanism to achieve this is price with the highest value applications for a metal outbidding the lower value applications.

Pundits may be confusing a return to a norm in the metals commodities with some sort of extra-long price boom (their super-cycle). In fact, we believe they are not seeing the wood for the trees. The production boom stretches back, as we think we have shown, to the 1850s with various degrees of steepness, the price trend has differed, not necessarily with real demand, over that time but that recent years have shown the beginnings of a reestablishment of fair returns for miners. [f5]Divergences may still exist but it's more likely that amongst end-users a realization that the Endgame of Cheap mineral commodities is upon us. Strangely, investment in mining companies is still regarded as something for niche players implying that the bulk of the investment community is stubbornly divergent from the new norm.

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