

The Paperclay and Digital Revolution

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Abstract:

Like many, I have made many unsustainable economical, social and ecological choices.

Thirty years ago I developed a passion for travel, and now we live in Perth, Western Australia, 3,000 to 5,000 km from our respective families. There is a large financial and ecological footprint of visiting them.

Two decades ago I resigned as an economist and made an irrational economic choice to become a full time ceramic artist. The government had removed tariffs on cheap Asian ceramics a decade before this.

Ceramics is an economically obsolete craft form in Western Australia. Western Australia has a tiny economy in a huge area. A total 2 m people live in 2.5 m sq. km (the combined size of Sweden, Norway, Finland, Germany, Spain, UK and Poland, or 5 times the size of Texas). The 2000 kg of paperclay my students and I use comes from Sydney and Melbourne, 3,000 km away. My kiln is powered with electricity from non-renewable brown coal. Each year I regularly fly to either America (20,000 km) or Europe (15,000 km) in response to requests to exhibit, demonstrate and speak.

Like many others, I hope you will find interesting my solutions to these economical, social and ecological challenges.

Keywords: paper, clay, economic, energy, travel

1. Introduction

When my father died over a year ago, I began to digitise and organise his, and his father's photographic slide collections. This led me to examine the sources of their, and my own nomadic traits. The traits reflect the wider New Zealand and Australian culture, which in turn has been shaped by its history, population and comparative advantages.

I also would like to overlay my talk with a slideshow of my work. Showing art and an explanation of the economic and cultural circumstances of its production, will provide an alternative understanding of the work and its content, to that provided by my traditional artist statements.

2. A Personal History

While the distance between us in this lecture theatre is a few metres, it hides the geographic, psychological and cultural differences between us. To speak to you today I will travel a total of about 30,000 km, or five times the distance from Gothenburg to New York.

Long distance international travel is common in my family, despite the cost and risks. Fifty years ago my paternal grandparents spent three months annually traveling internationally, in order to gain a higher price for their wool and lambs, to find new cost cutting technology, and to visit relatives. For similar reasons my parents and some of my siblings have travelled similar long distances (one even made more than 200 flights in one year).

Moving back in time, twenty people died on the sailing ship my great, great grandparents spent 3 months on sailing from England to New Zealand. Today, travel is quicker and safer, but it will still take me about 60 hours of flying to and from this conference. I may experience up to four days feeling sick as I recover from the stress and adjusting twice to the globally opposing climate and time zones. Then there is the severe health risk of developing Deep Vein Thrombosis, and with longer and more frequent the trips, the greater this risk. New Zealanders and Australians tend to downplay these negative aspects of long distance international travel. I only raise it now, in order to emphasise the personal, physical experience I go through, in order to have this conversation with you today.

3. A National History

An emphasis on international travel is heavily engrained in the culture of both New Zealand and Australia. Our low population countries have a history of encouraging their young people to travel overseas [1]. This "rite of passage" develops a broader perspective, an essential awareness of our national economic and cultural dependency on remote countries.

The Australian and New Zealand economies are very exposed to the world economy. Compared to other countries we sell a disproportional amount of agricultural product and minerals to Asia (10,000 km away), Europe (20,000 km) and North America (15,000 km away) [2]. In return we bring a disproportional amount of our manufactured goods and services from these same 10,000 to 20,000 km away countries. While the carbon foot print of this trade must be enormous, it has evolved over 200 years as a result of persistent international economic pressures.

For a century we fought these pressures, by protecting our manufacturing industries (including ceramics). It was falsely hoped that protectionism would enable the small manufacturing sector to grow large enough to survive, without penalising wages. But after a century we realised that protection via subsidies and tariffs wasted valuable government and business resources, fostered structural inefficiencies and pushed up our cost of living to an unsustainable level. After carefully dismantling this protection system over the last thirty years, we now refocus on exporting huge volumes of our cheap agricultural product and minerals, and importing cheap, high quality manufactured goods, from anywhere in the world. This utilisation of our comparative advantage, has resulted in full employment, cheaper consumer products, and a huge freight carbon footprint.

There are other reasons why New Zealand and Australia are so internationally focussed. Around 90% of Australia's population (80% for New Zealand) is of European descent[3][4], and arrived less than five generations ago. Consequently our language, food, legal and political systems predominately come from the United Kingdom, 20,000 km away. Most recent immigrants have travelled long distances from southern Europe (15,000 km) and Asia (10,000 km), bringing new languages and cultures. The result is a culture based on other countries, located on the other side of the globe.

There are also good reasons why our culture has not changed much once we arrived here. With a small combined population of 26 million, it is difficult for Australia and New Zealand to cheaply produce their own books, movies, and other cultural products. Consequently most of our consumed music, television, movies and literature comes from the UK or USA [5]. The local cultural sector struggles to continue to exist. Locally made quality New Zealand and Australian cultural goods and services are generally expensive luxury goods, for private consumption by a very small part of the population.

The recent surge in people using the internet to buy cheaper, high quality good and services from overseas, could well increase this overseas focus and dependence.

4. An Obsolete Craft

Our international economic and cultural dependency makes it very difficult for any manufacturing industry to survive here. For those trying to manufacture ceramics in Perth, Western Australia, the picture is even more depressing.

The local population is tiny, isolated and spread out over a huge area. Less than 2.3 million West Australians live in 2,500,000 sq. km, an area the combined size of Sweden, Norway, Finland, Germany, Spain, UK and Poland, or 5 times the size of Texas. The nearest city is Adelaide (2,700 km) which has a smaller population.

Settled less than 185 years ago by Europeans, there is no tradition or culture of supporting locally made pottery. Any pottery industry that may have existed over thirty years ago, has slowly collapsed after the Federal government removed tariffs from cheap imported ceramics.

Consequently, in 2011, in Western Australia, over 95 percent of bathroom and kitchen ceramic tiles come over 13,000km from Europe (and are still of higher quality and cheaper than similar, locally made tiles)[6].

Large companies like Australian Fine China, the last Australian based mass producer of high quality functional tableware, was forced in 2006 to relocated its Perth factory to South East

Asia. For many decades it tried to keep its costs down by using a cheap new immigrant labour force of over a hundred people. It has now faced the financial reality that it can only be price competitive, if it keep its costs down, by moving offshore, and by importing its own and other ceramics.

To illustrate just how internationally uncompetitive our ceramics is, only last week I saw perfectly made one metre high porcelain vases which have come 10,000 km from China and still sell for half it would cost me to buy the clay to make them.

In 1992 the Western Australian Craft Council could not tell me the name of a single ceramic artist who survived solely upon sale of their studio work. Both then and now most prominent professional ceramic artists cross-subsidised their studio work with other income, often teaching.

While making functional ceramics had become economically unsustainable in Western Australia thirty years ago, it seemed that the tertiary educational institutions were slow to respond to this fact and continued to provide specialist vocational ceramic training for another twenty years. Recreational ceramic courses provided by government were also eventually progressively amalgamated and downsized.

5. Export or Perish

In 1996 I was greatly impressed by an eight page report that surveyed emerging Australian artists within a government business incubator scheme, and concluded that in order to economically survive, they need to have an interstate and international focus [7].

Between graduating and 1999, I used the government unemployment benefit, relief and university teaching to supplement my studio income. After that I used the opportunity provided by a government small business creating scheme, to produce a 50 page analysis and plan for a self sustainable studio practice, with has guided me since.

In light of the decline in tertiary ceramic education employment, my research identified an opportunity to provide private recreational ceramics courses [8], a service which could not be imported into Australia.

I also increasingly focused on selling my work and skills interstate and internationally. This would give me access to larger populations, as well as protect me from downturns in any one city or country. But larger populations and markets do not guarantee sales and income.

It was through conversations with Brian Gartside and Rosette Gault that I learnt I was one of only a very small number of paperclay experts in the world [9]. Having already made over 200 exhibition pieces and given over 50 paperclay workshops I knew that this new technology would continue to spread, and that I could earn income from it [10].

My logic was simple, if I was going to organise, fly to teach, or pack and send my artwork, up to 3,000 km away to the larger art markets in Sydney and Melbourne, then it would be no more work to send it 5,000 or more to another country.

My first solo was in Sydney and my first commission came via a New York city curator, 20,000 km away.

6. Nine Tonnes of Luggage

The decision to focus internationally was also influenced by my personal circumstances. Thirty years ago I had left New Zealand and now live in Perth, Western Australia, 3,000 to 5,000 km from my wife's and my own extended family. We face a huge annual economic cost and ecological footprint from visiting them. So it seemed logical to reduce the total cost of personal and professional travel by amalgamating them.

Even by combining them, I fly an average of 76,333 km (London to NY 14 times) each year and it costs me a fifth of my income. I experience travel sickness for about two weeks per year and lose valuable time in the studio and more importantly can be away from my own young family for up to three months a year. So, it is clear that there is a substantial economic and personal cost of traveling, and I am very motivated to minimise these. To reduce the risks and costs of international travel, whenever possible trips are aligned closely with events in other countries, at off-peak ticket times.

Obviously this reduction in travel might also minimise the huge ecological cost of this activity, which I estimate at about 8,753 kg CO₂ per annum [11].

7. Cost Cutting

To survive as a professional artist, I am constantly seek ways to reduce my costs.

As mentioned previously I sought to minimise the cost of international travel by carefully planning, and also used government grants whenever possible.

In 1999 I discovered I was spending \$500 a year photocopying paperclay workshop handouts, and far too much time responding to paperclay questions on the phone and email. Providing the information on a website seemed to be a way to save this money and time. But providing over 130 pages of free information on the internet has unexpectedly fostered the spread of paperclay around the world, raised my own profile and created new opportunities. Incidentally it eliminated my annual photocopy paper use by about a quarter of a tonne, or six plantation trees [12].

For many years I made my own paperclay, based upon a recipe invented by Jaromir (Mike) Kusnik in the early 1980's [13]. However, one of my workshop students convinced a small Western Australia clay maker to become one of the first paperclay manufacturers in the world, and I was offered paperclay at half price. Unfortunately a few years ago the business was sold to a larger company, which stopped making it when it became unprofitable. So today the 2,000 kg of paperclay that my students and I use, comes from the cheapest, quality manufacturers, 3,000 km away in Melbourne and Sydney.

To keep equipment costs to a minimal, 20 years I decided that I would not buy a kiln, wheel, pug-mill or extruder. While it would be convenient and time saving to have this equipment, I could not afford or justify the interest and principal costs, on my low income[14]. Even today, all our studio furniture had been salvaged from the streets and abandoned warehouses, plus the two studio kilns are lent or donated by students. This unconventional studio setup highlights my focus on having a low cost studio. These decisions were always made for economic, not ecological reasons.

I am fortunate to be part of a group of artists who were offered the lease on an old local hall. Only later did we discover that the building was inexpensive to operate, because it was designed by an architect to maximise natural lighting, and windows to utilise sea breezes for summer cooling and solar heating in winter. This and the mild Mediterranean climate means we use only ceiling fans for about three weeks a year on the hotter days, and electric heaters for a similar period in the middle of winter. Unfortunately only about 5 percent of the electricity we use to operate the studio and fire the kilns comes from renewable sources, as local coal is a relatively low cost energy source here [15].

While it is not practical to reduce our running costs by installing a solar hot water heating or solar electric generating equipment at the rented studio, two years ago in our home we installed both. Since we installed the 14 cell 2.45 kW photovoltaic system, electricity prices have increased 50 percent, and are expected to increase around 20% this year. The system generates electricity far in excess of our domestic energy needs, so we have not only eliminated our electricity bill, we have also halved our gas bill and will be paid \$100 a month by the electric utility. I calculate this is equal to us having a \$3000 tax free increase in our income. A byproduct is that the system creates a carbon footprint *credit* of about half a ton per year. Unfortunately it is insufficient to eliminate an estimated annual 1.3 ton CO₂ footprint *debit* produced by my studio electric kiln firing[16].

A similar situation exists for water. Recognising that Australia is a dry climate with scarce water resources, then logic dictates that water prices will go up. The rented studio probably uses only about 600 Lt per week and therefore it would be difficult to justify to our landlord the capital cost of water tanks and recycling. So two years ago we installed two 3,000 Lt tanks to collect rainwater from our house roof and established a home vegetable garden.

Again, these decisions were based upon economic and lifestyle, not ecological reasons.

To maximise my making time I have developed an unconventional system of recycling paperclay. I allow it all to dry out completely and then soak in water overnight before beating it into a slip which is used in a workshop the next day. If I need to soften paperclay I just wet it, or place in a bag with wetter paperclay and leave overnight. Thus I have no need for an expensive pug-mill and sometimes will even go for years without wedging clay. Due to the hollow cellulose fibres and their hygroscopic properties, there is no need to wedge to remove air bubbles or to create a moisture consistent clay body. Because the paper fibre creates an open body, the kiln can be fired more rapidly than with conventional clay, saving electricity and money. Similarly, paperclay eliminates the need for a bisque firing, halving the number of kiln firings each year. Through my work, teaching and writing I have also radically questioned the need for firing decorative works which are never exposed to the weather or water [17]. Also radical is the absence of potters wheels in the studio. Consequently students don't waste clay learning how to throw, nor waste time recycling it, and instead learn how to slowly make perfect forms with thin walls (less clay). Slip casting is used for mass production.

For a decade we could not afford a car. So I transported dry greenware paperclay work on a trolley on the back of my bicycle without mishap, as the material is stronger than conventional dry greenware clay, as well as can be instantly repaired with paperclay slip.

Due to space constraints I refer you to the other presenters papers and the 35+ journal articles reproduced at www.grahamhay.com.au for further economical (and ecological) benefits of paperclay.

8. 40 Ton of Paperwork.

What I want to do now is briefly highlight another aspect of my studio practice. As the volume of donated newspaper exceeded my need for making my paperclay, I began to see old paper as a free art material. Compressing, cutting and carving it seemed a great way to burn off my frustrations with office paperwork and hours doing academic research [18]. Over the last two decades I developed unique techniques to convert over 40 tonnes of donated documents into artworks. Some of these have each weighed up to 3 ton, which, apart from an internal steel frame, miscellaneous tools and my labour, have cost me nothing. More recently I have installed these works in native forests, added cultured native fungi and so created living art/biological recycling plant. [19]. Paradoxically one 2 metre high work weighing about 250 kg, was selected for an exhibition promoting recycling, and then the organisers paid for it to be shipped over 7,000 km to and from the exhibitions [20]. This is but one example of how my paperclay and compressed paper sculptures have been used to promote these environmental values.

Yet I have never been motivated by environmental values to make these works. Like my paperclay sculptures, these are made because of artistic concerns and for the creative challenge they present.

9. Summary

My motivation has always been to become an artist, and to earn enough from my art so that I can afford to continue to keep making the art I like making.

By examining my family history, as well as the natural resources, small population and culture of New Zealand and Western Australia, I have highlighted a tradition and reason for long distance travel and trade. Despite the ecological costs, long distance travel and trade is essential for the survival of my art practice, family network and country.

Rather than be driven by the environmental movement or ecological concerns, I anticipated their impact on my studio and living costs, and used new technology to reduce these costs. But this is always within the context of minimising my costs, and the overriding desire to make art. Inadvertently these may reduce the cost to the environment.

As such this paper has been a journey of rediscovery for me. It is not a lesson plan or map for others to survival, but a story of my ongoing survival, despite the circumstances.

References

[1] Burden of the OE, *The Press Sunday Magazine*, Christchurch, New Zealand. Cover & feature article 23/1/11

[2] See <http://www.tradingeconomics.com/Economics/exports.aspx?Symbol=NZD>, <http://www.tradingeconomics.com/Economics/Imports.aspx?Symbol=NZD>, <http://www.tradingeconomics.com/Economics/Exports.aspx?Symbol=AUD>, <http://www.tradingeconomics.com/Economics/Imports.aspx?Symbol=AUD> Dynamic trade? Read: *Research Note*, Department of the Parliamentary Library, Parliamentary Research Service, Number 14, 16 October 1995 (copy at <http://www.aph.gov.au/library/pubs/rn/1995-96/96rn14.pdf>) and *Fact Sheet*, Market Information and Research Section, Australian Department of Foreign Affairs and Trade, Dec 2010, (copy at <http://www.dfat.gov.au/geo/fs/aust.pdf>).

[3] http://en.wikipedia.org/wiki/Demographics_of_Australia at 31/1/11

[4] http://en.wikipedia.org/wiki/Demographics_of_New_Zealand at 31/1/11

- [5] Trade in cultural goods and royalties, Screen Australia, Commonwealth Government screen agency, <http://www.screenaustralia.gov.au/gtp/atradeoverview.html> at 4/2/11
- [6] Personal communication WA tile shop sale manger 1/2/11
- [7] Clarke Carthew & Associates (1996), *The Business of Art: NEIS Visual and Performing Arts*, Melbourne.
- [8] Part of prior research and findings I had already published in Hay, G. (1997) *Counting Ceramics*, Pottery in Australia, (6) 3, 19 - 21 (reproduced at <http://grahamhay.com.au/hay1997counting.html>)
- [9] For an updated summary of the history of paperclay see Profile Visual Masters, Arts and Crafts Digital Magazine, UK, Issue 2, 6-13 (zip copy at <http://www.vmmag.co.uk/download/zip-files.html>)
- [10] This was later proven to be true: Personal communication with the two clay retailers in Perth, Western Australia, February 2007: over a third of all clay sold to Western Australian studios and schools is paperclay.]
- [11] Personal records: 3yrs ave: 76,333 km (47,431 miles). Using <http://www.terrapass.com/carbon-footprint-calculator> and 1 return trip each to US, Europe, Melbourne, and NZ is 46,226 miles and 8,753 kg (19,296 lbs) CO2 produced.
- [12] Calculated from The Department of Environment and Climate Change, Know your paper: A guide to purchasing recycled content office paper, p.1 copy at <http://www.environment.nsw.gov.au/resources/sustainbus/0992OfficePaperFacts.pdf>
- [13] Hay, G., (1996) With but not on Paper, *Pyre: Journal of the Clay & Glass Association of Western Australia*, Issue No. 9, p. 4-5. copy at <http://grahamhay.com.au/haywahistory.html>
- [14] Hay, G., (1999) Paperclay experiences in the Studio, see <http://grahamhay.com.au/hay1999experiences.html>
- [15] Source: http://www.energy.wa.gov.au/2/3419/64/renewable_energy.pm (3/1/11) and http://www.abare.gov.au/publications_html/energy/energy_08/EG08_Oct.pdf
- [16] Analysis of data from a domestic 2.45 kW photovoltaic system in Western Australia

Year	kWh used	kg CO2 footprint	kWh generated	kg CO2 footprint	Net kWh	Net kg CO2 footprint
2007	3538	3465	0	0	-3538	3465
2008	2208	2162	0	0	-2208	2162
2009	2348	2300	3018	2956	670	-656
2010*	2564	2511	3111	3047	547	-536

* increased consumption as using electricity rather than gas for winter heating source: Household electricity bills, and <https://www.synergy.net.au> at 30/1/11

Last financial year the studio paid \$551 for electricity. It is estimated that this equals 2700 kWh pa. Using Synergy's 1: 0.98 ratio for kWh: kg CO2, then total studio electricity creates 2644 kg CO2 pa. Assume the kilns generate 1/2 of this ie 1322 kg CO2 pa or 110 kg CO2/mth produced.

- [17] Hay, G.(2007) Why burn paper?, *The Journal of Australian Ceramics*, 46, 84-86 (reproduced in *Ceramic Review*, UK, 227, 35)
- [18] Hay, G., (2004) The cutting edge, *Textile Fibre Forum*, Vol.23, 1 (73) 10-11. (copy at <http://www.grahamhay.com.au/hay2004tafta.html>) and Hay, G., (2001), On Paper and about paper Exhibition Opening speech at Mater Dei College *Unpublished* (copy at <http://grahamhay.com.au/hay2001speech.html>)
- [19] See <http://grahamhay.com.au/paperman.html> and <http://grahamhay.com.au/2008forest.html>
- [20] (copy at <http://www.consumption.org.au/ian-lowel.htm>)