

12 YEARS TIL BREACH

Pam McKinlay



Figure 1. Pam McKinlay. A living poem and photo remnant of a performance by Pam Phlaterre reproduced from Pamphlette No. 6, published 2019.

Breach

There's a hole in my cryosphere.

You put it there.

Waters are rising,

imperceptible,

the cup is half empty.

There's a hole in my glacier.

Waters are rising

the saucer is half full.

Peter, come quick.

Waters are rising!

12 years

- too long to sit over that cup of tea.

Drink up.

The saucer will breach.

INTRODUCTION

Breach is a living poem and photo of a performance remnant, by Pam Phlaterre reproduced here from Pamphlette No. 6, 2019.¹ The performance focused on the melting of the Franz Joseph Glacier, on the West Coast of the South Island, New Zealand, as a metaphor for global ice loss, through the notion of an impossible cup of tea from a leaking souvenir cup. There is a perforation in the side of the cup that makes the cup leak, creating tension as the tea line rises in the saucer and apprehension builds as the guest anticipates the imminent overflow of the saucer's contents. The poem calls on a young heroic character, Peter from an old Dutch story, who once stemmed the flow from a leaking dike by placing his finger in the hole, thus keeping the dike intact and saving the surrounding countryside from flooding. The hole is a metaphor for runaway climate change. There is no way to plug this hole by a single noble action. And yet the poem is an urgent call to action to stem the breach. Individual action can be the start to global economic change, with a collective call to governments to step up and regulate with policies that can stem the rising tide.

BACKGROUND

A perceived shortcoming of science research outputs is the use of specialized language (including mathematics and complex statistics) and a resulting lack of public engagement with graphs and charts as the primary visual language. The goal of the Art+Science project is to generate a creative response rather than illustrating or making a representation of the science. Engagement requires an emotive connection. Artists engaged in the project seek visual pathways by which a public audience can "get it". The theme for Art+Science in 2019 is "Art+Water: Mountains to the Sea". Artists and scientists participating in the project this year aim to highlight the impacts of land use on water from the mountains to the sea, and *Breach* is a work that came out of the 2019 project.

For my part in this project, I am working with scientist, Geoff Wyvill, with reference to the timeless work of prominent nineteenth-century Irish physicist, John Tyndall. Tyndall was an avid mountaineer who pondered the structure and motion of glaciers in his book, *The forms of water: in clouds and rivers, ice and glaciers* (Tyndall, 1896). He is often cited as the father of climate change for his work on the properties of gases to absorb radiant heat and his speculation on how fluctuations in water vapour could be related to climate and hence to ice formation. His work is still held in high regard and the leading UK Climate Change research centre, the Tyndall Centre, is named after him.² *The forms of water: in clouds and rivers, ice and glaciers* first looks at glaciers, the effect of melting, forms of ice retreat and the role of carbon dioxide and other gases in the global water cycle. I am working on three pieces, one of which is a response to the retreat of the Tasman Glacier and these will be exhibited in September 2019 at the HD Skinner Annex of the Otago Museum.

GLACIERS NEAR AND FAR

The annual glacier survey by the Snow and Ice Research Group New Zealand (SIRG, 2019) reveals that the state of glaciers in Aotearoa New Zealand are in a rapid retreat phase.³ This can be seen graphically in photo sequences of the rapid retreat of the Franz Joseph Glacier: "Between 1893 and the end of its last big retreat 90 years later, in 1983, Franz Josef Glacier receded about 3km." The retreat has accelerated and guided walks onto the glacier are no longer possible, with access to the upper ice only by helicopter (Mills, 2012).

Franz Joseph is our local microcosm of what is happening in the cryosphere globally. Scientists predict that tipping points and runaway feedback loops from melting glaciers will accelerate in twelve years if we fail to curb carbon emissions. Elizabeth Kolbert, in *Song of Ice*, asks us to imagine an ice cube, which when left on a picnic table melts in a predictable way. She contrasts this with the massive glaciers in Greenland which are subject to feedback loops which in turn spawn sub-loops and further feedback loops in a complex unpredictable feedback system. Water accumulating on the surface affects ice reflectivity and as more of the sun's energy is absorbed melting increases, and so the cycle loops and builds on itself. She quotes a remark by Professor Marco Tedesco who calls this "melting cannibalism" (Kolbert, 2017, 96). She concludes that at a certain point these feedback loops become self-sustaining and it is possible that such a point has already been reached (McMahon, 2018).

The effects of melting ice in glaciers are predicted to be pulses of meltwater release. Arctic ice is predicted to disappear within five years, and this in conjunction with the weakening of the Greenland ice sheets and loss of ice mass in the Himalayas (Kaufman, 2019) would see sea level rise by seven metres (McMahon, 2019). Various scenarios have then been proposed about what will happen when ocean currents warm and the ice shelf buttresses have dissipated and the Antarctic glacier sheets also free to flow, in the subsequent meltwater pulse scenario (Viñas, 2018; Surging Seas, 2019).

Kim Stanley Robinson, writing in *New York 2140*, describes a future society in which social chaos and economic depressions would follow the first and second meltwater pulses. These are predicted to be caused by the collapse of the Greenland ice sheet and the ice shelf buttresses in Antarctica (as above) at which point, melting would double with increasing atmospheric and ocean warming, the loss of the sea buttresses which mean the land glaciers lose their footing in the sea and are free to flow. At this point, one-eighth of the world's population would be directly impacted, one-third of food production would disappear and shipping would be adversely affected by changing coastlines and currents, and unpredictable weather at sea (*Surging Seas*, 2019).

As record heatwaves, flooding, wildfires and mass die-offs of coastal shellfish come to our attention, we fail to act on these reports as dire warnings. Instead, the messengers are treated as hysterical or peddlers of pseudo-knowledge. Dr Katherine Hayhoe interviewed by Sonia Smith, (2017, 299) said that,

If you study literature you don't have to spend a lot of time convincing people that books are real. If you study engineering, most people will agree that engineering is real and its an important part of our society. But I study something that about half of the country and much more than half of Texas think is a complete hoax. Many people view having climate change at Texas Tech as similar to having a Department of Astrology. But we don't use crystal balls, we use supercomputers, we rely on physics, not brain waves.

OF GODS AND KINGS

Day after day we are exposed to news reports that say we must 'deal' with the problem of global warming and climate change, but we seem not to notice or are incapable of joining the dots. We don't like complexity and prefer simple solutions. We look for simple rules and manufacture reasons to give them authority. In the past it was god/s or kings. Today, as we tread water in the sixth extinction event, the desire for economic growth underlies economic policies. Growth is seen as good, more growth is better and growth means profit. We scan the horizon looking for the saviour and some prophets invoke 'technology' as our great hope. We will need new technologies to adapt but the elephant remaining in the room is growth. Our current rates of consumption are at the expense of our biosphere, provision of essential bio-services (such as oxygen production) and raw materials, and are unsustainable.

We continue to add carbon dioxide to the atmosphere at an increasing rate and fail to account that it will take millennia for the earth to recalibrate (not in our or our children's life times). Kolbert summarises this "The climate operates on a time delay... In effect, we are living in the climate of the past, but already we've determined the climate's future" and "once feedbacks take over, the climate can change quickly, and it can change radically" (Kolbert, 2017, 113). Kim Stanley Robinson (2017, p.140-141) in *New York 2140*, uses the analogy of compound interest to explain exponential impacts of excess carbon emissions, driving a complex system which, without constraint and limits, will reach a tipping point beyond which there is no resolution.⁴ The US Department of Defence calls climate change a "threat multiplier", because it exacerbates all existing problems (Smith, 2017). Yet as I write, the US government of the day is dismantling measures to curb carbon emissions rather than intensifying those efforts, for example with the "Affordable Clean Energy Rule" (2019) designed to weaken environmental regulations in favour of expansion of so-called "clean coal" for coal-fired plants.

1.5 DEGREES CELSIUS

A report last year by the Intergovernmental Panel on Climate Change (the IPCC) concluded that while it is technically possible to cap global warming at 1.5 degrees Celsius (2.7 degrees Fahrenheit) by the end of the century, it is highly unlikely because this would require a dramatic overhaul of the global economy, including a shift away from fossil fuels (IPCC, 2017).⁵

I pick up the story again in *New York 2140*, where solutions to climate change in the story were deemed too expensive

Economists could not help but be dubious. Because prices were always right, because the market was always right, right? So, these new-fangled inventions, so highly touted by those neo-Malthusians still worried by the Club of Rome limits-to-growths issues. Could we really afford these things? (Robinson, 2017, p.381)

How can we not? Economic solutions along the line required by the IPCC would require a world refocus, rapid decarbonisation and oversight, if not interference, in market forces as we pass peak oil. We need to rethink our priorities for energy return on energy investment priorities for the future – another gas guzzling car or the means to create regenerative energy systems and transport solutions for the masses? More single use plastic bottles and cling wrap, or something a bit more useful like a catheter tube? (Krumdiek, 2012) What might the new economic rubric be?

The land ethic simply enlarges the boundaries of the community to include soils, waters, plants, and animals, or collectively: the land. A thing is right when it tends to preserve the integrity, stability, and beauty of the biotic community. It is wrong when it tends otherwise. (Leopold, 1949, p.262)

What's good for the greatest number is what's good for the land (Leopold, 1949), rather than being indebted to a system of economics that serves the profits of the few. In effect, a post-growth economy with prosperity for more where we live within the means of our environmental bio-capacity (Jackson, 2017).

BREACH – A PERFORMANCE

I return now, to the situation of the melting glaciers. To recap, the melting is being caused by excess carbon emissions which are fuelled by rapid carbonisation of our atmosphere, a product of our post-industrial revolution which depends on the burning of fossil fuels. The glaciers are spilling their waters at an increasing rate and contributing to rising sea level. I enter now the accompanying photo and poem, which were documentation of a remnant from a performance piece, as part of my research response. We return the focus to the Franz Joseph Glacier:

During the performance a guest was handed a plate with a delicious slice of cake on it and as they began to eat, the performer poured tea from a tea pot, delivering an engaging stream of conversation whilst innocuously pouring the tea into the cup. The guest felt increasing anxiety as the pourer blithely poured tea into the cup, but hesitated; there was still time and it would be rude to interrupt the interesting anecdote. The pourer seemed oblivious of either the leaking vessel or the fact that the tea was approaching the rim of the cup. Finally, the guest could bear it no longer and interrupted the anecdote feeling the need to intervene because the saucer was getting dangerously full.

The Cup

It is a tea cup. Tea cups are symbolic of many things – think “storm in a tea cup”, “over the tea cups” and “Another cup of tea, Vicar”. Tea cups have an association with conversation, planning for the future or even foreseeing the future, as in “reading the leaves.” From politics (think Epsom talks between John Key and John Banks during the 2014 General Election) to relaxed chats with friends. However, this is a cup fraught with danger; you can’t have a relaxed drink from it. The lines that ask “Is the cup half empty? Is the saucer half full?” are a nonsense juxtaposition. They are a nod to the common phrase, generally used to ask the rhetorical question, should a situation be a cause for pessimism or optimism, however neither view in this scene-ario is cause for optimism.

What is it about this souvenir cup? It is a memento mori – based on one of the iconic landscape photographs of this glacier which has circulated since the first half of the twentieth century (NZ Stamps).⁶ It aspires to be more than a tacky trinket by finding itself on a cup of the finest of bone china by Royal Grafton, made in England, the old country. It is a souvenir image of a place that doesn’t exist in this form today. The glacier has retreated from the view and the panoramic window now frames a gravelly terminus, and by the end of the twenty-first century the glacier may not exist at all. The Franz Joseph Glacier will soon inevitably spill its way down the Waiho River and flow out to sea.

“There’s a hole in my cryosphere”

I don’t think there is any doubt about that if you have read this far; that there is a problem with the cryosphere, nor the cause. There is of course no “hole” in the glacier through which the water streams. The notion of a “hole” makes invisible the visible and suggests the notion of the “hole” in the ozone, a planetary calamity averted last century. Until 1987, ozone damaging gases were being released into the atmosphere weakening the ozone layer in the Earth’s ionosphere, which protects the earth from UV-B radiation, and hence posed a severe threat to human health. Collective global remedies, instigated through the 1987 adoption of the Montreal protocol, banned the most damaging of these gases; chlorofluorocarbons (CFCs), halons, carbon tetrachloride, and methyl chloroform. Consequently the ozone layer began the process of healing (Montreal, 2018). Glaciers too are being weakened by invisible gaseous interactions in the atmosphere. If we fail to act, the cryosphere (like the ozone layer before it) will become dangerously depleted, and the flow on effects will be disastrous in terms of sea level rise, changes in climate and changes in ocean chemistry (ocean acidification).

Although a minor glacier on the world stage, the disappearance of Franz Joseph Glacier will add little to the rising sea levels globally, compared to the ice loss from the Himalayas, Greenland, Victoria and Antarctica, but locally its loss will be greater. On the home front, the West Coast will lose a major tourism attraction as the Franz Joseph Glacier becomes a deserted moraine.

“You”

Yes, you and yes, me. We all need to take responsibility for the causes of this crisis and act to remediate it in any way we can. The image of the church on the cup indicates the hope of salvation. We might pose the question – what does your faith tradition demand of you in the face of such overwhelming evidence for climate change? Your God demands some response from you – you can count on it – right from the opening chapters of Genesis “And let them have dominion...” (The Bible, Genesis 1:26 ff). The contract you have with your belief system requires you attend to this matter of stewardship in return for your soul’s salvation. What will it be – what will you DO to stem the tide of this immortal engine that is nearing its tipping point of run-away climate change?

“Peter – come quick”

I grew up in a street of Dutch immigrants and this story may not be familiar to all. Considering the urgency of rising sea level and the tea water pouring from my hole, it seemed pertinent to call on Peter of Haarlem, to hasten to my side to do his duty once more, not only for that low-lying country but for my lovely tea cup (Sweetser, 1910). There is another obvious association with Holland in that we (New Zealand) are named after Zeeland - itself named for

its proximity to the sea (Sealand) and one of the Netherland’s coastal lowlands considered most vulnerable to sea level rise. In the nineteenth century tale of “the little hero of Holland”, it is the actions of a young selfless person which save the day.

Our modern-day hero is a young woman with pigtails from nearby Sweden, Greta Thunberg. Earlier this year she was nominated for a Nobel Peace Prize for her climate activism (Smith, 2019). She quietly slipped onto the world stage two years ago with a simple personal message which called her government to action to stop to runaway Climate Change. Since then she has inspired global movements such as School Strike for Climate and Extinction Rebellion and more.

Greta reminds me of another childhood heroine of mine. A young girl of independent spirit, and a keen sense of justice, also a sense of personal agency to prompt change, none other than Pippi Longstocking, of Astrid Lindgren’s books. Of Swedish origin and sporting trademark pigtails, they both have a propensity to tell it straight to adults. There the similarities may end. Pippi comes from a time of pre-peak-oil childhood innocence. Greta quietly holds her own calling for action amidst a planetary crisis, which many seem to wilfully ignore, wielding a sword of truth with intelligence and a fierce maturity, which make her seem more like a young modern-day warrior princess (move over Xena) albeit sans the boy-fantasy leather costuming.

“12 years”

Twelve years indicates the window for action. To paraphrase Ralph Chapman, we are living in a period of “useful consciousness” – this is our (only) window in which life-saving action is possible (in Macfie, 2015). In 12 years, the world will have lost significant glacial ice, and this will have an irreversible impact on rising waters, affecting every aspect of society. As I wrote that last sentence, I found out we had lost a year: We now have 11 years (United Nations news 2019).

“Too long to sit over that cup of tea”

We are a long way from the streets of rebellion as we return to the tea cup and yet the call to action is the same. In the performance the performer set out to induce a sense of anxiety in the guest with the potential spilling of the tea beyond the containment of the saucer. The guest had to act urgently to interrupt and intervene to stop the pouring to prevent a breach. Here we are talking about a regular sized tea cup, but scale is everything. One small tea cup, one small breach and a small puddle on the table to clean up. One small glacier drying up, one small town struggling for survival. Massive ice sheets melting will have massive social consequences from the meltwater pulses. The Pamphlette (an artwork of poem and image) does not offer solutions. It’s a postcard from the impending crisis and urges the participant to move, to act, to interrupt, to DO something to remedy the imminent spill. The glacier is melting. The water is leaking from the hole. Even when the performer ceases blithely pouring tea into the cup, the tea continues to stream out of the hole. The stage is already set, the story half written. Without actual intervention from the guest, the tea would have continued to be poured but has the guest altered the course of the story in time? Will the saucer breach?

Pam McKinlay has a background in applied science and history of art. As an artist she works predominantly in sculpture, weaving and ceramics and photography in collaboration with other artists locally and nationally, in community outreach and education projects around the theme of climate change, sustainability and biodiversity.

ENDNOTES

- 1 Pam Phlaterre is the non-de plume under which Pam McKinlay publishes Pamphlettes which accompany performances and exhibitions.
- 2 Tyndall Centre for Climate Research, n/d/ Retrieved 26/6/2019 <https://www.tyndall.ac.uk/>
- 3 Rate of loss is increasing: NZ Glaciers: "Huge" loss of ice in 40 years, 9 April, 2019, <https://www.odt.co.nz/news/national/nz-glaciers-huge-loss-ice-40-years>, New Zealand's glaciers could disappear almost completely by 2100, <https://www.newshub.co.nz/home/new-zealand/2019/04/new-zealand-s-glaciers-could-disappear-almost-completely-by-2100-scientists.html> [Retrieved 26/6/2019]
- 4 In the story he explains exponential Growth with the Legend of Paal Paysam Retrieved 26/6/2019 from <http://www.singularitysymposium.com/exponential-growth.html>
- 5 What have we learned from our excursion into the last deglaciation? Could polar ice sheets collapse catastrophically, as in the past? Full Report from the IPCC here: <https://www.ipcc.ch/sr15/>
- 6 Built in 1931, St James Anglican Church was built to take advantage of the view through the altar window. The photo has been taken by many and was reproduced in the peace stamp series of 1946.

REFERENCES

- Affordable clean energy rule, (2019). *United States Environmental Protection Agency*. Retrieved 26/6/2019 <https://www.epa.gov/stationary-sources-air-pollution/affordable-clean-energy-rule>
- IPCC, (2017). *Full Report, Global Warming of 1.5°*. Retrieved 26/6/2019 <https://www.ipcc.ch/sr15/>
- Jackson, T. (2017). *Prosperity without growth: Economics for a finite planet*. New York, NY: Routledge, Taylor and Francis.
- Kaufman, M. (2019, June 20). Declassified spy photos show rapid melting of colossal glaciers. *Mashable*. Retrieved 26/6/2019 <https://mashable.com/article/spy-satellite-glaciers-melt-himalayas/>
- Kolbert, E. (2017). Song of ice. In: *The Best American Science and Nature Writing*, Ed. Hope Jahren, Wilmington, Mass.: Mariner Books.
- Krumdiek, S. (2012). *Confronting the Status Quo*. [Video file] Retrieved 26/6/2019 <https://www.youtube.com/watch?v=M9YRNqewGIY>
- Leopold, A. (1949). *A Sand County Almanac*. Oxford, UK: Oxford University Press.
- Macfie, R. (2015, October 15). Sink or swim. *The New Zealand Listener*. Retrieved 26/6/2019 <http://www.noted.co.nz/archive/listenemz-2015/sink-or-swim/>
- McMahon, J. (2018, January 15). We have five years to save ourselves from climate change, Harvard Scientist Says. *Forbes*. Retrieved 26/6/2019 <https://www.forbes.com/sites/jeffmcmahon/2018/01/15/carbon-pollution-has-shoved-the-climate-backward-at-least-12-million-years-harvard-scientist-says/?fbclid=IwARImrbngGL42tflDeMn9oOvcSA-HSwVUrax2MXIEOx4IAWAi7sM2Peo3PAU#79031323963e>
- Mills, L. (2012, July 9). Franz Josef Glacier's 'rapid' retreat (+photos). *New Zealand Herald*. Retrieved 26/6/2019 https://www.nzherald.co.nz/nz/news/article.cfm?c_id=1&objectid=10818264
- NZ Post Stamps (n.d.) Retrieved 26/6/2019 <https://stamps.nzpost.co.nz/new-zealand/1946/peace>
- Robinson, K.S. (2017). *New York 2140*. USA, Canada and Australia: Orbit.
- SIRG (2019). *Annual end of summer snowline survey*. Snow and Ice Research Group New Zealand. Retrieved 26/6/2019 <https://sirg.org.nz/about/annual-end-of-summer-snowline-survey/>
- Smith, C. (2019, June 23). Swedish teenager Greta Thunberg urges wealthy people to stop stealing others' carbon budgets. *Straight Talk*. Retrieved 26/6/2019 <https://www.straight.com/news/1258421/video-swedish-teenager-greta-thunberg-urges-wealthy-people-stop-stealing-others-carbon>;
- Smith, S. (2017). Unfriendly Climate. In *The Best American Science and Nature Writing*, ed Hope Jahren, Wilmington, Mass.: Mariner Books.

- Surging Seas. (2019). *Risk Zone map*. Retrieved 26/6/2019 https://ss2.climatecentral.org/?bbox=40.9579931139,-74.3075324619,40.4574196046,-73.6450665035&label=New%20York#13/40.7077/-73.9764?show=satellite&projections=0-K14_RCP85-SLR&level=10&unit=feet&pois=hide
- Sweetser, K.D. (1910). PETER OF HAARLEM: The Boy Who Saved His Country. In *Ten Boys from History*. New York, NY: Harper and Brothers. Retrieved 26/6/2019 <https://www.learn-to-read-prince-george.com/peter.html>
- The Ozone Hole. (n.d.). *The Montreal Protocol on Substances that Deplete the Ozone Layer*. Retrieved on 26/06/2019 from <http://www.theozonehole.com/montreal.htm>
- Tyndall, J. (1896). *The forms of water in clouds and rivers, ice and glaciers*. New York: D. Appleton and Company. Available online Retrieved 26/6/2019 <https://archive.org/details/formswaterincloud00unkngoog/page/n17>
- Viñas, M. (2018, December 10). More glaciers in East Antarctica are waking up. *NASA, Global Climate Change – Vital Signs of the Planet, Feature*. Retrieved 26/6/2019 <https://climate.nasa.gov/news/2832/more-glaciers-in-east-antarctica-are-waking-up/>
- United Nations Press. (2019, March 28). Only 11 Years Left to Prevent Irreversible Damage from Climate Change, Speakers Warn during General Assembly High-Level Meeting - Ambition, Urgency Needed to Address Global Emergency, Secretary-General Says. Retrieved 26/6/2019 <https://www.un.org/press/en/2019/ga12131.doc.htm>