# A Transitional Imaginary: Space, Network and Memory in Christchurch

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HARVEST

FRESH SCHOLARSHIP FROM THE FIELD

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Introduction

[Adam Hyde, *Fault line, Networks, GAP,* 2015.]

A Transitional Imaginary: Space, Network and Memory in Christchurch is the outcome and the record of a particular event: the coming together of eight artists and writers in Ōtautahi Christchurch in November 2015, with the ambitious aim to write a book collaboratively over five days. The collaborative process followed the generative 'book sprint' method founded by our facilitator for the event, Adam Hyde, who has long been immersed in digital practices in Aotearoa.

A book sprint prioritises the collective voice of the participants and reflects the ideas and understandings that are produced at the time in which the book was written, in a plurality of perspectives. Over one hundred books have been completed using the sprint methodology, covering subjects from software documentation to reflections on collaboration and fiction. We chose to approach writing about Ōtautahi Christchurch through this collaborative process in

order to reflect the complexity of the post-quake city and the multiple paths to understanding it. The city has itself been a space of intensive collaboration in the post-disaster period.

A Transitional Imaginary is a raw and immediate record, as much felt expression as argued thesis. In many ways the process of writing had the character of endurance performance art. The process worked by honouring the different backgrounds of the participants, allowing that dialogue and intensity could be generative of different forms of text, creating a knowledge that eschews a position of authority, working instead to activate whatever anecdotes, opinions, resources and experiences are brought into discussion. This method enables a dynamic of voices that merge here, separate there and interrupt elsewhere again. As in the contested process of rebuilding and reimagining Christchurch itself, the dissonance and counterpoint of writing reflects the form of conversation itself. This book incorporates conflict, agreement and the activation of new ideas through cross-fertilisation to produce a new reading of the city and its transition.

The transitional has been given a specific meaning in Christchurch. It is a product of local theorising that encompasses the need for new modes of action in a city that has been substantially demolished (Bennett & Parker, 2012). Transitional projects, such as those created by Gap Filler, take advantage of the physical and social spaces created by the earthquake through activating these as propositions for new ways of being in the city. The transitional is in motion, looking towards the future. *A Transitional Imaginary* explores the transitional as a way of thinking and how we understand the city through art practices, including the digital and in writing.

Views of Ōtautahi Christchurch

In 2010 and 2011 Ōtautahi Christchurch was rocked by a series of earthquakes. In the second large quake, on 22 February 2011, 185 people lost their lives. The earthquakes resulted in the destruction of much of the central city, widespread damage to infrastructure, the loss of homes and livelihoods, and lasting trauma. This much, and a great deal more, will be familiar to some of us. We may have heard it, spoken it and written it many times. Nonetheless, the earthquakes haven't lost their ability to shock, especially for those who live in Christchurch, or knew it well before the quakes. The city has been radically transformed, and its transformation continues.

A Transitional Imaginary is the outcome of a meeting specifically in and about Christchurch, emerging out of the authors' responses to the city's 'situation'

and the experience of gathering here to write the book. Some authors were unfamiliar with the details of the post-quake recovery process and all of its implications; others have been living with that process for more than five years now. The detail and complexity of events and issues can seem almost too great to comprehend. Some people in Christchurch are in a position to understand the various big pictures of recovery or have a particular capacity to research and retain all of the information at hand. At the same time people 'outside' the direct experience of the quakes have a mediated and external view – they bring other stories and responses from other sites to this discussion or imagining.

All understandings of Christchurch are partial and impressionistic – focused on a particular issue here, a detail of the environment over there, layers of media and memory, the frustration of navigating a constantly changing roading environment and shifting personal feelings. Everyone in the city is expert in some aspect of the recovery process, whether that be the detailed insurance issues related to their own house repair, the circumstances of their own employment, an appreciation of the creative responses to the recovery or simply how to cope with an ever-changing city. One of the strategies of *A Transitional Imaginary* is to write from both inside and outside of Christchurch, to create a picture that doesn't seek to explain everything that has happened here, but to immerse the reader in a feeling of the constantly changing post-disaster situation.
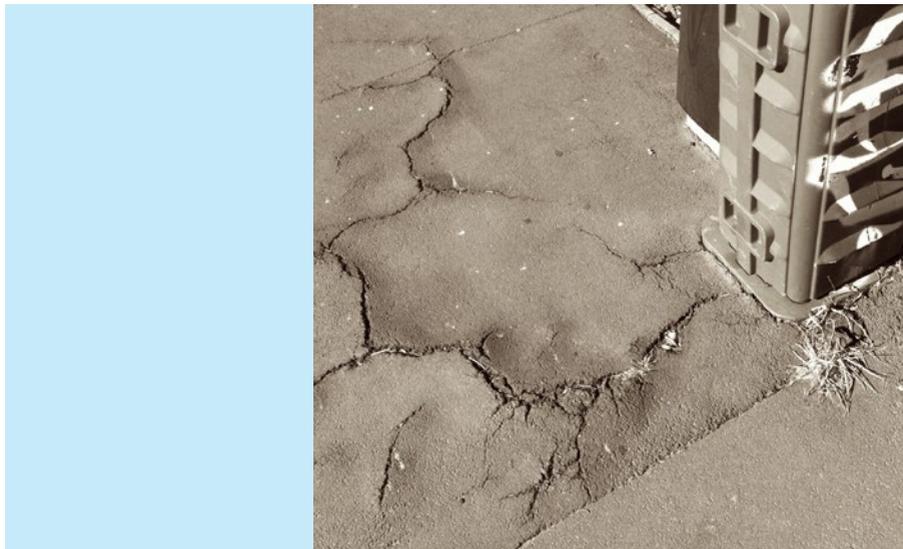
[Susan Ballard, *Telecom Tree Roots*, 2015.]

Much has been written about the situation in Christchurch since the earthquakes. As journalist Philip Matthews has observed in local newspaper *The Press* (29 November 2015), 'we are now the subject of films and books…. a metaphorical setting as much as a real one, a symbol of brokenness and the hope of healing.' There is now a substantial body of work detailing and critiquing the earthquakes and all aspects of the recovery, from insurance processes to city planning, creative responses and the records of lost and found pets. There are many in-depth accounts of all of those processes, and much more to write as the post-quake period slowly unfolds. This book responds to many of those works, and seeks different imaginaries, interwoven paths through, and different lessons from, the experience of the city over the past five years.

The expanded field of the digital

Digital art is about the various connections between the technological and the organic, and the networks by which humans understand each other and the physical world. The digital is a useful way to address the Christchurch earthquakes because it helps us think about degrees of networks and the possibilities and limits of technology. From the close proximity within which this book was written (simultaneously in person and online), to the city-wide digital infrastructure mapping tools that will determine the city's futures, the digital is pervasive.

The book arises from the Aotearoa Digital Arts (ADA) network's longer exploration of the meanings and possibilities of the digital in art practice and writing. The first document of this work was the collection published in 2008 as *The Aotearoa Digital Arts Reader*, which explores what digital art practice means in Aotearoa New Zealand and presents a network in formation, constructing both a pre history and a future scape for digital arts in New Zealand. The digital and analogue were once understood as binary opposites, but as computer programmer Douglas Bagnall argues, 'What the digital age really means is that the digital disappears. It swallows itself, hiding within every apparently analogue thing.' (Bagnall in Brennan and Ballard, 2008, p. 27). The art practices embraced by the ADA network have always been a part of more commonly understood analogue practices such as walking, photographing and sketching.

In *The Aotearoa Digital Arts Reader* we argue that the digital is not simply about the embrace of new technology but enacts a paradigm shift, where the emergence of digital practice has given us new eyes through which we can view everything. So many art practices that are more commonly understood as analogue are now inherently digital – aided and disseminated through technological networks. Digital art may use digital tools, but not always in the

service of technology. Because it always turns to, is formed within, or comments on, the network, digital art offers a useful space from which to understand transitional events of any kind.

Seven years later, this new book strengthens our conviction about the centrality and diversity of digital practices in New Zealand. *A Transitional Imaginary* applies the expanded digital perspective to a very specific event. In doing so, we suggest that it is not possible to understand any monumental event in isolation. The Christchurch earthquakes are deeply entangled in matter, bodies, networks, spaces and memories. Historical earthquakes in New Zealand have been defined as singular temporal and spatial events: Napier (1931), Inangahua (1968). The sixteen-thousand-and-counting shocks that make up the Christchurch sequence are an ongoing demonstration that a disaster is never singular. In this book we show how works that grapple with networks and systems and digits can highlight other networks (of colonisation, of sewerage), systems (of government, of traffic, of industry) and digits (of mapping, of numbers, of movement and sound).

A braided river

A braided river is unconstrained by the valleys and terraces that characterise more singular rivers. In its flow from mountains to sea, the braided river is always in transition - moving forward and constantly changing the terrain through which it travels. A braided river traverses a wide flood plain, following paths that shift according to constantly changing volumes of both water and sedimentation (Gray and Harding, 2007). It is defined by more than surface characteristics however, as water moves downwards within the system, flowing through alluvial gravel to travel as groundwater. Christchurch sits within the extended flood plain of the Waimakariri River, and that braided river's gravel deposits underlie the surface of the city (Geer Association, 2014).

A Transitional Imaginary is framed by the metaphor of a braided river, an image that is emblematic of the South Island landscape within which Ōtautahi Christchurch is situated. Its shifting waterways, which carry and lay down silt in layers of new memory, reflect both transitions and networks and describe the continually shifting gravel beds upon which the book has been written. This approach represents an understanding of the transitional that explores aspects of change and network around Aotearoa, but begins from Christchurch, and from an expanded view of the digital. In particular, we hold that digital art provides new ways to think about the long catastrophe in Christchurch, and about cities and their vulnerabilities more broadly.

[Gobeirne, *Waimakariri*, 2007. Source: Wikimedia Commons.]

This book was written by braiding the voices and perspectives of its eight participants as we responded to the overall themes of space, network and memory. The bringing together of fact and metaphor, anecdote and storytelling is the result of a digital process of writing across and between texts. It encourages the reader to think about writing itself as a cultural and digital act. When overlaid with networks of presence and absence, writing presents multiple views of the transitional city, attuned to the technologies, networks and virtualities that have always ordered our world. This fictocritical approach to the digital enabled us to embrace the convergences and divergences of the braided river.

A Transitional Imaginary is one outcome of the ADA network's Mesh Cities project, a series of symposia and events that considered the role of digital arts in the 'transitional' city. The process of the book sprint networked through proximity; proximity to each other but also to Christchurch. In offering a proximate and collaborative perspective on the networks that continue to resonate around and across Christchurch, we present a new reading of the Christchurch earthquakes. Significantly, *A Transitional Imaginary* shows that digital art, because of its focus on networks, is useful for understanding transitional sites, and in the process challenges common understandings of both.

Space, network and memory

Transitional sites and imaginary cities are in constant production. The title, *A Transitional Imaginary: Space, Network and Memory*, gives this book its structure, but also suggests the range of ideas that circulate around the digital: ideas about spaces as sites of meeting, sedimentation, colonisation and exclusion; ideas about networks of physical cause, biological distribution or human meaning; ideas about memory stored, obscured and uncovered. The three large sections Space, Network and Memory emerged from the collective knowledge and practices of the group. They reflect on aspects of the city as it is now, in November 2015. Within the sections individual chapters offer nodes of close exposition, links where concepts contribute purposeful mis-readings and sites where imaginaries are deeply embedded.

Those chapters under the heading of 'space' deal with the settling and unsettling of spaces; with physical and virtual meeting places; with depth, scale, pattern and complexity under the surface of a seemingly flat plane; with the charting and mapping of space. It is impossible to fully understand everything that is happening in Christchurch, so to begin the book traces the passage of arrivals from sea into the harbour and over the hills to the nascent city, bringing the reader into this unsettled land. It digs into more solid ground, in the earth, and works outwards again to seek the people and people's spaces.

The 'network' chapters concern networks of human interaction; networks and counter networks of weeds; the causes and consequences of network failure; the sense of hope and loss associated with the development of network ecologies. We expand our definition of network to include not just the technical and infrastructural, but also the social. In just one example, the informal game of 'guess the aftershock magnitude' was enabled by the shared connectivity of social media networks and Geonet's networked updates from seismic drums. Many informal and participatory social relationships re-emerged after the quake and continued to resonate within transitional projects. We show how these ideals find parallels in some of the pre-histories of the digital. We explore how network ecologies further entangle bodies with the land.

The final section of the book explores the memory of things, the memory of memory and the memory of a city that feels always in the process of being forgotten. Like memory, the accounts and stories here are necessarily fragmented and partial. They include the resurgence of the swamp as a form of earth memory; the memory laid down in discarded material; trauma as an interruption of bodily memory; the difficulties of remembering a city in transition.

Cities and networks are embedded in one another as figures of community and alienation, technology and togetherness, and ways to think through our mutual interdependence, our resilience and fragility. Networks thread their ways in and out of people, animals, surfaces and things. They activate spaces, generate and contain memories. They are present in braided rivers, in wave transmissions through the earth's crust, in the trusting looks, words and relationships we share with each other. They cross fences, connect us with absent others and forbidden zones, offer surprising views and perspectives, and also challenge the very idea of perspective.

The digital is networked within every crack and crease of the still moving ground in Christchurch. *A Transitional Imaginary* works to make that visible. We show the entanglement of walking with GPS technologies; the way that the rising swamp resonates with the industrial birth of the Anthropocene; how volcanic boulders vibrate through the media screen. All these examples prove that it is still not possible to isolate the digital from the analogue, but that a networked digital perspective can add something new to the way we view the transitional imaginary of an earthquake.
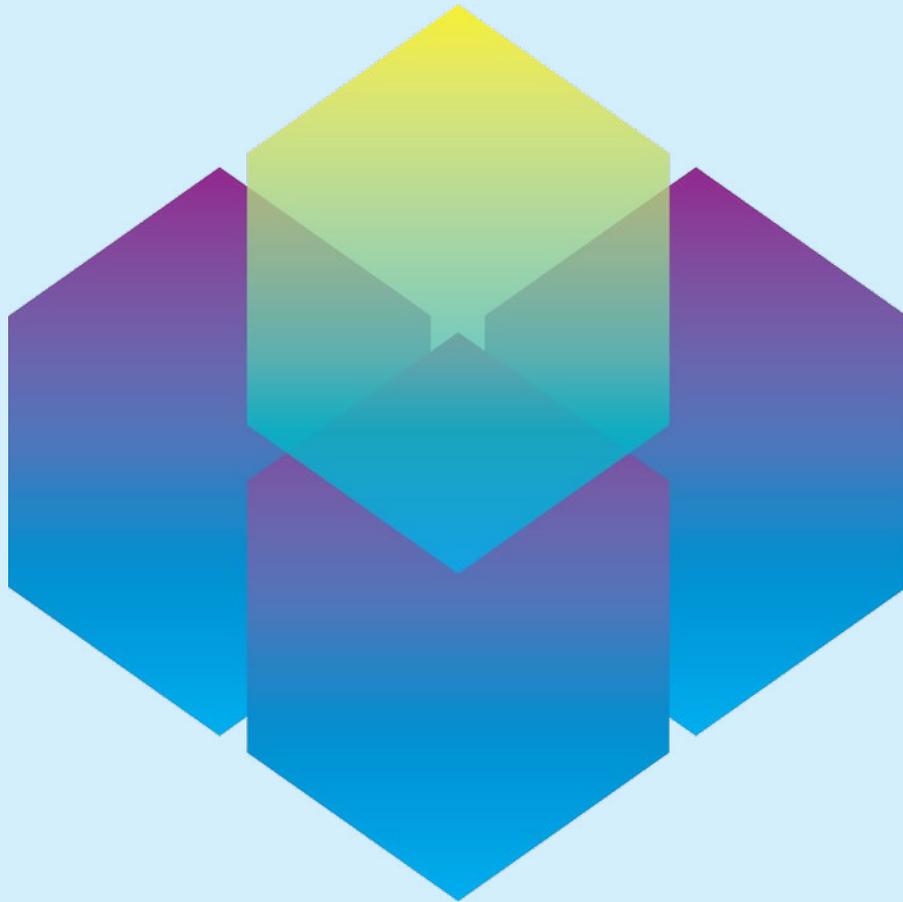
Part one:

Space

The chapters in Part one: Space experiment with the parameters of the digital and the city in order to focus on the spatial aspects of Christchurch as a transitional site. We show how digital and networked tools help us to traverse and understand the limitations of physical space.

Charting alternative cartographies explores the different uses of maps and charts, from navigation into port, to the colonial imposition of maps onto physical space, to the traces of wayfinding emerging from the experiences of navigating through a newly imagined city.

Reimagining the agora gives an account of the possibilities inherent in physical and virtual meeting places, and explores the kinds of alternatives that emerged when Christchurch's central sites for gathering together were closed off.

Unsettling space is a fragmented text that reflects on the ways in which the earthquakes disrupted established boundaries within the city and the individual: boundaries between settler and indigenous imaginations of the city, or between interior and exterior spaces.

Geology of gravel turns to the visual cultures of earth and energy, finding depth, scale, pattern and complexity under the surface of the apparent flatness of Ōtautahi Christchurch's land.

1. Charting alternative cartographies

[Vicki Smith, *Sailing Godley Heads,* 2012]

Sail us in. We are heading towards land.

When a boat approaches land, the bigger charts used for navigating the ocean are put aside in favour of smaller charts. Once the arrival is being planned at the edge of the approaches chart, it is possible to gain entry to a harbour or port. 'Approaches to' tells you that you are about to arrive. The 'approaches to' chart is supplemented with a pilot book and almanac. Navigation, at this point, is a process of reading simultaneous layers. The pilot book is text only, a wayfinding of known markers and way points. The chart will show you where you are allowed to anchor using records of known anchorages, but it

won't necessarily recommend a safe space. The chart marks the way through the mud, shoal and gravel, the buoys and cardinal markers that bring the boat to land.

Charts are based on mean high water springs (MHWS), the edge of the land and the foreshore. Sailing into a country made of islands, you have to be aware of movement. Anchors have to have the flex for the tidal range. The altitudes and contours of a map, on the other hand, are based on a perceived sea level – a zero of fixed trigonometry points. Unlike charting, mapping involves projecting three dimensional space into two dimensions. Sea level is an imaginary thing that we hold in our head. It might be fixed on a map, but in actuality it rises and falls and is never fixed. Chart datum itself is zero on a chart. Zero then, is a starting point. The moment of stepping off the boat.

The multi-layered reading required to navigate; the incomplete nature of every record; the shifting surface over which the mariner travels – these things are characteristic of all our attempts to represent and record spaces and movements through them. The flexible and partial nature of the chart and the moving surface of the water serve as a reminder then, of something that mapping can forget: that even solid ground slides and moves and that our maps need to move with it.

Loom of the land: Approaches to Christchurch

Looms are the sign of the land before you see the land. Cook's diaries record how they stood off and sent in the long boats to sound their way into the land. Looms were features of the charts at the time, as well as of present-day pilot books: sketched perspectives that offer not a top down view, but a view as if from the water's surface. From the lithographic maps you ascertain how the entrances work and what you should be seeing at a given bearing: they show shore line soundings alongside some topography. Looms indicate the possibility of a perceptual approach to wayfinding – reading views rather than, or alongside, top down information. We might orient ourselves by the first signs of a city as we drive at night, the lights reflected on the cloud layer above.

[Adam Hyde, *Loom*, 2015.]

There is no boundary to the technologies for establishing one's location. Local Māori navigation relied on memory and song for the transmission of knowledge required for safely making landfall. Pre-Global Positioning Systems (GPS), sailors would ping radio stations on the short wave network, triangulating response times to establish their location. Pre-pre-GPS, Cook used the sextant. In order to find latitude we can read the angle of the sun, yet for longitude an accurate clock is needed. Cook used one of Harrison's chronometers when coming down this way for the Transit of Venus in 1769. The time of ingress and egress of the edge of Venus across the edge of the sun were recorded to establish parallax and figure the astronomical unit, the distance of the sun to the earth. Space and time become a map. GPS similarly uses a timestamp protocol to establish location. The macro scale – time and space itself – is assessed against the micro scale of a particular location to chart a course that avoids known dangers.

The power of where and passage making

The surface of the earth is – seen on a larger scale – itself fluid. In 1915, Alfred Wegener published his controversial theory of continental drift in the *Origins of Continents and Oceans*, a book that was not widely accepted by mainstream earth science until the beginnings of plate tectonic theory in the mid-1960s (Wegener, 1966). An invisibly fluid surface is matched by the hidden fluidity

of what maps it: Cook misread the land of the Port Hills, a volcanic peninsula surrounding Christchurch, as being 'of a circular figure … of a very broken uneven surface…' (Beaglehole, 1968, p. 253-257). He classified it as an island with a false harbour, and moved on. The process of mapping includes the reading, redrawing, layering or overwriting of past maps – Cook's maps, drawn in situ are still in use, while the next European maps of Christchurch were drawn and laid out overseas.

The map is never accurate and complete, but is a gesture towards an imagination of space that never renders the lived experience. It is always an approximation. Despite its claims to truth, then, the map is always about not knowing – you don't use a map to navigate a city you already know. We can read the incompleteness of maps as early indicators of geopolitical boundaries. The edges of the world are marked by what is known: dragons, antipodeans with huge feet and swamps.

[Unidentified photographer. *A woman with children stands outside the toll-gate to the Summit Road leading past the Sign of the Kiwi, Port Hills, Christchurch,* c. 1919. Source: Wikimedia Commons.]

The Port Hills define Christchurch, either within the city as a wayfinding point, or from the hill suburbs looking down onto the city and across to the mountains. The land, then, gives us looms and charts of itself, felt ways to guide us through it, and spaces on which we can directly inscribe further wayfinders. Travelling across the Port Hills from Lyttleton in the late 1880s, Harry Ell had a vision of rest houses for the Summit Road, part of a broader dream of public access to a

reserve covering the Port Hills. The four rest houses would mark and break up the journey:

Sign of the Packhorse

Sign of the Kiwi

Sign of the Bellbird

Sign of the Takahē

Ell's punctuation of the route created the lived map of a journey across public space, one that became the destination for Sunday drives out of Christchurch. After the earthquakes, the Sign of the Kiwi (home of the ice cream shop) remains closed.
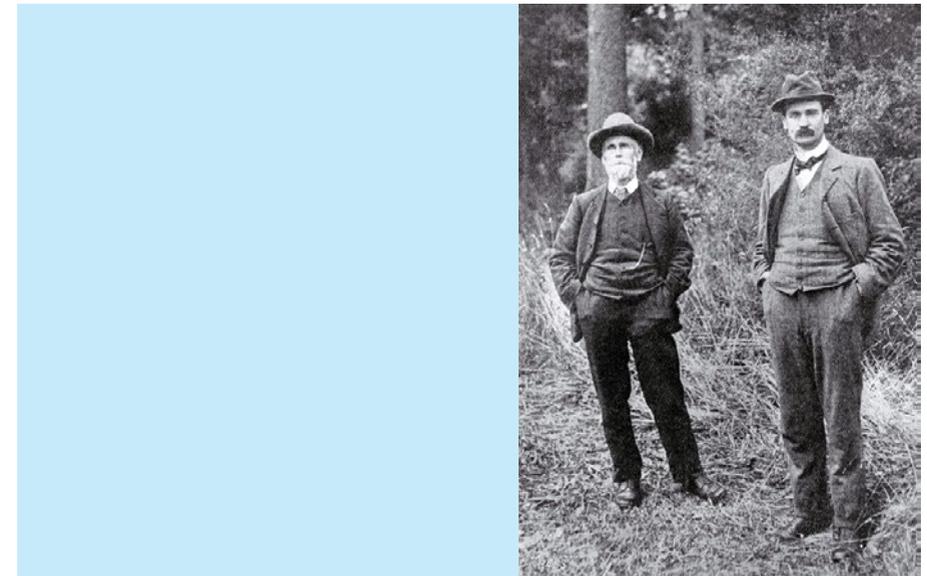
[Unidentified photographer, *Harry Ell and Leonard Cockayne,* 1904. Source: Wikimedia Commons.]

Imposed maps

There are questions that can and should always be asked of a map: Who is generating it? What are the intentions built into how it looks? What are the purposes for which it is to be read? Mapping can be instrumental to political ends. A map tells you how to behave and move and how to look at things.

In the case of Christchurch, such questions are exacerbated by the city's instability. It is a city where people who have lived here all their lives suddenly use maps to find water, petrol and power. The lives of those living in the city are reflected in, and directed by, a multiple layering of maps. Different data visualisations either present a ground-up perspective linking people and projects or document a direct representation of how civic or political processes are being stamped onto the city. Regulatory maps form boundaries of use and access at the edge of city zones. Red zone boundaries are not safe anchor points, but serve a policing function and give us a sign to move on.

In a transitional environment the layering and redrawing of maps demonstrates the elasticity of time, marking extended durations and the moments of rapid transformation that disrupt them. Flexible structures such as online open street mapping can be used to share and locate common areas, or point to water and petrol, creating a user-defined layering of information. Temporary memories are laid down in street views, which hold onto time as markers of change. The dangers of misreading remain – any damage on the online map or street view is misread as earthquake damage, though it might also include recent diggings. Maps hold legacy information inside the grid, as well as transform the visible and the spatial, thus making the city and land around it mutable and amorphous.
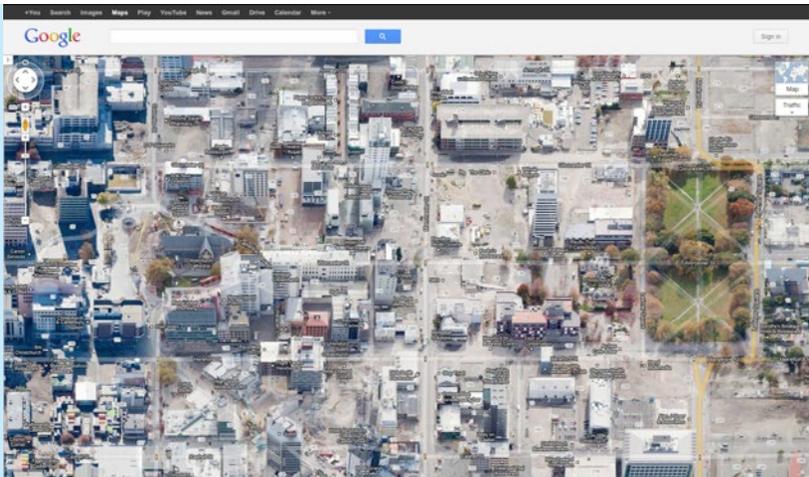
[Screen capture of Christchurch, Google Maps, 2013, The timestamp in the file is 2013-02-21T16:22:47+13:00.]

Clay city: Collective mapping and imposed design

There is a tension between the imagination of cities and the imposition of maps as power. Directly after the quakes there was a profusion of ideas, but no plan. Christchurch City Council released *Share an Idea*, a simple website where (in the site's words) "we all" could put a very simple 140 character idea up. This 'we' was self defining. Even in this process, however, there were still boundaries, called 'non-negotiables':

- the central city will not be relocated
- more than 50% of buildings within the red zone are likely to have survived the earthquake and will remain in their current form
- the form and function of Hagley Park will remain the same
- the meandering Avon River's course will not be changed
- the grid pattern of the central city streets will remain; however, there may be changes to traffic flows and use of streets.

Share an Idea contained within it the hopes of a generically accessible all encompassing 'we' who met and shared a collective mapping. On the site, ideas were submitted, gathered, harvested, and sorted. The central government's blueprint for the city's development, by contrast, no longer reflected a soft clay formed by many hands, but an imposition of boundaries. What arose was a city colour coded and remapped, defined by zones that set the spatial framework for the redevelopment of Christchurch.

A return to dead reckoning

The wayfinding towers installed by the city council throughout Christchurch in 2015 are forms of orientation (Cairns, 2015). Motivated by the interests of business and tourism, the towers were installed to assist in the identification of routes and places, both old and new. They led to a storm of controversy about the use of public money. The towers themselves are designed to be relocatable and changeable, suggesting a sensitivity to the needs of a fluid city. They seem, however, to definitively point to landmarks, such as the city centre, fixing them in the process. There is no thought that perhaps they too, like Cook, are mistaking the flexing of the land for an island. This city is now the same, and like every city can be described in colour coded blueprint survey pegs. It is no longer a city made of string. The danger of maps is that they obliterate invisible cities.

In the face of this danger, dead reckoning is happening in Christchurch. People are trying to figure out a way to move through the city and reach a point without maps. They take their bearings off the land as they leave. Saving a series of vectors, they log the changes of state.

I am in Lyttelton walking the mesh perimeter with my sister, it is a passage of her new reality marked by stories: the broken church where she got married; the school where the invisible man underneath the earth chased my niece through the playground.

Helen responds to the reformed landscape by creating maps, tracing her walking of the city.

Tracey, newly arrived, circumnavigates Christchurch by tram, repeating the loop three times to orientate.

We are wayfinding, weaving ourselves into the local ecology.

[Vicki Smith, *Summit Road*, 2015.]

2. Reimagining the agora

When everything was cordoned off in the state of emergency shops were demolished and people lost everything. Antique shops were demolished, where what was lost just couldn't be replaced – and people didn't get a chance to rescue things, the state of emergency just rode over everything. (Netwalking participant, 2013)

In ancient Greece the agora was a central public space in the city where free persons (men of property) could gather to debate, buy and sell in the market and take part in the athletic, artistic and spiritual life of the city. The earthquakes in Christchurch caused the destruction of much of the central city. The subsequent cordoning off of the centre and closure and damage to individual buildings made the existing public and civic spaces of the city inaccessible. The agora stands as a shorthand for the public space at the centre of any city: a meeting place for people, council and government. The classical agora was a singular space for all the different forms of public meeting. In the colonial civic centre these public functions were separated into the distinct institutions of the library, town hall, art gallery, stadium and market place.

The concept of the agora has been extended to include networked spaces of the internet. The idea of an unmediated virtual agora was one of the driving ideologies of virtual communities advocated by new media evangelists like Howard Rheingold, such as the Whole Earth 'Lectronic Link or WELL founded in 1985 by Stewart Brand and Larry Brilliant (Barbrook and Cameron, 1995). In the period immediately following the February earthquake, Facebook became a space for gathering online when there were few physical spaces available. Groups like Rise Up Christchurch, Rebuild Christchurch, You Know You're From Christchurch When and Geonet became places to share experiences, information, and responses to the ongoing quakes and their aftermath, for people both within and outside of the city. Twitter also provided a shared space, and hundreds of thousands of tweets were sent using the #eqnz hashtag in the first two years.
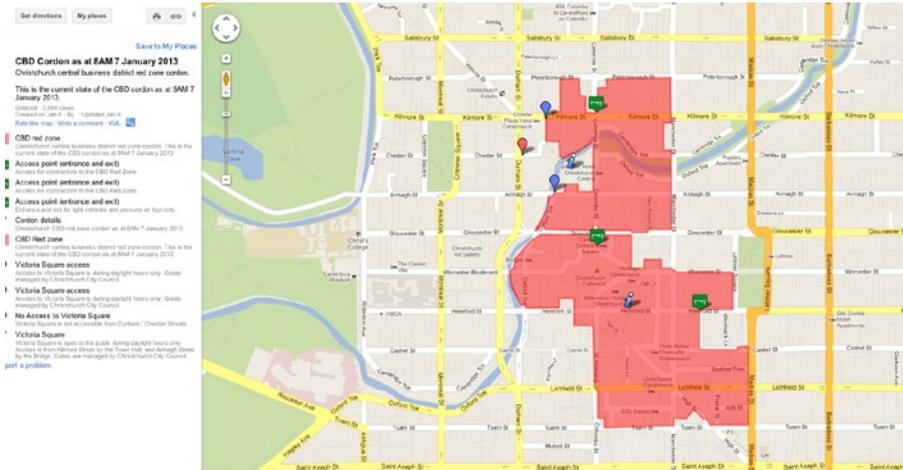
[Simon Pope, *Red Zone Cordon,* 2013.]
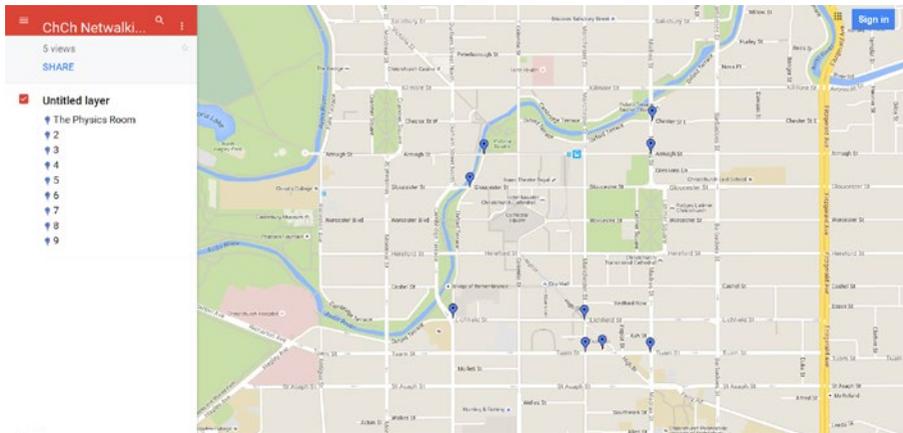
[Simon Pope, *Public Walk Map,* 2013.]

Cordoning the city

The central city cordon was erected on 22 February 2011 under a state of emergency declared by central government, and remained in place until the end of July 2013. The cordon was erected by the police and the area inside it was named the Central City Red Zone. In that time the boundaries of this public exclusion zone were reshaped thirty times (Fairfax Media, 2013). CERA called the process 'cordon reduction'. The cordon delineated the red zone of demolition, excluding all those who did not have permission to enter, making

it a space for demolition workers, officials, and burger trucks. The cordon was patrolled by the New Zealand Defence Force, and initially by members of overseas military contingents such as the Singapore Armed Forces. Resident access was strictly controlled, with people requiring identification to reach their own homes. Civic spaces like Cathedral and Victoria squares were completely inaccessible, along with many central city shops and cafes. After the earthquake there was a rupture between the civic and the governmental: in government discourse the centre was talked about for the first time as a central business district. Civic space was reimagined in this imposed language as business space.

The Christchurch Town Hall of the Performing Arts was enclosed within the cordon. Built and opened in 1972, the Town Hall was designated a significant public space for cultural and civic events, and was the site for a wealth of public memory. The governance of the red zone changed this, in an intentional removal of the public space that took place outside of public process. The rebuild plan initiated by central government included the eventual demolition of the Town Hall, until the Christchurch City Council successfully argued to have it rebuilt. Its role as a gathering place is articulated in an explanatory sign reading 'Our Town Hall: Restoring the city's Living Room'. The reason for its survival is an accident of the insurance policy that prevented the money from being used elsewhere.

[Julian Priest, *Restoring the City's Living Room,* 2015.]

Public gathering spaces were also closed around other parts of the city. Churches and sports facilities were damaged. AMI Stadium, the former Lancaster Park sports stadium, was closed immediately and remains closed nearly five years later. QE2 swimming pool and sports facility has since been demolished. Libraries, which were fully insured, quickly created temporary facilities and became the most accessible civic gathering spaces – two were developed around the central city as the cordon shifted, and others appeared in suburban areas. The Linwood Library in particular moved from its city council owned space into a shopping mall next to the original library building, which was damaged by both earthquake and subsequent arson. Moving a public agora space into a shopping mall complicates the usual distinction between public and private space, and the assumption that proprietary shopping mall space excludes non-consumptive public behaviour. Following the successful relocation of the library, the mall is now developing a social services hub around it, including medical and counselling services. With such a move, a suburban re-imagination of the agora begins.

Redefining public space

In the process of the city rebuild, the Christchurch City Council ran a hugely popular consultation called *Share an Idea* where citizens reimagined the city and its public spaces. There were 10,000 visitors to the online and physical public space, with its mix of technical and non-technical ways to participate. The consultation process informed the Christchurch City Council's Draft Central City Recovery Plan, which was submitted for approval to the Minister for Canterbury Earthquake Recovery, Gerry Brownlee in December 2011. Rather than approve that plan, Brownlee appointed a new committee, the Christchurch Central Development Unit (CCDU), to write a new plan, the 'CCDU Christchurch Central Recovery Plan', which offered a 'blueprint' for the central city. The blueprint mapped out major anchor projects, including a convention centre, a covered sports stadium and a justice precinct. This represented not only a symbolic loss of the agora but a surrendering of local autonomy and responsibility for the re-envisioning of Christchurch.

A netwalking participant describes the devastating effect of the minister's blueprint:

> I was so depressed by the draft plan. The CCDU Plan made it feel like …. everything that I thought was exciting about the possibility of what could happen here was crushed. That was the first time that I thought that maybe I could leave.

The process and the disappointment are ongoing. An article in local newspaper *The Press* on 25 November 2015 recounts a reader survey demonstrating dissatisfaction with the level of public engagement in the rebuilding plan:

> Many readers said they were disappointed the thousands of ideas put forward for the city during the 2011 Christchurch City Council-run Share An Idea campaign appeared to have gone unexplored …. "It seems like our dreams at the beginning of the planning of the new city are being ignored," one reader said. (Cairns, 2015)

In the same article, a Canterbury Earthquake Recovery Authority spokesperson defends the CCDU plan as having been an adequate response to the issues raised in share an idea, 'including calls for green space, accessibility and a compact city centre' (Cairns, 2015).

Netwalking the red zone

UK artist Simon Pope visited Christchurch in March 2013, as part of the *Netwalking* (2013) tour, which incorporated a series of public events and ADA-hosted masterclasses in different cities in New Zealand and Australia.

[Julian Priest, *Netwalking Christchurch Participants*, 2013.]

Pope invited a group of walkers to participate in the work. They gathered on the roof of the Physics Room gallery in the old Tuam Street post office building. From there, a clear view could be seen of the February 22 earthquake's epicentre on the Port Hills. Walkers were invited to study the hills in detail and commit

their features to memory. The group then embarked on a walk loosely following the red zone perimeter. As people came to an open space in the city where previously there had been buildings, they were asked to remember a mountain – either the Port Hills or one of their choosing - and manifest it in the space through the exchange of memory in conversation.

[Susan Ballard, *Zita Points,* 2013.]

The experience of walking the red zone boundary was a response to the common post-quake practice of walking the cordon. Looking into the flattened gravel spaces where buildings and public spaces had been gave the feeling of being excluded. The feeling was one of being physically outside the cordon, but also outside the decision-making process. With the red zone border patrolled by the army, the situation created a disturbing visual distance between the polity and the state, a spectacle that was difficult to square with the understanding of our nation as a democracy. As well as the imaginary inscription of mountains into the spaces in the city, a series of discussions and conversations developed between the participants, and some conversations between Pope and participants were recorded. The conversational space that was opened up by the walk functioned as a temporary informal agora, a space for discussion and conversation that contrasted sharply with the closed public space of the red zone.

[Julian Priest, *Temporary Informal Agora Approaches the Commons*, 2013.]

One stopping point on the walk was the Pallet Pavilion, a temporary structure built from shipping pallets, which contained a meeting point, food stalls, bar, performance venue and discussion space. The Pallet Pavilion was built in 2012 as a communal space for performance and gathering, making up for the many venues that had been lost from the city. The more formal community run space of the pavilion provided a counterpoint to the informal agora of the walk. The minimal framing provided by the architecture of the pavilion created a working and multi-functional agora that was popular and well used for a huge variety of projects. Although it was constructed inside the red zone, on a site that had once held the Parkroyal and later Crowne Plaza hotel, the cordon was moved around it to make it accessible to the public. In 2013 the pavilion's broader site was renamed The Commons, reflecting the different community organisations using the land, including Gap Filler, Greening the Rubble, and RAD Bikes - a communal site for the sharing of skills and resources, facilitating bicycle repair. The Commons site is guided by principles that prioritise inclusivity, and the sharing of resources and ideas:

We wanted to create a space where people feel they could contribute to making ideas come to life; a space they could help to shape; a space for small-scale experimentation; a space that feels welcoming and inclusive. The site should serve as an invitation to people who want to do things here – projects, events and more. It will evolve and change to support new ideas and 'makers'. (Gap Filler, 2011-2015)

[Vicki Smith, *ADA Sound Sky Workshop at the Pallet Pavillion*, 2014.]

The Commons has been formalised by a community of people as an urban agora. It facilitates gathering and discussion. In the absence of a civic agora, The Commons arises out of what the commons means in action. In the course of its various onsite activities, The Commons combines the functions of marketplace, meeting place and athletics zone, through the open communal flow of play in the Retro Sports Facility. The Grandstandium provides spectator seating for the Retro Sports Facility, but can also be transported around the city: a mobile agora that facilitates discussion about the past, present and future of the city in events called 'Eyes on the City'. The Retro Sports Facility and Grandstandium also operate as an alternative to, and implicit critique of, the central government's anchor projects like the Metro Sports Facility and Stadium.

Common spaces in Christchurch have arisen from what Ryan Reynolds calls a 'propositional mode of development' (2014, p. 168). These are events and spaces that implicitly invite the public 'to engage their own imaginations' (p. 169). This tactical approach to urban development in 'the gaps' answers what Reynolds identifies as a desire for spatial and temporal gaps, but also suggests a political space offering 'possibilities for fundamentally reshaping social interactions …. spaces conducive to sociability without pressure to shop, for inclusivity and for the possibility to be truly surprised' (p. 175).

The devastation in Christchurch created a rupture in the history of the city and a levelling of many physical structures. The abrupt lack of an agora presented an opportunity for the creation of something new – a new city was possible along with the opening up of new thinking and change. The situation created a possibility for re-imagining public spaces, and for updating the personal, civic and capital relationships in the city. At the cost of diminishing the official agora, the location and role of the agora was transformed, entering formerly private spaces and reinvigorating public involvement in collective discussion and experience. The red zone, the blueprint, and the marginalisation of the people highlight a boundary between different versions of public: the public of the state and the public of the polity. The public seeks a voice, and when there is no space we route around it and build a new thing. Coming up against the cordon, we witness by contrast an empty space marked by the now visible coincidence of damage and capital. The fence marks the point where the polity meets the state.

3. Unsettling space
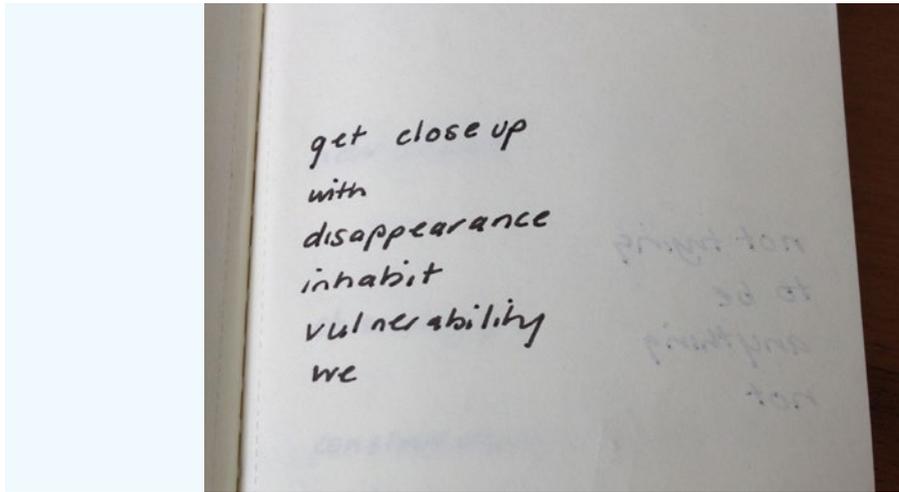
[Helen Moore, *Handheld Notebooks,* 2011-2015.]

Local communities in Canterbury found themselves experiencing many thousands of earthquakes (it has been said that over the five years there has been an accumulated fifteen minutes of shaking). Three of the earthquakes were particularly devastating with loss of life, homes, businesses and workplaces and the associated trauma of that ongoing situation. Living at the centre of disaster, the familiar became unknown territory during Ruaumoko's activity. Ruaumoko, god of earthquakes, volcanoes and seasons – an earthshaker.

Was it already unknown territory, in a way that was easy to forget?

The Christchurch earthquakes disrupted previous memories of space and place, whilst unearthing other sites for the generation of new memories. These new spaces along with the quakes themselves remain unsettled, contributing a fragmentary narrative: the formation and performance of new memory through space.

Talking about events named by the media as catastrophic has, at times, reduced the language of the experience to clichés. *Shaky ground, unstable, grounding ourselves*. A re-noticing. The ground we stand on is an elemental human experience of being in the world.

Trusted.

Telling us who we are and where are.

Assumed.

Disruption now reminding us that we are vulnerable.

Temporal.

A time of change.

What was forgotten and, perhaps only for a moment, remembered, was unsettlement itself. That is why 're-noticing' is the right word. The land on which Christchurch was established was purchased from Ngāi Tahu in 1848, with reserves of ten acres per head of population. This was later reduced to four acres per head by the surveyor Walter Mantell (Christchurch City Libraries Ngā Kete Wānanga-o-Ōtautahi, 2015).
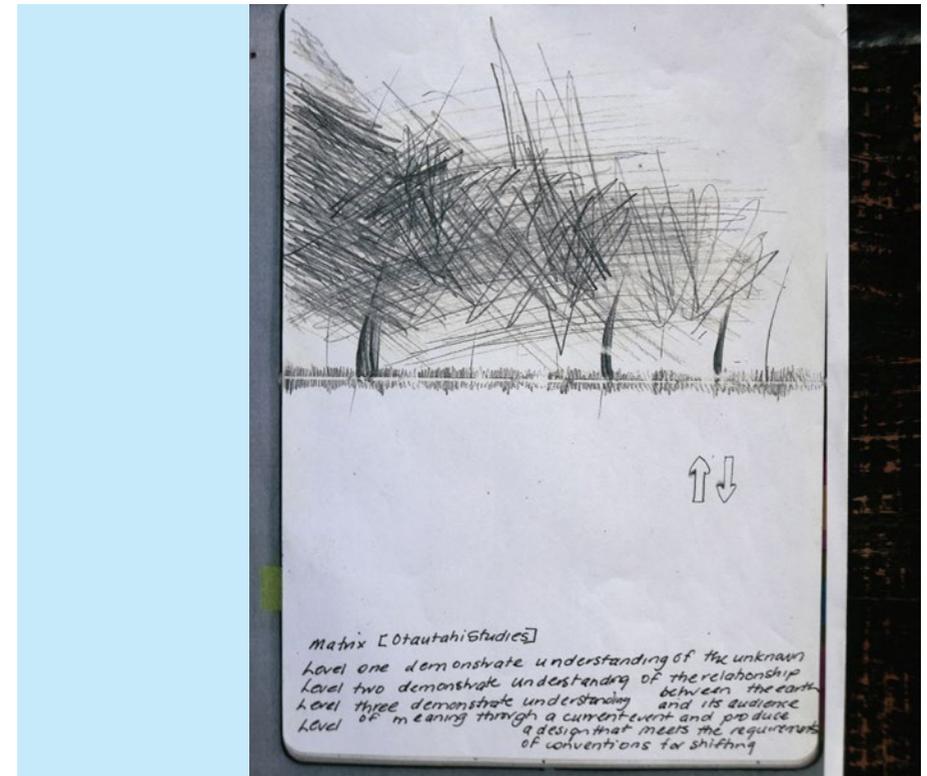
[Helen Moore, *Handheld Notebooks,* 2011-2015.]

The ground shakes: Opening up spaces

The shaking has opened up the space for the contemporary entanglement of Ngāi Tahu with the city to become more visible. The Transitional Cathedral Square project has given Te Rūnanga o Ngāi Tahu, one of the institutional collaborators with Christchurch Art Gallery and the Christchurch City Council, the opportunity to contribute to the re-imagination of the city centre. This includes Ngāi Tahu artist Chris Heaphy's *Planted Whare* (2013), a work that asserts Māori architectural form within the settler space of the square and associates it strongly with new growth amongst the broken forms of the English imaginary (Te Rūnanga o Ngāi Tahu, 2013). The imaginary of the city as English has centred on the image of the cathedral and its square, and grew from the idea of Christchurch as the Garden City. This is a historically deep strand in the imaginary of Christchurch. The memory of vulnerability, of a tenuous foundation on the land. This is a basic universal condition of all life, a recognition of the interdependence of things. Can it be converted into a recognition of other sorts? Does it shake loose the solidity of a claim according to which buildings are anchored on a founding deed?

[Vicki Smith, photo of Christchurch cathedral, 2013.]

I Like Your Form (2013), Lonnie Hutchinson's temporary installation work as part of the Festival of Transitional Architecture draws on her Ngāi Tahu and Samoan heritage. This work consisting of a fifty metre suspended hīnaki (eel trap) involved a transformation of The Arcades Project, a 'temporary' architectural artwork able to be used as a temporary market space.

> Intrinsic to each series within my art practice, I honour tribal whakapapa or genealogy. In doing so, I move more freely between the genealogy of past, present and future to produce works that are linked to memories of recent and ancient past, that are tangible and intangible .... I make works that talk about those spaces in-between, those spiritual spaces. (cited in Tyler, 2015)

The location transformed by *I Like Your Form* is sometimes referred to as the pre-quake site of the old Crown Plaza / Park Royal hotel, but has a deep historical significance for Ngāi Tahu, that is referenced by Hutchinson's artwork. The Ōtākaro-Avon river was known as an abundant mahinga kai (food source), and breeding ground for tuna and inaka.

The TEZA Site (2013) by Tim Barlow of TEZA (The Economic Transitional Zone of Aotearoa) occupied a vacant space in the Creative Quarter of the New Brighton Mall, provided by Renew Brighton and supported by Positive Direction Trust. The project valued and worked with the existing creativity and innovative endeavours of that community which has sometimes been referred to as part of the post-quake 'forgotten East'. Making it easy for people on the street to come in, a wharenui with a gateway passage provided a space for conversation and connection. A colonial tent space of 'transitional encampment' welcomed those accessing via the street (TEZA, 2015). The form of the site references colonial settlement, Māori land rights, and Occupy.

Craig Pauling, Shaun Awatere and Shadrach Rolleston suggest that the quakes have opened up space enabling Māori urban design principles to be put into practice. Their essay titled 'What has Ōtautahi revealed?' references the Ōtautahi Revealed symposium, both names suggesting that, out of shaking, something hidden comes to light. They show how the quake is a chance for Ngāi Tahu, the Ngāi Tūāhuriri and other local Runanga to work with the Christchurch City Council and CERA to 'implement Ngāi Tahu values and principles through the Christchurch Central Recovery Plan' (Bennett, 2014, p. 452). 'This is something that was missed in the development of Christchurch in the nineteenth century, but that we now all have the chance to resolve' (p. 464).

The quake enabled the opening of spaces for works to arise. Water-laden sands and silts are impacted in the earthquake shaking – a process known as liquefaction. Resulting liquid sludge affects the stability of the built environment

including underground water and sewerage pipes, particularly near waterways. This offers the opportunity to re-evalute the colonial settlement by all, not just Ngāi Tahu. Any settling must come with an unsettling. A process of arrival and exclusion, these projects point towards a resettling and connecting.

This developing awareness of living in geological time interrogates our knowing in relation to living with histories of place and being with the natural world. Non-Māori land settlement in Ōtautahi had attempted to build on swamp changing a natural state and resulting in what has been described as almost total elimination of wetlands and almost complete displacement of native vegetation. As we experience the changes to the land beneath our feet in a vivid day by day way, the land's close relationship with the waterways comes to our attention. The waterways impacted communities. Some reformed themselves through the necessity to access food and water for survival during the disaster, others continue to be flooded. Basements fill with water, the river 'just over there' appears 'over here'.

[Helen Moore, *Through the Net,* 2014.]

These conversations between our past present and future selves bubble up.

A breakdown of the walls we have erected to keep ourselves feeling safe.

One of many creative events that emerged early during the post-quake period in Christchurch brought together a small group of people around Irish architect Peter Cowman, on the cleared building site at the corner of Manchester and

Dundas Streets. Cowman improvised with a broom to demonstrate the sun's position during the seasonal equinoxes. There is a relationship here with early European settlement that initially forgot the sun's path was different in the southern hemisphere, resulting in sunless dwellings.

[Helen Moore, *October,* 2012.]
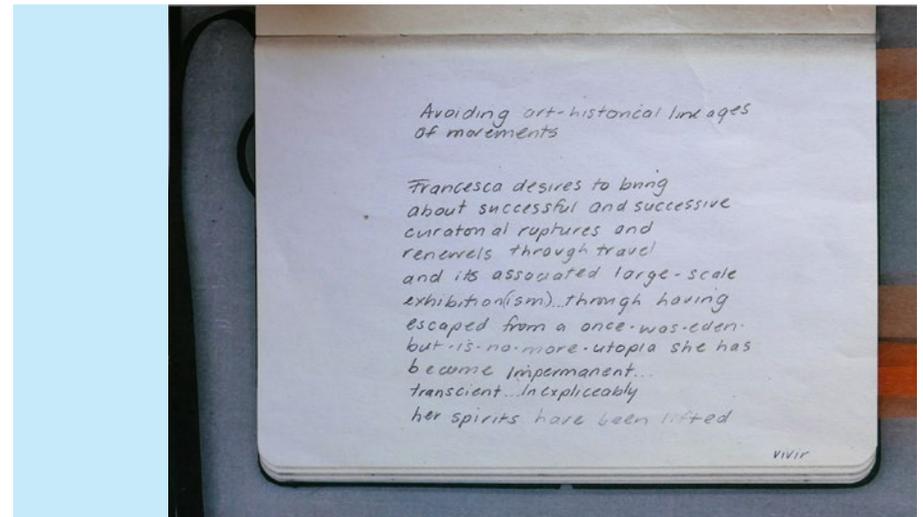
[Helen Moore, *Handheld Notebooks,* 2011-2015.]

Dolls houses and private views

You might find yourself drawing breath sharply as you come across a familiar building once part of your mental and sensory map. Previously considered unremarkable but reliably 'there'. A missing wall. Interior spaces hanging in public view like book pages.

Striped wallpaper. Desk. Chair.

Once, someone.

Shock. Just *not* right.

The intimate now out.

Strange guilt for wanting to look. For being curious. Small material world of lived lives. Overtime, an attachment. Please. Please. *Don't demolition this beautiful*.

Just yet.

Desire and distraction. A mirror held up to our own impermanence. Inhabiting the unpredictability of natural disaster inside and out.

This disappearing.

Private or indoor space, the space of safety – though not, as feminism reminds us (and needs to keep reminding us) – always a safe space. Walls provide safety, including safety from view, allowing us to do what we want to each other. The sense then of dirty laundry, the guilty view of others' secret lives and practices.

Shaking shakes our sense of ourselves by shaking down walls between us and the public world: presented surfaces are missing.

Later you will find yourself feeding jelly on a spoon to a person you do not know. The event is Free Theatre Christchurch's *The Earthquake In Chile*, held in October 2011 at St Mary's Church and Square, Addington. We partake in a feast and participate in performances outside. The man you feed jelly to tells his story inside the tent. His wife will later tell you it is the first time he has talked about the earthquakes.

We participate in the mesmerising spectator sport of demolition. 'The activity of high tech devouring machines bringing down the damaged high rise structures will become semi-affectionately referred to as nom nom' (Bennett, 2014, p. 267). A CBD street is opened for the first time to the public for a limited period. Personal documents rain down from a lawyers office high in the damaged CBD as it is demolished.

[Helen Moore, *October,* 2014.]

There are many openings between the private and the public: shameful, wonderful and touching, inappropriately revealing by turns. Day-to-day behaviours shift and continue to shift as we invent ways to keep ourselves safe, physically or perhaps psychologically in the form of personal ritual. We may have found ourselves early on sleeping in our clothes under tables for several weeks – ready to respond to the next big 'one'.

Sorting water and food.

Navigation and engagement behaviours within the CBD area change on a daily basis. As if we already didn't know the way. A bar like Revival, for example, is furnished with recycled material. In some ways it looks like a bar anywhere in the world but in the context of Christchurch given a new meaning, given the provenance of the furnishings. Insides of houses are here. Or, differently, Harry Knight's *Rent Party Club* (2012), which organises music events in private houses – inviting the public in. This is also consistent with a widespread movement to take events into people's homes. In this case, it serves another need too, making up for the lack of public music venues, a failure of public space after the quake.

Again, Gap Filler's *Dance-o-mat* (2011-2015) allowed and encouraged public bodily expression that might once have been kept indoors. A domestic technology, the washing machine, turned inside out. This turning inside out of

personal space is highlighted in the multiplicity of moments played out through the media in the direct aftermath of the September quake. National media fixated on the peeled away front wall of a building. Revealed was the upstairs flat and its orange painted walls. This interior behind a string of Tibetan prayer flags were at odds with the traditional disaster imagery of mangled steel and concrete. It became uncertain who owned the view, and who should look, an uncomfortable voyeurism of the forbidden. Who was the imposter or settler within this fragile structure?

The quake opened up the space of public and private; unsettling a known relationship to land and reshaping all relations. Rūaumoko shakes all these layers: the imposter and the unsettled. Any maintenance of the English garden city suddenly became untended. Settling and shaking is an ongoing inversion of the public private space of a city.

The city became differently interesting.

4. Geology of gravel

Much of the Christchurch gravel formation was developed by an ancient glacial ancestor of the Waimakariri River that laid out a fan of gravel called the Yaldhurst Surface. Older than that are the Canterbury plains formed by glacial and post-glacial out-wash gravels creating the Darfield Surface (Suggate, 1958, p. 104). Different deposits layer on top of each other, eroding estuarine and marine beds. Mean sea level is used to map the contours of these gravel layers and their constant shifting marks ecological as much as geological time.

Gravel was never meant to be looked at, apart from in those geological and graphical journals where people with sharp pencils and a theodolite record their measurements. Gravel is generated by the mountains and transported by water flowing from the mountains to the sea. Out of the river, and on the surface of the city, a dull grey dustiness speaks of its invisibility. A place holder for nothing. A place holder for potentiality. Soon this will be a car park, soon it will be paved – the warmth of black asphalt will soften the cold sharp edges. Gravel in Christchurch is not only sourced from the river but crushed buildings, not only land-based pits, but recycled demolition material (Environment Canterbury Regional Council, 2012, p. 4). To the bare foot, demolition gravel is sharp, river gravel is smooth.

[David Haines and Joyce Hinterding, *Geology*, 2015. Real-time 3D environment. Image courtesy of the artists and Sarah Cottier Gallery, Sydney.]

There is a multiplicity of gravel. Gravel sits within these hierarchies of size, beneath boulder and cobble but above sand and silt. The hierarchies also exist between gravel that has a memory of place, and gravel that contains memories of crushed up buildings. In this sense, gravel is an other category. Gravel becomes an aggregation when it ceases to be a singular pebble. The singularity of gravel exists below our ability to resolve it. Any cohesionless aggregate of sharp angular particles with a diameter of less than 2mm is merely coarse sand (NZ Geotechnical Socitey Inc., 2005).

Gravel allows us to see the field and its potential. Gravel is not only described by its particle size, but by its source and constitution. The categories are different around the world: there is pea gravel, pay gravel, creek rock and crushed stone. At a larger scale aggregations of gravel become objects. A gravel road or a pile of gravel become infrastructure or building materials. The gravelling of a city prevents people from touching the ground, a curated covering within a space bounded by building.

But it also has its uses. Gravel made from recycled concrete can be used in non-structural concrete. New Plymouth's Symon Klemra has started a concrete recycling business in Taranaki whose first contract was to crush the concrete from the old Govett Brewster building. 'It's saved at least a couple of tonnes of concrete from going into the tip,' he said. Since starting up, Mr Klemra reckoned he had saved about 2000 tonnes of concrete from ending up in the landfill. 'I hate to see good, usable product end up in the rubbish' (Ewing, 2013).

Gravel helps to focus the view, shifting the granularity of things in the civic environment. Engaging with gravel in Christchurch is about telling the stories of the city from its bedrock. A process of formation and deformation, where buildings and masonry have become reduced back down to aggregate. Gravel is complicated, it has become other, and cannot distinguish itself. Beyond the microscope, gravel mounds have relocated from the sides of rural roads to the centre of the city. By observing the gravel we turn it into an object.

Here is a purposeful misreading – gravel is meant to cover rather than be seen. Gravel presents a way to pay attention to space through its physical

manifestations (Barad, 2007). These network with virtual and actual spaces. Space is capable of change. Gravel marks the space as no longer empty; it is a zone about to be filled.

The hills come before the rocks

The hills are the ancestors of the gravel. Driving over the hill into Middlemarch in the late afternoon, Timothy Morton suddenly begins to describe the romance of the land around his grandparent's place in England. Timothy Morton, his grandmother and grandfather suddenly take up a lot of room in the front of the car. That is why they are out there on the hills when we drive on to Wedderburn.
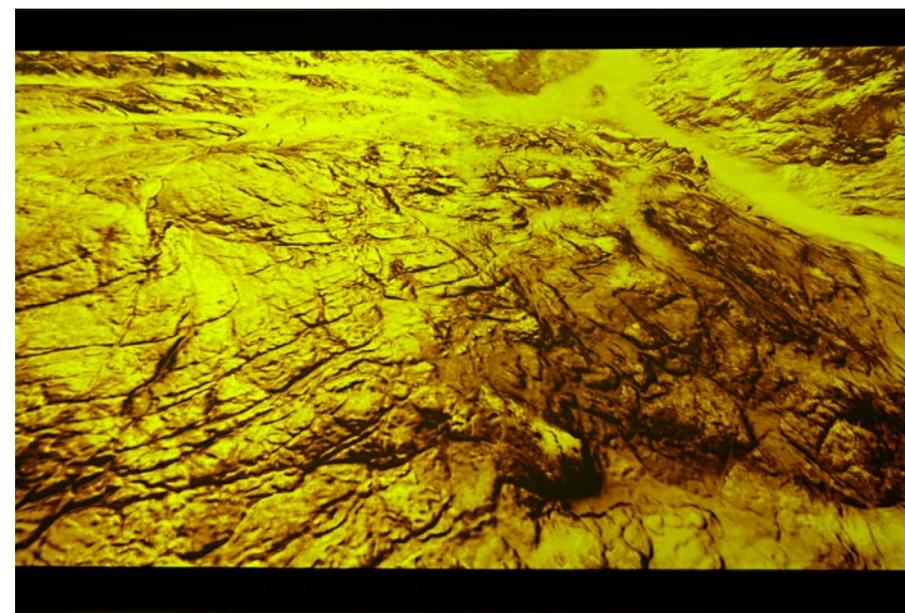
[David Haines and Joyce Hinterding, *Geology,* 2015.]

The point is not to reduce the story to content. *Under the Mountain* by Maurice Gee (1979), is the story of volcanoes in Auckland that connects the geology of the two islands together through telling and retelling. Dormant volcanoes are an unknown that cannot be grasped; and *Under the Mountain* captures these forces and turns them into ways of understanding, not just reflections of reality. In *Under the Mountain* there are indications of life but not always activity or movement. The Wilberforces are wayfinders of habitation but none of us have any ability to actually grasp them. We try to explain them, their lava tunnels, their

slug-like imperceptibility to some one who has not felt their horror. We marvel at the bravery of Theo and Rachel as they take action against the lava. They represent a collective memory of New Zealanders and live on in the bodies of a generation as a shudder. Christchurch sits on these layers of gravel between the volcanoes and the mountains.

Colin McCahon's Port Hills are there, over there. In this instance, the content is not produced but found. In *Tomorrow will be the same but not as this is* (1958-1959) he depicts the hills and a version of the land is still there to be seen, used daily as a means of navigation and orientation. The painting is a force that points to the future. It contains the vibration of colour. Its as if McCahon drew upon the vibrations that were already there rather than produced them himself. The paintings are still present and the affects are there to be lived. Witnessed. Reverberations are captured in the images. We see in and out of the paintings. We see the windscreen wiper on the car as the family travels through the land, crossing from South to North Island. There is a space behind the paintings, and sitting beside you are the painter and his family. We are travelling through a landscape whilst mapping a landscape. The painting is a wayfinder for Christchurch.

Landscaping and the social world of the boulder

Geology tends to look to the ground. Geology from the air belongs to space, rocks, meteors and volcanoes and the weird stuff that falls out of planes. After the earth quaked, rocks responded through movement. Some found themselves in walls, and houses, constructing and deconstructing homes, and people died.

Many rocks were immortalised in images around the world. First, the images travelled across New Zealand and then out to major newspapers and news aggregators around the world. One particular image of a boulder seemed to capture the imagination and intensity of the experience for those of us on the outside. The image of the rock contained the bizarre, the out-of-place, the possibilities of movement in something that had previously weathered millennia from a single spot on the top of the Port Hills. Made famous by a brief moment of Trade Me glory the boulder answered to the name of 'Rocky' and ended up in a garage in Heathcote in the Port Hills. Phil Johnston listed Rocky on Trade Me under the category 'home living - outdoor garden conservatory - landscaping materials'. The seven photographs of the 25-30 tonne new landscaping feature fit the usual genre of lo-fi pixilated cellphone images, as they say on eBay: 'photos form part of the description'. Johnston includes documentation

of damage to the rock including one side coated with a thick layer of white concrete dust and another badly scuffed corner, evidence of its previous movements.

For the photographs, Johnston has not taken the trouble to tidy the area around Rocky: the garage door is left half open obscuring one clast/ facet/ edge/ face. These seeping moments of reality in the photograph add to the seduction of a Trade Me purchase (you didn't know it but this is what you want). The low-fi images add authenticity to the commodified rock. How else can we believe that the item described before us is truthful? The burden of proof is in the way Rocky rests on a bed of pink batts insulation, supported by framing timber. Johnston gives potential purchasers a clear sense of the care with which Rocky has been housed. In the last photo, mimicking the aesthetics of car porn, an 'unidentified woman' stands with one hand resting softly on Rocky. After a heavily fought auction, Rocky was purchased for $36,900 by NZSki.

Also in Heathcote, Betty McGrail was photographed sitting in her favourite chair in her lounge room beside an unnamed large volcanic boulder. Betty had left her house during the quakes. She said that the boulders 'came down the hill fast, bouncing. They came from everywhere with a "boom, boom, boom". When I went back to my house this big boulder was in the sitting room. It's sitting there quite nicely, like it's happy to be there.'

The boulder dominates over half of Sarah Ivey's press image that continues to circulate around the news webs (Leask, 2011). The bounder rests on a little pile of gravel on Betty's dark red Axminster carpet. Betty sits beside it. Her hands clasped, she perches just to the front of her chair; beside the rock but not companionable, possibly ready to run. No one has a cup of tea. Under her neat machine-knitted blue acrylic skirt, Betty's red gumboots are dusty. They would usually be taken off before she came inside. But today is a little different. Her chair has been turned towards the camera, in the background the sofa has some washing in the process of being folded, and a door frame interrupted. The rock has broken in while Betty was out. 'Someone said dig a hole and push it through, someone else said take the roof off and lift it out and someone else said they'd have to drill it. These men have all these good ideas, but no one's been able to shift it' (Leask, 2011).

These twin boulders from the volcano have entered into the space of the image web. They are images in circulation, what we can manage to share while touching lightly into the trauma.

The bizarre.

The unusual.

The comical.

'A cavern. In the middle, a boiling cauldron.'

Between the quakes ADA hosts an event at the Physics Room. At that point of course we didn't know we were in-between. December 15. Douglas Kahn presents a lecture on seismicity that would become the start of chapter eleven of his *Earth Sound Earth Signal* (2013). A historian, Kahn draws on his own experiences of earthquakes in Seattle "in which the ground itself became acoustic, with swelling waves travelling down through the road" (Kahn, 2013, p. 133). Kahn discusses Alvian Lucier's *Music for Solo Performer* (1965) in which Lucier uses brain waves to control the sound of space. Kahn takes us to the moment in 1945 when "atomic shots" joined with naturally occurring earth signals. And then takes us into the acoustical and audible sounds of earthquakes: not just the land, which itself is not a single rippling surface, but intersections of the sound and silence of the animals, their voices mixed with people and vibrations at different frequencies.

Kahn relates a description of the Murchison earthquake of 17 June 1929 that 'Created sounds in the area of greatest destruction [that were] deafening and and of extreme loudness, creating as great panic as the earthquake itself. Most observers described them as tremendous subterranean explosions. At Nelson, about 85 kilometres from Murchison, the sounds resembled the whistling and rush of wind' (quoted in Kahn, 2013, p. 163). These are descriptions of sound that form a mapping; noises 'more felt than heard' (Kahn, 2013, p. 164).
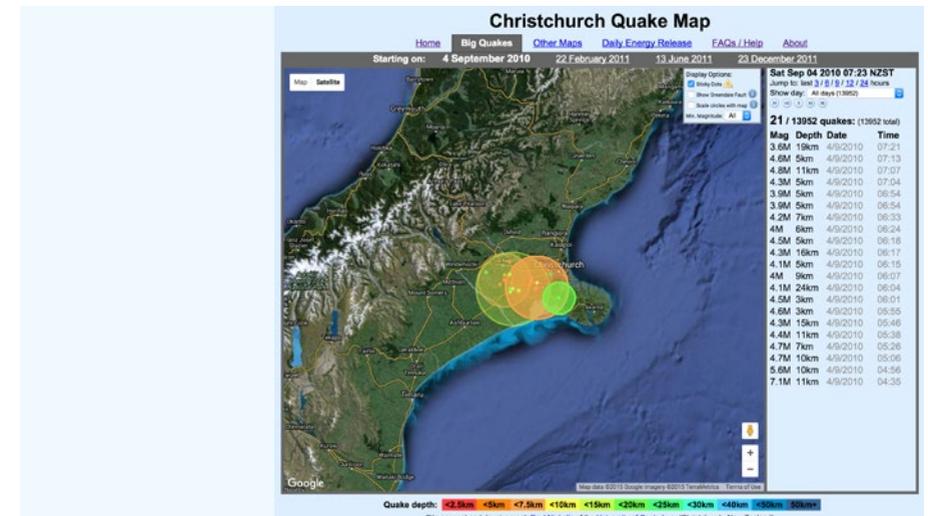
[Screen capture of christchurchquakemap.co.nz, November 2015.]

Bruce Russell performed the earthquake inside a forty four gallon drum. *Under the Volcano: A Live Electro-Acoustic Sonata* (2011) was a concatenation of chemical, electrical and physical processes. The building rumbles and everyone's nerves are on edge. Its hard not to look back and read more into it, read February back into December. Russell threads reel-to-reel tape across the room, linking two machines to a microphone stand they play recordings from Lyttleton. In the background a silent lycra clad man inhabits a photographic space. Russell struggles with the drama. A contact microphone on the outside of the drum is rolled back and forward, each time the motion is getting a little more out of hand. He starts to loose control of his materials. This is not gentle waves of energy, but forces beyond those the microphone can gather, forces beyond those contained within the drum, forces beyond the gathered people.

"Boil thou first i' the charmed pot" (Shakespeare, 1611, *Macbeth* 4.1.9).

And suddenly everything is upright again. A drum stick swirls around the inside.

of the drum, drawing a whirlpool out of nothing. Air is sucked into the drum, people look at their shoes.

"Thrice the branded cat hath mew'd" (Shakespeare, 1611, *Macbeth* 4.1.1).

The point of thinking at earth magnitude is that singular moments are always already entangled with others. Russell's cauldron resonates with earlier magic, and we find Shakespeare's *Macbeth* drawn into our narrative of the gravel. In 2001 the Loons Theatre performance of *Macbeth* could not be performed in their damaged theatre (O'Conner, 2011). Instead it was performed to audiences in the gravel remains of the Volcano Cafe to sell-out audiences.

[David Haines and Joyce Hinterding, *Geology,* 2015.]

Magnitude and energy

The physicality of geological process reasserts itself at differing magnitudes, both micro and macro. Seismic events by their nature occur at the scale of the earth that Kahn calls 'earth magnitude'. Seismicity becomes this measurement of geology; seismic movements are not understood as a separate thing to bodies or spaces, but something that can be captured on graphs, in contours, in bodies, in the gravel. Each quake event in Christchurch is transmitted by

longitudinal and shear waves to the other side of the planet. The earthquake resonates outside of Christchurch. Geologically, fifty years is the statute of limitations that all visible effects of the earthquake would be obliterated by erosion and rebuilding.

In *Geology* (2015), Australian artists David Haines and Joyce Hinterding pick up on the environmental networks that travelled across the South Island. In a Kinect space delineated by geometry and motion, Haines and Hinterding have created a one-to-one spherical world of information. Standing in the cavernous gallery, our body hits the screen and we are in. Flying. Charting our direction with superman arms. Hovering over brown mountains, neither Mars nor Tiritiri-O-Te-Moana. The land does not fracture, and despite repeated attempts we never touch down. Someone gets stuck at the top, spinning against the edge of the sun, the attendant advises they stroke their way down. On the surface of the land small spaces of light and water glisten. And in the sky a flock of small cubes begin to migrate, clustering in valleys.

It is as if Brent Wong has infected this virtual space with floating concrete cubes that beckon us into their flat shiny surfaces. In this space there is no scale to the gravel, the cliff faces echo something volcanic and it is hard to get close enough to sample. Then suddenly we are sucked through the surface of the cube. It is a survey ship. Inside the cargo hold are geological specimens, their scale overwhelming the logic of their suspension. Carefully preserved rocks sit within a hive of individual compartments. This is a life of building worlds, an environmental space that reflects light sun and energy. We sense the humming energy of the rocks. The AI system inside the machine continues to threaten its own edges, the space folds on itself. There is a third layer to the work. A third world hovering on top of its antipodes. It seems to be an unstable world of timber, shaken and fractured. We suddenly inhabit the perspective of the rock, no longer a human sized body we slam ourselves against the edges. We rain down on the timber, the geometries resist and shatter. We are inside and back out. The energy folds and creases across the land and we are floating, witnessing a beautiful collapse.

Haines and Hinterding constantly challenge magnitude through scale and matter. They force us to enter into 'circuits of force beyond the viewer's own organic networks' (Colebrook, 2011, p. 51). *Geology* challenges the preexistence of materiality. Reminding us that all geology, all matter requires activation. When a pile of liquefaction is a volcano and a pile of gravel is Mount Fuji. Earth magnitude. Economic and social magnitudes. Magnitude helps to think forces and energies. The earth probably still feels for Christchurch.

Sorting the gravel

Jet grouting is the process of injection of grout under pressure into boreholes beneath existing damaged buildings with foundation issues. The high pressure grout fuses with the soil to create soilcrete, a stable concrete-like solid that can support the building from further subsidence.

More than gravel, yet not.

Liquefaction is the opposite process where soil became liquefied by earthquake shaking, the land becomes slip. Christchurch artist Julia Morison collected silt in boxes transforming them into paintings called *Monochromes in Liquefaction* (2011). When the work was installed in the gallery it was placed in the Baines Building at NG Gallery, a first floor gallery that was one of the few remaining art spaces around the edge of the central city. The work was next to a window that looked out over the vacant lots joining the slip to the gravel. Viewing the work was a process of threading together the loom of the land – the unreality outside the window – with the close gritty monochrome of the liquefaction. Liquefaction brings together the gravel and the volcano as sand. For many, liquefaction became a descriptor of the lived experience of those in and outside of Christchurch – gravel as driveway fill or gravel as the marker of absence in the vacant space where once was a house. Gravel is finally an insult when asphalt roads outside still-occupied houses are re-covered with gravel and established gardens suffer dust damage (Gates, 2015). It is an anxiety zone, presenting a schematic between volcano and mountain, boulder, gravel, sand and slip.

A visualisation of liquefaction is modelled on YouTube by a guy with a wheelbarrow. He layers some of the mud from his driveway into the wheelbarrow and bounces it vigorously along a lumpy concrete driveway. Suddenly liquid and solid separate. He shows the kids exactly what was already around them, the swamp emerging, before tipping the load out onto the street and collecting the next. The entirety of the geology of Christchurch is there, inside his wheelbarrow.

[Screen capture of Christchurch earthquake showing the sand liquefaction process with vibration, YouTube, November 2013.]
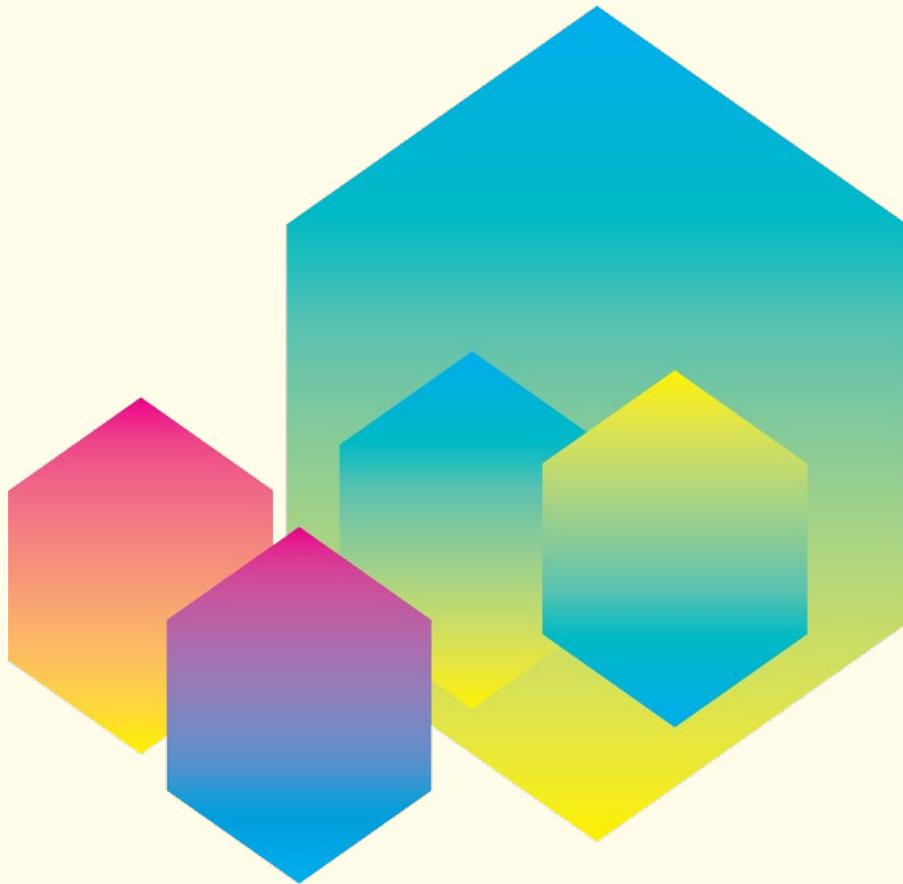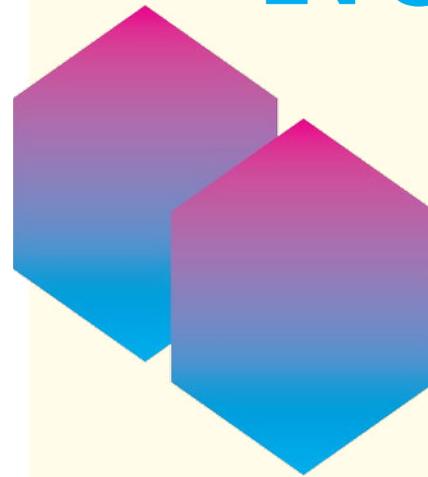
Part two:

Network

The chapters in Part two: Network document a range of different understandings of what networks are and look at the transitional city through diverse entanglements. In the process we demonstrate how different definitions of networks connect digital arts practices to the physical and organic transitions occurring within Christchurch.

People examines the networks of human relationships that have formed at different scales, from international connections with other post-disaster and resilient cities, to the personal dialogues between individuals and communities.

Weeds traces a history of the garden city and its networks of plant life, from early colonial settlement through to transitional projects of urban greening, through the analogue lens of the dispersal of invasive species. It offers up plant networks as a way of understanding the transitional.

Network failures turns to the complex reliance of one network on another and explores global examples of the ways in which communication, infrastructure and support networks can fail, survive, or emerge anew after a catastrophic event.

Grieving the possible and the network to come uses a fictocritical approach to evoke a moment when a transitional period draws to a close. The chapter draws an analogy between the microcellular activities of a forest floor and key moments in the development of networked digital culture. It identifies and grieves for the opportunities produced and lost when space appears in interconnected systems of diverse networks.

5. People

The earthquakes have had an impact on the level of the personal, the human, as well as that of the material. The boundary between human and the inanimate is of course vexed: there is a world of connections bringing them together. Indigenous world views do not imagine distance between them, and nor does physics, which recognises cause and effect at a molecular level. The specific attention to human consequences, however, enables us to focus on the networks of interpersonal connections that have emerged since the quakes. These operate within the city as well as outside it, extending to a global scale.

[Robert Carter, *Infrastructure*, 2014.]

Christchurch has become inscribed in a global network of post-disaster cities. The kinds of connections that have emerged are indicated by list published in a special report in the *Guardian* on cities 'that are recovering and rebuilding after a natural disaster', including New Orleans, Bandah Aceh, Ishonomaki, Galle, Port-au-Prince, and Christchurch ('Cities: Back from the brink,' 2014). In this paratactic list of story headlines, each location represents a set of traumatic events and the resulting complexities of recovery. These locations and others form a loose network of affinity and empathy, of shared understanding of an experience of disruption and the knowledge required to cope and recover.

The connections with Christchurch are often explicit, as in Gerard Smyth's film *When A City Falls* (2011), where New Orleans' recovery from Hurricane Katrina serves as an point of comparison. They are, however, not always simple. The case of the Italian city of L'Aquila, hit by an earthquake in April 2009, provides, for Fiona Farrell, a counter example in which, unlike Christchurch, heritage buildings and cultural treasures are respected (2015). The same case, however, is offered as an example of disaster capitalism and protest in Giovanni Tiso's essay 'We weren't laughing: Disaster capitalism and the earthquake recovery at L'Aquila' (2014).

Networks of human contact

These international networks are not only a matter of comparison, but are put into practice as direct connections. Other cities recovering from disaster have been the subject of presentations by visiting speakers that reveal the similarities and lessons to be learned. Just one example among many is the talk by architect Reed Kroloff at Word, the 2014 Writers and Readers Festival, about the process of city planning in New Orleans after Katrina, and also in Detroit, another affinity-city in the post-disaster network. Other examples include Shigeru Ban's design for a transitional cardboard cathedral to temporarily replace the damaged Anglican cathedral. This articulates a connection with Kobe, where Ban designed the Paper Church in response to the destruction of churches in the 1995 earthquake. He expressed his social consciousness and provided encouragement to the people of Christchurch by gifting the building's design and embedding their needs in its construction by refining the design to reflect locally available materials. Further potential networks of direct exchange are set out in the framework of Resilient Cities, a Rockefeller Foundation project that includes Christchurch as one of 100 cities that 'are ready to build resilience to the social, economic, and physical challenges that cities face in an increasingly urbanized world' (2015). Resilient cities are not necessarily the same as post-disaster cities, but as a result of its disaster experience Christchurch has been drawn into both of these global networks.

Art thrives in the exchange between cultures, processes and places, and like all festivals and biennales, Christchurch events like Scape Public Art, the Body Festival, and Word Writers & Readers Festival are designed to bring new perspectives into the city. The earthquakes have created new themes and motivations for creative exchange, informing not just these, but new festivals dedicated to re-imagining the city through activities like transitional architecture, public sound art, and street art. The Audacious: Festival of Sonic Arts (2015) overlays the physical and visible city with sound, inviting the public to 'explore

the city by ear,' to trace a new aural topography of the city. In its two iterations, the festival has drawn on a network of sonic artists from around New Zealand. Similarly, the Festival of Transitional Architecture (FESTA) opened the possibility of shared languages of architecture, experienced through architects' temporary spatial installations. The work of local architects and students from Christchurch and Auckland enabled a felt understanding of how Christchurch's situation could be illuminated by the design of social, connective and engaged spaces and ideas for living.

[Vicki Smith, *CityUps FESTA*, 2014.]

Spontaneous personal connections were formed kanohi ki te kanohi on an everyday basis after the quake. The importance of interpersonal meeting is emphasised in a comment by Adam Hyde that 'face to face is the broadest bandwidth. It's corny but it's true' (Smith & Hyde, 2008, p.61). The Urban T(act)ics symposium at Physics Room October 2013 emphasised the importance of citizens' purpose and ideals, taking a tactical approach to planning for their future city. As well as being a critical site for contemporary art, the Physics Room is a hub for the people to exchange ideas, create socially responsible works and think about the future of the city at the community level. This energy is also reflected in the establishment of spaces such as XCHC, which combines collaborative work areas with a cafe, bar and event space.

Within Christchurch, networks of exchange and support have connected residents in important ways in the time after the earthquakes. In a literal sense this happened through social media networks, like Facebook groups that have

connected people through information exchange and humour. Social media connections articulate what Austrin and Farnsworth refer to as discursive networks that collectively constitute the contemporary city (2012). Specific networked projects have reflected on the particularities of the post-disaster city, such as the blog *Showusyourlongdrop*, which collected photos of long drop toilets created in the weeks after the February 2011 earthquake when the sewage system was not fully working, responding to the way the earthquake disrupted the infrastructure networks. It revealed the way that human networks interconnect with non-human networks like the sewerage system and other infrastructure rendered invisible in the 'technological unconscious' (Austrin and Farnsworth, 2012, p. 80).

At the governmental level, Canterbury District Health Board's All Right campaign for supporting community mental health reminds residents of the importance of connecting with others by using posters asking questions like 'When did you last show a mate your care?', 'When did you last share kai with the whānau?' and 'When did you last catch up?' (Canterbury District Health Board, n. d.). These are examples of the support networks that social science literature on community and personal resilience emphasises (Thornley et al. 2013; Britt et al. 2012). This project is ongoing, an expanding distributed knowledge base about the well-being of the community.

[Vicki Smith, *Sunburners Audacious Festival*, 2014.]

Material tracings of the human network

German artist Misha Kuball's *Solidarity Grid* (2013-2014) is a series of street lights to be gifted from twenty one other cities installed along the Avon Otākaro riverbank along Park Terrace. Although named a grid rather than a network, the work demonstrates connections to the infrastructural networks of different cities, the electricity grids of other places. Each light is evocatively distinct, representing the gifting city's differing claims to historicity or contemporary 'smart' design. Their presence is a gesture of solidarity for Christchurch's rebuilding process. More specifically disaster-related networking is evidenced in the project *Shared Lines: Christchurch / Sendai Art Exchange* (2013) an artist-run exchange between the two areas connected by earthquake experiences in 2011, which 'celebrates the resourcefulness and resilience of artists living in the earthquake-struck cities' (Hashimoto, 2013). Work by Christchurch artists was exhibited in Sendai in Japan and artists from Sendai exhibited in Christchurch, and the project was designed to encourage dialogue between artists from the two cities.

[Lyn Russell, *Cocoon*, 2015.]

Whole House Reuse articulated these and broader human and non-human networks in the context of a single residential home. As cultural geographer Tim Edensor writes, all buildings are 'assemblages of heterogeneous materialities which (re)produce circulations of matter, labour and knowledge' (2011, p. 240), underscoring the way a building, like a house, is assembled from multiple networks of material and construction. The project was facilitated by Rekindle, a social enterprise that enables diversion of reusable resources from waste via design, creativity and craftsmanship. For Whole House Reuse, Rekindle's Juliet Arnott and Kate McIntyre identified a house that had been 'red zoned' – bought by the government because of the condition of its land, but otherwise undamaged – with the additional criteria that it be single story and made of solid wood. The house, originally located at 19 Admirals Way, New Brighton, was deconstructed by hand over nine days. All of the materials that came from the house were documented in detail, and artists and craftspeople were invited to choose items and create something useful from them.

[Lyn Russell, photo of Whole House Reuse puppets 2015.]

The networks that produced the house were revealed by its dismantling. The home's wooden, metal, and plastic elements were connected to a whole new network of people, who drew on their own networks of skills and knowledge to create new objects from them. The network was physically enacted when the items were personally delivered in a van to participants around New Zealand. It was thus an opportunity for people from outside Christchurch to engage and reflect with the people of the city. Some of the materials travelled as far as the UK, or were exchanged between artists to be reassembled. The objects were

then gathered together in an exhibition at the Canterbury Museum, transforming the parts of a house, like any other, into an exhibition assemblage with its own symbolic and cultural meanings. The project reveals the networks stabilised in the house's form, but also breaks them apart again in order to recirculate them in new forms through new networks. Whole House Reuse is an assemblage of material networks, and the human assemblages that have solidified through residence in the home.

Stories of the house at 19 Admirals Way were made personal through the characterisation of the materials. One of the exhibited pieces focused on the creation of puppets made from the remnants of materials that were not claimed by other artists. The puppets were created in an intergenerational workshop, and the general public were invited to 'animate' the puppets and share stories about the earthquake. This created a loop where materials were reclaimed, made into beautiful objects that were then a catalyst for performing the life of the house as a metaphor. This project enabled people to project the trauma of the earthquake onto the puppet as an avatar, allowing distance from the situation. It was a purposeful way of giving people agency, a voice to express themselves. The puppets were suggestive of participants' relationship to the material world, as well as a gesture towards the spiritual realm, the ghosts of the house. In the exhibition, the puppets embodied the wairua, the inbetweenness of the physical and spiritual, bearing witness to the story of the house and connecting it, through other stories, out to the wider city.

6. Weeds

Christchurch has long been known as the Garden City, grounded in the green space of Hagley Park and the flowering of botanic and suburban gardens. The Garden City title was derived from Ebenezer Howard's notion of the English Garden City and promoted by the Beautifying Association of Christchurch, an organisation responsible for both saving the remaining patches of native bush and beautifying public spaces with gardens (Strongman, 1999). By the beginning of the twentieth century, this divide between protecting the native remnant and importing garden species mirrored the ambivalent colonial relationship with indigenous plants, which became emblems of national identity even while the process of land clearance was underway. This chapter focuses on the networked nature of green spaces, and also the nature of the networks that invade those spaces, the networks of invasive species travelling along routes that cross spatial boundaries.

[Vicki Smith, *Fence, Grass, Mow*, 2013.]

In one sense the colonial mission in New Zealand was a process of fencing, grassing, and mowing, establishing bounded spaces of monoculture production. Settler colonialism – in distinction to 'plantation' colonialism, which is based primarily in the exploitation of indigenous and/or slave labour – is a project of clearance, removing human and other impediments to the development of land

(Wolfe, 1999). Settlers appropriated land from Māori either directly or through negotiated deeds. The legal basis of land rights was transformed in this process, from indigenous forms such as ahikāroa to the alienated ownership of colonial law, which allowed the sale and commoditisation of land. Land went from being conceptualised through use, to being conceptualised as property, something to be owned and fenced.

A typical mode of development followed from the alienation of the land: first forest clearance, then fencing, then sowing with European grass seed to create pasture. This pattern was repeated all over New Zealand, resulting in the pastoral economy that continues to this day. The biodiversity of the old growth forest was, of course, vastly richer than that of the monocultural farm paddock. The typical paddock sward contains four or five species of grass, and is grazed by one species of ruminant herbivore. The sward of the contemporary dairy farm is carefully monitored and conditioned, fertilised, and managed with herbicides to ensure maximum production. There is no space for weeds in the landscape of agro-industrial production.

[Zita Joyce, *River Road Tractor*, 2015.]

Behind the pastoral spectacle of the bounded and owned agricultural space is the network that drives and enables it. Early settlements were, as historian James Belich has shown, largely speculative bubbles relying on lines of financial credit from London. The turn to intensive agriculture, forestry and mineral extraction only occurred after a series of spectacular late-nineteenth century crashes that left colonists needing to establish an export economy (Belich, 2009). Both economies required elaborate networks: the advent of investment credit enabled the long-term flow of capital; telegraphy allowed

the rapid wiring of monetary promises; larger and faster wind-powered ships became 'virtual bridges' for the transport of goods and people across the globe. The settler colony's green spaces became, in a sense, nodes in a global garden city network across an empire centred on London, which itself was then sprawling outwards along its own metropolitan train lines. The New Zealand paddock became, and long remained, Britain's garden, deriving its income from the escalating food demands of British workers, and increasingly relying on the input of soil nutrients. These networks, then, relied on the exclusion of other networks – the networks by which native and other plants distribute themselves across borders.

The lawn is a proxy for the paddock, a small piece of suburban field, fully fenced and regularly mown, an echo of the colonial pasture that aspires to be weed free. Weeds are wild plants growing according to the peculiarities of their species. In different contexts they might be characterised as wildflowers or protected species. From the conservation perspective, introduced lawn grass species can be seen as a weed, supplanting the native biodiversity that the Ministry for Primary Industries, Ministry of Agriculture and Fisheries, the Department of Conservation and Forest and Bird seek to protect. The noxious weeds listed in the Weedbusters *Plant me instead* booklets distributed by regional councils are often garden escapees: '[m]any of the weedy species that are invading and damaging our natural areas are ornamental plants that have 'jumped the fence' from gardens and gone wild' (Weedbusters, 2007, p. 1). These relationships are complex, however. The endemic gorse that plagues the high country farmer provides perfect herbivore resistant nursery cover for the regenerating bush. The same native species that form the unique character of the national park colonise the zones where humans are not permitted.

Dispersal

Plants can be imagined in terms of the networks through which they proliferate. Weeds are invasive species that arrive autonomously, crossing borders to inhabit any available ecological niche. The seeds that blow with the wind pay scant regard to the fences of the red zone. Seeds lodge themselves in the cracks, germinating with exposure to newly available light in a magic of reversed darkroom chemistry. Disturbances to habitats can determine which kinds of weeds can network in that place. Some plants, having multiple generations in a season, are also able to rapidly adapt to areas built or modified by humans. Weeds, then, operate as a complex counter-network to, and within, the networks that underwrite the Garden City.

[Helen Moore, *This site was cleaned*, 2013.]

As network theorist Tung-Hui Hu suggests, our Western freedoms – replete with their own pastoral imagery – are often ideologically centred on apparent 'internet freedoms', but the dangers those freedoms need to be defended from are also imagined as networks: the terrorist 'enemy' is notoriously a network of sleeper cells, like the seeds lying dormant waiting to be activated by the right conditions (2015). A similar logic applies even to those who perceive the network of state surveillance as a weed that attacks the genuinely free, non-state internet. The network and the counter-network are, indeed, impossible to disentangle. A network is something to be protected from weeds, but the weeds may be already inside.

Land clearing

After the earthquakes, the land in Christchurch began again to be cleared, this time by the demolition process. In the cordoned central city area and the residential red zone concern about abandonment emerged alongside, and was symbolised by, flourishing wild plants. Earth that had lain hidden for more than one hundred years beneath buildings became visible, the soil reasserting its presence. The newly revealed spaces and emergent wastelands appeared empty, untended, wild. They became liminal spaces between past and present. In the former gardens of the residential red zone, the plants that once marked the boundaries between sections flourish within fences, alongside

grassed and mown expanses that are the result of CERA's flat land clearance work, in which 'unwanted trees will be cleared and the areas grassed and prepped for future use, still to be decided' (Wright, 2014).
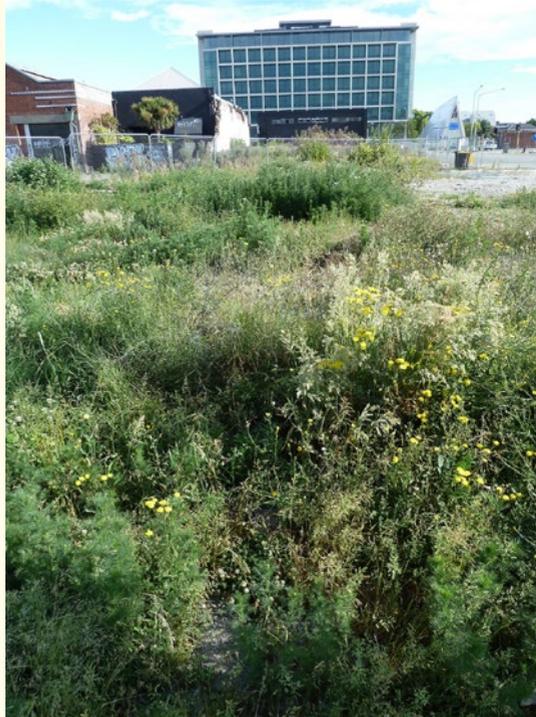
[Helen Moore, *Weeds on the Central City Edge*, 2013.]

Plants emerging in newly opened city spaces have seeded diverse responses. Spaces of new growth are spaces of possibility for Liv Worsnop and Plant Gang, who have performed artist interventions and tended urban spaces over time and seasons, cleaning away rubbish and enabling the plants to thrive. Plant Gang collect and identify seeds from a diversity of regenerating plants, actively honouring the 'weeds'. In the *Botanical Preservation Project* (2012), Worsnop:

> catalogued and celebrated the plants growing wild on demolition sites in central Christchurch. She lifted and pressed representative plants, then scanned them and displayed them on the website Tumblr. She added notes on their origins, naturalisation, medicinal and edible uses. (Harvie, 2013)

The Life in Vacant Spaces (LIVs) and Greening the Rubble project engages with plants in empty spaces, by creating temporary parks in vacant sites in the city. LIVs work with property owners and partners, and provide creative landscapes using whatever materials are available, to provide welcome relief and a safe space in the city for creative play.

Many gardens in the residential red zone remained productive even after their owners had moved away. Fruit trees and vegetable patches enclosed by the red zone cordon became a rich source of foraged food, as represented by the Ōtautahi Urban Foraging network, and links to the global movement that includes Noma in Copenhagen and projects such as the *Herbologies Foraging Network* (2010) in Helsinki. Restaurants have also embraced foraged food as part of a newly local cuisine. The Roots restaurant run by chef Giulio Sturla produces creative menus from very humble and often underrated local ingredients, including gathering produce from sustainable farms, and the hills, gardens and sea around Lyttelton Harbour.

The network community of these projects echoes networks of weeds – human and nonhuman bodies find their ways into the spaces between fences, transforming the gaps opened up by the earthquake. By avoiding the network flows of capital, fertiliser and agricultural products, a society can sustain itself in other ways: physically, socially and tactically.

7. Network failures

A disaster is a catalyst for network failure. But what happens next? Like disasters, network failures are never singular. They radiate across the topologies of the network. Paul Baran mapped three topologies of the network: the centralised star where network traffic moves through a centre; the decentralised network of connected stars; and the distributed network where every node has multiple connections and traffic travels through different paths across the mesh (Baran, 1962). This isn't solely a historical sequence: all three topologies exist simultaneously as overlays, in both cities and disasters. Baran's guide is a design tool for robustness and the survivable resilience of the network. In the context of natural disasters, network failures challenge visible and invisible certainties: phone networks suddenly won't allow you to phone your neighbour, but do let you contact people outside of the disaster zone. Innovations emerge amidst the breakages and rifts.

RED CENTRALIZADA   RED DESCENTRALIZADA   RED DISTRIBUIDA
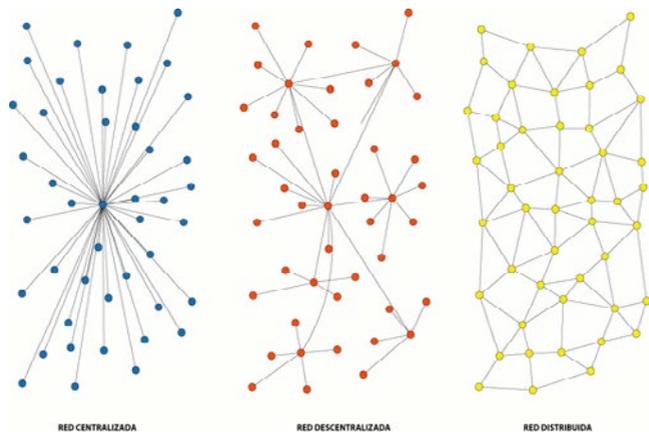
[David de Ugarte, *Baran diagram*, 2007. Source: Wikimedia Commons.]

Anatomies of failure

Communications networks are particularly prone to failure in disaster. The network becomes overloaded by citizens trying to communicate and help each other within and outside the city, and are further compromised by power cuts or other infrastructure damage. Although the internet is, by virtue of its topology, a relatively resilient network, it also fails by design. Individual modems are reliant on the domestic power grid, which can itself fail without uninterruptable power supplies (UPS) on home routers.

The centralised network means centralised power back up: the old analogue telephone service carried its own 60 volt power supply down the data lines. Ironically, to be resilient, the distributed network must be paired with its own distributed power network – otherwise, it remains prone to the failures of a separate, centralised power supply. In the case of cellphone failures during the Christchurch quakes, the networks failed for a different reason: although cell towers could establish connections outside the area, local network congestion meant that they couldn't handle local traffic.

There are many other networks that fail in a disaster situation. Blocked roads, walkways, sewerage, energy and water supply are all networks that, in the event of failure, have a huge impact on how a city reacts. In Christchurch such failures were widespread:

> The earthquakes caused significant infrastructure disruptions. Road networks throughout Christchurch were extensively damaged by liquefaction-induced settlement. Local roads in the eastern suburbs of the city were the most affected, with 83 sections of 57 roads closed following the February 2011 earthquake. Five of the six bridges crossing …. the lower Avon River, which runs through Christchurch, were closed and many urban bridges required weight restrictions. The power, water, and wastewater distribution networks were also badly affected. Substantial ground deformation induced by the earthquakes caused multiple faults in the underground electricity distribution networks, leading to major power outages. About thirty percent of water and wastewater pipes suffered extensive damage, inducing severe and prolonged disruption to these services. (Giovinazzi et al., 2011)

Lack of access to electricity, running water and waste services has a significant impact on a city's ability to recover after a disaster. The uncontrollability of failure creates a sense of heightened anxiety for a community, that is already struggling with the impacts of the tragedy.

These infrastructural networks also filter down to an individual level, reflected in and understood easiest through the real and fictional tools we had been provided with since childhood. In classics we were taught that the tragic hero can never anticipate the cause of his own demise. People had thought of

earthquakes. We are all taught to duck and cover at school, practicing fast reactions to potential disasters or visiting the 'earthquake room' within the Awesome Forces exhibition at Te Papa Tongarewa. In this sense, earthquake preparedness forms a network of knowledge held inside the body of most New Zealanders. But how do you defend yourself against rising mud? The unknown threat to the networks of Christchurch was liquefaction (Cubrinovski et. al., 2014). It was a key factor in the breakdown of Christchurch's drinking water storm water and sewerage pipes (Turner, 2012).

[Digital Globe, *Fukushima I*, 2011. Source: Wikimedia Commons.]

Although one disaster is not the same as any other there are disturbing equivalences (Nancy, 2015). The failure of the seawater pumps at Fukushima exposed the extreme equivalence of disaster networks. The level seven meltdown and leakages from the Fukushima Daiichi Nuclear Power Plant following the 11 March 2011 earthquake and tsunami are examples of network failure on a catastrophic scale. They are a sobering reminder of the inherent life of the materials we use to generate energy, create cities and manage waterways. 'Four years after the quake, about 230,000 people who lost their homes were still living in temporary housing' (Oskin, 2015). The stricter seismic safety standards introduced in response closed many of the world's other nuclear reactors, creating an urgent necessity to find other power sources. This dramatic and traumatic failure of the local network expanded out from the implementation of emergency reactor shut down, to a secondary systems failure of the coolant pumps caused by layers of disasters: earthquake plus tsunami. The wider technological, economic and political implications of this network failure were catastrophic (Nancy, 2015, p. 4).

The tragedy of Fukushima showed how network relationships involve the incommensurable. Disaster ripples out through the interconnections between the networks, yet none of the ripples are equal or balanced. The communications network layers over the electricity network, which layers over the social network, which layers over economic networks, which layers over the political network. The whole thing sits on the physical. All are prone to failure. Philosopher Jean-Luc Nancy (2015) explains how equivalence asserts that the spread of repercussions crosses inequality with technical, social, economic and and political intricacies. In this highly interconnected situation, says Nancy, '[e]verything becomes the end and the means of everything' (2015, p. 36).

Managing failure

Nancy ends his text by reminding us of the importance of respect and dignity. He insists that communities demand equality, demand the singularity of experience and reject the equivalence of catastrophes. Instead he argues that amidst the failures of networks we assert a common equality and a common incommensurability. His point is that I can never know your tragedy, but I can listen across the networks.

[Billbeee, *Fukushima I*, 2007. Source: Wikimedia Commons.]

It would be a mistake to always assume that when a network fails the result will be catastrophic or unanticipated. Networks are not always resilient, but some network failures can be predicted. Some networks are built in the full knowledge that a failure will be managed through contingencies in the future; others are designed to be resilient in their particular configurations. Other networks are not so tolerant of failure, particularly in the built environment. Pipes, power lines and sewers are vulnerable to environmental conditions and infrastructure failure can be complex.

Responses to network failures need to be appropriate for the situation and site. They must be specific, and situated, and local, like the impact of a disaster itself. For example, the power supply in Darwin was extensively damaged in the wake of Cyclone Tracy on 24 December 1974, adding another layer of network impact to the physical devastation.

Located on the shore, Stokes Hill power station was subjected to extremely high winds and drenched in salt water. Although the power station sustained no significant plant damage, extensive damage to roofing and walls allowed water to flood the station and destroy electrical equipment. All substations were damaged by airborne debris. Casuarina zone substation collapsed completely, both switchgear and control panels being buried under the rubble. Overhead distribution systems were totally destroyed. (Power and Water Corporation, n. d.)

Across the city, power poles and lines became extremely dangerous as they fell, twisted and damaged beyond recognition. Personal accounts of the cyclone speak of people seeing live power lines flicking around in the cyclonic winds. Other accounts talk of the emotional impact of losing power that Christmas Eve:

I was only 7 when Cyclone Tracy stuck and I will never forget it. I'd already been in other cyclones, so when we got the warning we didn't think anything of it, boy were we wrong... The wind was scary and I remember thinking as soon as I heard the terrible winds that this was gonna be a bad one... The next thing I knew everything was dark. I started screaming "mama mama where are you?" but all I heard was silence, dead silence... Suddenly I heard a cry or a scream. It woke me into consciousness. It was my little sister. She was badly hurt. Blood everywhere. I got up. The house was ruins. I felt a sharp pain rising up my leg... I couldn't see anyone. I ran back for my sis. She was laying there. She wasn't breathing. I started screaming. And then everything went dark .... I woke up 3 days later in hospital in Adelaide. It was a crowded room full of people injured in the

cyclone. My aunt was there. She and my uncle had found me and my sister... My sister was dead and my mama's body was never found. (Pickles, n. d.)

The failure of the network added another layer of trauma to an already frightening situation. Like the more recent examples in Christchurch and Fukushima, Cyclone Tracy was a confronting example of how the failure of networks has the propensity to make a situation worse, more dangerous, chaotic and heart breaking.

The management of the network was location specific. The immense damage done to above ground power poles and lines after Cyclone Tracy in 1974 led to the subsequent decision to install underground power as part of the rebuilding of the city. Moving everything underground in Darwin protects the networks from future anticipated cyclones. In Christchurch flexible underground cables are being installed, improving the network's ability to route around any failures.

[Billbeee, *Damaged houses after the passage of Cyclone Tracy on Christmas day 1974 in Darwin, Australia,* 2007. Source: Wikimedia Commons]

Innovation from failure

Sometimes innovation steps in when the networks fail. For example, the 2011 floods in Queensland after Cyclone Yasi cut off roads and suburbs across the state. In response, the Brisbane City Council, Queensland Police and Emergency

services were able to create new communication channels to inform and reassure residents. These measures helped significantly to restore calm to the city, despite the number of localised network failures along the way.

The Brisbane City Council (BCC) released maps of the Brisbane area showing residents which parts of the city were prone to flooding. Although this was very useful information, the site crashed due to the sheer volume of people trying to access it. The communications team responded by communicating through social media: Facebook, Twitter and YouTube, which became preferred communication channels within the first 48 hours of the event. Brisbane City Council already had an established presence on key social media channels, enabling quick communication of information.

> Social media had the potential to reach far beyond the immediate community of Brisbane, ensuring that important messages were relayed efficiently and rapidly. Social media channels also allowed for the ability to share messages from other trusted authorities in that sphere, such as the Queensland Police Service, Energex, State Emergency Service (SES) and Translink. (The Australian Centre of Excellence for Local Government, n. d.)

The Queensland government was also innovative in its use of radio, television and YouTube for communicating important information. The then Premier, Anna Bligh, made frequent television and radio broadcasts with the Chief of Police and an Auslan (Australian Sign Language) translator, who communicated in Auslan to the audience. These updates were also streamed online and shared through the BCC, QPS and SES social media channels. Since this event it is now commonplace in Australia for leaders to have a sign translator when informing the public about the management of disaster situations. Premier Bligh not only made the community feel safe by being present during the traumatic events, she inspired the community, embedding a sense of resilience and pride in statements such as the following:

> As we weep for what we have lost, and as we grieve for family and friends and we confront the challenge that is before us, I want us to remember who we are. We are Queenslanders. We're the people that they breed tough, north of the border. We're the ones that they knock down, and we get up again. (Bligh, n. d.)

Bligh's statement points to the adaptation that happens after the network fails. She communicated hope, resilience and grit in the face of disaster. We as communities work through the chaos, we find solutions, we work together, grieve together, rebuild the networks and resolve to survive and thrive.

In Christchurch, there were a number of innovative projects that emerged in the wake of the earthquakes. Tim McNamara's online Christchurch Recovery Map was developed as a way for people to navigate the city and find their way to resources to which they had lost access (2011). It was a temporally constrained project, created, supported and then retired as the need for the information decreased and usual forms of communication resumed. The website was built using the Ushahidi platform, which was specifically developed in Kenya to support communities in times of crisis. The word Ushahidi translates as 'testimony' in Swahili, and the platform was developed to map reports of violence in Kenya after the post-election violence in 2008.

[Screen capture of eq.org.nz, *Christchurch Recovery Map*, 2015.]

Disaster doesn't always mean catastrophe. Disaster can cascade through multiple infrastructures to create catastrophe but networks that are designed for resilience can successfully function through the most extreme situations. Infrastructures are supporting structures for a technological life. Catastrophe is when infrastructure fails and destroys technologies, economies and societies. Media networks can serve to mitigate catastrophe and bring it back into the realm of the survivable. By ensuring that the community is informed, that people have a channel to report back issues and a means to alert authorities, people feel reassured that the network will be operational again. Although the existing networks may fail, crisis situations present new network formations: some of them temporary, all of them critical to the recovery of the city.

8. Grieving the possible and the network to come

The light well

Deep in the Whanganui National Park is a huge tōtora, its energy sapped by possums devouring every new bud. The root system is clinging to soft papa mudstone rock weakened by incessant rains of a year of record precipitation. The tōtara finally loses its battle with gravity, crashing down, felling jumping jack and māhoe, punga and kānuka, karaka and mamaku to create a huge hole in the mature canopy of the rainforest. Light streams into the gap, and in the process space is cleared for new pioneer species to emerge from the seed bank. First, ground cover and exotics like gorse take hold, creating a spiky nursery that defends the sprouts and saplings from the wild goats. Then kawakawa and horoeka lunge upwards, followed by tī kōuka, punga, mānuka and kānuka with their bee friendly blooms. Lastly, the slow growing giants of rimu and kahikatea emerge, carrying their epiphytes and making a home for rata needles, which drop vine roots down and slowly enclose the living scaffolding of their host trees to form the giants of the canopy. Initially these parasitic symbionts hug their hosts, but ultimately they outlive their scaffolds. The rata becomes the apex of a dense network of organisms of energy and nutrient flows, housed within a slowly developing form. After a further century or two the light well has returned to its mature character of large trunks and sparse undergrowth.

The light well represents an ideology of youth – the regrowth, and regeneration of the community of Tāne. Within the light well resources, including the light itself, gradually become scarce. It is a space where there is no need for competition because there is information for all. Here, any seed can produce a sapling. It is only later that a tentative emergence from the soil takes on the character of a struggle against gravity and a battle for access to the reds and blues of the spectrum. Punga shades out gorse, the protective spikes of the gorse die back, the fern unfolds and the forest floor darkens and is blanketed in litter for the arthropods and communities of micro-organisms. On the forest floor the microbial processes of decay dominate.

[Julian Priest, *Raukotahitanga—The Multitudinous Self*, 2011.]

For a moment the large structures that seemed permanent, the trunks that once supported the canopy, were revealed to be points in a longer cycle and gave way to a space of possibility. It was a space of dynamism, a space for smaller voices that had lain dormant in the seed bank, waiting for the ordered energy of the sun to penetrate from the over-arching canopy and activate the genetic information of the seed. What was transformed was the shifting gradients of entropy. The earth as a system constantly takes in and transforms energy and information. The interesting thing is how you order it.

Time is measured in change. When the body of the forest loses an older member of the community, a space of possibility opens up. The character of the light at ground level changes. Now instead of a disordered low frequency infra-red that barely warms the soil, the bright higher frequencies of full spectrum white light penetrate to the soil and activate the dynamic processes of germination. Structures of many kinds begin to emerge, new patterns of settlement are experimented with and the pace of change is furious. The network of knowledge contained in the seed bank provides the blueprints for many possible forests. Different approaches are tried, discarded, and counter examples are maintained between generations. When the light well comes

anything goes (Feyerabend, 1975). Within the light well, the diurnal processes appear to speed up, but the time of the forest maintains its pace. Different times overlap: *chronos*, the time of steady sequential change, and *kairos*, the moment of indecision, the Hertzian beating of the photon.

The cycle of death and re-birth and the network of knowledge create a resilient structure that can adapt, re-invent and re-assert itself. Without regeneration there is only stasis and a drifting into the high entropy states of thermodynamics: silt, sedimentation and mudstone. The light well, the seed bank and the network community between organisms provide the resilience that ensures the survival of the forest. We mourn the felling of a singular ancient giant of the high canopy, but we also celebrate the dynamism and youth of the open field of possibilities created by its passing. The clearing without rules, without expectations, with hope for a better order, with the chance of change and access to the light for all.

Axes and fire expanded the light well for agriculture and settlement. In early stages of settlement, the light well became the garden. Civilisation was born in the light well. Before we roamed we were saplings.

Pioneers

In the twenty-first century our frequencies have turned towards other colours: the hidden oscillations of GSM, UMTS and 802.11n. The forests that structure twenty-first century app gardens are towers, routers and systems on chip network granules embedded in our media grazing, non-essential deluxe.

In the post-war period, during the birth pangs of cybernetics, the certainties of command and control were shattered by the fact of the bomb and the possibility of unleashing practically infinite potential energy far beyond our ability to contain and control it. It became clear to the new generation of network architects that survivability and resilience needed to be key features of any network. Packet switched networks were developed, where information packets could be diverted along any of a multitude of possible paths. Information could be acceptably lost if part of the network was damaged, but with error checking and the possibility of re-delivery, the message could get through. Communications channels could remain open, opportunities could be sustained. The network could survive the loss even of a city – a densely connected network of energies and nutrients inhabiting an apparently stable form. In a piece of unwitting biomimicry, the network was designed to survive the light well.

In the 1990s, the packet switched network of the internet came to dominate older analogue telephone systems – including party line networks

built on mutual trust. In the forest of telecommunication systems, a giant – The Plain Old Telephone Service (POTS) – fell, leaving space for new networks to emerge. Activity flooded into this space of possibility and people experimented with a thousand new forms in all fields.

Before the web there was the WELL (Whole Earth 'Lectronic Link). Online communities such as the WELL emerged based on internet networks and the bulletin board system. The WELL in particular represents a brand of utopian network community that believed it could exceed the existing structures, linking counterculture and cyberculture. But the technological medium it was based on was short lived.

As Ed Toton, an early bulletin board system administrator, writes:

> I was first exposed to the concept of a BBS via a Commodore-64 based board that was running somewhere in MD. I didn't fully appreciate what it had to offer at the time. Years later, in 1990, I found that there were quite a few WWIV BBSes local to me, and I was instantly hooked. I set out to run my own board, which went online on Feb 10, 1991. It was my senior year of high school, and the system ran on a 286 with a 2400 baud modem (at first). The Sorcerer's Quarters ran for exactly 4 years; it was shut down for the last time on Feb 10, 1995. By then I had made many new friends, and had hundreds of users come and go. I had attended BBS parties and movie outings, and socialized in a medium that was unlike any other. [...] And although it was a sad day when I finally decided to lay it to rest, that same year I discovered this WWW thing, and was never completely out of touch with a digital world. (Toton, n. d.)

The WELL is a rare example of a bulletin board system (BBS) that continues today, but after the release of the HTTP v0.9 protocol in 1991 the BBS was eclipsed by the web. Users quickly migrated away to the new medium, leading many BBS services to close. Ed Toton expresses the sadness at the passing of the BBS but also gives a sense of the excitement of the days when the BBS was an open space.

New businesses sprang up, and new modes of expression and experiment were created. Net.art to eBay. Some took hold and many did not, and eventually the space was alive with the promise of new possibilities. This vitality and potential was expressed in Ken Goldberg and Joseph Santarromana's *The Telegarden* (1995-2004), which created an online garden that could be tended by a global team of visitors to a web site. This agricultural colonisation of the web meant that the light well extended its glow into the new emergent medium.

[*The Telegarden*, 1995-2004. Source: Wikicommons.]

As the commercialisation of the internet picked up pace, the dotcom boom took hold. The character of the internet began to change, imperceptibly at first, and then rapidly. AltaVista became a commercialised portal to the web's content. The beta version of Google was free of advertisements, and as far as users were concerned just a nifty search engine by a couple of Stanford students. As the online population grew, business interest increased and a wave of venture capital allowed an increasing number of strange niche startups to make it into trading, amid the sushi fuelled lunches of the incubator culture.

In response, some of the non-commercial online cultures began to express a distaste for the invasion of the mainstream. The utopian visions of early networked communities gave way to anger and satire. blowthedotoutyourass.com created satirical billboard posters in the Bay Area, which advertised fictitious new companies such as butidon'tneedmytoothpastedelivered.com. As the dotcom boom imploded on itself, taking down the entrepreneurial dreams of a generation, the satirists charted its apparent demise with an element of glee. And fuckedcompany.com charted the closure of dotcom companies.
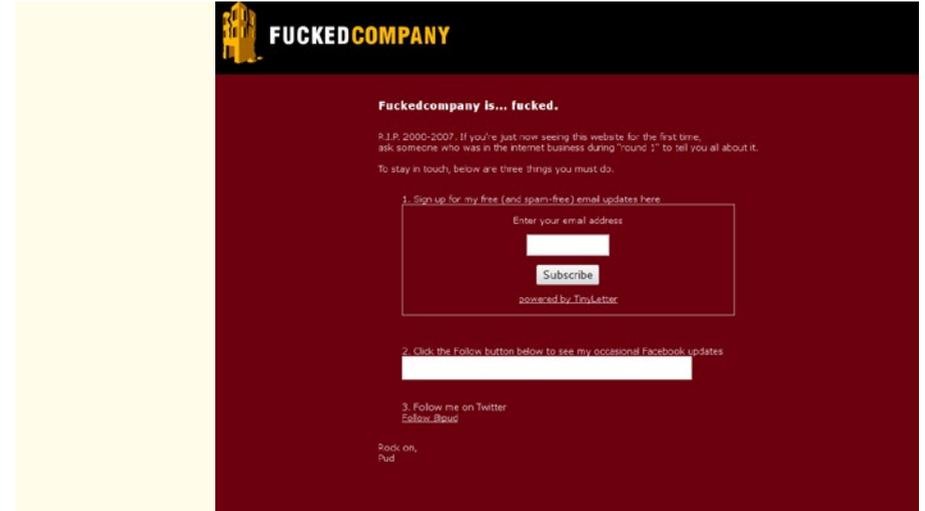
[Image: *archive.org*, 2015.]

Over time the first wave of dotcom experimentation gave way to the vast, planet-wide market for information and services that we have today, and the survivors and their backers reaped their rewards. Sequoia Capital's investment in early Google transformed it into the stand of giant redwoods it has become today.

This light well pattern of technological innovation, disruption to the communication infrastructure and media status quo was followed by experimentation, utopian and commercial adoption, and then consolidation. The pattern repeats and repeats. After the dotcom crash, cheap wireless networking opened the way for the creation of metropolitan area wireless free network communities. They opened the public space of the city in radical ways and established a pattern for meshed networks and local communities. Enabled by the now global reach of the internet, wireless free networks sprang up rapidly following the pattern to become a worldwide phenomenon. There was a sense of a huge space opening up, both within the network, and within the communities. The optimism spread out into the actions of free networkers who built incredible networks, many of which are in use to this day.

Adam Burns of free2air – an early London free wireless network – ran a linux based debian compaq ipaq with an 802.11b pcmcia card, and a touch screen. At the 202 wireless meetup The Copenhagen Interpolation in March 2003, he demonstrated accessing a web site over an experimental mesh network, while walking in the street and clicking through the pages with a stylus (Albert, 2003).

In 2005 there was a wireless free networking event in London – The World Summit on Free Information Infrastructures – which focused on open mapping, free networks, free hardware and open knowledge (The WNDW Authors, 2005). Australian artist Kate Rich ran *HOST.EXE*, an artwork that offered a concierge service for conference visitors. It enabled the conference organiser community to invoice the conference funders for housing visitors in spare rooms, thus embedding speakers in the conference community and diverting funds from Holiday Inn and Novotel to the cultural production community.

This proliferation of new life inside the wells of the web can be framed up as a classic story of an artistic avant garde. With hindsight we can see elements that continue 'the wireless lifestyle' of the Whole Earth pioneer settler culture. The sprouting of the swiperverse marks a global shift to the smart phone as the central device in our communication and media landscapes. The Linux iPAQ gave way to the walled garden of the iPhone just as *HOST.EXE* gave way to Airbnb and the free social spaces of early online communities gave way to proprietary social media spaces.

The canopy

Immediately after the first Christchurch earthquake, barriers went up to prevent people entering potentially dangerous sites. Suddenly the city began to feel paywalled. The barriers signalled the arrival of the light well and the germination of the seed. A single word, 'HAPORI', appeared woven between the mesh of the hurricane fence. The surprise of its appearance, and the anonymous transitory openness that marked its arrival, highlighted its human scale. The word and the gesture were a heartfelt expression of being embraced by a community, rather than excluded by a barrier. Within a few years the fence was broken up, the word (an unseen monument) deconstructed, and the site moved into a new phase (Young, 2003).

At a later stage Agropolis (2013) was founded. This transitional urban farm uses organic waste from hospitality businesses to grow a garden for the production and distribution of food. The Agropolis is a busy farm serving a wide community of people who gather for a variety of practical purposes, such as mud brick making. The dynamism of the space and the associated projects that collect around it create a vibrant micro community that sustains the residents. As participant Helen Moore says, 'I liked that there was somewhere in the city where we could come and see some elemental activity around something that could sustain you in any situation' (personal communication).

The urban garden models the ideal of small communal production, fulfilling basic needs in an agriculture outside the reach of Monsanto. These energies of small-scale biodiversity connect the memory of the saplings back to a colonial time when vegetable gardens were a matter of life and death.

Higher in the canopy, The Ministry of Awesome is a network that connects people. Events where organisations and people gather and co-create tap the same spirit as the ad hoc networks of the early web. Tools, resources, and providers necessary for collaboration are gathered together on a social innovation map, documenting the emergence of projects at any stage of their process. Supported by mentoring, these organisations operate at any scale that avoids duplication of effort. Alongside them, The Enterprise Precinct and Innovation Campus (EPIC) provides a space and support for small technology entrepreneurs. Housing the new generation of tree dwellers, EPIC functions as an incubator for new small businesses in Christchurch. Bursting above the canopy a small number of new trees break into the sunlight of the emergent layer. They have expended much energy to reach their height and no longer have the shelter from extremes of wind and heat that was given by the canopy below.

As if it wasn't before, the narrative becomes complicated, the space becomes crowded, there is competition for light – slow growing large structures begin to form. As the canopy develops the light well closes and the ground returns to the gloaming. The emergent is housed within the canopy. There is a grieving for the open space and the community and the moment of potential, the energy and dynamics of the expansion; and yet there's a memory of the optimism and boundlessness of the space of possibilities. Finally with acceptance there is the cycle and the knowledge that the light well will open again.

Part three:

Memory

Part three: Memory constructs the city through a record of its materials and its people, and discusses the difficulties of accounting for and recounting interruptions to memory. In this final part, engagements with digital practice show how a transitional imaginary emerges as space and networks are enmeshed with memory.

Remember me, the swamp uses a deep ecological approach to describe a form of earth memory in the resurgence, as liquefaction, of the wetland drained for the colonial settlement of Christchurch.

The midden is a future archaeology of the rubble; it asks about the tools necessary for the retrieval of memories from discarded matter such as the demolition material used for the reclamation of land in the Lyttelton port area.

Trauma against memory explores trauma as a disruption of the memory sedimented in the city's function and in the bodies of its citizens. It shows how art practices that directly engage catastrophe help us experience things that cannot be described.

Memory city grounds us back in Ōtautahi Christchurch. While it argues that all cities are in transition, this chapter evokes the situated difficulties of remembering the pre- and post-quake past, and imagines the continual process of change in this city at this time.

9. Remember me, the swamp

An early whaler reported of the future site of Christchurch that '[a]ll the land that I saw was a swamp and mostly covered with water' (Rice, 1999, p. 11). Scars, weeds and cracks are memories imprinted onto the whenua. The swamp reclaims its lost spaces: geological memory and deep time are measures that obscure and obliterate the scale of the human. This is a story of the city of Christchurch – however it could be the story of any city. Reclaiming the land and manipulating the hydrology of a site are standard ways of constructing urban environments. But there are always risks: the risk of flood, of seepage from below and of movement deep within the earth.

In post-quake Christchurch the idea that liquefaction is the re-emergence of the swamp has become something of a popular commonplace. On a Yahoo discussion group online, user and Christchurch resident Rusty Shackleford makes these observations about the processes at work:

> Much of the eastern side of the city is built on reclaimed land that was once swamp. The settlers drained the swamps and built houses on the new land. However the soil in the east is very silty and soft. The shaking in the earthquakes caused these soft soils to behave like liquids (liquefaction), the water in the soil bubbled up to the surface. This meant that the soil that was once under houses was now at the surface. This caused many houses foundations to sink into the ground. Also because the soil was so soft the shaking was much more violent, this caused more structural damage to homes, cracked foundations etc. (Shackleford, R., 2011)

Hard concrete gives way to soft earth. Water and liquefaction rise to the surface, layers previously rendered invisible are now laid bare. The actions of the past hold more than mere memory. They reverberate across time and space, bubbling to the surface like a lie that has finally been exposed.

A 2014 paper by a team of civil engineers focused on the impacts of liquefaction in post-quake Christchurch, stating that over 60,000 houses were affected by liquefaction (Cubrinovski, M. et al., 2014, p. 1). To rebuild the city means that the swamp needs to be refilled. Rubble, waste and debris fill the swamplands,

the materials having a lasting consequence on the land and the water table below. So many of these materials are poisonous, toxic to humans and other living beings. What memories will the land spew forth in the future? How is it possible for us as humans to try and comprehend geologic time, when we seem unable to fathom the Anthropocene as the geological epoch that has been brought on by human activity?

Scales of time

Our human scale cannot incorporate the perspectives of geologic time – we are a small blip on the register of the earth's memory. Trudy Lane's research project *A Walk Through Deep Time* (2011-ongoing) invites people to share scientific, philosophical and cultural ideas as part of a roving discussion and walk through 'deep' or geologic time. The first walk event in 2011 followed a farm fence-line of 457 metres to represent 4.57 billion years. Astronomers, geologists, physicists, and biologists as well as mātauranga Maori practitioners, philosophers, artists, teachers and a wider public participated in the initial walk. Since this event, the project has been featured as part of SCANZ2013 and ISEA2013. At the various installation sites, audiences were encouraged to use an i-Phone app to contribute stories and listen to audio recordings from other participants.

[Trudy Lane, *A Walk Through Deep Time*, Sydney, Australia, 2013.]

Rebecca Solnit, in her book *Wanderlust*, offers an insightful observation of how we define scale as humans: 'walking …. is how the body measures itself against the earth' (2014, p. 31). If, as in the case of Lane's deep time walk, one metre represents a billion years, then our human existence comes to less than a centimetre, barely visible on the scale. That said, our subjective, human experience is the only reality we have sensuous access to. History, scientific discoveries and built environments all stand as testament to our sense of purpose, identity and importance. Arguably, if we planned cities and built environments that were mindful of the geology and ecology, then these places would be radically different. Western civilisation has not been very good at paying attention to the nuances of nature. Instead, the impetus has been to mould and adapt the natural environment to our will. This has often had dire consequences – earthquakes, floods, cyclones and bushfires are all natural occurrences that we label as disasters.

[Trudy Lane, *A Walk Through Deep Time*, Miranda, New Zealand, 2011.]

'All disasters are cultural', writes sociologist Lars Claussen, 'if one takes into account that the ways one gives them a chance, fights them, or even succumbs to them make for their respective qualities as "disasters" as different from both foreseen and of willingly taken "risks"' (1992, p. 183). They are disasters because these events impact on our lives, our built environments, our sense of scale and our perceptions of safety. Environmental theorist Timothy Morton argues in *Ecology Without Nature* that we find discussions about the environment difficult, as we prefer to think of nature as something 'over there',

not as something we are fully immersed into. He states: 'When you start to think about where your waste goes, your world starts to shrink' (Morton, 2007, p. 1).

Inscribing the surface

Although the swamp reclaimed some of the city of Christchurch, the rebuilding of the city represents a further re-inscription of the human on the surface of the land. Metal house framing replaces the fallen timber frames, the steel almost a statement of rebellion against the movement of the earth. In other quake prone regions around the world, particularly South East Asia, house structures are built from bamboo – flexible, resilient, yielding. Similarly, the traditional 'light' architecture of Japan was able to cope with regular disaster: Jordan Sand writes about the 1880 fire that devastated the Kanda district of Tokyo:

> The mayor reported that, fortunately, it had occurred during the day, so there were no deaths or injuries. With a population well prepared for disaster, destruction of property even on this scale was accommodated within the management of the city. This accommodation was possible because the city's light physical infrastructure was matched by a strong and enduring social infrastructure. The people of Edo policed themselves and fielded their own fire brigades. The wealthy property owners who had the most to lose from lawlessness and property damage paid directly for these services, which were provided by their tenants and employees, and established town residents provided alms to the poor until houses were rebuilt. (Sand, 2011, p. 34)

Our choice of materials can be a mirror for how we as humans manage the challenges of surviving earthquakes. Should we be flexible, yielding and accepting, or do we build hard structures of resistance, fighting the will of the shifting earth? In the case of Christchurch, the drive for absolute solidity has resulted in reports of pile foundations needing to be extended many metres deeper than pre-quake depths, including one extreme case of a house requiring seventeen metre piles before suitable soil was reached (Stewart, 2011).

The earth claims back what belongs to it. Richard Jefferies's prophetic text *After London* speaks of a deserted city, a city where traces of memory have been lost underneath the weeds and trees. He writes:

> For this marvelous city, of which such legends are related, was after all only of brick, and when the ivy grew over and trees and shrubs

sprang up, and, lastly, the waters underneath burst in, this huge metropolis was soon overthrown. (Jefferies, 1905, p. 48-49)

[Susan Ballard, *Weeds*, 2015.]

Jefferies imagines a post-industrial London, a place where the memory of industry is rendered invisible, as an uncomfortable moment in time. The return of the rural landscape is seen as a form of utopia, a lifestyle without the complications of the city.

Life in the rubble

After the earthquakes, plants started to grow over the damaged buildings and empty spaces, taking hold in many unexpected places. An initiative titled Plant Gang sprang up as a result of this change in the plant life in Christchurch. Their *Botanical Appreciation Project* involved documenting the plants that appeared around Christchurch post-quakes (Plant Gang, n. d.).

Since then, Plant Gang have led a number of deliberate interventions into the urban environment, planting gardens in unexpected places. Gardens have been created out of the rubble in the gaps in between buildings, in empty spaces and parking lots. The founder Liv Worsnop states that 'Plant Gang is a mechanism to create a conversation between people about plants.' She is motivated to 'get people's attention and get them looking... I'm after subtle, small changes that spark ideas' (Harvie, 2013).

Plant Gang operate in a sort of halfway, semi-legal world: One of the central city projects, Zen Garden, was officially sanctioned by Life in Vacant Spaces (Livs), the non-profit that brokers deals between landowners and creative types for temporary projects. Livs got Worsnop permission and a proper lease to set up the minimalist meditative space at Manchester and Cashel streets. When she needed help keeping it tidy, the army sent a squad for a few hours. Other times, Worsnop carries on without sanction. The succulents on Manchester were found out east somewhere and transplanted without anybody's permission. The police pulled her up one day recently, worried that one of her rock gardens was a trip hazard – as if central Christchurch isn't peppered with trip hazards, she says. They let her go and she was back the next day. "I had to plant them somewhere," she says. (Harvie, 2013)
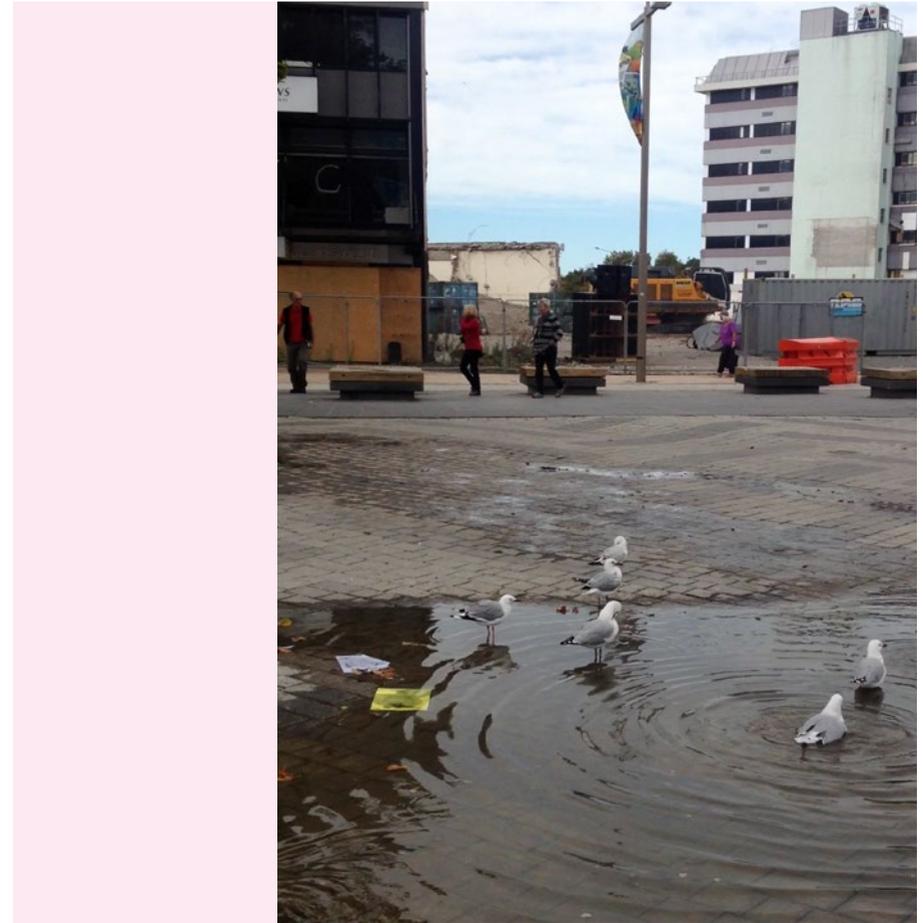
[Vicki Smith, Simon Kong's *The Beach*, 2014.]

The earth never forgets

The swamp has evolved as a place to store rubbish and forget the trauma of the past. It needs to be filled, otherwise it will not be stable land for the built structures that will appear on its surface. But the earth never forgets, time is etched as scars deep beneath the surface, rising to the top as waterways, crevices and valleys. The swamp may be considered just a wasteland, but it also has an identity as a wetland, a place of biodiversity, a fragile natural environment. When we consider the same piece of land as a wetland rather than a swamp, we as a society assign to the site a different set of values – of

conservation, preciousness and environmental significance. The Canterbury Earthquake Recovery Authority (CERA) has a number of environmental goals for the rebuilding of the city:

Restore the natural environment to support biodiversity and economic prosperity and to reconnect people to the rivers, wetlands and Port Hills by: ensuring recovery activities value, protect and sustainably manage the sources of our water; ensuring ecosystems are healthy and functioning; improving the quality and function of estuaries, waterways and wetlands to support the unique biodiversity that is endemic to Te Waipounamu; providing public access to and opportunities for outdoor recreation, cultural, social and economic activities; enhancing air quality through managing recovery activities that impact on air quality, such as heating, transport, demolition and construction; and storing, sorting and processing waste in an environmentally safe and effective manner, including minimising and recycling construction and demolition wastes. (Canterbury Earthquake Recovery Authority Te Manu Haumanu ki Waitaha, n. d.)

Are these goals achievable and what have been some of the concrete steps that have been taken to ensure the recovery of biodiversity and the safety of water supply? Although there are clear goals for the management of waste materials, CERA acknowledges that collaboration with other strategic industry and government partners is needed to achieve this goal.

Land reclamation has historically been fraught with controversy in the region. For the large city developers and the small-scale landfillers, the swamp has been a constant yet repressed companion. Now, we must pay attention. It seems strange that we afford ourselves the luxury of imagining dystopian and utopian futures far beyond our own life span. In the end, the swamp will remember all the things we have forgotten, including our expectations and hopes for the future of the city. The midden also holds all that we wish to forget over the aeons of time: a legacy of our inhabitation.

10. The Midden

To encounter a midden is to discover layers of human occupation. Strata of use are represented by a giddying range of organic materials including animal bone, shells, botanical material, bricks, rocks, excrement and other artefacts associated with past human occupation. Middens are reflections of layers of occupation and transformation. The midden as both artefact and container of artefacts embodies the energy of a particular site and is layered with cultural value. On a different scale to the one we usually imagine, the new urban midden of Christchurch is a space where the construction material of an entire city forms a new and painfully visible layer. Objects discarded at our convenience speak of the circumstances of their use and value. In Christchurch the changing use of objects determines how much thought we put into their future life. This midden raises questions of the way future generations might interpret its composition and how we may all be impacted by it.

[Susan Ballard, *River Stone Collapse*, 2015.]

Layers of occupation

How do we speak about a midden on the city-scale? On a scale of disaster, rather than of accumulation? One answer is found through the process of digging. A midden is a record of human activity evidenced by consciously and unconsciously discarded objects, things, and matter. The word is derived from the early Scandinavian word mødding, meaning an old dump for domestic waste. Archeologists use this term to describe any kind of feature containing waste products. In the official parlance, these features may take the form of single use pits created by nomadic groups or longer term, designated dumps used by communities which accumulate over several generations.

> Archaeologists love middens, because they contain the broken remains from all kinds of cultural behaviors, including food stuff and broken crockery; exhausted stone and metal tools; organic matter and sometimes burials. In some cases, midden environments have excellent preservation of organic materials like wood, basketry, and plant food. (Hirst, n. d.)

The port of Lyttelton has provided archeologists examples of middens on two scales: the city and the human. In the 'clean up' after the quake, an ancient Māori adze was discovered under the foundations of the old Post Office at 7 Norwich Quay in Lyttleton. The Post Office dated from 1875, and the need for earthquake remediation has given archaeologists the opportunity to dig deep beneath its exposed foundations.

> Te Hapū O Ngāi Te Wheke representative Rewi Couch said the adze gave physical proof to centuries-old tales, but until the artefacts were carbon-dated, an exact age of the settlement would not be known. "This might have been a launch site for waka," he said. "They might even have been building waka here. The trees were right down to the shoreline then." Historians have long known of Rāpaki, the Māori village located under what is now Sutton Reserve, dating back about 800 to 1000 years …. However, the midden showed evidence of fires, and a variety of food remains including paua shells, seal bones and fish bones. (Mann and Robinson, 2011)

The archaeological context of the objects is strongly supported by Ngāi Tahu oral history. This site is a place where deep memories from history have become entangled with those more recent encounters with the present. The midden on the site of a post office (itself a place for sending and receiving memories) enacts an ideological process of knowledge, discipline and value. The demolition of the post office revealed layers of habitation, previously invisible but retained

in language, dating more than 800 years in the past. That layer had in part dissolved, but left its traces, enfolded within the surface of the foundations and revealed as an indirect result of the earthquake. The movement of the earth exposed its own history, but also that of the generations of people who had balanced precariously upon its surface.

[Susan Ballard, *Windbreak with Cones*, 2015.]

This unintentional midden, awaiting discovery, presents a microcosm of the industrial scale of the city. A city produces and naturalises waste; it is a continuous breathing cycle. The use of building debris from the Christchurch earthquakes in the construction of new piles and rubble sites, then, may not be domestic waste, but it is the material that comprised the domestic, the home itself, which may in turn provide the archeologists of the future some insights into the early twenty first century. Any future archeological exploration of Christchurch will need to be supported by oral histories like those collected in the CEISMIC database as 'Quake Stories', part of a long term project dedicated to the preservation and study of information relating to the Canterbury earthquakes. A future archaeology will be a bit like an imperial enterprise: a process of managing relationships with trauma, but also something that may

set in train systems of memory through a new inscription of oral histories onto sites of communication and transmission, especially now the very structure of the post office itself is destined for the midden, somewhere on the edge of the city (Watts, 2012).

City-scale middens

The activity of reading a midden is one of reconstructing the past through imagined futures. Rubble from the demolished buildings of Christchurch now forms the basis of land reclamation in the Lyttelton port area. In 2011, fast-tracking of the reclamation work was justified with claims about restoring the economic potential of the Port in response to the damage caused by the earthquake. Bypassing the normal regulatory processes, the Port project obtained consent to use up to one million tonnes of rubble from the demolished buildings of Christchurch (Wood, 2011). For example in 1913, Joshua Little, an elected member of the Lyttelton Harbour Board published a pamphlet outlining his views and opposition to land reclamation at Lyttelton. In late 2011, the government fast-tracked a ten hectare reclamation of land in Lyttelton, bypassing the normal consent process. Over 42,000 tonnes of rubble from the earthquake was deposited on the reclamation site, with another another million tonnes approved. Minister Brownlee at the time said: 'This decision to streamline the consent process is to ensure we have a proper plan for the reclamation but within a practical timeframe given the importance to Canterbury's recovery' (Swiggs, 2011).

The concern is not with the careful and unintentional layering of sedimentation of habitation. Today, crumbled elements are in the process of being pushed into the sea to form a modern city-scale midden; a midden that shares the common qualities of its human-scale relations. It is a new kind of archaeological environment in which timescales are compressed into a rubble that will form a determinately unreadable midden. Like the solid foundations of the Post Office, it is anticipated that these layers will never be read, not now and not for five thousand years. This is a midden of unwanted, discarded material: homes, shops, offices, factories, warehouses, and sheds that are no longer architecture but rubble.

Residents have raised concerns about the environmental impact of the reclamation project. Specifically, that the diverse range of materials from which the rubble is composed may contain asbestos and other materials that may have a negative impact on the marine environment. But the midden keeps growing. There is a semantic rhythm to the city-scale clearance and reclamation.

It is as if the city is living within its own refuse pile. Encountering on a daily basis the ideology of waste and the impacts of ritual.

Sorted by the sea

Erosion, tidal flows and foraging animals change the structure of middens. A domestic or kitchen midden may contain only shells, bones and seeds, as most other organic matter breaks down quickly. There is a gentleness and weathering to the materials. This cycle of discard, layer, repeat is not necessarily stable. Over time, humans build and excavate materials. Shells are collected from the sea and tossed aside. Domestic gardens and raised flower beds resonate with these levels of diffraction. Garden beds in Christchurch that have formed slowly over the years from collection, have, out of necessity, found themselves reconstituted as visceral mounds of excess top soil scraped to the edge of the section. Levelling the land forms peaks and valleys. The domestic city-midden activates an ethnographic imagination, one in which knowledge is located and situated in the very material that surrounds a city and that will now form its archive.

[Vicki Smith, *Playground Midden*, 2015.]

The city-scale midden composed of building rubble has a different material quality. Heavy metals, plastics, asbestos leach into the soil, or, not content to stay in the soil, seep into the surrounding land and water table, moved by tidal flows to other places. There is the problem of historical erasure when considering the use of rubble to reclaim the land. Perhaps it is more comfortable to forget the material's origins, as it represents a traumatic point in the history of the city. The city midden of Christchurch cannot yet be forgotten. The debris is fresh, and as it is raised it also refuses to readily accumulate. Some items drift off, others are scavenged. The density of the shared environment is filtered, and in the structures and cracks the liminal surface of the archive is beginning to form.

[Susan Ballard, *Conduit*, 2015.]

In Lyttelton certain kinds of rubble have been effectively sorted by the sea. Already, some objects that compose the disparate mix of fill have washed up on the beaches in other parts of the harbour. Buoyant items such as wood, polystyrene and plastics have moved across the water to Ripapa Island. It is possible that tides will begin to form their own middens, with the material of reclamation forming new layers in other unintended locations, even suspended in ocean currents, like the North Pacific Gyre, or 'Pacific trash vortex' (Sachdeva, 2011).

The future midden

The Whole House Reuse (2014) project addresses the act of burying Christchurch's homes and buldings on a mass scale. The project keeps the materials of a single home alive and in circulation. The house disassembled, its constituent parts are documented in detailed images in a 'catalogue of resources', which was offered to the creative community of New Zealand. Items selected by 250 artists and craftspeople from around the country, were transformed into nearly 400 works:

> For me, with my hoarding instinct, seeing a house that you've worked on, that you've painted, that you've loved and restored and done little bits to – that you know is actually in the end going to be essentially wasted is really difficult. (Arnott and McIntyre, 2014, p. 11)

The process served to give the house enduring life, to value its material qualities, and to take care of the family who owned it. Sometimes revealing unseen parts, or creating practical objects for everyday use; the artists honoured the house as home. Waka huia created from the house material was gifted back to the family, a sacred container never to be thrown away. The objects formed an exhibition at the Canterbury Museum (2015), another site of the archive. Whole House Reuse exists as documentation, in derived objects, and as distributed possessions. As such, it actively resists the midden. A distributed archive that requires continued kaitiaki the project refuses to be discarded.

For future archeologists the interpretive landscape of Christchurch is complex. Middens are separated by city-scale layering of re-composed built structures. Somewhere out in the forest a pile is growing. Soon to be repurposed into a mountain biking track, these recycled once-were-home mounds represent a negotiation between engineering, convenience, and the possibility of an organic covering. Digging beneath this future landscape will reveal concrete, metal, bricks, plastic and asbestos.

[Vicki Smith, *Midden Mesh Hapori*, 2013.]

[Susan Ballard, *Sydney Midden*, 2014.]

Over time the composition of a midden changes. Organic materials become compost, wood and baskets rot; though many materials remain. There are serious environmental implications for the remnants of the city-scale middens. Peat fires in Indonesia demonstrate how waste material previously considered invisible and safe, becomes a new layer of pollution and debris. The process of burning the forest continues below ground into the layers of peat that have accumulated in the waterlogged soil. Likewise endlessly burning tyre fires release significantly large amounts of pollutants including sulphur, oil and various hydrocarbons into the air, soil and water. It is hard to imagine the midden of the future in a world where the oil and hydrocarbons are laying down their own contributions to the geological map. As Claire Colebrook says "The idea of a near-post-human world is today utterly plausible" (2011, p. 53). But what does the midden of this near-post-human world contain, if we no longer consume coal, oil and plastic?

11. Trauma against memory

Repetition, re-creation and recovery

Jo Burzynska and Malcolm Riddoch's *Body Waves* takes Burzynska's soundscapes made from recordings from the first hour and subsequent weeks after the Christchurch earthquake of 22 February 2011, accentuating their lower frequencies and tuning them to the resonant frequency of a performance space. The result is felt in the body as much as heard.

Body Waves was finally performed in Christchurch only in late 2013, well over a year after its first performance, suggesting an uncertainty about whether Christchurch audiences were ready to experience it. If the work is potentially too traumatic, what does that say of the desire to perform it and to experience it in the first place? Burzynska has described the performance of the piece as an attempt to make the sound recordings "more visceral, more like an earthquake" (Anderson, 2012).

In Christchurch there were the diverse methods of sense making that, maybe, each of us use in the face of crisis, as a body in crisis: to talk it out; to go walking; to focus on others; to attend a performance directly related to the body, re/experiencing the source of the so-called trauma, to experience catharsis as a result. An example that surfaced in this writing process was a remembered performance of Japanese Butoh dance at the Black Box Theatre in Aomori, 2015. The performance involved the body of a dancer fully encased, even mummified in something like cardboard, in a deep black theatre space. Giant insects cavorted in projected images. A large knife was drawn out by the dancer – whose sight was completely obscured by the body wrapping – and began the process of self releasing. It was terrifying for the viewer, who did not want to believe this metamorphosis was being played out with what seemed to be disregard for self harm. Eventually in a storm of DJ'ed sound the newly 'born' figure – now identifiably human – moved off stage and we followed the last glimpse of red stained skin.

[Photo: Helen Moore, 2015]

Environmental theorist Timothy Morton writes:

> Butoh, the Japanese "dance of darkness" …. was invented in the wake of Hiroshima. In Butoh, the human body no longer floats as if weightless in abstract space, but is pressed down from all sides by a horrible gravity, the spacetime emitted by a gigantic object, preventing the human from achieving escape velocity. (Morton, 2013, p. 194)

The performance remembered here, was of something traumatic done to a human body. A similar conceit concerning *Body Waves*, perhaps not to be taken at face value, might be that sound waves acting directly on the body might induce trauma. Perhaps a desire to answer the impossible question: What was it like?

Too much

Sound artist JLIAT's *1TB noise* (2011-2012), a 233 DVD set of harsh noise mp3 files representing one terabyte of data, has a running time of 1 year, 346 days, 14 hours (JLIAT, n. d.). How does this work relate to the idea of trauma? Trauma can be understood as something that is 'too much', that does not allow itself to be incorporated into the victim's ordering of the world. Psychoanalytical accounts of trauma focus on the intensity of experience that breaks through psychic defences, the shocking thing that disrupts the symbolic order. With JLIAT's work we can begin to understand 'too much' not in terms of intensity of experience, and not only in terms of sheer quantity of experience (though no doubt a full auditing of 1TB Noise would be traumatic enough) but in terms of what systems of understanding and coping are absent from it. This 'too much' is the too much of data, the overload of information that we normally filter and categorise into knowledge.

Filtering requires a range of technologies. We can normally only approach large amounts of digital information through software that enables us to search, share or take in: Google's search algorithms, social media's transformation of informational connection into minimally felt interpersonal communication, or data visualisations. These technologies are also the technologies by which we make ourselves into the kinds of subjects required to interact with the world – users with a user name – and coincide exactly with the technologies that allow corporations or security agencies to target users (Hu, 2015). Technology, more generally, concerns ways of living, ways of being in the world and navigating through and around it.

Cities are built out of technologies: traffic and signage systems, information, water, power and sewage infrastructures designed to shift the problems of life out of the reach of conscious concern. Without them, a city of almost any size really is too much – a welter of matter and energy, the accumulation of human activity, encounter and waste to be experienced and accommodated. Philosopher Henri Lefebvre writes "the town at a very early stage displayed certain characteristics of the machine or automaton" (1991, p. 345). It is this that Fiona Farrell evokes when she writes, after moving to Christchurch in 1992, "[t]his city took time to assemble" (Farrell, 2015, p. 55). This is not the building of a city, but the building of what Alexander Kluge, in his film *Die Entstehung der Zivilisation* (2014) calls 'the city in us' – the migration of built urban form into the structure of human consciousness. In the process of making the city manageable, technology also asks us to become the kinds of subjects that live in cities, who keep to the standards by which public and private behaviours, especially concerning hygiene, are policed. Conceived in this way, technology is

present also in the body, as unthought obedience and bodily memory. It is the remembered interaction with a space that enables us to move automatically, 'as if with our eyes closed,' through homes and streets.

The trauma victim's anxiety on entering certain spaces – 'reentering' a space perceived as similar to one where a traumatic event occurred – works against the functioning of bodily memory that allows us to thoughtlessly treat buildings as the sum of their flows and utilities: stairwells, thoroughfares, kitchens and toilets, spaces for sleep or recreation. For the anxiety sufferer, the inability to navigate is a failure of internal technology. It is perhaps not so much the product of a singular event, but of the repeated aftershock that again and again reduces trust in the built world.

Disrupting time

Trauma, as the disruption of technologies for living, ruptures time and memory. In particular, it ruptures quotidian time, cyclical time of circulation through and between the lived spaces of home, work and recreation. *Body Waves* enacts this through the live manipulation of sound sources, identifiable noises – notably, the sound of alarms, which are distorted, slowed down, and repeated. The effect is to defamiliarise the sound – but more importantly, it gives an index of the transformation of 'natural' sound, an aural understanding of what we are hearing. The transformed sound is both comprehensible and not. Any imagination of what is happening in the 'scene' can only be either a reconstruction after the fact or an alternate reality. The recognition of specific sounds amidst the noise both anchors the listener to the origin of the recording and distances from it.

Why invite listening, and why listen? Morton argues for an environmental art that refuses the attempt to change its viewer's mind, instead asking us to attune to objects that are too large, too massively distributed, too multi-dimensional to be grasped (2013). *Body Waves* asks a similar retuning from the audience. Although Morton focuses on the nonhuman and environmental, there is in *Body Waves* a more local collision between human and physical that also refuses to argue, reveal or map, but rather attunes us again to the removal of quotidian temporal structures. Such work is not, either, simply an attempt to change a mind by providing trauma therapy. It also registers the fact of what happens when time is disrupted. The outburst of sound is physical, but it is also an outburst of human striving, of accumulated building and labour, whose energies are released in clamorous and often destructive ways. It becomes a hint of the city below the city, the city of human energies below the surface of the city of ordered routines. A rupture in this surface may release potential energies that are destructive or creative.

Trauma, breaking through the quotidian, shows us nothing so much as ourselves, our alarm, the collapse of the collective urban project as it tumbles. This registers the darker side of what was always potential in the human city. The chaos of collapse, the chaos of the throng or multitude, the unstructured possibility of encounter that cities, accidentally or not, discipline. These two valencies of the emergence of human energy 'up through' the city's surface are visible, in fact, in the 'throwing together' of people after the Christchurch quakes; people helping strangers or gathering in safe spaces. Here, 'society' or 'the people', constitutes itself for a brief time out of its various dismembered or distributed parts. People become visible to one another as having needs or solutions, as sharing experiences even as each owns their own version of 'where I was when'. *Body Waves* does not answer the curiosity of the outsider who wonders what the physical experience of trauma was like. It is not necessarily a reminder of a specific event, it can be also the reminder of the buried memory of human possibility.

Requiem for the city centre

The double nature of the loss of quotidian time finds expression also in the emergence and guilty appreciation of a different city, one deprived of its centre and thrown back onto the smaller networks of human possibility and imagination. There can be no suggestion that we can simply celebrate the emergence, even only in its 'positive' valence. Removing the structures of time, the quake also removes the centres of temporal authority – metaphorically, perhaps, the clock, or indeed time ball, at the town's centre that marks or rings out the time of day. The city itself becomes its own traumatic body of non-functional togetherness and no longer a productive machine.

There are many versions of the city centre. One is the meeting place, the place of political power but also of political claim – the goal of any hīkoi. Another is the marketplace, site of exchange. The city and its regimes of power are tied to accumulation, one outcome of the efficient functioning of its machinery. Without these centres, the post-quake city subsisted as a ring of transformations, passages and encounters around a felt absence, drawing walkers to the so-called ruins of the central city to peer through mesh fences, to sense the presence of something unnameable speaking back. There was some responsibility to trespass, to enter the red zone – to stay with the body of the city.

Chim↑Pom's production and curation includes work in forbidden 'centres', such as the 20km exclusion zone around the Fukushima power plant. *Don't Follow the Wind*, the project initiated by Chim↑Pom in 2015 and curated by Kenji Kubota, Jason Waite, and Eva and Franco Mattes, includes work by themselves as well as Ai Weiwei, Grand Guignol Mirai, Nikolaus Hirsch and Jorge Otero-Pailos, Meiro Koizumi, Eva and Franco Mattes, Aiko Miyanaga, Ahmet Öğüt, Trevor Paglen, Taryn Simon, Nobuaki Takekawa and Kota Takeuchi in sites lent by absent residents of the zone (Kubota, Mattes, Mattes & Waite, 2015). It remains resolutely invisible, featuring a website that is blank other than a basic audio introduction, a 'non-visitor centre' at Tokyo's Watari Museum of Contemporary Art (echoing Robert Smithson's non-site works) and very incomplete reporting and documentation. In an online video feature about the project by The Creators Project, Chim↑Pom member Ushiro Ryuta talks about the sense of powerlessness of art in the face of the Fukushima disaster, and the necessity nonetheless to do something and record what is possible as an artist in such conditions (The Creators Project, 2015). The result is a project that measures the impossibility of the response, a work that cannot be experienced. It is for the same reason, as Ai Weiwei states in the same video, a project that has an appropriate relationship to radiation's threat to life. The project trespasses into the forbidden zone and establishes something more to trespass for – Ryuta talks about the strong power that art can retain over us, even if inaccessible. There are suggestions that the art might be overrun by nature or remain for residents of the area to return to – or indeed that it might serve as a kind of replacement for the displaced residents. It is an overlay of meaning onto a space that highlights the meaning inaccessible to us already.

12. Memory city

The colonial process wrote itself on the surface of the swamp in a project of hopeful forgetting, but the city's pasts, presents and futures are the memories, stories and dreams of its peoples

[Tracey Benson, *Christchurch Art Gallery*, 2015.]

As base isolation was completed, the last part of the Christchurch Art Gallery's connection to the ground was severed, so that it now stands on its own legs. Although this is not obviously visible, it has been transformed into something akin to a modernist floating building. After the earthquake it was the civil defence headquarters, because the Environment Canterbury bunker was threatened by the building next door. Civil defence and other planning and emergency staff worked at desks brought into the gallery spaces, watched over by paintings. After being closed for nearly five years, when the gallery reopens it will return as a space that has been much missed in the interim. It may seem like the same space, but has been fundamentally changed in its connection to the ground, but also in the memory of what the building is and has been. It was an art gallery, it was a civil defence headquarters, symbol of strength and resilience despite that rippling wall of glass. The glass was the story, proving the value of the new against the fallen old. It was the backdrop for media

interviews, for press conferences for the big sad news of the first weeks. Radio New Zealand ran a studio there. And eventually the staff went back to work, and the process of planning and strategising its transformation back into an art gallery could begin. Without its building, the gallery became fluid: its work flowed out around the city, onto walls, into other buildings - the NG Gallery, Alice in Videoland, and the Box quarter - and into public projects. Micheal Parekowhai's work *On First Looking into Chapmans Homer* (2011) followed sponsors and donors around different workspaces (Placemakers, the airport); the imagination playground inhabited the Workers' Education Association (WEA) offices. Gallery staff moved around the building and across social media. When the art gallery returns it will no longer be fluid and transitional, it will be an art gallery. By letting go of the earth it becomes stable enough to hold the treasures of other galleries, to reconnect with networks of loaners and donors, to care for the memories of other cities. But it also brings an end to its transitional period, a return to centre, and a reaffirmation of the normal way of things.

[Daegan Wells, *Field Theory Stadium Broadcast*, 2014.]

Christchurch may be nearing the end of its transition. By the same token, transition is the normal state of things for any city. The phrase 'transitional city' thus signifies two things at once: the extraordinary status of a city in transition, and the transitional status of cities as such. Fiona Farrell, in *The Villa at the Edge of Empire* (2015), begins with a discussion of the early colonial maps of Christchurch, the speculative planning for a small town at the edge of a sleepy river in a fertile plain, a harbour at its back, sun at its face, wetlands stretching to the coast.
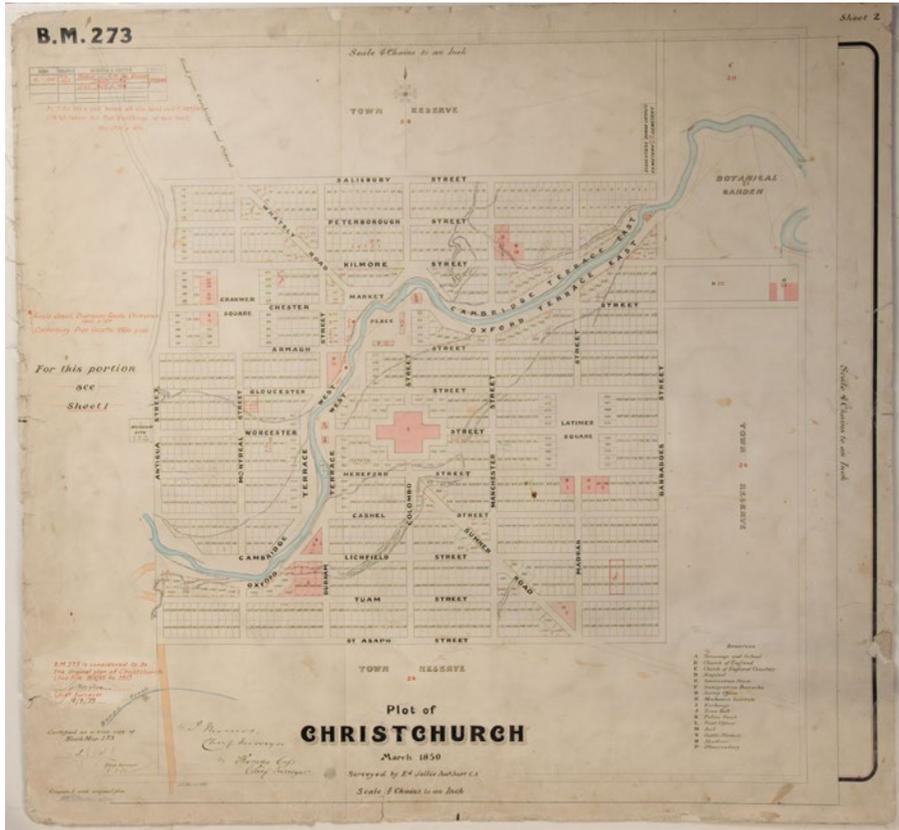
[Edward Jollie, *Map of Christchurch*, 1850, Source: Wikimedia Commons.]

These plans wrought a transition before even being set in motion: the transition, in thought, of the living earth into a blank slate for settlement. The title of the collection *Christchurch: The Transitional City Part IV* evokes the constancy of transition by referring back to three previous transitions prior to the earthquakes and rebuild: the coming of Māori, the coming of Europeans, and the post-war suburban expansion. Each of those instances in time is a point of speculation and hope. Ngāi Tahu arrived via other places, establishing themselves via Kaiapoi and Koukourarata (Port Levy) a trace remaining through the establishing of pa by Huikai, and his son Tautahi leaving the legacy name Ōtautahi for Christchurch (Taylor, n.d.). The colonial project superimposed an ideal city into that landscape, slowly filling in and draining the wetlands. Before the city's expansion through road infrastructure and available transport technology, it remained largely within the confines of its town belt – girls living in the Brittan House on Linwood Avenue boarded at Girls High a few blocks down the road

because the terrain was impassable on a daily basis. Layers of these histories are found in the traditional knowledge of mahinga kai, in the mapping and expansion of the colonial project, in the rezoning of farmland to accommodate a cricket pitch and, eventually, the various iterations of Lancaster Park, in the extension of the city across grain land and, later, the predominance of dairy farming. The colonial project successively reshaped the land, erased its prior forms and forgot it functions.

[Kathryn Bates, *Avon-Ōtākaro Network Mahinga Kai Exemplar*, 2015.]

The fourth transition came when the land was remembered. The histories, maps and stories remain, but they carry little meaning through the transitions, and human memory is inadequate to the task. The expectation of solidity in stone and brick crashed away. Buildings, roads, infrastructure were suddenly manifestly impermanent, perhaps no more permanent than the stories and memories that adhere to them. The memories of buildings long outlasted the buildings themselves, but the stories we tell about them are fragmentary and partial. Memory is fallible but so is stone.

Creative interventions

Art's interventions offer, amongst other things, the hope of breaking through the complex layers of memory and forgetting. In his work for the Scape Public Art Christchurch Biennale 8, *Raise the anchor, unfurl the sails, set course to the centre of an ever setting sun!* (2015), Nathan Pohio mounted a billboard-sized image from 1905 on the riverbank of the Avon-Ōtākaro overlooking the rebuilding city. A row of Māori leaders on horseback, wearing korowai and kākahu flank the small open car of Governor Lord and Lady Plunket. Horse and car evoke the past and the promised future. The image was mounted on two sides of an illuminated billboard, facing both the setting and the rising sun. The title invokes an eternal future, progress by one or all. The title, however, disorientates: this is not a maritime image. Appearing in the city out of 110 years past, the image re-imposes a history from outside living memory, hinting at the possibility of a new layer of memory for the future as well as an acknowledging the fact that, as Te Maire Tau puts it, "Māori live with their ancestors at a series of different levels, all within the present" (2011). The work also troubles the way we orient ourselves towards the future: in its Janus-faced structure and the almost mock-heroic stance that Pohio's cropping gives its figures.

A wide variety of other works and projects offer other new layerings of memory, while concentrating the spirit of the transition. The High Street Stories (2013) project is a collection of audio stories recalling moments in the history of the High Street precinct. It was developed quickly, by Heritage New Zealand, emerging out of conversations about of loss and anxiety about the future of the familiar city. The project captures not just the layers of memory and history of High St, but an immediate post-quake energy, a desire to get things done before it was too late. *Sound Sky* (2014) asks users to share memories, recordings of the present, and hopes for the future, to create a responsive map that layers the past, present and future recorded and accessed through a smartphone app. It recognises that memory has multiple layers, that both the past and the anticipation of a possible future can be part of the present. In this it plays a similar role to the University of Canterbury CEISMIC archive, which includes the 'quakestories' gathered by the Ministry for Culture and Heritage. The archive retains the fear and tremors of the time, the stories told raw or considered, but carrying within them a shared memory. Some stories were written long after, when the teller was ready, some are raw and immediate and are made of anxiety.

In their November 2014 work *The Stadium Broadcast*, Australian artist group Field Theory established a radio station inside the stadium at Lancaster Park, which has been unused since 22 February 2011. From a caravan studio they remained on air for seventy two hours, an endurance art performance that echoed the long form of a cricket test match, broadcasting from 10am on Friday 14 November to 10am the following Monday. In their transmission, archival recordings were interwoven with memories of Lancaster Park by local residents, tied together with the broadcasters' own reflections on the experience of being in the space. School girls waiting for the Queen in 1954, Pope John Paul the second celebrating Mass in 1986, Pearl Jam performing in 2009, sporting commentary, memories of childhoods spent on the embankment, tales of great sporting moments, combined with the view from the caravan windows, the experience of walking on the field, late night rumi nations on sleep deprivation and radio. Spreading over the central city from inside the closed-off stadium the broadcast reinscribed the space over the city itself. In nearly four years the condition of the stadium structure and its future had been a subject of much speculation and debate, but little was known for certain. The artists obtained public access to the space, so that anyone could visit and walk the field for the first time, to see the structure if not appreciate its uncertain condition. The broadcast carried people's hopes and uncertainties about the future of the space, the value of the present temporary stadium, and the structure planned for the central city.

Lost Oscillations (2015) was an interactive tactile sound work by Dugal McKinnon, Jim Murphy and Mo Zareei that elicited a range of historical sounds of Christchurch. In it, a wooden box held an abstracted map of Christchurch in perspex and metal, shaped according to the river, the square, the street blocks. It was installed on the site of the former convention centre, a field of rubble, with views across to the temporary library on Peterborough St, the Town Hall under reconstruction, the river, trees in the distance, the craftspeople displaced from arts centre, the Sound Garden and coffee and food trucks.

[Dugal McKinnon, *Lost Oscillations,* 2015.]

Here history had been stripped away, leaving the new, transitional, post-quake, or contested. Touching the map of central Christchurch conjured up voices and sounds from a long past – before the Sound Garden and food trucks, even before the convention centre, or before the Town Hall. The user was immersed in voices and sounds of distant Christchurch, layers of memories rising up out of the rubble. Requiring touch to activate meant that the sounds and layers could only be experienced in that place and time. In most cases the recordings were not the user's own memories, and were not recorded as memories. The radio recordings were once live, heard in the flow at the time of transmission, but the act of archiving turns them into memories – of radio broadcasts in themselves, or the events, people and places they document.

Erasure

In older cities in non-seismic zones such as London, building is by comparison a sedimentary process: buildings are built on buildings and the iterations of demolition and construction expose an often visible memory. In Christchurch, architectural memory gives way to human memory and media, yet in the reconstruction following the quakes the traces of building and erasure are still visible. Here the process is the same, on a shorter timescale. Transitions which

in other cities might take centuries have been compressed into a few short years – the normal city's slow evolution compressed into the exceptional time of the transitional city.

The initial moment of September 4 still resonates in memory, the following dates falling one after the other: Boxing Day 2010, February 22, June 13, December 23. Each moment is a point in the long unravelling of the city. Other dates are less certain: each shift in the cordon, the reopening of shops, cafes, restaurants, the remapping of the city-memory. The time in between the quakes was one of memorialising, theorising, planning and hoping, yet as the ground kept shaking there was also anxiety, the uncertainty of whether it was really over, whether it would continue, a overlay of hope and unease. It feels now like a single extended moment point in time, stretching on towards February 22 and now layered with a false memory of foreboding, as though everything we did was done in spite of what would happen next, because little did we know. It's hard to know, since then, when we stopped asking 'where were you when it happened', or telling the story unbidden. Each time it was told it was a surprise: we haven't told each other this before, now I'm going to tell you about that, this is something we don't yet know about each other and it matters.

The long process of the transitional has brought moments of peace: the quietness of Latimer Square, when it was reopened but cars could not yet travel around it, the silence of the snow, the frozen bulldozers and a city caught in time. The demolitions and land clearances were an erasure of memory, a deliberate process of removing the points of reference, wiping the old city off the map to start again, removing attachments to 'old dungas'. Generations of memories inscribed in the pathways that people walked through the city – paths that kept some resonance in the stone – were lost. Now there are new memories, new buildings and absences, new structures and playful times with children born since the quakes.

Layers of memory

But it is in the nature of the transitional that the spirit, the climbing structures and play spaces will again become shops and commerce. We have lived in the between times, and even these times are being overwritten. The Pallet Pavilion made new memories on a site that still holds layers of memory: eating at the Park Royal Hotel, renamed the Crown Plaza; watching its demolition and unofficial award for best demo of 2012; the construction of the Pallet Pavilion and everything it sheltered; the arcades, the commons, markets and pizza. Even new features of the rebuild have submitted to the process of erasure, like the murals covered by new buildings, secrets being hidden for later, to be revealed in what kind of event?
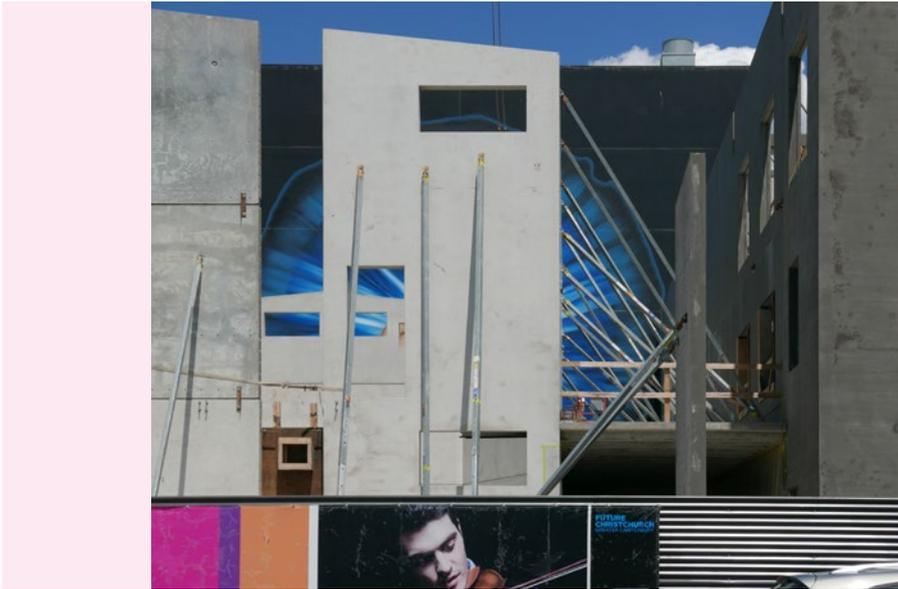
[Julian Priest, *Ballerina*, 2015.]

Other structures such the Town Hall, Lancaster Park stadium and Anglican cathedral have been frozen in time, their memories crumpled and fallen like the brick steps around the Town Hall's fountains. Now the repair work starts, but already the crumpled steps have gone, another symbol of the erasure of 'the in-between'. Eventually again the Town Hall will host us at primary school events and graduations, and the new old building will fold up the years of 'crumpled stasis'.

Despite the predominance of glass, the new buildings are heavy. Steel beams perform their strength. There is an implicit assurance in them that their prospective tenants will be safe, that the past will not repeat, that their memories and remembered fears of collapse are not needed here. In them is another forgetting. Even 'transitional' structures sometimes had the same structure of forgetting: Restart Mall, which quickly replaced the damaged Cashel Mall, was built of shipping containers and provided this same sense of safety through its steel boxes, an illusion of solidity.

For now, there is a confusion of time stopped, accelerated or forgotten. Eventually, like the Art Gallery and the Town Hall, the spaces will be returned to us, and our memories of 'the in-between' will be lost in the shrinking gap between the old and the new.

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Robert Carter is an Auckland based artist, writer and researcher with an interest in site-specific work incorporating sculpture, sound and performance. His most recent collections of writings include *In Support of the Lunatic Fringe* (2013), a collection of short fictocritical essays. Exhibitions include *Used Parts* (with George Hajian), Elam School of Fine Arts, Auckland (2015); *Sometimes a Great Notion*, Audio Foundation, Auckland (2014); *The University of Who?* Artspace, Auckland (2014). Robert received an MFA from Elam School of Fine Arts in 2014 and is a board member of the Aotearoa Digital Arts Trust.

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Zita Joyce is a lecturer in Media and Communication at the University of Canterbury, and board member of the Aotearoa Digital Arts Trust. Zita's research has focused closely on Christchurch since the earthquakes, exploring interconnections between media, memory and the changing spaces of the city. She co-edited a special issue of *Medianz, the Media Studies Journal of Aotearoa* on the mediatisation of the Canterbury Earthquakes.

Helen Moore is a trained artist, designer and educator. She has tertiary qualifications in education and visual communication, with a Masters of Design (Hons) and has worked in arts, sustainability and inclusion teacher education. Her research focuses on construction and imagining of national identity, belonging, and place. She was an invited commentator at Beyond Contamination: Corporeality, Spirituality and Pilgrimage, in Aomori,Tohoku,Northern Japan 2015, one site of the decentralised PSi #21 Fluid States conference. She is based in Christchurch.

Julian Priest is a New Zealand based artist and writer who works with participatory and technological forms. He is director of The Greenbench and is a board member of the Aotearoa Digital Arts Trust. He has lectured at the Banff Centre, Whanganui School of Design, AUT University and Massey University. Recent exhibitions include: *The Blue Marble, Machine Wilderness,* Public Art Finalist Exhibition, Abuquerque (2012); *Sink, Machine Wilderness*, ISEA, Abuquerque (2012-13); and *Local Time, Local Knowledge*, Dowse, Wellington (2011-12). His interactive sound work *La Scala* was recently comissioned for the Chartwell Stairwell at Artspace Auckland (2014-15).

Vicki Smith is from the West Coast of the South Island and is based currently in Nelson. Her work navigates the permeability between visual and virtual, weaving science, the environment and traditional practices in her collaborations. As well as performances in the online venue UpStage, recent work includes a print *Approaches to Puke Ariki* (2013); a book of sailing bound in fish vellum *under her skin* (2013); a public participation light installation *Ship's Pass in the Night* (2014); a media art weaving collaboration *Pattern Recognition* (2014); a mural painting *George Bolt's aerial adventures* (2015) and an interactive fiction work *Finding Lucinda Fairweather* (2015). Vicki is a board member of the Aotearoa Digital Arts Trust.

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