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# ENVIROMENTALLY UNSTABLE

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An exegesis presented in partial fulfilment of the requirements  
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# ABSTRACT

This project is about the impact of dairy farming on our waterways. A 2004 study of more than 300 lowland waterways revealed that 96% of them in pastoral catchments failed the pathogen standard for contact recreation (Joy, 2012; Muir, 2013; Morgan, 2014).

The project uses illustration to inform the public about the degradation caused by introduced nitrogen, pathogens and pollution to our waterways. In the same way that Theodore Geisel (Dr Seuss) used a playful approach in the Lorax to explain environmental issues, this project aims to engage its audience through humour and playfulness (Seuss 1971).

The output is an Information Graphics Poster which represents the life and death of a waterway, and an accompanying teachers resource.

# ACKNOWLEDGEMENTS

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# Introduction

The English ratepayers have much to regret that the wise provision of Richard II who created a statue against throwing filth and corruption into rivers or any other watercourses, has been disregarded, and it goes without contradiction that those who come after us will be duly grateful, if, by timely protest, we save the river to them fit for all such purposes Providence directed it to supply, which certainly was not for a common and noxious sewer. The Mayor and Councillors of the Borough of Foxton should never weary in this fight for purity and health.  
(Manawatu Herald, 1890)

This project demonstrates how design, illustration and a playful approach to transferring information with story telling, can relay complicated subject matter to a wide audience. The information itself concerns the effect that predominantly dairy farming has had, and continues to have, on the waterways of Aotearoa New Zealand. For the most part, when I speak of waterways, I am referring to rivers, but streams, wetlands and lakes are equally susceptible to the hazards. The topic stems from my interest in the interconnectedness of economic processes and the health of eco-systems. The project focuses on one aspect of this interconnectedness. The degradation of waterways, an issue of current interest and concern to many New Zealanders. The design enquiry in this project is situated within an existing discourse of the critique of the dairy industry, governmental attitudes towards dairy development, received perceptions of 'clean', 'pure' and 'green', and an historically steady decline in the health of our waterways (Bell, 2005).

In this project, I belong to a continuum of concerned comment, which includes, but is not limited to, the work of tangata whenua, Mike Joy, Gareth Morgan, Kyleisha Foote, Claudia Bell and Grant Muir. The critique of the dairy industry and its effect on waterways has taken many forms. It has been addressed as academic enquiry in published works (Foote & Joy, 2014); in conference presentations and through public discussions (Joy, 2014) (Joy,

2011a) press releases (The Morgan Foundation, 2014) film (Muir & Hunter, 2010) and on line initiatives (WAI | Water Action Initiative New Zealand, n.d.) (The Morgan Foundation, 2014) Worthy of note in the international sense is Rachel Carson's book *Silent Spring* (Carson, 1962) that was pivotal in the environmental movement of today.

Much of the information provided by researchers to the general public is difficult to grasp as it deals with very complex issues. It is often discussed in scientific jargon and acronyms, which are inaccessible to the public at large. We live in a world where information is entertaining and instantaneous (Graber, 2014). Alan Alda a professor of journalism and on a mission to persuade scientists to stop using jargon to get their point across, argues that there is no need for it (Eltman, 2013). Children are our environmental stakeholders, and the importance of relationships with the environment has been researched to be of significant value in formative years ( Elisabeth Barratt Hacking Robert Barratt & William Scott, 2007) I argue that there are ways to present this information that is accessible to the young and encourages engagement through playful activities, yet retains its scientific integrity. This project seeks to lay out the information in a clear visual presentation of the problem. The project consists of what I will go on to explain in detail further on, as an IGP (Information Graphics Poster) that lays out the trajectory of water degradation, and is accompanied by a teacher's resource that allows pupils to dig deeper into particular issues by explaining some of the science. Although this project is focused on the scientific data related to the dairy industry and water degradation, it is equally important to acknowledge the cultural significance of our waterways to New Zealanders and especially to Maori, the tangata whenua of Aotearoa New Zealand. The waterways play a part in Maori creation stories and as the tribal guardians of these waterways; they are responsible for the health of the eco-system and its mahinga kai (food sources). They are the tiaki (guardians) of the land and as a result of modifications to the waterways and riparian

areas the relationship between them has changed. Their ability to shoulder that responsibility diminishes if they lose control over the waterways with the increase in dairy production. The National Government in 2009 set up the The New Start for Freshwater (MFE, 2013) Their strategy is as follows:

*'Engagement between Ministers and the Iwi Leaders Group to advance discussions on resolving high level freshwater issues, including iwi/Maori rights and interests, particularly in freshwater management and allocation initiatives;*

*Concurrent scoping of policy options on matters including freshwater allocation, quality and infrastructure (the 'officials' work programme);*

*A stakeholder-led collaborative process run by the Land and Water Forum (LAWF) to develop shared outcomes, goals and long-term strategies for fresh water.'*

The project describes the process of the development of a particular illustration style that references early environmental influences and illustrators such as Richard Scarry, Miroslav Sasek and Theodor Geisel. It particularly focuses on the work of Theodor Geisel, the inventor of Dr Seuss. Geisel's work is pivotal to both the development of my illustration style and the ludic (playful) narrative method of story telling that I used in this project. The exegesis then offers a detailed description of the process of constructing the design output, which addresses and utilises both the scientific evidence and the stylistic influences. Finally, it concludes with a discussion of the potential of the project to roll out into the school system.

# Chapter 1

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## THE PROBLEM WITH OUR WATERWAYS

### Waterway Issues: The Science

A current problem facing New Zealanders is the degradation of our waterways. This has a number of causes, including industrial pollution and a variety of farming practices. This project focuses on the dairy industry as one of those practices that, through recent and unprecedented growth, has increased the degradation of the country's waterways (Impacts from dairying on freshwater worse - Dr Mike Joy," 2014)("Dr Mike Joy NZ 100 percent pure illusion - YouTube," 2013)(The Morgan Foundation, 2014)("WAI | Water Action Initiative New Zealand," n.d.) If we accept that there is a correlation between waterway degradation and the increase in dairy farming as Joy et al suggest, then the more our dairy industry grows, the more degraded our waterways will become. In order to cope with such an unprecedented growth, knowing the precise effects nitrogen will have on a waterway are not clear, what is clear though is that if it does cause algal bloom, it will be too late to do anything about ("Impacts from dairying on freshwater worse - Dr Mike Joy," 2014). Some of this science is related to the growth of microorganisms like e-coli and some is related to chemical elements such as nitrogen and the eutrophication (excessive amounts of nutrients) in our waterways. Further complications lie in the politics that support the growth of New Zealand's dairy industry. The growth of our dairy industry endangers not only the

eco-system of our waterways, but also our international reputation. In 'Branding New Zealand' Claudia Bell discusses New Zealand as a brand, a strategy for marketing the country and its products. She notes that the 100% pure campaign completely avoids the issue of environmental degradation and land contestation.

Encouraging people, especially young people, to understand the science may help to accelerate the change in current practices. There is much information available on the subject of degraded waterways, the causes and possible remedies, as well as the science surrounding it. Joy has repeatedly debated the issues with politicians and farmers and at numerous national and international conferences (TVNZ 2012, RMLA 2013) Muir of Water Action Initiative has been working on developing drones that collect information on areas of waterway that would be difficult to access using conventional means. His son James Muir and Oscar Hunter have produced a film River Dog, that outlines the struggles that one farmer and his team of dogs have, battling the odds in an attempt to keep the Pahaoa River clean (River Dog, 2011). Morgan has been a firm advocate of the movement and was the driving force behind the Government's Freshwater Policy Revisited (2013) Assessed by sixteen scientists working for: NIWA, The Cawthron Institute, Dairy NZ and Massey University among others.

Their discussions came down to a collection of statements that were either unanimous or supported by the majority. A few of these points are:

*'Government water policy should be designed to ensure the ecological qualities of waterways remain above scientifically defined irrecoverable tipping points. Unanimous*

*Landuse change and the increased intensity of farming is contributing largely to continuing degradation. Unanimous*

*Many of our waterways, and lowland ones in particular, have been impacted in some or all of the following ways: reduced shade cover, reduced flow, increased temperature, and/or they have higher levels of sediment, chemicals, nutrients and/or bacteria such as E. coli than they did in the past. Unanimous'*

The investigations of these researchers have identified a number of key factors that adversely affect New Zealand's waterways that are related to the proliferation of farming.

## Key factors in waterway degradation

### Cows

Cows are one of the causes of faecal bacteria and stream cloudiness. Their faecal matter enters the waterway and so pollutes the eco-system it supports. A cow is a ruminant, which is an animal that has a stomach comprising of four parts, the largest compartment is called the rumen. Cows drink around 50 gallons of water a day, and are capable of turning grass that they eat into usable protein for humans, in the shape of milk and cheese. When a cow consumes more nitrogen than it requires it excretes it as urea in its urine. There are a number of chemical elements that derive from this seepage which affect the health of our waterways. Because of the vast quantities they consume they also excrete vast amounts, when they do, pathogens can enter the waterways. A pathogen is a microorganism that produces a disease. Some of the ones we face from polluted water are: Campylobacter, Cryptosporidium, Giardia, Gastroenteritis (Infectious Diseases | HealthEd, 2012)

### Nitrogen

Nitrogen is a key element of life on earth and about 80% of our atmosphere is made up of it. It is an essential part of a balanced chemical ecosystem. All organisms need nitrogen in order to grow, but because nitrogen is a by-product of cow excretion, when there is an abundance of it problems arise. As the number and area of dairy farms increase, the levels of nitrogen rise. This is exacerbated by the application of urea used to help fertilize the

land and boost crop growth. The high levels of nitrogen contained in animal urine are surplus to pastoral requirements (Environment Waikato, n.d.) This means that, not only is it not actually very useful, but it contributes to excess nitrogen in waterways when the end result seeps into them. Nitrogen can take decades to emerge in surface water from groundwater (Waikato council web, 2014) Excess nitrogen in the waterways, results in a process called eutrophication, which in turn cause algal blooms. Algal bloom is when photosynthesis is exacerbated by excess nitrogen and results in algae growing so much that it blocks out light to the bottom of the water and uses up all the oxygen, a process called anoxia, which in turn means that the fish and bugs that were part of that ecosystem can't survive there anymore. Pastoral land use affects the water to the extent that it causes an excess of sediment, a build up of silt, oxygen becomes impaired and animals and humans become at risk from waterborne disease (Waiology, 2005)

## Phosphorous

Phosphorus is found predominantly in rocks and soil. When soil becomes eroded and washes into streams and rivers it becomes problematic, and is also instrumental in the growth of algae. Phosphorus also comes from fertilizer, the weathering of rocks and soil, and animal effluent. Dairy farms leach considerably more phosphorus than dry stock farms (Drystock Farms -practices to improve water quality, 2013) Tree root systems hold the soil in place and when they are lost or become impaired, the soil works its way down into the catchment area at the lowest point of the landscape. In addition to these problematic chemical elements, a number of pathogens also get into the waterways, either through run-off or by cows actually in rivers or streams. Some of the wider issues related to the growth of dairy and what appears to be our inability to address it, have a political dimension that cannot be ignored.

## The Political Dimensions of Dairying

I have outlined how environmentalists like Mike Joy and Grant Muir argue that the main problem of waterway degradation is the excess nitrogen from the dairy industry. Mike Joys' damning report (White Gold -- Dairy Production in New Zealand - Mike Joy - YouTube, 2013) and Muirs film River Dog (Muir & Hunter, 2010) paint a bleak picture.

In the report, Beyond Rio: New Zealand's environmental record since the original earth summit Water Quality, there is a guest chapter by Dr Mike Joy:

*"In Johannesburg at the Rio Earth Summit in 2002 New Zealand signed up to various commitments. "To reverse the current trend in natural resource degradation as soon as possible, it is necessary to implement strategies... to protect ecosystems and to achieve integrated management of land, water and living resources" also "Intensify water pollution prevention to reduce health hazards and protect ecosystems by introducing technologies for affordable sanitation and industrial and domestic wastewater treatment, by mitigating the effects of groundwater contamination, and by establishing, at the national level, monitoring systems and effective legal frameworks."*

The 'Progress in New Zealand: 1992-2012' report shows that the data significantly declines in nearly all the water quality measured. More than 60% of New Zealand's freshwater fish are being threatened with extinction.

Clint Van Marrewijk; the CEO of 'Thunder maps' makes the point in an online article, that farmers don't set out to pollute rivers (Farmers don't set out to pollute our rivers, 2014) In the article he alludes to the fact that no farmer actually goes out of their way to pollute and an estimated 90% of Fonterra waterways are already fenced from livestock. He has teamed up with The Morgan Foundation on software called 'Thunder Maps' The software keeps farmers up to date with any waterway problems so they can be rectified with haste.

Federated farmers, Dairy NZ, Fonterra among others that make up the Dairy Environmental Leaders group are working on a new Clean Streams Accord to establish a working relationship with farmers (Federated Farmers, 2015) Also the Dairy Companies Association of New Zealand are implementing a Water Accord with sustainable dairying in mind (DCANZ 2013)

Perhaps more revealing is those who do support the Government's agenda. Farmers are quite naturally at the forefront of the dispute. However, Fonterra, Irrigation NZ, Hort NZ and Business NZ are also big players. These players stand to gain handsomely from a visionless, flawed agrarian growth model that is predicated on controlling water, irrigating everywhere, and selling dairy products to Asia. (Gutting the RMA, 2013)

In a recent article, Jan Wright the parliamentary commissioner for the Environment has expressed some serious concerns about the lack of action being taken to deal with our waterway pollution problems before time runs out. At the time of this article Feb 2014 amendments were being proposed for councils to set objectives and limits for waterway plans by 2030. She said of these amendments

*"I'm worried this will take so much time and money that would be better focused on this urgent problem of nitrogen now "* (Warning sounded on water quality, 2014)

### Disseminating the information.

Statistical data, government reports and scientific information are often difficult for the layperson to understand. They are often directed at a particular group of people: farmers, investors or politicians. The NOF and the NPS-FM are aimed at regional councils (MFE, 2013) such reports often contain jargon and terms that only those familiar with the topic can grasp. One of the problems I have encountered is the amount of acronyms involved when trying to read any of the literature. Listed below is a selection of some of them:

NOF National Objectives Framework

The NPS-FM The National Policy Statement for Freshwater Management

The MCI The Macro Invertebrate Community Index

RMA Resource Management Act

IBI Index Biotic Integrity

DO Dissolved Oxygen

NRWQN The National River Water Quality Network

OECD Organization for Economic Co-operation and Development

MFE The Ministry for the Environment

PCE Parliamentary Commissioner for the Environment

### How it could be different:

There is nothing wrong with the current enablers of communicating, but for a project aimed at children, that deals with the industrialisation of an industry, it would not be fitting to relay the information and produce the images in an overly digitised fashion. I needed to render the important information in a clear and engaging way so as to be easy to read, enticing to navigate and believable, whilst adhering to a hand crafted style relaying back to a time when we remember things differently. Something can be clean and well constructed but if it is too perfect or polished then it can tend to take on a manufactured appearance as opposed to a crafted one. Our waterways degradation is in part a result of industry, all the more reason I didn't want the imagery to look stiff and manufactured.

Very little information surrounding degradation clearly illustrates how cows process food in layman's terms. This project explains how a cow has a digestive system capable of processing large quantities of food prior to excreting them in their different forms. It is necessary to explain this so that the viewer understands where bacteria and nitrogen come from. The project will also explain what bacteria is by showing it visually, as opposed to an entity that is more often than not just referred to. I have decided to do this so the story takes on more than one field of interest. Not only will it seek to explain the problems with our waterways, but it will also seek to educate its audience about the contributing variables. I have chosen to do this, as I believe a more holistic approach to a subject is invariably of more use than one that either, assumes the reader already understands certain variables, or is not concerned and in doing so only paints half the picture. For the project to take on a different approach to relaying the information I looked at particular influences and how that would direct the project.



## Chapter 2

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# THE KEY ELEMENTS THAT INSPIRED THE PROJECT

### **Influences, Inspiration and changing the way I work**

This project is equally about reassessing my own working style as an illustrator. My illustration style was not fully sympathetic to a narrative that was about movement and flow. This began an exploration into how I could produce linework that was more gestural, fluid and organic in nature. This chapter describes the detail of some of the influences that went into developing my new style. It highlights how particular illustrators have influenced me, how David McCandless displays information differently. How John Berger made me think carefully about what my audience might take from my illustrations, and how Geisels playful characters and ludic narratives inspired me.

## The River Thames, Graffiti and The Lorax:

I grew up in Walton On Thames, a town situated on the river that runs through the middle of London. As a youth I was inspired by the graffiti and tags up and down the river, on the trains, houses, bridges and overpasses. Graffiti and tagging are a kind of virus that has spread throughout the world. Starting in New York in the late 60's and 70's many different styles have developed. It is a raw form of calligraphy with certain common traits, but is unique to the individual artist. I looked to retain some of the rawness that inspired me and add it to some of the principles of illustration that I had learned over the years. The lettering was often accompanied by characters, whose dynamic posture brought humour and playfulness into the work. Having a love for dynamic and raw looking work I was equally drawn as a child to the work of Theodor Geisel, the writer of the Dr Seuss books.

Geisels appeal for me is his adeptness at wrapping an important issue in a playful, nonsensical but unforgettable story. Emotions, places, scenarios and characters in his work are depicted through tone, gesture, hierarchy, viewpoint and colour, creating a strong and vivid narrative. Geisel squeezed a lot of information onto a page without it becoming cluttered. Each page is full of movement and rhythm based storytelling. There is one particular Dr Seuss book that resonates with me for this project beyond just its style. This is *The Lorax*, published a decade after Rachel Carson's *Silent Spring*, and responding to the environmental issues she raised. *The Lorax* is an environmental polemic that is easy and fun to read, yet a coherent and salutary narrative of heedless industrial growth. The book was initially banned in a school in California as it was seen to paint a derogatory picture of the lumber industry, the state's biggest industry at the time. *The Lorax* used personification to discuss how corporate greed can damage nature. *The Lorax* is also the story of how a forest was lost due to shortsighted greed.

*"Plant a new Truffula. Treat it with care. Give it clean water. And feed it fresh air."*

Rachel Carson would have liked that. (Weiss 2012)

## Ludic/playful

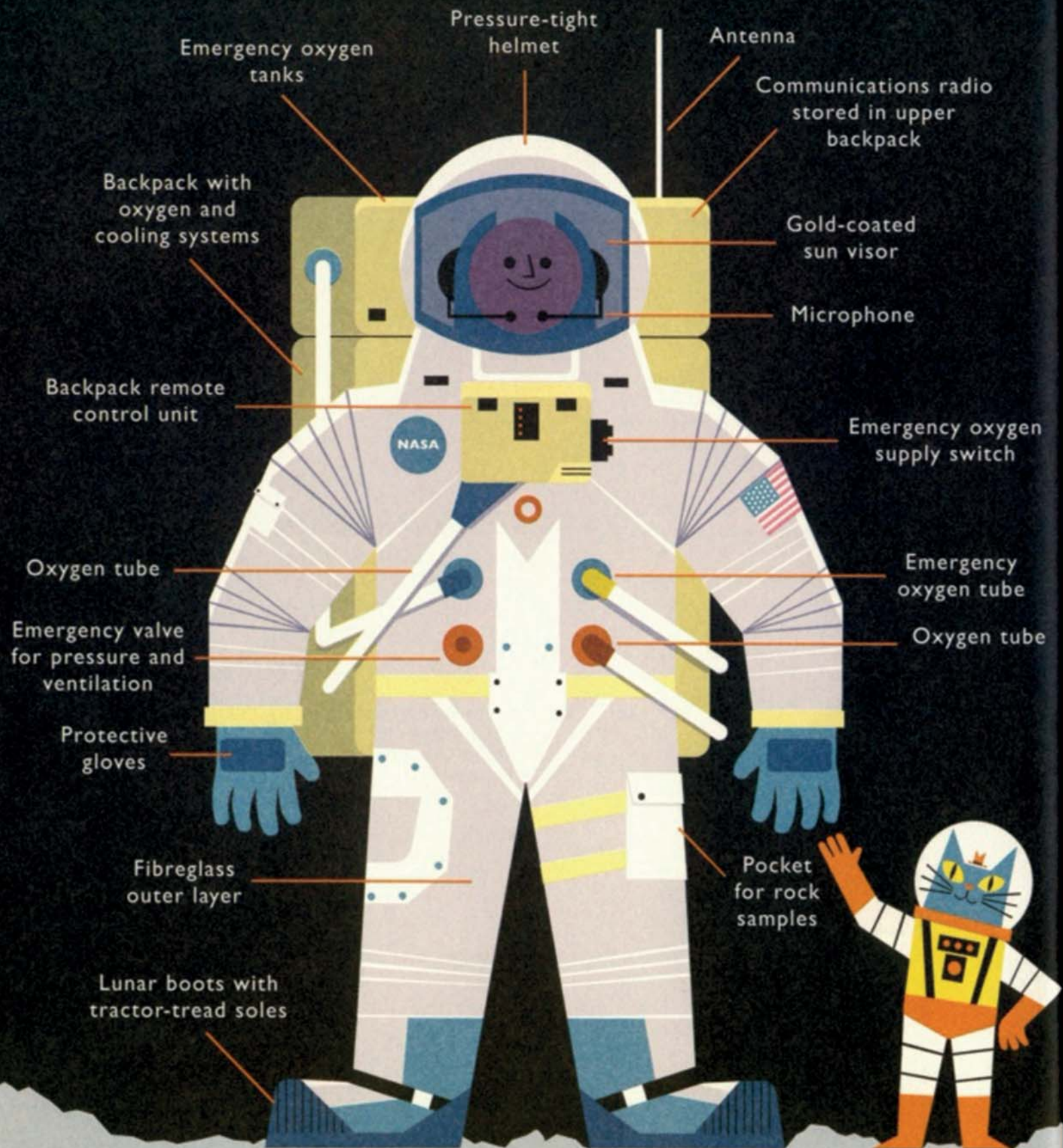
Ludic is the latin word for play. In the book *Homo Ludens* it is argued that people are characterised by play as much as anything else (Gavner, 2008). While ludic design does have a problem-solving, goal oriented function, its capacity for interactive and playful engagement give it a communication advantage. A great many of our daily activities are play based as opposed to goal based. Not specifically playing to a set of outlined rules, but play in the sense of engaging with the activity at a fun and playful level to no set outcome. Gavner argues that this is a way to approach environmental awareness in a non-judgmental way, one that is more aligned to a kind of aesthetic appreciation. In a study conducted in 2014 (M.M. Agha-Hosseini, R.M. Tetlow, M. Hadi, S. El-Jouzi, A.A. Elmualim, J. Ellis and M. Williams) a series of tests were carried out with the aim of persuading the inhabitants of a building, into saving energy through interactive posters. Although different to my approach in terms of size and demographic, their results demonstrated a positive outcome. The tests were carried out giving playful rewards to the occupants upon completion of the tasks at hand.

## Playful Illustrations and complicated data

A number of illustrators over the years, since the Dr Seuss books have explored methods of illustrating information with a ludic approach. Among them are Miroslav Sasek and Richard Scarry. Geisel, Sasek and Scarry although are very different stylistically hold a rawness about their work that resonates with me. Nothing is overly worked up or stiff. There is life and movement on the pages and an endearing whimsicality. Recently Dominic Walliman and Ben Newman used their individual knowledge and expertise to produce a comparable style of book that explains facts about the universe. Walliman holds a PHD in Quantum Device Physics and Newman is an Illustrator. Together they wrote and illustrated *Professor Astro Cat's Frontiers of Space*, using a combination of engaging facts, humor, and illustration. A method of story telling, which has informed, in some part my project. By using humour as a mechanism to inform, the subject matter becomes more palatable and engrossing. Humor helps students to lower their defenses making it easier to learn and can bridge a gap between the teacher and student when relaying information (Garner, 2006)

# THE APOLLO MOON SUIT 1969

image source: Professor Astro Cat (Walliman, D. 2013)



On July 20<sup>th</sup> 1969, the astronauts Neil Armstrong and Buzz Aldrin made history by being the first people to walk on the Moon. They wore the Apollo 11 space suits on the surface to protect them from the vacuum of space. The suit contained everything needed to keep the astronauts alive in the hostile environment, including pressurised air and layers of protection from extreme temperatures and radiation. Each space suit was custom-made for each astronaut and could be worn in relative comfort for up to 115 hours.

On Earth, the suits were very heavy to wear, but on the Moon they weighed almost nothing at all.



# What was I Scared? of?

A Glow-in-the-Dark Encounter

By **Dr. Seuss**



image source:  
This way to the moon (Sasek, 2009)

“Birdwatchers” at the Cape’s press site. Thousands of others, usually less well equipped, crowd Cocoa Beach, and millions more throughout the country do their bird-watching by television.

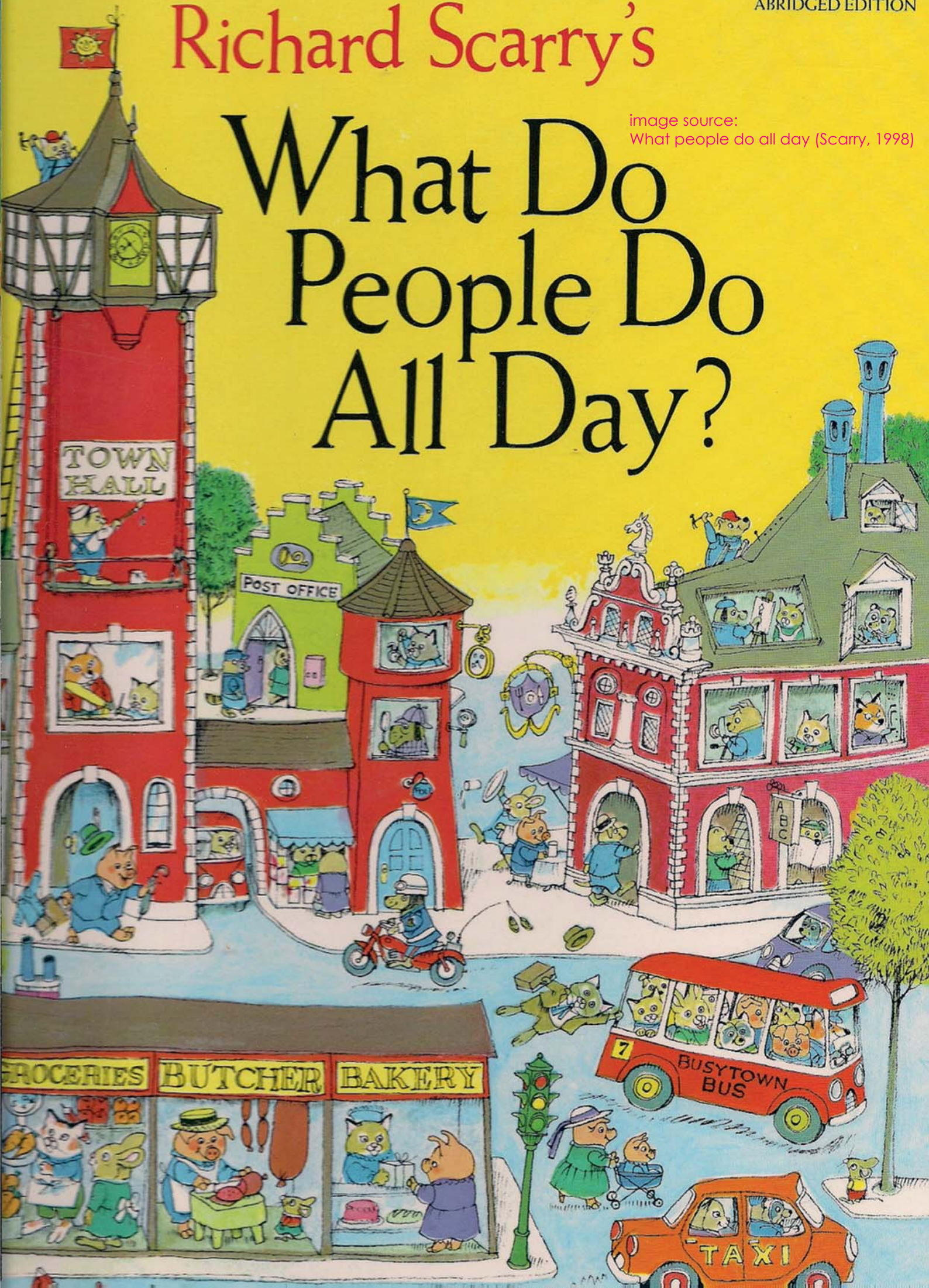
image source:  
This way to the moon (Sasek, 2009)



# Richard Scarry's

# What Do People Do All Day?

image source:  
What people do all day (Scarry, 1998)



How Seuss relayed information through imagery is one way in which it can be done but John Berger argues that there are ways in which we look at things, and our feelings are often determined by pre-existing assumptions.

## John Berger

While an illustrator may intend to convey information in particular ways, in the end it is the viewer who dictates what he or she takes from the work. Berger suggests that image-producers should take instinct as seriously as composition and context. He encourages us to question how people look at imagery. For me as an illustrator this would pertain to how my audience might view my project. Berger argues that changing the context, that is anything in or around an image, changes a viewer's perspective on it. For example, he highlights how fire, associated in the Middle Ages with an inherent belief in hell, would have a different meaning to what it has for us now. He goes on to note that when we look at something, we are also taking into account our relationship with what it is we're looking at. (Berger, 1972)

## David McCandless

Author of 'Information Is Beautiful' (McCandless, 2009) David McCandless is a data journalist who uses what could be seen as complicated data and presents it in a clear, enticing and alluring way. I suggest he is bridging a gap between information and art. His work, Berger and the works of the illustrators I have mentioned, have provided me with a platform to implement my project in a particular format.

## The format, IGP

I wanted to enable the full timeline of the degradation to be visible, this relates to the topic on a semiotic level in the sense that it can be seen as one gestural motion going from left to right. Our water is an entity that moves, so conversely movement within illustration is an appropriate way to address it. While exploring different styles to work in I also looked into the way in which the information would be relayed to its audience. Although I would be working with a narrative I wanted there to be a holistic element that would involve an initial impact with its audience. The history

of this kind of relaying of information stems back to cave paintings and also includes works like the Bayeaux Tapestry, Chauvet Cave in Ardeche, Egyptian tombs and then in more modern times what is termed as The 'Muralista' movement with Diego Rivera, José Clemente Orozco and David Alfaro Siqueiros. The 'Muralista' movement was a way of producing large scale paintings with social or political issues aligned with the Chicano civil rights movement (Stefano Bloch 2012) It is hard to ignore an issue if it is large and in front of you, the Elephant in the room so to speak. The format in which the project is delivered is a mural of sorts and an information-graphic. It is also an educational poster, interactive when used in conjunction with the teacher's resource and provides a series of pertinent questions and answers that outline the rivers degradation. I like to think of it as an IGP, an interactive, graphic poster.

I chose an IGP as a way of communicating information to a group whilst enabling a teacher to simultaneously indicate points of interest. Because of its nature it can also be a source of information that remains in the classroom as a reference point/artwork for future discussion. The IGP will be wall mounted and approximately 230 cm across by 100 cm in height, will display the narrative from left to right elucidating what has happened. Due to the large size of it all the elements are easily detectable. The IGP itself is the catalyst for teacher/student enquiry, but for it to be effective it needs to be accompanied by the resource that will continue teacher/student dialogue. A series of cards will accompany it and be available to further the enquiry through instigating a collaborative knowledge base, developed through discussion and a collective engagement process. They will do this through a combination of rhetorical and dialogical elements that correspond to a colour coded series of questions on the IGP.

The colour coding relates to science, bacteria, cows and history. These four headings encompass enough of a holistic overview to establish the degradation of the waterways. To accompany the poster the 4 A2 work cards with the same headings as above will have an overview of the topic with engaging illustrations and a holistic overview of the topic. These four cards are for the teachers to hand out to the class. The class then works in teams looking at the poster and trying to find the answers to the questions on their

cards. If one team of pupils has the bacteria card then they will work with the corresponding coloured questions. All four subjects are clearly colour coded so as to avoid any confusion. After an unspecified time the class will have a discussion about what they have learned.

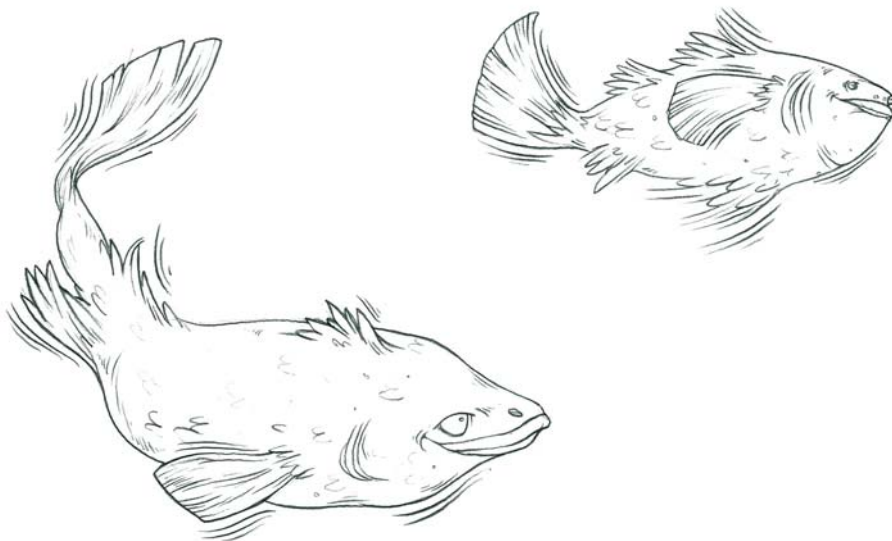
## Chapter 3

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# THE PROCESS OF DESIGNING THE IGP, THE INFORMATION GRAPHIC POSTER

### **The Process**

My approach to educating children about water degradation as a result of the increase in the New Zealand dairy industry is to promote playfulness while looking for answers to questions, pictures and facts. The playfulness is approached from a rhetorical and Ludic point of view.



## Rhetoric

Essentially, rhetoric is an old word for communication. An argument is persuasive and influential because of how you signify through a system of signs that work together (Ehninger, 1968) In the case of my project I have sought to do this by constructing a set of images that cohesively show the progressive degradation of the waterways. For example, the multi coloured forest adjacent to a distinctly blue hue of water that are both blatantly moving, give a positive indication of a thriving and vibrant world. One that gradually from left to right changes to a barren landscape, devoid of vegetation, and has a resolute turbidity displayed in the water. The significant colour change in the water is a semiotic representation of its change in viscosity, resulting in a holistic image of gradual pollution. In conjunction with this I adopted a Ludic approach to make the subject matter appealing to children.

## Word and font

Although not used in the final, during earlier iterations I wrote the narrative in rhyme, in an effort to bolster the potency of the narrative. While doing this I found through various iterations the amount of syllables I chose had an impact on the cadence and flow. I also experimented with developing a type face. The type face might work in the context of a larger project but were neither necessary nor useful here. The serif font Century Gothic was used instead for its clarity and ease of readability.

## Rhythm

Rhythm has played a large part in this project, in the essence of the line-work and how the information is relayed to its audience. The river was the ideal emblematic analogy to carry the information from left to right, showing the initial movement, to the slowing down and static lack of movement. This in turn could be complimented by having the dense wooded background gradually diminishing behind it, parallel to the river in the foreground being affected. To achieve this I tried various techniques that expanded on my

usual style. I looked at more traditional styles as oppose to digital in an attempt to create more of an organic personality to the work. I wanted to try and retain a human feel about it. Maybe subconsciously this may have had something to do with the feeling that a lot of modern illustration, graphics and animation is digitised, mechanised and in my opinion loses some of its personality. I wanted to be able to see the imperfections and mistakes, the workings out and the journey from rough to final line.

## Line-work

As I began to work on the illustrations for the project, I became aware of how I produced my line-work, through this awareness I intuitively felt it required loosening up and becoming more gestural. I found that my line-work did not signify the water movement I wanted to replicate. As a result, I consciously strove to develop a style, which was more sympathetic to and would more accurately reflect the flow of a river. Although I have worked in digital media for many years, I felt this would not be the appropriate way of communicating a project that is essentially critiquing the adverse affects of industry and mechanisation, therefore I decided that a demonstrably analogue approach was more fitting to evoke a time in the distant, but unspecified, past. The illustrators I looked to for inspiration in this way of working were Seuss, Richard Scarry and Jonathan Routh during the 60s and 70s. While looking into the history of water pollution in this country as a topic of my narrative, I found that it was also an issue in the mid-1800s (Manawatu Herald, 1890) This strengthened my resolve to reassess my own style, rather than trying to hone a specific style related to a particular era. With the intention of finding a relevant style, one with more gesture. Through a series of different iterations I used felt pens, graphite pencils, coloured pencils, ink, and traditional drawing methods. As to not restrict myself and in an attempt to loosen up my line-work I created some work that was external to the waterways project.

My initial experiments were produced on brown paper, card and a 200gsm hard press paper. The reason for working on brown paper was so that I could put tonal value on the paper that when darker gave the work depth and presence and when lighter would pop off the page and give impact. This did not achieve what I expected it to, but through these experiments found that I was drawing considerably more than I normally do. Gradually, my line-work developed into a significantly more gestural style, that was looser and more fluid compared to my previous work. To find my own linework's personality and rhythm, I examined and questioned individual lines, stripped away the colour, and at this stage stopped using Photoshop. Through various iterations I finally concluded that a 2B pencil produced the sweet spot between soft and hard, dark and light. The graphite was soft enough to become sufficiently gestural, which became integral to dealing with the line weight I was looking for. At the same time, it was neither so hard it damaged the paper nor so dark that it became oppressive. My newly developed style has a particular wobble that is reminiscent of the work of a number of the illustrators that have influenced me. Now confident with my mark making and my signature 'wobble', I was able to take the linework into the computer. I would previously scan my line-work after the inking process, then transpose to a vector in Illustrator. The process would give the line-work a highly polished feel, that although looking clean and precise, purged the life from it and gave it a somewhat clinical appearance. One of the biggest problems I faced pertaining to linework and such a large collection of images is that using my previous way of working with ink and vectors would yield inconsistencies when images needed to be resized.

Using the new process that doesn't involve ink means that by using the level adjust I can bring about a synonymity between the linework after resizing images.

The linework is primarily scanned in, in its raw pencil state with no inking attributed to it. On occasion I adjusted the levels but as oppose to previous techniques where I did this to clean up the work, this time it was part of the process to elucidate some of the original workings-out and previously rubbed-out iterations, and by doing this hopefully retain an element of the images

original gesture and feeling. The next stage was to set the layer to a 'multiply' layer, I was then free to colour in the layer directly underneath without interfering with the linework.

The first image on the next page shows the style I have had prior to how I draw now. I have demonstrated how when an element of the image is resized it also transposes the lineweight around it. This would have been problematic when dealing with a very large image comprised of a lot of different elements. I ran the risk of having to resize parts and then find that they might not appear to work symbiotically with one another.

Through my experiments I discovered that by alleviating the ink outline I also removed the problem of resizing separate elements thus making it possible to build up a much more cohesive picture.

In the next image of the man with a towel I have demonstrated how from pic A I can reduce the image to pic B, and then by adjusting the levels in pic C, it is clear that the lineweight does not change too drastically. Looking at the image after this one you can now see how this method has enabled me to be able to use more than one element together and not compromise the synonymity between them.

In the next next image, image 4 you can then see how taking the linework and setting the layer in Photoshop to a 'multiply' layer, it presents me with the capacity to be able to colour freely on the layer below. By using the 'multiply' layer I am able to preserve the linework along with all of its gesture and idiosyncrasies.



The process

Image 1



Image 2



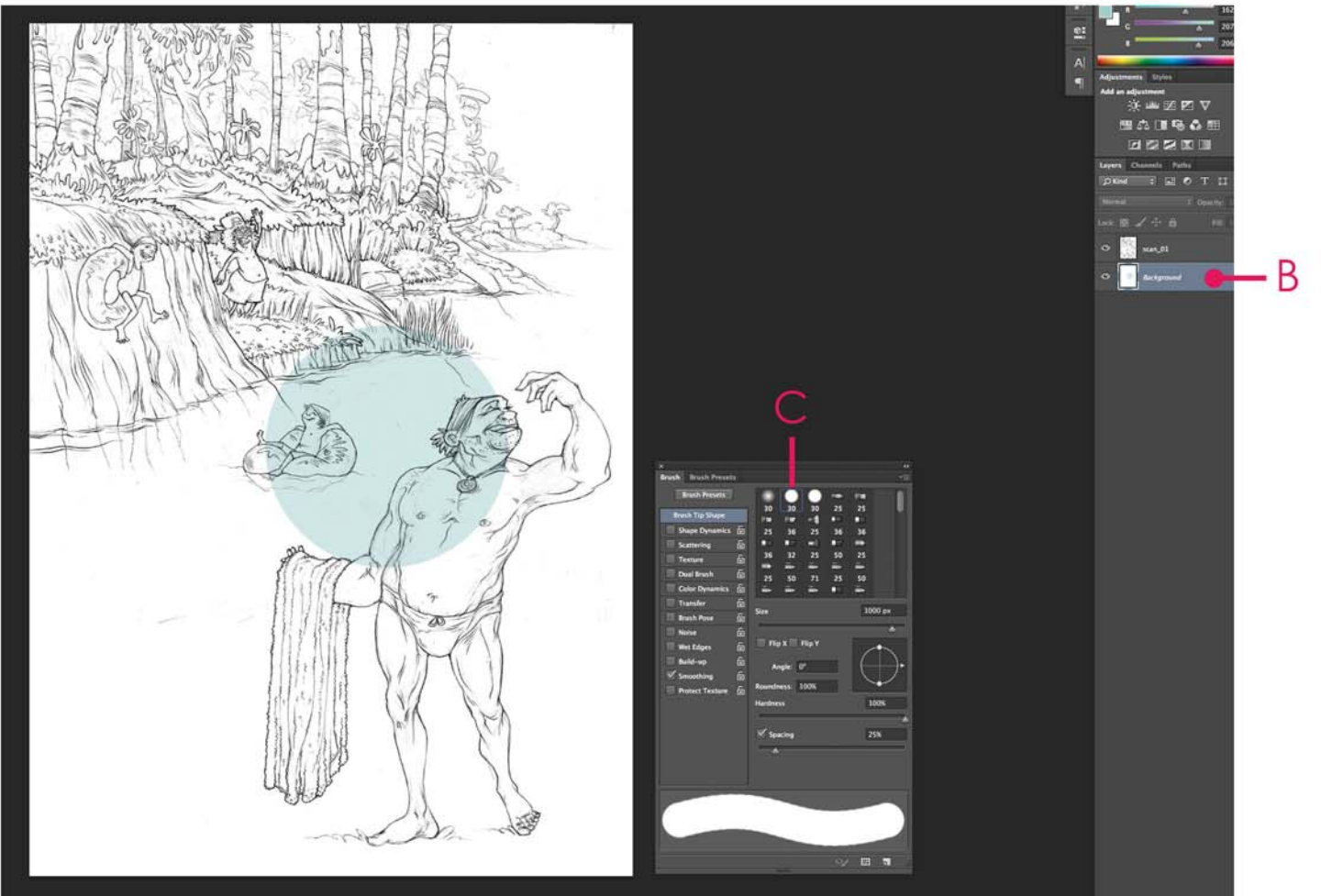
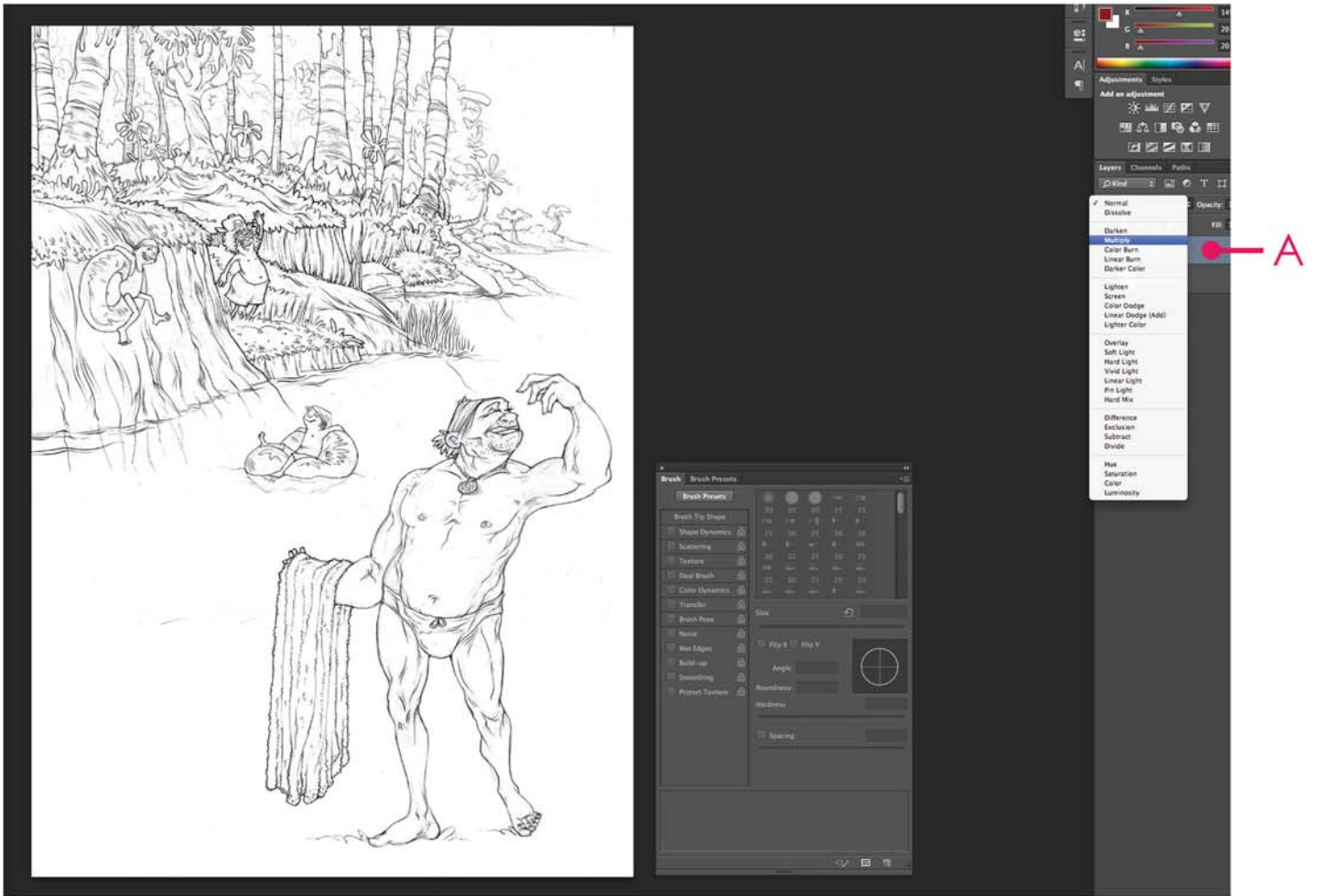
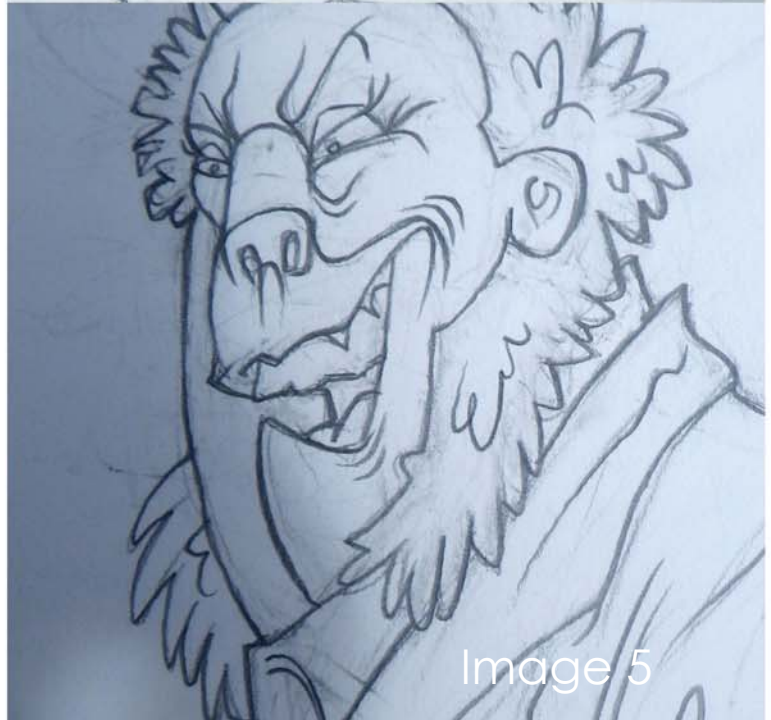
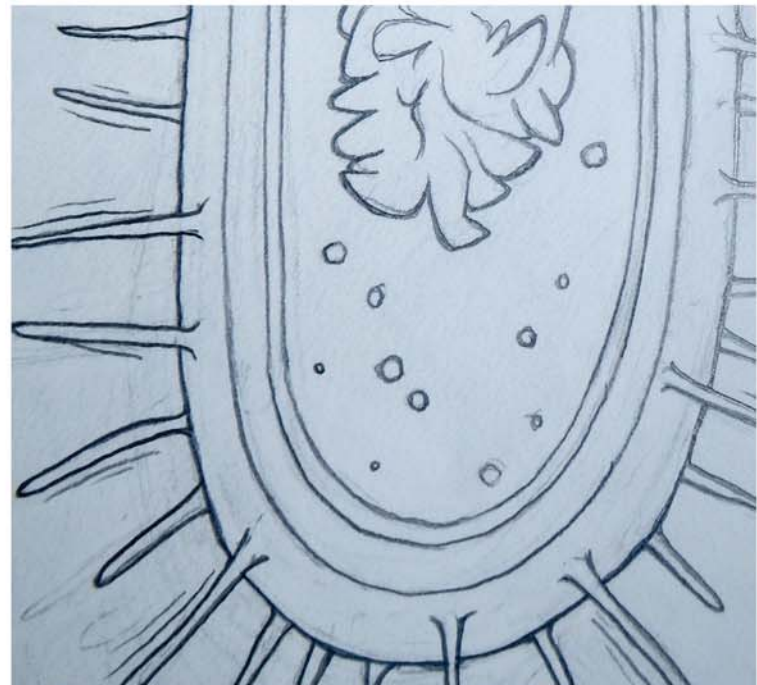


Image 4

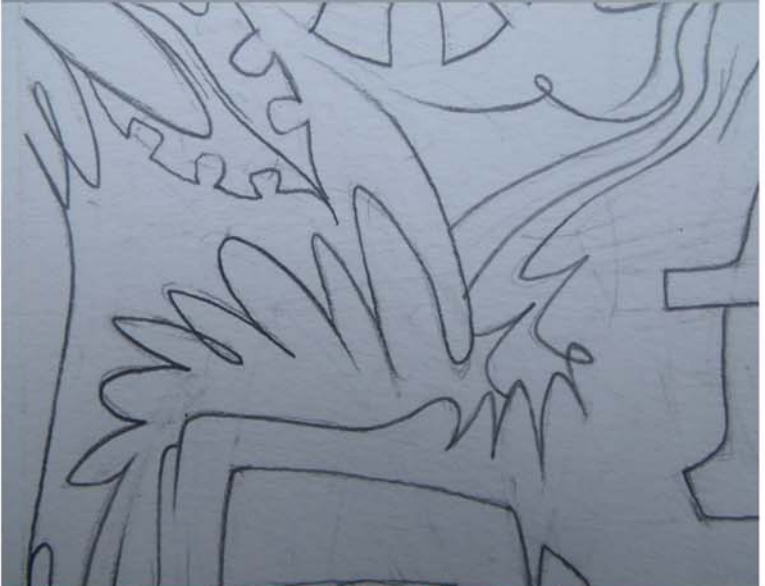


The process

Image 5

In the image to the left you can see how my linework has now taken on its own style. More so than it did with my previous illustrations. It now has a signature wobble and more of a dynamic feel to it.

Image 6 looks closer at the particular elements of my developed style that recur and are inherent to how I now draw. Whatever it might be that I am trying to illustrate, these recurring elements of my linework are now part of it.



The process

Image 6

## Colour

Colour was an important signifier within this project. It generated a subtle shift in degradation of hue as the river journey progressed. I used Dylan Wolfe's interpretation of the Lorax, to illustrate the transition from 'the pristine quality of a naturally coloured nature, of a fantasy to colour beyond the scope of nature in everyday'. Wolfe argues that this type of nature is not only appealing to a child's eye but this is a nature beyond the realms of experience and is a special nature (Wolfe, 2008) I decided to use a non realistic colour scheme, influenced in part by the colour used in the Lorax and in part by Scarry and Sasek. Whether it was the nostalgia of my youth or that I wanted to get away from the clinic feel of digital imagery I chose to embrace a more traditional approach and let technology supplement the process as oppose to dominate it.

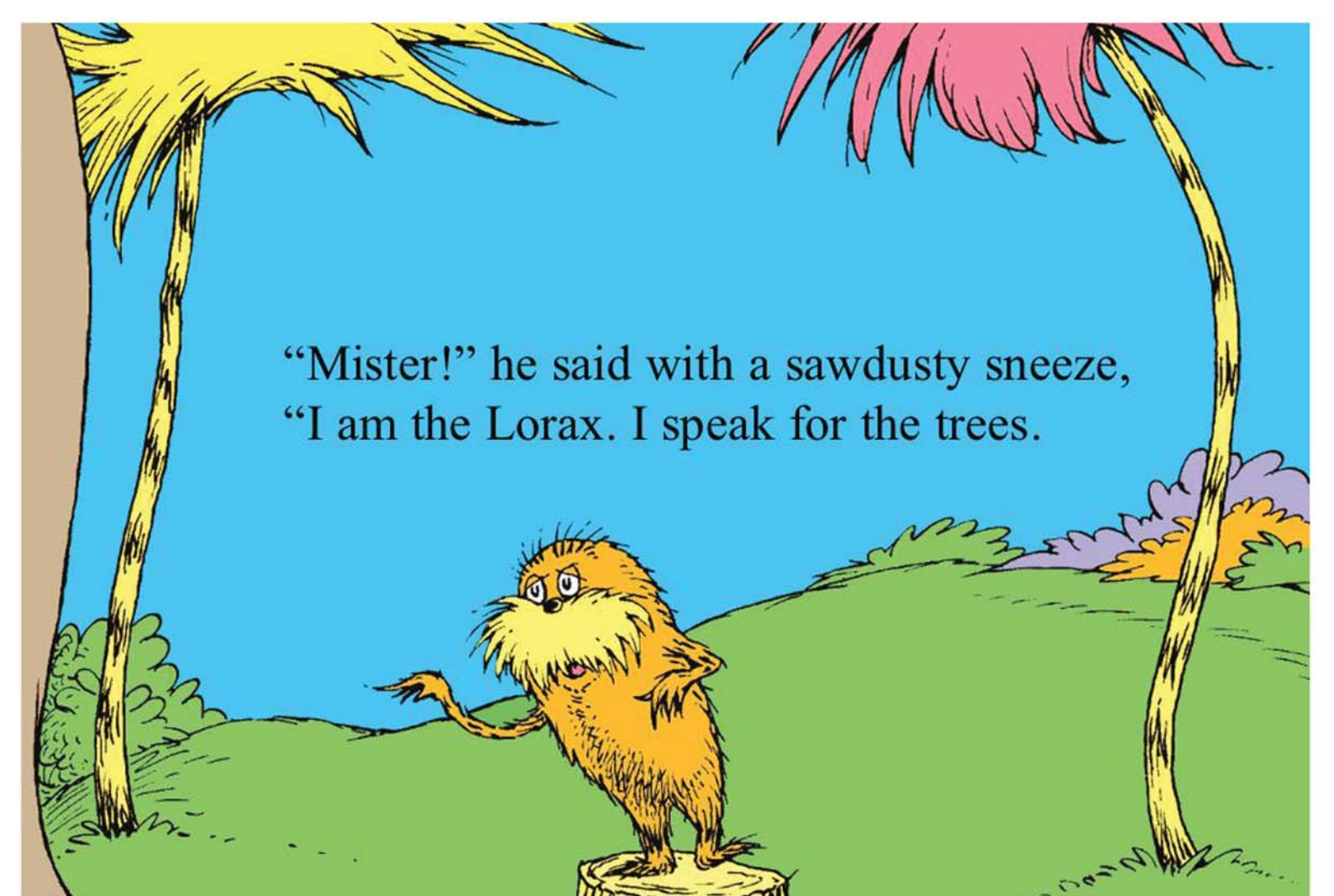
The next two images show the CGI movie of the Lorax using saturated colours, next to the original book version and the flat colours used by Geisel. It is also very apparent how the CGI version has lost the gesture and movement inherent in Geisels linework.



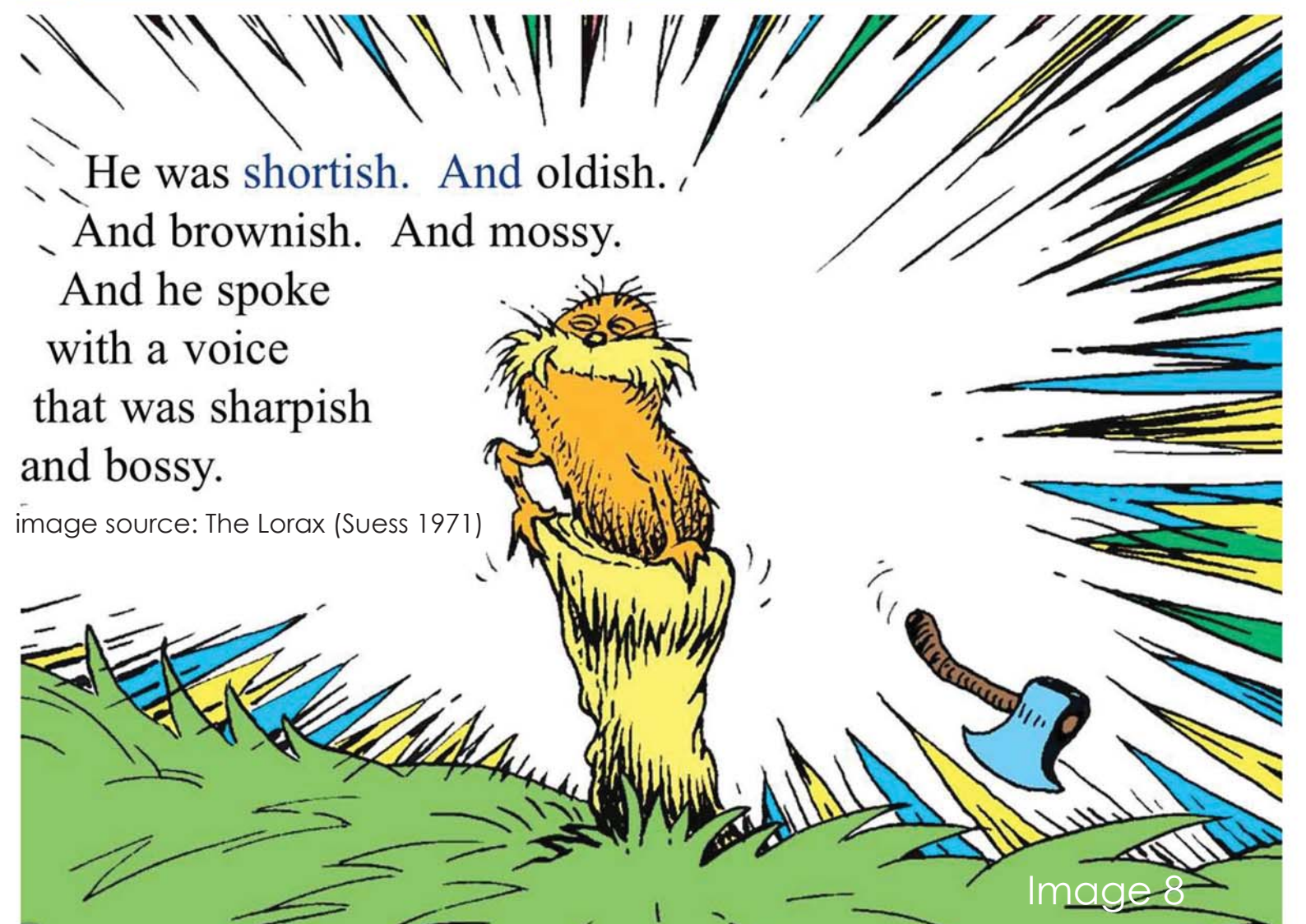
© 2012 Universal Studios. "Dr. Seuss' The Lorax" and Dr. Seuss characters TM & © Dr. Seuss Enterprises, L.P. All Rights Reserved. Wallpapers via [www.crankycritic.com](http://www.crankycritic.com)

image source: still shots from The Lorax film (Renaud & Balda, 2012)





“Mister!” he said with a sawdusty sneeze,  
“I am the Lorax. I speak for the trees.



He was shortish. And oldish.  
And brownish. And mossy.  
And he spoke  
with a voice  
that was sharpish  
and bossy.

image source: The Lorax (Suess 1971)

## Metaphor

I looked at the historical aspects of content, the places, names, dates and relevant people. If I tried to make it too historically accurate I ran the risk of various problems e.g. If I had a native tree in the foreground, then whatever else was in the frame whether it be foliage, a mountain range or a particular fish it could all be contested in relation to its authenticity, and conversely undermine the project if in any way was inaccurate. I looked into how Seuss approached some of these issues in *The Lorax*. He used metaphor and generalisation. In the *Lorax* the trees were called Truffula trees. He gave the trees character and by doing so made them collectively fun and accessible. Seuss' work was never stiff but full of life and momentum. This was a key inspiration in how I developed the relevant components.

## Project components and hierarchy

This project deals with the man-made degradation of waterways through constructing a narrative, depicting the lifespan of a river. The river itself, and its inhabitants and surrounding environment are generic. This is to ensure that no particular waterway and no specific area of New Zealand can be identified and therefore, the project can apply to any one of the problem areas of the country. I set out to establish a hierarchy within the image, etc with the most important aspect being the water. This carries the weight of the image throughout, so it was important to make this part the most alluring and magnetising element within the project. Residing within this water are the different components that make up the holistic overview. Starting with the fish, which through their gradual discoloration and eventual quiescence represent the degradation of the river. There are then a number of separate elements that all have their own attributes and merits of equal importance.

## Bugs

Essentially, MCI (the macro invertebrate community index) refers to the bugs that live in the water. These bugs are neither good nor bad. What they are though is an invaluable indicator of the state of the water. I illustrated these bugs in a particular way to make it clear that they are a recognisable participant in the health of our waterways. My initial experiment with drawing bugs although

colourful were devoid of any personality. The later versions were more playful and made them fit more cohesively into the narrative.

## Cows

An important aspect when considering the illustration of the cows was to allude to the fact that they are not guilty. The affability of the cows was crucial because of the innocent part they are playing, they are not guilty of anything. As with all the characters and elements within the project I wanted them to have an amiable feel that was pleasing to the eye and devoid of any persecutory accountability.

## People

Although it is human intervention that has caused the problems I didn't want to demonize the farmers. Because of this I also didn't want to make the farmers out to be the cause of the problems. I wanted to establish the farmer as a strong New Zealand man who works hard and is a piece of a larger problem. Looking through a number of Seuss books, I noticed that he used generic forms, never an actual person, a brand or particular type of tree. The closest he came to particularising his characters were in some of the animals he drew. I decided to make the content fantastical enough to be of interest but close enough to the real world to form a similarity that was easily recognisable.

## Trees

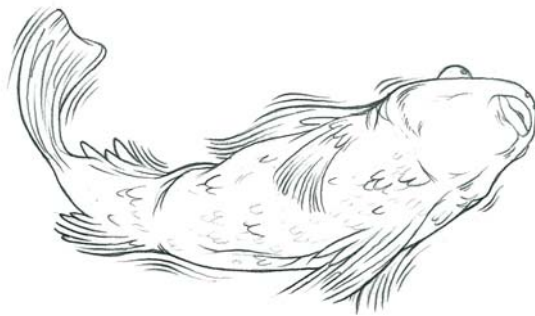
Trees and deforestation are a large part of the overall picture, this particular project though is concerned with the proliferation of the dairy industry, and as such they took on a role that would compliment the water symbiotically by showing how hand in hand they both diminished in life and movement. I used colour and movement within the trees as a metaphor for their life and how it gradually diminished.

After establishing the different elements, I was able to produce the IGP.

## Key partnerships

Muir and I are keenly interested in the desire to do something to help change the degradation of the waterways, and it was this common interest that brought us together.

We met up every few weeks and would discuss what was and wasn't working and then progress from there. Grant Muir wanted to make information about waterway degradation available to schools as an educational resource, this was something I was able to offer through my skills in visual communication.



## Chapter 4

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# Conclusions and Trajectory

## Conclusions

This project set out to develop a model for presenting complex scientific information in an entertaining and informative fashion, to children. I specifically addressed the state of NZ waterways and sought to accelerate change through education. My industry partner and I are both passionate about this issue and it was this common interest that brought us together.

Through analyzing the work of Theodore Geisel I have established a methodology, which theoretically can capture the interest of a younger audience. In particular, my research revealed that by using a ludic or playful approach, we can engage children with issues that might be otherwise be perceived as too boring or complicated if presented in a strictly scientific way. I found that humor can help bridge a gap between student and teacher, and therefore improve the students comprehension.

An obstacle I faced was that my current style of illustration was not suited to this approach. It was stiff and had too much of a synthesized look. As such I had to completely re-evaluate how I displayed visual information, everything from the linework, and the gesture, to the colour and the movement.

The outcome of this research is an Information Graphic Poster and a teacher's resource, which opens dialogue and enquiry between students and teachers.

The significance of this project lies not only in the final design output but in the ability to apply this strategy to other areas. In particular I aim to employ this method to tackle other related environmental issues in New Zealand such as the cadmium build up through use of superphosphates in fertilizer.

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