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Bronze as a non-customary intervention in the interpretation of insects from the natural world of Māori

VOLUME TWO

An exhibition report presented in partial fulfilment
of the requirements for the degree of

Doctor of Philosophy
in
Fine Arts

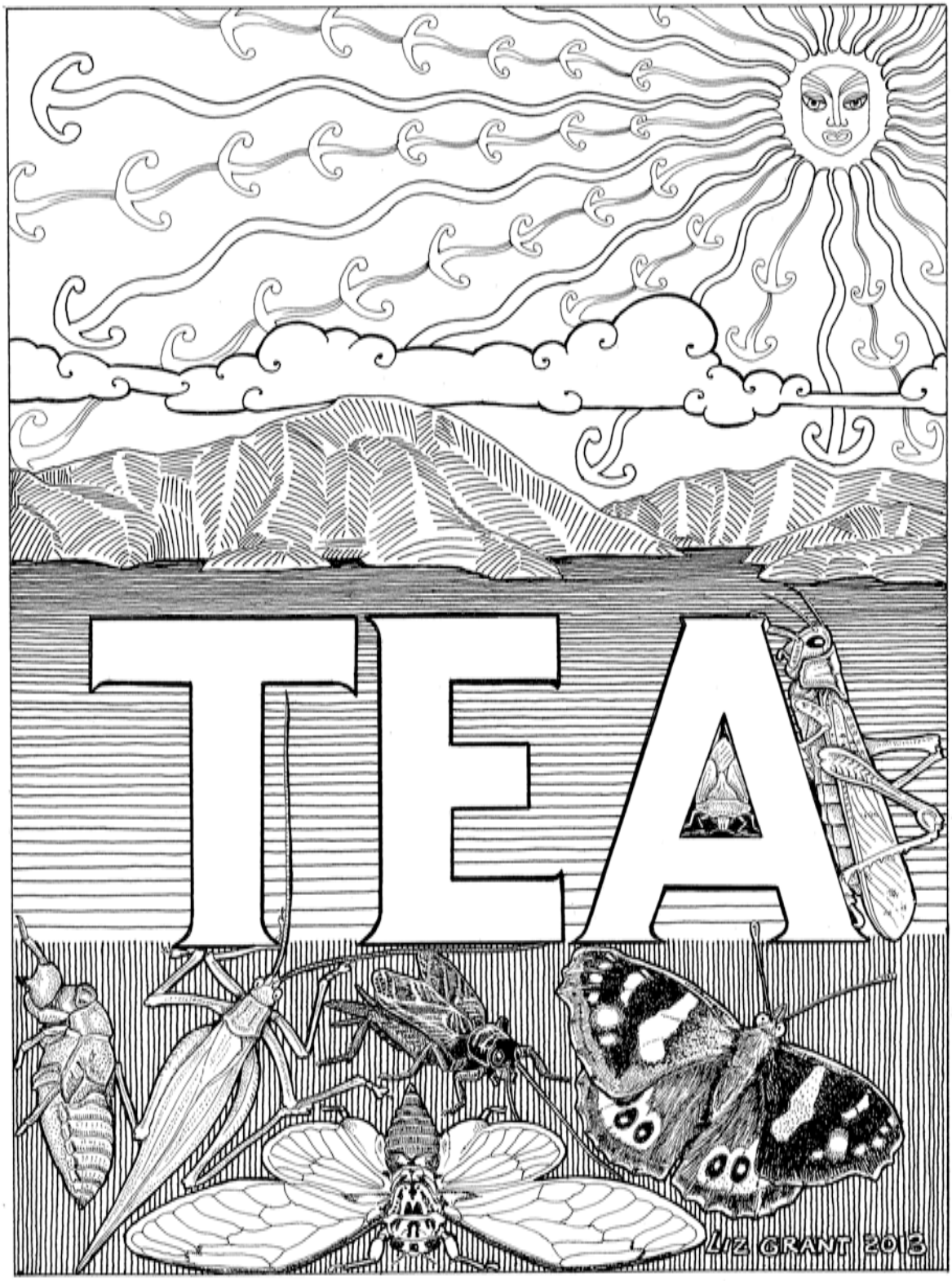
at Massey University, Palmerston North
Aotearoa, New Zealand.

Elizabeth Anne Grant

2014

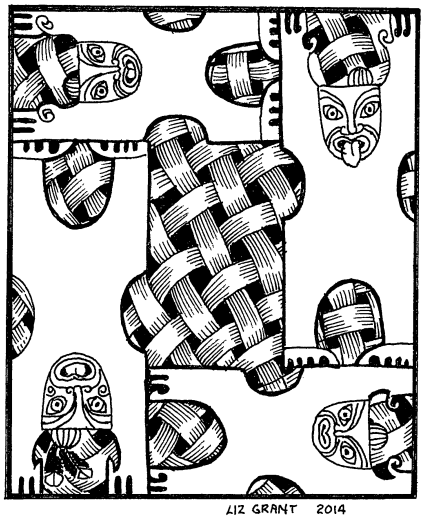
Art lies in nature

Dürer


TEA
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Chapter Three

Artistic practices



Chapter 3: Artistic practices

3.1 Introduction

In line with the Māori worldview that insects preceded humankind genealogically, this chapter can now examine the practices of relevant artists working in bronze, painting bronze or creating bronze insects. The work of two artists using visual distortion will be discussed, and this chapter also considers the contributions made by of one of New Zealand's early and eminent entomologist, George Vernon Hudson.

3.2 Bronze in the Māori world

In te ao Māori, bronze was not historically used as an artistic medium until the twentieth century. Around the world it has been used for many centuries. Of the Māori artists who currently use bronze, very few practitioners are female. This may be the result of a perception that bronze was never a traditional or customary medium. Or, its use may be perceived as stepping over gender based cultural boundaries.

Sculpture has always been an important component of Māori tradition. Historically, the mediums available were wood, stone and bone, with an emphasis on human imagery and secondarily on other vertebrates like reptiles and dogs. Figurative depictions and traditions that appeared in painted imagery in the late nineteenth century, recorded Māori relationships with the environment. But three-dimensional Māori art was traditionally restricted to male artists within the practice of toi whakairo (wood carving). There are some rare instances where women have been responsible for carving in the twentieth century. One example is the house Rangi-kurukuru (Dargaville) that was carved by Miss Jane Topia under the tutelage of East coast carver Pine Taiapa, and opened in 1936 (Phillipps, 1955, p. 245). Weaving, while also three-dimensional, was primarily the artwork of women, but was culturally acceptable because the medium was fibre and used to build up 'textures of tradition.' Inspired by the weaving skills of his grandmother Ranginui Parewahawaha Teimana Leonard, contemporary male artist Karl Rangikawhiti Leonard has successfully ventured into this once female dominated weaving domain.

By necessity Māori utilised the natural world around them, and wood and flax fibres are the 'raw' products harvested from nature. They signify ngā tamariki a Tāne, the children of Tāne. Bronze is an alloy of the two raw base metals, copper and tin. These are derived from Papa-tūā-nuku, and may then be regarded in essence, 'of nature.' Both bronze sculpting and woodcarving are intensely three-dimensional practices but producing a bronze sculpture, is fundamentally different from that of woodcarving. Using the 'lost wax' process, wax (or clay) is used to 'build up' each original piece. This then renders the process 'additive,' as apposed to 'subtractive' in carving where wood fibres are carved away.

Being female and using bronze 'additively' like flax, does not therefore transgress any customary practices and, bronze is my medium of choice.

3.2.1 Māori artists using bronze

One of the earliest Māori female artists to challenge the use of traditional mediums by working in bronze was Mere Lodge (nee Harrison), who during the 1960's and 1970's participated in the Contemporary Maori Art movement. An image of one of her works (Skinner, 2008, p. 107) shows her style to be bold, modernistic and abstract without overt figurative reference. Prior to this time, Māori art had been strongly figurative, but this art movement promoted change and experimentation, permitting Māori woman artists like Lodge to venture into new art forms without extensive criticism.

Particularly well known for his well-executed customary style of woodcarving, is Lyonel Grant, a graduate from the School of Maori Arts and Crafts Institute, Rotorua. In the late 1980's however, Grant investigated the bronze-casting process, and has since produced many pieces both large and small including, *Koruru* (1992) and *Waitukei* (2001). Both works demonstrate how Grant has successfully mastered this 'new' medium, even though woodcarving still appears to remain his main artistic practice. Indeed, his stylistic approach to bronze and subject matter appears to be firmly rooted in his wood carving practice.

Artist and notable academic, Professor Robert Jahnke is a highly respected mixed media practitioner. In 1998 he used the cast bronze process to depict a politically driven and powerful series titled *Koha*, consisting of an installation of six bronze

'plated snapper' set against a charred wooden base as exemplified by *This is not a customary rights issue.*

Other contemporary Maori artists to have used bronze are Brett Graham, Todd Couper and Roi Toia. Graham, who generally works in a variety of mediums, has recently, produced a series of cast bronze stealth bombers. Typical of many of his pieces is a focus on relatively simple form with intricate surface detail and texture. Graham has a Doctorate from Auckland University. Couper graduated with honours in the Diploma of Art, Craft and Maori Design at Waiaraki Institute of Technology in Rotorua. Although primarily a contemporary carver, he has also included bronze casting in his artistic repertoire, with pieces such as *Hokio* (New Zealand Eagle). Like Grant, Toia graduated from the Maori School of Arts and Crafts Institute at Rotorua. It is evident that those artists like the practices of Toia, Couper, and Grant that work in customary practice use the carved form as a basis for their bronze sculptured pieces.

More recently another mixed media artist Michael Parekowhai has made a shift into the medium of bronze with his 'piano works'. Invited to exhibit at the 2011 Venice Biennale, Parekowhai produced two full sized grand pianos with stools, in bronze. Each piano is surmounted by a 'life-size' bronze bull as part of a series of works entitled *On first look into Chapman's Homer*. One bull stands upright with head directed down towards the piano seat, as though offering a defiant 'bull fighter's challenge' and bears the title *Chapman's Homer*.



Fig. 3.1 *Chapman's Homer*, bronze, 2011, at Venice Biennale Image courtesy of Regan Balzer

On the lid of the second bronze piano, a semi reclining bull continues to issue the head stare challenge. Parekowhai has reproduced each component naturalistically and the patination of both pianos and bulls are essentially identical. While each could easily blend into the other, the 'living' curvaceous form of the bull contrasts starkly with the cold angular 'man-made' form of the piano thus ensuring each component has retained its identity.

3.3 Painted bronze

As a medium itself, bronze treated conventionally has great qualities, but when painted, those qualities can alter the perception and interpretation of the piece.

In the nineteenth century (1860) the Bergmann foundry was set up in Vienna, Austria. The owner was Franz Bergmann, who employed many different artists to produce small artworks in bronze whose subject matter ranged from exotic and provocative figurines to anthropomorphically posed and dressed animal subjects. The animals were mostly 'cold painted,' where layers of paint were applied to hide the base metal without the addition of heat. The exact technique used has apparently been lost but seeing pieces on the UK Antiques Roadshow program (July, 2012) and noticing the paint that has been flicked off, suggests that there was no metal primer applied before the paint.

Catalan artist Joan Miró is particularly well known for his paintings that use a primary palette amidst dancing black marks that range from tenuous threads, through to bold brush strokes or blocked areas of black. His early paintings in Paris during the 1920's, demonstrate that he was strongly influenced by surrealism. The eclectic, yet contrived gatherings of objects, people and animals (including insects) within his paintings at this time, are in many ways transcribed to the sculptures he produced during the 1960s.

As described by Penrose (1970, p. 141) his sculptures,

> *Evolved from the early surrealistic objects which were made of unexpected combinations of elements. This process often involved the use of random discoveries among the insignificant objects, natural or artificial, that litter the world around us, waiting to be given a new life through the metamorphosis that Miró is able to bring about. He has made sculptures built up of broken pots, old roots, limbs from celluloid*

dolls, sticks, electric bells and feathers, which come to life as projects for monuments to be constructed later in concrete, bronze or a mixture of materials.

Many of the bronze sculptures produced by Miró during the 1960s and 70s exhibit a conventional patina. Some however, were subject to his painter's mind and palette. Each was treated as though it were one of his two dimensional paintings - only one that could be walked around.

In *Personaggio, (Figure*, 1974), a blue 'egg' balances on top of a black 'apple shaped' sphere with a red 'mask.' These are all inturn balanced on a black clothes peg.



Fig. 3.2 *Personaggio*, 1974, Bronze, 3740 x 900 x 900 mm

While the forms appear balanced the small bright red sphere pinned to the side of the blue egg disrupts our senses.

Miró beautifully contrasted the geometry of the straight edges of the peg with the roundness and smoothness of the other forms and with the round negative spaces within the peg. The simple lines of colour along the edge of the black peg provide colour balance. The title, *Personaggio,* confirms its subliminal human form. The piece

is clinical and demonstrates the classic Miró palette, without reference to the base metal construction.

American artist Jasper Johns is renown primarily for his bold two-dimensional paintings and prints of familiar items like flags, targets, letters and numbers. Over the period of 1958 – 1961, Johns also sculpturally investigated commonplace objects such as the flashlight and the light bulb using many mediums including sculp-metal. The surface treatment of the mediums was largely from a 'traditional' palette, but in 1960, Johns produced two bronze sculptures that went beyond the conventional.

Since both pieces were titled *Painted Bronze,* the audience is immediately informed of the practice and treatment, - but not the concept. The first *Painted Bronze* appeared to be two Ballantine ale cans.



Fig. 3.3 *Painted bronze*, 1960, oil on bronze, 140 x 203 x 120mm

While most of the cans show a conventional patina, limited use of oil paints was made to 'reproduce' the labelling on each can. No careful attempt was made to recreate each label with the accuracy that would be achieved if they were printed. Yet the viewer's eye is surprisingly content with the 'hand painted' irregularities, because they are presented within the context of the 'cans.'

This is consistent with the psychological principle of *gestalt* whereby the grouping of elements over-rides the individual elements. In Johns's case, if the labels were painted onto a flat surface, and positioned side-by-side, the 'poorness' of the label

reproduction would be evident. But, because they are painted onto vertical can-like structures, the context has been established, irregularities blurred and visually accepted, and the trompe l'oeil effect completed. That they are works of art is further confirmed by their placement on a shallow bronze base.

The second *Painted Bronze* is a total visual deception that comprises a handful of well-used artist's brushes, left standing in an old Savarin coffee tin.



Fig. 3.4 *Painted bronze,* 1960, oil on bronze, 343 x 203 diameter

Johns' handling of the paint is casual yet confident and thoroughly convincing. Only picking up the 'tin' and experiencing the discrepancy in weight would the illusion be dispelled. Close examination again reveals untidiness in the label typography and a bronze 'blush' shows along the can's upper ridge rather than rust, but these very imperfections are, as John says, important in determining the works as art and not as replicas, as quoted in Orton (1994, p. 148) Johns says,

> *You have a model and you paint a thing to be very close to the model. Then you have the possibility of completely fooling the situation, making one exactly like the other, which doesn't particularly interest me. (In that case you lose the fact of what*

you have exactly done.) … I like that there is the possibility that one might take one for the other, but I also like that with a little examination, it's very clear that one is not like the other.

3.3.1 Bronze insects and painted bronze

The sculptural work of New Zealand artist Elizabeth Thomson and the subject matter from which she takes inspiration, have personal parallels. Her work combines observations of, and a fascination for nature, combined with an interest in museum display work, which in Thomson's case is in the form of dioramas. Her cast bronze work produced in the late 1980's to the 1990's is particularly relevant, since this work comprises a variety of super-sized insects including beetles and stick insects two and half metres tall. Her exotic and gigantic longhorn beetles *Batocera longhorns and Goliath* created in 1996, scale the front entrance walls to the Te Manawa Art Gallery, Palmerston North, New Zealand.



Fig. 3.5 Detail of *Batocera longhorns and Goliath*, bronze, 1996. Te Manawa

Her approach shows a naturalistic presentation of her subjects and most pieces exhibit the traditional method of patination using a variety of chemicals and heat. In some areas the bronze is painted in order to act as highlights while the longhorn

beetles are all painted bronze. Dunn (2002, p. 158) wrote the following about her work,

> *Thomson's methods of studying the natural world can be compared with the scientific processes of collecting and collating specimens and material …*
>
> *Thomson makes her creatures seem alive, as if alighting on the wall, not pinned to it like specimens. Her works are suggestive of movement and flight. Her wax models allow adjustments of size, so that her creations can and do differ from real life. She treats the surface of the bronze with patinations that closely imitate those in nature.*

As though viewing each insect through a dissecting microscope Thomson's insects are hyperbolic. They magnify the experience and encounter with each 'specimen' while also practically allowing for a greater inclusion of detail for maximum impact. However, despite the naturalistic presentation, their very size, by default, makes them 'unreal' and more theatrical. Creating insects on such a large scale however has been a successful foray for Thomson and has artistically helped to raise the profile of some aspects of our natural environment.

Thomson has more lately directed her attention towards botanical subjects. In some of her work, she has chosen to recreate and duplicate leaves of different sizes from certain native plants for use as building blocks within larger works. In *Southern Cross Parterre,* equally sized painted bronze leaves have been consciously removed from a natural context and deposited in groups to form a formal cross. So the individual leaves have become painted elements within a larger design structure rather than being the primary focus. This divorce from a 'natural placement' also eliminates the necessity to accurately imitate the anticipated natural hues, although they are hinted at by being broadly within the correct palette.

Huge proportions and natural poses were a feature of Thomson's insect work. By contrast, it is the closeness to 'life size,' together with a regimented and formal arrangement of some insects that are the focus of my work.

3.4 Bronze distortion

The stick insect appears as a small ‘discovery’ in the work of another successful New Zealand sculptor. Paul Dibble’s bronze work characteristically features large bilaterally compressed and distorted figurative subjects that appear in many national city scapes like Palmerston North. Situated in front of the entrance to Te Manawa Art Gallery sits *Pacific Monarch (Papaioia)*. Dibble’s sense of humour emerges with the creation of a stick insect that appears on the lower edge of one of her ‘support’ sticks.



Fig. 3.6 Detail of stick insect on *Pacific Monarch (Papaioia),* bronze, 1992, 4040mm, Te Manawa

While in essence Dibbles rendition of the stick insect is rudimentary and unrefined, it nevertheless conveys a readily identifiable form that even includes segmentation on the abdomen.

New Zealand artist Terry Stringer has demonstrated his fascination for illusion for many decades now. His recent work comprises rounded figurative forms but his strongly geometric bronze works from the 1980's are of particular relevance. Stringer's ability to distort reality and perspective by manipulating the two and the three dimensions within a still-life framework is persuasive, and well exemplified by *Table in two planes* (1987) and *Cloth table with wine and fruit* (1988) from Gow and Caughy (1999, p. 34).

Each has an optimal viewing position. Unlike many of his later works, these are attached to or located next to walls and not therefore able to be viewed in the round. In Stringer's work the heightened and foreshortened geometric forms, work most successfully when combined with the fall of cloth or the addition of figurative and organic forms.

The presentation of my insect drawers has been inspired by Stringer's approach during this period, where geometry is combined with and contrasted against naturalistic 'organic' forms. And, my pieces are also anchored to the wall.

3.5 Insect collecting and painting

One of the most important nineteenth century colonial insect collectors in New Zealand was the London born George Vernon Hudson, who arrived in New Zealand in 1881 when 14 years old with his father, brother and sister. His mother died when he was two years old (Gibbs, 2010). Hudson collected with enthusiasm and the determination to describe and record as many insects as possible from New Zealand.

As described by Salmon (1946, p. 265) "When he arrived in this country as a boy, he conceived the idea of – as he put it – 'doing' the New Zealand insects, a purpose from which he never faltered." In 1892 the first of his many books, *An elementary manual of New Zealand entomology*, was published when he was just 19 years old.

Hudson made it his commitment to not only collect but to also record each insect. His dedication was both absolute and tireless and involved in many cases, rearing the insects himself in order to determine life histories for recording (Museum of New Zealand Te Papa Tongarewa, 2004).

Over the years, Hudson's wife Florence, his daughter Stella along with other collectors and entomologists, have added to what is generally referred to as 'The Hudson Collection' now housed at Te Papa, Wellington, New Zealand. This collection is probably the most extensive of any amassed by a single collector in New Zealand and represents therefore, a highly significant and valuable historical record of insects from the 1880's to the time of his death in 1946 when aged 79.

Hudson made enormous contributions to our formal understanding of New Zealand insects and their life histories. This knowledge was meticulously recorded in a large number of scientific papers and documents.

What elevated his contributions further is that Hudson was also an accomplished artist, trained by his father. So Hudson was able to not only describe his specimens but also visually record them as well. The biological illustrating and painting of insects is a highly skilled discipline requiring not only a good eye for detail but also an ability to handle colour and an understanding of insect structure.



Fig. 3.7 Plate XIII from G. V. Hudson's *New Zealand moths and butterflies*, 1898

In all, Hudson produced eight books on New Zealand insects each with superb, fully coloured plates. His last book, *Fragments of New Zealand entomology* was published posthumously.

To date, no one has rivalled Hudson's extensive visual and written documentation of New Zealand insects and particularly, from the order Lepidoptera (moths and butterflies), which was Hudson's greatest area of interest.

There are nine cabinets made of kauri, each comprising 18 glass-topped drawers designed to accommodate this collection. The overall shape and attributes such as the dovetail jointing broadly formed a model for the sculptural drawers presented for exhibition.

3.6 Conclusion

Artists are never necessarily fixed to a particular medium. Having training or abilities in one discipline can often be advantageous when applied to another. The artist George Vernon Hudson transcribed his artistic ability into his other world of interest, entomology, while the painter Jasper Johns created his own three-dimensional 'canvas' to enhance its form and challenge the viewer's eye.

The following chapter investigates the processes involved in producing the artworks to be presented for exhibition. It also provides the rationale for the manner of presentation and grouping of insects, set against a backdrop for entomological practices.

Chapter Four

Methods and methodology



Chapter 4: Methods and methodology

4.1 Introduction

This chapter examines the practical processes and methods involved in creating each element of the artwork in bronze. The rationale for the arrangement and grouping of insects within each drawer will follow this.

4.2 Wax insects

The casting practice used for the insects, is called 'lost wax' or '*cire perdue'* and begins by creating each insect out of microcrystalline wax. Insects are essentially small, and everything associated with them concomitantly small. To assist with this, some of the insects were made approximately twice life size. Enlargement to some degree is an inevitable necessity because of a shrinkage factor of approximately 3% when the first insect is cast in bronze. But because each insect was duplicated within the artworks a mould was taken of each. A total of about 10% in size loss results when all duplicative processes are taken into account. The wētā-punga below however, is not much smaller in life.



Fig. 4.1 The completed wētā-punga in wax

At the foundry the wax insect with all its runners and pouring cup in place, is coated in fine ceramic slurry, which is built up over days to become a thick shell. Once dry this ‘shell’ is inverted and heated in an oven to melt out the wax. When cherry red, the empty shell is removed from the oven, placed in a sand pit and molten bronze is poured in. The shell is knocked off and the bronze is bead-blasted then returned to me for fettling. This involves cutting, filing, grinding and some cases re-welding to repair or replace short run features.

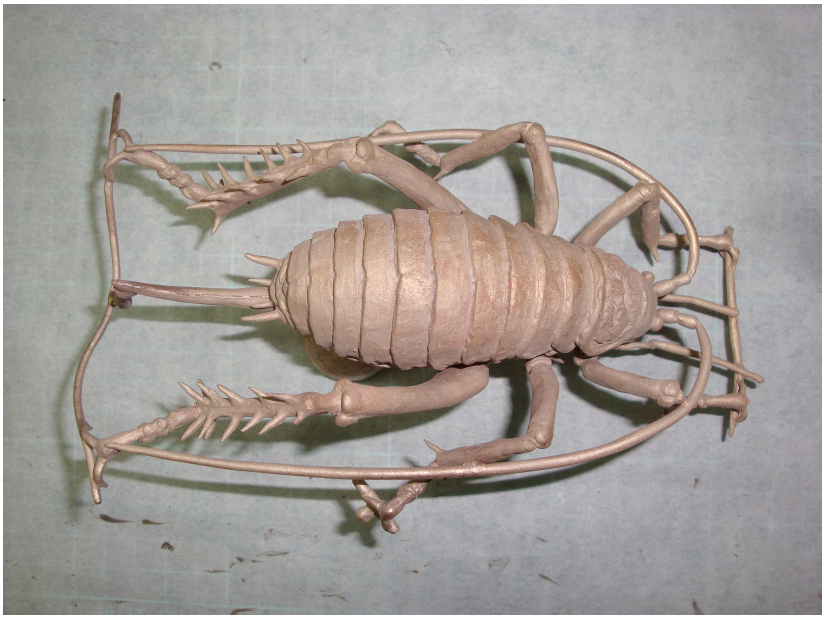


Fig. 4.2 Cast wētā-punga showing sprues.

4.2.1 Insect pins

Each finished insect is to be ultimately ‘pinned’ to the drawer so a fine hole was drilled into each fettled bronze insect in readiness for its pin. Modern entomology pins are made of stainless steel to prevent rust developing after contact with the body fluids of the insect. They are also especially long for both handling and to accommodate the depth of the insect body. A combination of straight stainless rod and tapered stainless steel bicycle spokes were used as pins. The bike spokes have a section of thicker 2mm rod that was positioned in the body section of larger insects and then into the drawer.

The positioning of a pin through an insect’s body is not random, but relates to standard entomological conventions. At the time that Hudson was collecting and

preparing specimens, beetles and small insects were mounted on individual rectangles of card, and an entomological pin positioned at one end.

Today small insects are ‘pointed’ on a small triangle of card and beetles are pinned conventionally like most other insects, to the right of the centre line of the thorax. This ‘off setting’ avoids damage to anatomical features used to identify many insects. The exception to this is for moths and butterflies where the pin goes through the middle of the thorax. However for practical reasons, it was necessary to pin small-bodied insects through the centre of the thorax.

4.3 The drawers and cabinets: The lost wax process versus sand casting

With the exception of the pins, it was important to remain sincere to the medium, so the drawers and cabinets would also be cast bronze and painted to appear as though fabricated from wood, and in the style of the old cabinetmakers. But the vision was to have these elements wall mounted.

To visually appreciate the contents, it was necessary to alter the perspectives of both elements. To create depth and perspective, the drawer, which was the first element to be designed, was compressed and distorted. The cabinet needed to accommodate this drawer, sit against the wall, and also appear three-dimensional. To resolve this, the upper section of the cabinet was pulled out from the wall at the point where the drawer ‘emerged,’ while the rest of the ‘cabinet’ remained flat. The conceptual outcome resulted in just one optimal position for viewing both drawer and cabinet.

A wax Maquette allowed for the general concept of distortion to be tested and this was followed by an accurate full size core-flute prototype as seen in the following figures.



Fig. 4.3 Wax Maquette of drawer and cabinet

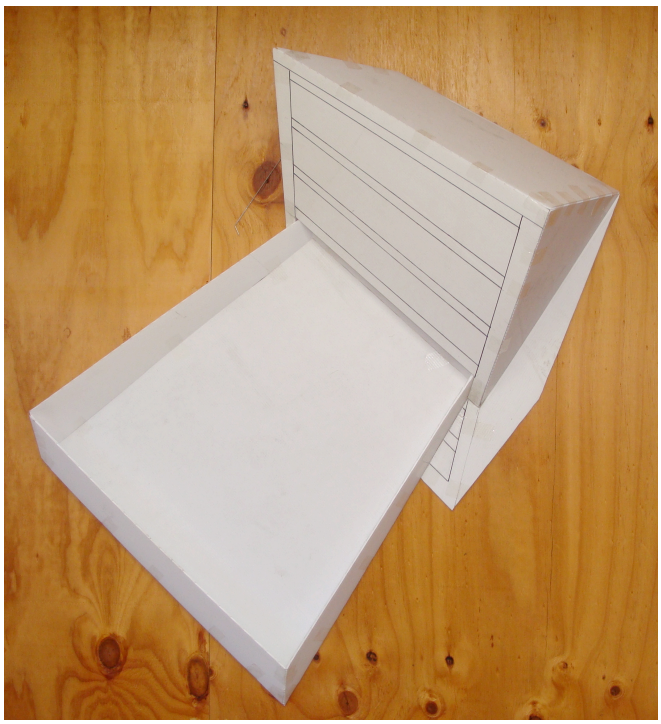


Fig. 4.4 'Fourth drawer' and cabinet combination

All core-flute components were then disassembled and used as templates to ensure that all drawers were identical. The wax 'cut out' pieces were then assembled and 'welded' together. Dovetail joints were marked onto the drawer side. Impressions of the three upper drawers were measured and marked out. Wax handles of diminishing size were designed[192] and then welded to the front of the drawer.

Ultimately, to create the illusion of three separate drawers pulled out at different levels, two other cabinet forms also had to be resolved. This wax 'Fourth drawer' cabinet was the largest of the cabinet forms. Both pieces were taken to the foundry for casting.



Fig. 4.5 The completed wax drawer/cabinet combination

However, their large size meant they were difficult to handle during the application of the ceramic shell.

[192] Initially two handles were welded to the front of the drawer, but with further consideration I felt that they both crowded and diminished the front of the drawer. So I later reduced the number to one handle. There is only one handle on Hudson's drawers.



Fig. 4.6 'Fourth drawer' and cabinet coated in ceramic shell

Fine cracks appeared after the wax was burnt out. These were repaired with additional ceramic slurry and reinforced with clamps where possible. Both shells were reheated and molten bronze poured into firstly the cabinet. However, the shell broke and the molten bronze spewed out. Only the upper section remained.



Fig. 4.7 Catastrophic failure in the pouring of the cabinet, using the lost wax process

In spite of this failure, the drawer shell was re-examined and repaired, then reheated and poured. The shell held but further cracks in the shell developed and bronze collected as 'proud points.' Two corners were short run and 'draw' occurred where a large sprue had been located. These defects highlighted the difficulty in using the lost wax process for large pieces and meant investigating other methods of production.

One option was to laser cut each element as though in flat form out of thin brass sheet and fold professionally into the desired form. However, folding any sheet metal

produces a broad radius or outside profile that would not suggest the cleanly ‘planed’ edge that is achieved when wood is prepared and finished by a professional cabinetmaker.

Alternatively, each section could have been laser cut and brazed together. But long joints are subject to distortion when heated, so both ideas were dismissed.

Sand-casting was investigated next. This process uses a wooden pattern that can be used repeatedly, but is limited to designs without undercuts that would otherwise prevent the mould from being pulled apart. The multitude of complex angles and facets meant that making a wooden pattern would be inordinately difficult, but transcribing the measurements and dimensions onto computer helped to calculate the angles.

Each face was then cut on a table saw out of 6mm thin-line MDF and a complex system comprising both forklift and an angle grinder with a diamond cutter head, was used to trim the mitre angles.



Fig. 4.8 Forklift and angle grinder used to cut the mitres

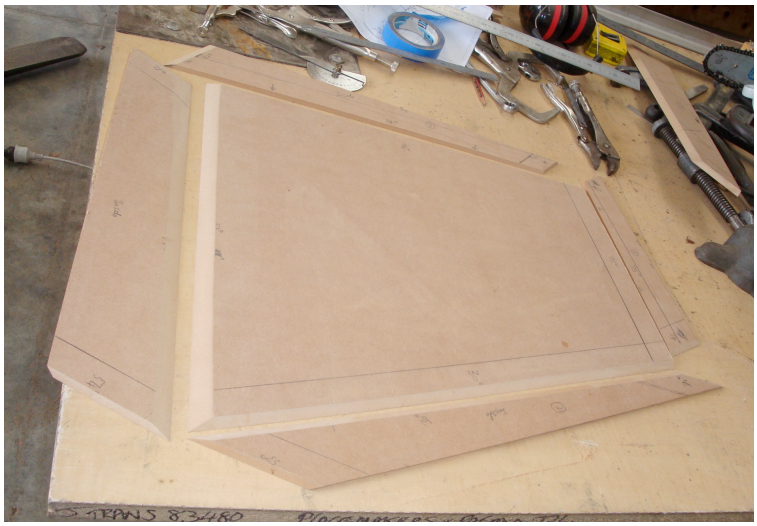


Fig. 4.9 All the faces of the drawer

These sections were glued together and paint sealed. The pattern was then taken to Heavy Metal foundry in Petone to be sand-cast.

Here, the pattern was first coated with a form of talcum powder (releasing agent) and placed into a pit. Green sand containing a setting agent was compacted around half of the draw, to form half the mould. Once set, the other half was compacted with sand. The two halves were pulled apart, the pattern removed and the mould reassembled. After a hole is drilled into the top of the sand mould, the molten bronze is poured in. With this method, the sand mould is destroyed each time the bronze form is removed.

Nine drawers were successfully sand cast this way and overall displayed the straight lines required to suggest a cabinetmaker's carpentry skills. Consequently the same process was used to create each of the three different cabinet forms. The necessity for no undercuts however, required that one triangular side face had to be cast separately.

Sand casting results in a surface that takes on the texture of the coarse sand. This and other faults in the surface finish required extensive grinding and sanding in order to rectify. The faces were ‘trued’ with an orbital grinder.



Fig 4.10 Section of cabinet before ‘cleaning’

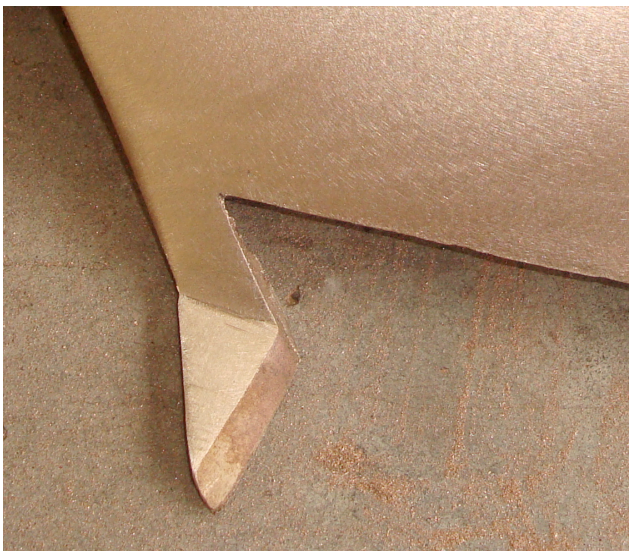


Fig 4.11 The same section of cabinet after grinding and fettling

Once both cabinet and drawer were aligned to allow for the required recess of the drawer, they were welded together.

4.3.1 The attachment mechanism for the artworks to the wall

With both sections now fused, the heavy unit required a secure and reliable method of attachment to the gallery wall. For this, a separate clamp was designed to both attach to the back of the drawer and also provide the hook for the gallery wall. By being a separate 'add-on,' the clamp allowed for any adjustment to the balance and angle of each piece on the wall by being able to be slid along this back edge.



Fig. 4.12 The stainless steel clamp attached to the back of the drawer



Fig. 4.13 The drawer/cabinet suspended off a forklift using the stainless steel clam

4.3.2 The knobs

While the lost wax process for the cabinets and drawers had initially allowed the handles to be incorporated at the time of fabrication, the sand-casting process meant they now had to be cast separately. The first knobs produced, comprised simple stalks with heads of different sizes to accommodate changes in perspective and would be attached on an angle.



Fig. 4.14 The first series of knobs for the drawers and cabinets

However, technical issues arose when negotiating the physical attachment of these handles either by welding or by mechanical means. This lead to a redesign of the knobs that resulted in not only distorting the angle position of the knob relative to the stalk but importantly, included the addition of a basal disc. This enabled a perpendicular hole to be drilled and tapped into each face that not only facilitated attachment, but also inherently placed each knob on the correct angle relative to the drawer and cabinet faces.



Fig. 4.15 the second series of knobs with the additional basal disc

The advantages of this method were two fold. No welding heat was applied to the faces, which would have risked warping. And secondly, the painting of these surfaces could be done before the physical addition of the knobs. So the paint effect could be carried cleanly across the surface without being disrupted by the raised knobs. These ‘brass’ knobs stay unpainted and remain the only reference to the base metal.



Fig. 4.16 The suspended cabinet/drawer showing wax knobs

Once all knobs were cast and fettled, they needed to be drilled from the back in readiness for attachment to the drawer and cabinet fronts. But, because they are asymmetrical, a new clamp was designed to hold and position the basal disc relative to the knob and drilling. The following figures show the clamp design and process.



Fig. 4.17 The knob is positioned centrally over a hole and against a stopper.

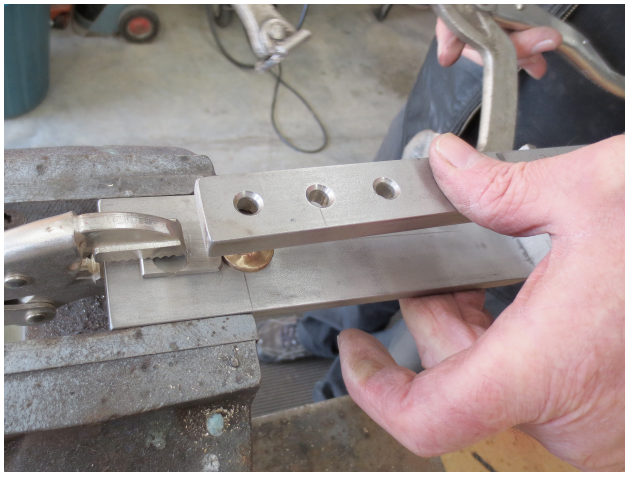


Fig. 4.18 A brace is placed over the head of the knob and clamped in place.

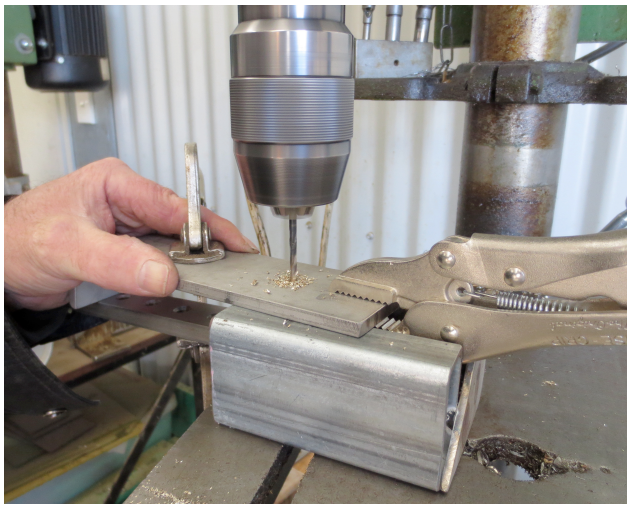


Fig. 4.19 The clamp is turned over to expose the hole and position for drilling.

4.4 Painting

1. Before painting, a fine wire was looped through the pinhole of each insect to enable it to be dipped into a Super Etch[193] primer. It was then 'hung out to dry.'



Fig. 4.20 Pūriri moth coated in primer

Quality *Old Holland* artist's oil paints were used to paint the insects. The natural and often bright colours of insects when alive can fade relatively quickly when dead, particularly Lepidoptera (moths and butterflies). This is apparent in many museum specimens, so it was important therefore to capture a 'fresh look' in the insects. The relatively bright colours enhance the visual impact of the insects, assuage the bleaching out from gallery lights, and provide a great contrast with the whiteness inside the open drawer.

The following two images show the effects of fading and shrinkage on a real specimen.

[193]This is a Wattyl product. It is a single-pack epoxy etch primer said to have excellent adhesion to all common metals including brass and copper, and can be over coated by most other products. Although there are other colours, I used white. The thinner is Dulon AA.



Fig. 4.21 A male pūriri moth freshly pinned and ‘set’



Fig. 4.22 The same moth showing shrinkage and fading after 2 months



Fig. 4.23 The bronze pūriri moth, painted

2. Before each cabinet was primed and painted, fine lines were engraved onto the face of each cabinet to locate the position of the upper drawers. This not only signifies the gap between drawers and cabinet but also facilitated the positioning of the knobs and the painting of the cabinets. To ensure that straight clean lines were achieved, guide runners were fabricated to guide the Dremel cutter.



Fig. 4.24 Engraving a drawer using guide runners

All surfaces were cleaned with Dulon AA to remove any grease and spray painted with Wattle Super Etch primer ready for painting. However, because the external surfaces of both the drawer and cabinet are those most exposed to handling and scuffing, conventional artist's paints were not used on these surfaces. Tough, durable and hardwearing automotive paint was used instead, comprising Dulon acrylic lacquer.

For richness and contrast, the appearance of straight or ribbon mahogany wood grain was reproduced on the outside of the cabinets and drawers. As a dark wood, the mahogany enabled both the whiteness of the drawer interior and also the 'brass' handles to be prominent. It was also a wood that was widely used by cabinetmakers. The inside of the drawer was spray painted white.

To achieve the **faux bois** (false wood) appearance a coat of salmon pink was first applied to the external surfaces to provide a rich base for the mahogany. A contrasting wood colour was applied to the drawer sides. The various sections of 'wood' were then masked off to align with cabinetry construction including dovetail joints on the open drawer front. Two shades of brown were air brushed in parallel lines to create the long lines of wood grain. These two browns were hand mixed by eye but the first brown applied, approximated burnt sienna and the second darker brown that was used to add depth, approximated burnt umber.

Once completed the 'wood' surfaces were spray painted with four coats of Dulon clear coat acrylic lacquer to both protect the surface and also create a varnished appearance.



Fig. 4.25 Mahogany faux bois air brushed and varnished

3. The labels for each drawer and those for each insect are particularly important aspects of the works because they are the strongest indicator of the cultural nature of the works. With the exception of the first drawer, the insect labels display the Māori name (or names) above the scientific name to register their original appellation. The scientific terms represent the most recently assigned names derived from an entirely different cultural paradigm.

The insect labels were made separately out of .25mm brass sheet, cut into 18 mm wide strips, primed and dipped into an off-white Dulon acrylic lacquer. The terms were then hand written onto the labels using the German made Staedtler permanent lumocolor ink pen.

The style of writing is a variation of italics. As suggested by its name, this sloping font was developed in Italy during the Renaissance period when “scholars and aristocrats alike joined in the hunt for everything that could be associated with the classical world, from sculpture to texts” (Whalley, 1984, p. 21). And, because all the letters connect and flow on to the next, this font enabled the scribe to produce script at speed and still retain legibility.

Coincidently, it is the convention to write or document all scientific terms in italics. The only other option would have been to underline the scientific names.

4.5 Combining the insects with the drawers

Once all painting was completed, the insects were repositioned. A drill using a small diameter bit was pushed through each insect’s pinhole to mark the position for the pin on the drawer floor. The insects were removed and all holes then drilled. The stainless pin was glued in place and then each insect was slid down its corresponding pin until it was in contact with the floor and similarly glued. Excess wire was trimmed off. For the ‘nylon pinhead,’ plastic beads were glued to the top of the pin and later painted with metallic fingernail polish.

Those insects without apparent pins (Cabinet three, drawer three) were either screwed in place or invisibly pinned from below. The labels were cut to length and glued in place using 3M™ double sided adhesive transfer tape.

4.6 The three cabinets and nine drawers of insects

From the outset of this study, the aim was to produce from six to nine drawer/cabinet combinations. Nine were completed in order to realise the dynamics of the artwork concept, which in turn determined the configuration of the gallery space required. This needed to comprise four more or less equally sized walls that could be treated independently yet remain visually connected to the next. Thus, on each of the first three walls there are three artworks. Each triptych represents one cabinet with a successive drawer pulled out for examination. Refer to pp. 345, 346 (Vol.3).

The recognised convention for organising and displaying insects within collections is by systematic arrangement whereby related insects are displayed together. This facilitates the retrieval of specimens and enables the common features of related family members to be displayed and compared.

However, the artwork created for the thesis exhibition is a cultural and historical record of insects that have in some way, been significant for Māori. Consequently, the grouping and arrangement of insects within their allocated drawers is based on cultural relevance, not morphological relatedness. And, as these are works of art, the organisation of the insects within each drawer is further tempered by artistic aestheticism.

There are a series of narratives that not only run concurrently through the sequence of drawers but also within each drawer. Some of these are alluded to in each of the drawer titles. Overtly there is the clinical scientific ‘processing’ of insects as specimens, laid out and pinned. The series culminates in the final drawer that reveals insect tenacity in the face of danger, where some have escaped while some insects have anthropomorphically become individuals with ‘personality and attitude.’

The sequence of drawers also chronicles a change in societal and cultural values of insects over time to reflect the peopling of Aotearoa, New Zealand. The sequence and rationale behind the insects assembled within each drawer is detailed next.

4.6.1 Cabinet One, drawer one

The first drawer in this series of nine, closely resembles a ‘conventional’ arrangement of pūriri moths, *Aenetus virescens*. The configuration and orientation, is broadly based on the image of Hudson’s drawer of specimens collected in the 1890’s (Museum of New Zealand Te Papa Tongarewa, 2004, p. 139).

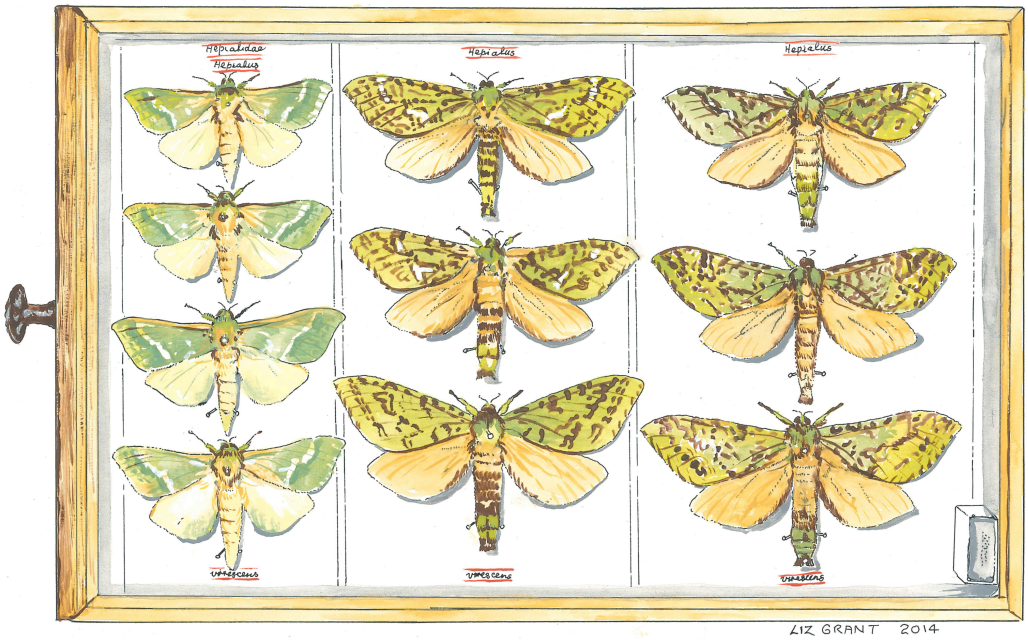


Fig. 4.26 Pen and paint rendition of Hudson’s drawer of pūriri moths

This image shows three columns of moths with their centre line aligned parallel with the drawer front. There is a single column of male moths on the left, and two columns of female moths to the right. Of note, is that the orientation of the moths is ‘landscape’ within the rectangular dimensions of the drawer. This orientation while adopted in the artwork of the first drawer, is unique to the series.

The Hudson drawer is also indicative of entomological practices such as the housing of a single species together, the noting of the scientific family name, (Hepialidae) and for collectors particularly during the nineteenth century the collecting of multiple specimens. It represents the ‘control’ and visual reference point to compare and contrast with the other drawers.



Fig. 4.27 Cabinet one, drawer one

Superficially this drawer contains a group of identical male and female pūriri moths. However close examination shows that just like our own fingerprints, the venation and colouration of each is unique, with not one ever being identical. The inclusion of a yellow specimen is not an artefact of fading but an example of colour separation in nature, where the colour green has split into its yellow component only.

The positioning of large relative to small insects was important in the art works, and used to enhance the perspectives of the male and female pūriri moths. Conveniently this matches the Hudson drawer, where a column of male puriri moths is on the left. The larger female moths could have been positioned here to emphasise the foreground as being closer to the viewer. But because the perspective is exaggerated, the smaller males would have, in theory, been the same size as the

females but made smaller only by the impact of distance. This layout therefore enhances the female size. Of course in reality, the viewer is the same distance from all aspects of the drawer and cabinet, but drawn into the trompe-l'oeil illusion.

The presence of a caterpillar represents another allusion to illusion. Fleshy insects (usually larvae) cannot be pinned successfully to display their morphology because they distort and shrink with dehydration. They are therefore usually stored in 75% ethanol, within 'wet collections.' The bronze medium allows easy inclusion of these parts of the lifecycle thus expanding and consolidating one's understanding of an insect's life history.

At the back of the drawer, two female moths are displayed in a more naturalistic 'closed-wing' stance. Given the line of reasoning regarding perspective and size, it is logical to conclude that these two female moths must be larger than their counterparts with their wings formally displayed. This argument holds true. Adult insects can vary in size, because size can be determined by quantity and quality of the food available at the larval or immature stages.

The title for this drawer is, **Ki te kore he mokoroa, ka kore te pēpepe**: **Without a caterpillar, there can be no moths**.
Most collections display adult insects only, because as noted, the larval stages are 'too wet to be dried' and still retain body shape. A less informed display is the consequence of this exclusion, and yet, the ability to show these moths at all, is predicated upon them having had a caterpillar stage.

The title also alludes to the loss of habitat that accompanied deforestation in colonial times that also impacted upon the faunal and floral diversity. The pūriri moth caterpillar is New Zealand's only wood tunnelling caterpillar. Removing large expanses of forest, would have not only directly killed huge numbers of specimens, but also millions of other forest dwelling insects, as well as removing the habitat opportunity for insects 'reintroduced' by adult insects from outside the 'modified' land. This concomitantly, impacted upon other fauna like birds that used the forest for nesting sites and where the source of their food such as insects, also resided.

4.6.2 Cabinet One, drawer two

Contained within this drawer are insects that have been associated with either physical travel (and physical transformation as both butterflies and moths show complete metamorphosis in their lifecycles) or with spiritual travel (as either spiritual messengers, or by representing spiritual transformation). The title for this drawer is, **Ngā haerenga me ngā whakawhiti o ngā pēpeke: Insect journeys and transformation.**

Butterflies were once believed to represent the souls of the dead and referred to as **wairua atua** or supernatural spirits. The rare forest ringlet butterfly, *Dodonidia helmsii* has been chosen to represent this term. The owl moth was regarded as **pepe kehua**, or the physical presence of ancestral spirits.

Each fly either corresponds to a spiritual messenger or represents the spirits of the dead. Many were associated with revenge.

Amongst the animals brought on the Ngāti Porou waka, the Mā-ngārara, there were the three insects, the **wētā**, a caterpillar, **whē**, and the **kēkerengū** or black cockroach. The sphinx moth caterpillar *Agrius convolvuli*, has been chosen to represent 'a caterpillar' because while it is a native, its genus is also found in other countries like Africa, Asia, and the Cook Islands, and represents therefore, an original 'passenger' on the continental drift journey (See 1.3.1, p. 4). Also, White (1887, p. 1, English, p. 3 Māori) recorded and translated the following karakia that was chanted during kūmara planting time and referenced whe,

I hara te taua, koia Ru	*My enemies are these:*
*Koia **Whe**, Koia Potipoti.*	*The earthquake, and the caterpillar,*
	And all devouring insects.

And, since the kūmara was introduced, it is appropriate that the most significant 'devouring' pest of the kūmara, the caterpillar of *Agrius convolvuli*, is associated with the term of 'whe.'

Taylor (1855/1974, p. 118) claimed that Turi, chief of the Aotea waka, brought with him to Aotearoa, several animals that included two insects, as well as the kūmara, the gourd and the karaka tree. These insects were "the **moeone** (a small bronze beetle) [and] the **awato** (the grub of the sphinx moth, which preys on the kumara)."

The dragonfly or **kapokapowai** is a reference to the legions that were assembled and deployed to exterminate a particular chief's enemies (Miller, 1955).



Fig. 4.28 Cabinet one, drawer two

4.6.3 Cabinet One, drawer three

This eclectic assemblage represents the insect portion of Whiro-te-tipua's war party sent to attack Tāne on his foray to the heavens for the three baskets of knowledge. Tāne captured many of these insects (see pp. 30, 31) and took them as prisoners down to earth, and explains why they now exist in the world.

This drawer is called, **Te taua a Whiro**: **Whiro's war party**.



Fig. 4.29 Cabinet one, drawer three

This array of insects allows for the different interpretations of the Māori terms.

4.6.4 Cabinet Two, drawer one

Most of the specimens in this drawer represent insects that were valued as articles of food, or, as rongoa Māori (Māori medicine). Others indicated the status of an individual or the health of an individual.

These are, **Ngā pēpeke papai**: **The beneficial insects**.

At the back of the drawer and from the right are the two beetles, the **kēkerewai** (mānuka beetle) and the **tutaeruru** (grass grub). The ground bodies of the kēkerewai were mixed with the pollen of raupo and cooked to make bread. The tutaeruru was also eaten in "former times." Both were considered some of ngā manu a Rehua, and represented therefore the summer season.

Adjacent to these beetles is a moth, **pepe**, and its caterpillar. This looper caterpillar **whangawhanga** is largely responsible for creating the characteristic holes in kawakawa leaves. The damage caused, stimulates a change in the chemical composition of the plant that concurrently increases the medicinal value of the leaf. Below, are another three species of insects whose immature stages were eaten by Māori. On the left, the **moka** or leaf roller caterpillar, was a pest of the kūmara plant but was also "sometimes eaten." Nymphs of the dobsonfly on the right were reputedly eaten and the adult is included here for completeness. The stonefly nymph in the middle more convincingly warrants the same name **puene** or **pūeneene**, as argued within this thesis.

The charred and ground up bodies of the vegetable caterpillar, **aweto**, (**tutaekereru**) located mid-left in this drawer, were mixed with fats to form a black pigment suitable for tā moko (body tattoo) and indicated a person's ancestry and standing within the iwi. When fresh, they were also eaten.

Biting down onto the cocoon of the bag moth, **pū a Raukatauri**, was thought to relieve toothache while the caterpillars of the pūriri moth, **mokoroa**, were flushed from their arboreal tunnels and eaten. Large numbers of nymphs of the little grass cicada were collected, crushed and also eaten. The sphinx moth appears here because it acted as a pollinator of the utilitarian gourd plant.

Of the insects that contributed most to the diet of early Māori, the **huhu** rated most highly because they were easily collected and all parts of the life cycle were apparently eaten. The larvae of the kānuka longhorn beetle closely resemble those of the **huhu** beetle but live within the living wood of mānuka and kānuka, and were also eaten. They appear here therefore, as another contributor to the Māori diet.

Both the praying mantid and stick insect at the front of this drawer indicated conception if either landed on a woman. The terms **rō** and **whē** were used interchangeably for each.



Fig. 4.30 Cabinet two, drawer one

4.6.5 Cabinet Two, drawer two

Each of these insects was a destructive pest or nuisance for Māori. Not all were directly named or historically recorded as such, but they are presented here because it is reasonable to conclude that their nuisance value was at least registered subconsciously. These are **Ngā pēpeke kikino**: **The insect pests**.

The six 'plates' at the back of the drawer, represent insects that are pests or parasites of the body. From left to right these are the **kutu** (louse), the **keha** (flea), the **namu** (sandfly), the **naonao** (biting midge) and the **waeroa** (mosquito) along with its larvae, **ngarangara**.

The bluebottle fly, **rangopango** and the **ngaro** or brown blowfly[194] 'spoil' food. Both would have also fly blown bodies especially if not buried after battle. Between them wriggles a 'bundle' of **iroiro** or maggots.

The three moths and their associated caterpillar are pests of utilitarian plant fibre. There is the cabbage tree moth **pepe tāwhanawhana** whose caterpillar **tāwhanawhana** feeds on and therefore degrades the leaf fibre of the cabbage tree. And adjacent, are two species of moth that are pests of harakeke (flax) and similarly degrade the muka (flax fibre). These are the flax notcher moth, **pepe**, whose caterpillar **pukupuku** consumes large triangular notches from the edge of the blade of the flax leaf, and, the flax looper moth **pepe tāwhanawhana** and its caterpillar **tāwhanawhana** that creates windows within the leaf blade.

The kānuka longhorn beetle **kapapa** is the adult of the larva that forms long galleries within live utilitarian wood, like mānuka and kānuka. Such galleries would have limited the use of the wood, where length and strength was required. The larva was probably not necessarily associated with the adult form, which has been included to better inform the viewer. The larva, which looks superficially like that of the huhu, *Prionoplus reticularis*, was also eaten. So its role in Māori culture may have been both beneficial and negative.

The four moths and their caterpillars on the bottom row were pests of important food supplies. The **moka** (leaf roller caterpillar), **torongū** or **muwharu** (greasy cutworm)

[194] Introduced.

and the **anuhe**, **hotete** (sphinx moth caterpillar) were all pests of the kūmara plant. All three stages of the Sphinx moth life cycle are displayed including the two colour morphs of the caterpillar. This caterpillar was the most significant insect for pre-European Māori.

The fourth pestilential caterpillar of significance is the **tuiau** that attacks the tubers of the white potato. The high yielding white potato increased in its importance for Māori by being more easily grown than the kūmara and over a wider range of climatic conditions.



Fig. 4.31 Cabinet two, drawer two

4.6.6 Cabinet Two, drawer three

These insects have been grouped together because they represent many of the primary senses.

The title for this drawer is, **Ngā rongo ā-tinana me te mārama: The senses and light**.

Sound has a strong presence in this drawer. At the back are four insects that are strongly associated with the sound of summer either for their flight in the evenings or for their 'singing' during the day and/or night. They are collectively referred to as '**Ngā manu a Rehua**' (the singing birds of Rehua). These are the **tutaeruru** (grass grub) that produces a buzzing sound when flying about in the evenings, the two **pihareinga**, or black crickets that produce their singing trill during the day and into the night, and the clapping song of the **kihikihi wawā** or cicada during the hot summer and autumn days.

In front of these, mārama (light) is represented by the bioluminescence produced by the glow-worm, **titiwai**, **pūrātoke**, or **Moko-huruhuru**. Significantly, this bioluminescent light represents **Te maramatanga namunamu ki taiao**, the first form of light to exist in the world while the primal parents Papatūānuku and Ranginui embraced.

The name of the bag moth cocoon (**pū a Raukatauri**) denotes the pūtōrino flute of Raukatauri. As the goddess of music, she also represents the source of mysterious sounds in the night.

Three insects that emit a strong and foul smell if handled represent the sense of smell (rongo ā-ihu). These are the black cockroach, **kēkerengū**, the garden bug, **kiriwhenua**, and the ground beetle, **kurikuri**.

At the front of this drawer are more insects associated with sound. On the left is the humming hoverfly **ngaro-tara**. The 'ticking' sound of the **tākituri** or borer beetle was considered ominous and the whine of the **waeroa** or mosquito alerted Māui of its presence.

To the right there is the **kapakapa** (locust) that also produces a distinctive sound in flight, and its name is an onomatopoeic derivation of this sound. The **kikipounamu** or

katydid produces a characteristic ‘Zzitt’ at rest within foliage during the day and into the night during summer.

The two species of **huhu** grub in the middle represent the sense of taste (rongo ā-waha). These insects are still valued as articles of food.



Fig. 4. 32 Cabinet two, drawer three

4.6.7 Cabinet Three, drawer one

These insects have either an association with named gods, or are visual personifications of gods, spirits, or ghosts.

This drawer is called, **He hohonga atua: The god connection.**

At the front of the drawer are the **kahukura** or red admiral butterfly, the biting midge **tuiau,** the **waeroa** (mosquito), and the **namu** or sandfly. These are the four messengers sent by the goddess of the night, **Hine-nui-te-pō**, to gather the hau of Māui. It was the namu that successfully collected his drop of blood and initiated his ultimate demise. (See pp. 57, 58 and pp. 121, 122 for narratives).

Behind these is the case moth, **pū a Raukatauri**, that represents the goddess of music, **Raukatauri**, **Rakataura**, and to whom the mysterious noises in the night are attributed (Gudgeon, 1885, p. 172).

The giraffe weevil represents the god of a newly made canoe, **Tuwhaipapa** (White, 1891, p. 99 and Williams, 1917, p. 543).

The praying mantis was considered an aria of one of the lesser gods, **Te Ihi-o-te-rangi**.

The sandfly, **Namu-iria**, was killed by the god of ‘man,’ **Tū-matauenga**, and his death triggered the retaliation from both sandflies and mosquitoes to forever attack ‘man’ during the day and night, respectively.

At the front right, is the heaviest of our native insects the **wētā-punga**, whose name is derived from and associated with the time when **Tāne** in his search of a woman, coupled with many female forms including Punga. Some of the children borne from this union were the insects and other small creatures that were often considered ugly.

The blue hoverfly, **rango-tamumu**, was presided over by the god of flies, **Tuatini-ariki**.

The cicada is the personified form of **Hikawaru**.

The larva of the tiger beetle is the transformed body of **Kui** who had been gifted the North Island by **Māui** (considered a demi-god) and to which blades of grass were given upon the completion of a new whare or house (Tregear, 1891, pp. 180, 559).

The Māori term for the cranefly, **Te-tatau-o-te-whare-o-Māui** (the door of the house of Māui), is a reference to the journey Māui made to Rarohenga, (the underworld) in search of his father. To do this, Māui first shifted the centre post of the house (as he had seen his father do) that revealed the world below (Beattie, 2009, p. 65). A possible connection is made with the pole and the long legs of this fly.



Fig. 4.33 Cabinet three, drawer one

4.6.8 Cabinet Three, drawer two

The insects in this drawer occupy diverse habitats ranging from caves, fresh water, coastal, forest, grassland and subterranean environments. This is reflected in their diverse body shapes. Māori named these insects, but no other apparent significance appeared within the literature reviewed. While it is likely that there were other levels of importance conveyed orally, this information was unrecorded.

The drawer is called,

Ka tapaina, ka maumaharatia: **To be named is to be remembered**.

The round-bodied scarab beetles are the green, bush dwelling **mūmū** and **tanguru** chafer beetles, and the large sand scarab **mūmūtaua.** The sand scarab took a unique standing in European/New Zealand entomological history as being the first New Zealand insect to have been ascribed a scientific name based on Linnaeus's system of binomial nomenclature. Its 'new' name, *Scarabaeus truncatus* was later changed to its currently accepted name, *Pericoptus truncatus*. The 'C' shaped grub or **papahu** is characteristic for the family. Another round-bodied beetle, the ladybird, **mūmūtawa**, belongs to a different family of beetles.

Both the seashore earwig **matā** and the subterranean mole cricket **honi,** provide parental care for their eggs and/or their very young for a limited time. The flattened spade-like forelegs of the honi enable it to tunnel its way through the soil. Speculatively Māori may have encountered this insect while tending their kūmara gardens.

The black and white day flying magpie moth, **mokarakara** has a hairy woolly caterpillar, **makokōrori**.

At the front left of the drawer is the **namu katipō**, the black spider-hunting wasp that can drag around spiders up to three times its size. Bank's team collected a specimen of the **wīwī** or golden hunting wasp, during Cook's first voyage in 1769. It was therefore another species to be first described and ascribed its scientific binomial name, *Sphex nitida* (now *Sphictostethus nitidus*) by Fabricius in 1775. This species is endemic to New Zealand, but its habitat was noted as from 'nova Hollandia' (Australia).

The red **kikitara** and blue **tīemiemi** damselflies are associated with freshwater, while the **māwhitiwhiti** or small short-horned grasshopper is a common inhabitant of grasslands.

Looper caterpillars like **ngata** feed on the leaves of the wineberry tree and would have been encountered by Māori when gathering leaves to be boiled and made into a poultice for burns, or when bark was harvested to make a blue-black plant dye.

Striking for its size and exceedingly long legs is the cave wētā, **tokoriro**.



Fig. 4.34 Cabinet three, drawer two

4.6.9 Cabinet Three, drawer three

This last drawer is a drawer of contrasts. Some insects have escaped the constraints of the entomology pin and death, and others have not. The labels and 'empty' pins locate the original position of each escaped insect. Only the Māori terminology is displayed on the labels to represent a time before Europeans. This drawer like the first one represents a visual comparison for the others.

This drawer is called, **Hutia ana te pine**: **Pulling the pin**.

This title is a play on words, where 'pulling the pin' means calling a halt to a particular activity and in this case to the collecting of rare or endangered insects, and also to habitat destruction. In the context of this drawer, 'pulling the pin' is also a reference to the self-extrication from the pin that some insects have achieved to attain life and freedom.

Possibly the most attention grabbing insect in this drawer is the escaped **wētā-punga** as she makes her way along the drawer edge. Today the species has only just escaped extinction.

The wētā-punga's ability to escape the collector's grasp was recorded by Buller in his own recollections (1894, p. 145). He wrote,

> *I remember … riding through a strip of bush between Mangakahia and Whangarei, I caught a pair of them on a low tree, where they were apparently feeding on the young leaves. Dismounting from my horse, I secured the two Wetas in a pocket-handkerchief, and hung them up in a tree to await my return a day or two later. On coming back, however, I found that they had eaten their way out and made their escape.*

The tenaciousness of the insect collector however, is revealed in accounts that document the efforts required to get the perfect specimen to 'process.' Buller (1895, pp. 323-326) published the writings given by J. Brough of Nelson on his discovery of a new species of wētā or 'tree-cricket' that Buller presented for the first time in Wellington. Here is part of his account,

> *Far up in the gloomy alpine woods which clothe the Karamea Saddle, and in the very heart of a red-birch forest, I came across this fine Weta for the first time. I should state, however, that I met with a still bigger one, which unfortunately I quite destroyed*

… I first of all felled the tree with the axe, and then followed the tunnel for about 8ft., when unfortunately I sent the axe clean through a very large Weta - a much larger one than the one forwarded, but of the same species … Not far from this place I found, on another tree, the same kind of lichen overhanging a hole, and this time I was more careful in using the axe. Here I found the insect which I send to Wellington ... From observing the habits of my Weta in captivity I am convinced that it is nocturnal in its habits. I had an excellent opportunity of noting its ways and doings, for I kept him in a glass pickle-jar, and he was my only camp-mate I had for some time. He seldom moved by day, unless I disturbed him; but he became quite lively by night, and at times emitted a chattering kind of sound … I tried one day to measure him around the girth, but he resented this liberty, and went through some extraordinary antics, and I had to give it up. I found he could bite quite fiercely, and when excited could hiss like an adder … My captive Weta would eat nuts, and occasionally a little bark; but I could never induce him to eat by day. Although nocturnal in his habits, he could apparently see perfectly well in daylight. He generally remained in a flat position, quite motionless, and looking gravely out of his[195] *house at the ways and doings of man.*

The tree wētā, **pūtangatanga** has also escaped, and demonstrates a defensive and aggressive stance by his upraised legs.

Still pinned are the giant dragonfly, **kapokapowai** and its nymph, **pokopoko**. Their presence relate to a time when Aotearoa was extensively endowed with wetlands, and where these and other dragonflies (and damselflies) would have flourished. Today, more than ninety percent of New Zealand's wetlands have been drained to create farmland.

[195] Although this account refers to the wētā as a 'he', it was a female, and Buller named her in deference to its discoverer, *Deinacrida broughi*. This holotype is housed in Te Papa Tongarewa, Wellington, New Zealand.
A holotype is a previously undescribed specimen that is ascribed a new name, and its description becomes a reference base for identification of any future specimens.

A female giraffe weevil also remains pinned, while the male with his elongated rostrum has escaped. Large numbers of the wood boring larvae would have been destroyed when native bush was cleared. Kirk (1895, p. 4) noted a decline in their numbers in the late nineteenth century.

> *Amongst the indigenous insects which are now to be met with only in diminished numbers is the elephant beetle*[196] *(Lasiorhynchus barbicornis, Fabr.), which was formerly plentiful in the vicinity of Wellington, as in other districts, but is now comparatively rare. Its high degree of specialisation invests it with exceptional interest, so its diminution can only be witnessed with regret.*

And, about the impact that wide scale land clearance had upon insects Kirk (*Ibid.*) wrote,

> *When the limited area to which many of our indigenous insects are restricted is considered in connection with the wide area over which clearing operations have extended, it will be difficult to evade the conclusion that many species, and possibly entire genera, have become extinct, their places being now occupied by introduced species …*

A. Morris Jones listed a number of whakataukī in the 1956 February edition of the *Forest and Bird* magazine (p. 11). The following is an expression of sadness for a burnt out forest clearing,

> E takoto kau ana te whanau a Tane — Naked lie the children of Tane (the trees of the forest and by inference the other flora and fauna).

Two ground dwelling **honi** appear to consider the predicament of another still pinned.

While two **kahukura**, (red admiral butterflies), rest on various parts of the cabinet, the **wairua-atua** remains frozen in its processed state.

[196] The term elephant beetle is misleading, since there is an elephant weevil, but its scientific name is *Rhyncodes ursus*. The scientific term, following 'elephant beetle,' clearly identifies the beetle as the giraffe weevil, *Lasiorhynchus barbicornis*. This is an example of how a common name alone cannot be relied upon, and often requires further qualification.



Fig. 4.35 Cabinet three, drawer three

4.6.10 Beyond the drawers

The flow on conclusion to this exhibition extends beyond the final drawer and comprises a selection of insects positioned around the fourth wall and away from the confines of capture and 'processing.' This is **Rangatiratanga: Freedom**

It showcases insects going about their life's activities just as they would have thousands of years ago, on a landmass located somewhere in the southern hemisphere. Each insect or cluster of insects represents a vignette of part of its life history.

The group of cicada and nymphs exemplify the process of metamorphosis.



Fig. 4.36 Kihikihi, cicada nymphs and adult kihikihi wawā

The magpie moths copulate to bring about life, after ultimate death.



Fig. 4.37 Mokarakara, *Nyctemera annulata*, magpie moths

The owl moth rests with its wings outstretched high up on the wall.



Fig. 4.38 Pepe kehua, pari kori taua, *Dasypodia cymatodes*, owl moth

The spider-hunting wasp drags off its paralysed victim, to eventually deposit inside a ground cavity for its larvae to feed upon.



Fig, 4.39 Namu katipō, *Priocnemis monachus* and the tunnelweb spider, *Porrhothele antipodiana*

Two male black field crickets competitively ‘sing’ with their wings raised. Each is vying for the attention of the female in the middle.



Fig. 4.40 Pihareinga, *Teleogryllus commodus* in singing positions

The art-works end as they began, - with a group of pūriri moths.



Fig. 4.41 Pepe tuna, *Aenetus virescens*, pūriri moths

4.7 Conclusion

Translating the concept of a group of collected insects displayed within a series of entomological drawers, into bronze, has required many different processes, and the skills of many people. The numerous difficulties encountered were overcome, and the results I believe, are both enduring and arresting. The narratives contained within the sequence of drawers 'and beyond' provide interest on many levels.

The following chapter examines the exhibition pieces, the intentions, and the relative merits of presentation. The 'value' of the exhibition is considered, and also its potential audience. Possible implications and applications of both the visually assembled information and the cultural knowledge, upon which this exhibition is based, are discussed. Some alternate interpretations of the original cultural material are put forward as possible variations to those made by early Europeans.



Fig. 4.42 Painted wētā-punga in 'habitat' (image by Brad Boniface)

Chapter Five

Discussion and analysis



Chapter 5: Discussion and analysis

5.1 Introduction

This chapter initially discusses the 'nature' of the historical recordings and the basic findings gleaned from them. It then examines and discusses the individual and overall elements comprising the work, as well as possible implications and applications of the study. Some limited anecdotal audience response to aspects of the work while being produced is also included.

5.2 Historical records

It is evident that the early material collected for Chapter Two, primarily constitutes records and documented information from people of European descent and whose interpretations and published information was primarily for the European audience. However, New Zealand born Elsdon Best produced the largest number of publications that included entomological information, gathered while he lived amongst the Tuhoe people.

Consequently, he and the European documenters appeared as the authors when the information was subsequently published. As Smith (1999, p. 82) commented,

> *Their authority as experts in Māori things was vested in the whole structure of colonialism so that while engaging in very colonial operations with Māori, they also carried out investigations into Māori life which later were published under their names. Through their publications they came to be seen by the outside world as knowledgeable, informed and relatively 'objective'. Their 'informants' were relegated to obscurity, their colonial activities as unproblematic, and their chronic ethnocentrism viewed as a sign of the times.*

And with regard to Elsdon Best in particular Smith (1999, p. 85) noted that,

> *Best gained his knowledge from the* tohunga *of Tuhoe, and some from other tribes. He sought the most knowledgeable and the most respected* tohunga *who had access to the kind of knowledge he thought would reveal the most profound aspects of primitive culture. Their knowledge existed within a much wider cultural framework which was under attack by the colonial urge to civilize and assimilate Māori. In 1907* tohunga *were outlawed through the Tohunga Suppression Act which sought to prevent* tohunga *from practising 'quackery'. While Best lives on as the expert, the*

> *names of his informants and the rest of their knowledge lie buried in manuscripts and archives.*

The title page of Grey's 1885 publication displays the full title *Polynesian mythology and ancient traditional history of the New Zealand race, as furnished by their priests and chiefs.* This latter bland attribution substantiates Smiths view on how Māori were denied authorship. Acknowledgement was only provided in the preface, where Grey (1885, p. xvi) noted,

> *Many of the manuscripts were written by natives from the dictation of the most celebrated old chiefs, such as Rangihaeata, Te Rauparaha, Potatau, Te Heuheu, Pauone, Te Taniwha, etc. Those that I took down from the dictation of the great chiefs, were all carefully gone over and corrected by natives who could read and write. The chiefs who supplied the various religious services, poems, legends, and histories, including the wars and events which had taken place during their own lives, were as anxious as I was, that a complete picture of the Māori race in its original state should be preserved and handed down to posterity, and they cheerfully and eagerly aided me in the work. In many cases I told them exactly what I wanted, supplied them with the requisite writing materials, and some months afterwards received a valuable manuscript which had been dictated to an educated native. Probably no such collection of materials for illustrating the history of a barbarous race has ever before been made. The labour undergone in its collection was great.*

Grey's comment that 'he told them exactly what he wanted,' immediately suggests 'control' over the type of information required. Also, the name Wiremu Maihi Te Rangikaheke (William Marsh) who as Orbell (1968, p. 8) asserts, contributed substantially to this publication, is not mentioned in the above list. And, while such people may have been well known as contributors or interpreters at the time, with each successive edition published, their names become lost in the historical mists of time. Such omissions, deny the original contributor, mana.

Reference to insects within these early written accounts appeared more often than not, as background information that provided a backdrop for Māori life in New Zealand. The 'writings' of Polack and Taylor *et al*, albeit tainted by their European 'hand,' are nevertheless likely to have been some of the last to record the breadth of information pertaining to insects while still 'fresh' in the Māori psyche.

Not withstanding this, it is also likely that those Māori who provided information may have been selective, in what was relayed. Or, to please the pākehā, narratives that received a lively reaction, might have been further embellished. Ancestral knowledge and its associated narratives would likely have been sacred, and those in possession of it, of high standing within the iwi and of great mana. Such knowledge would traditionally have been verbally passed on to those of worth. Knowledge is powerful and tapu, and those able to hold and disseminate the knowledge would be in a powerful position and probably highly sought after by pākehā, thus elevating their mana. This conceivably could have created a competitive situation between chiefs and even iwi.

By transcribing this knowledge into written word, those knowledge holders however, had relinquished control and discernment over the right of the recipient to access this knowledge. Also, this sacred knowledge becomes 'fixed' to the words of delivery, and no longer therefore, under the artistry of the orator, who was previously able to elaborate, simplify or embellish, according to the audience. And, once published and exposed to an unknown, impersonal public, this knowledge could be freely accessed without protocol, - at any time and in any place, - or country. This conversion of sacred knowledge into common knowledge meant it was no longer under the jurisdiction of the tohunga and an ability to read, became the only 'entry' requirement.

Not withstanding the aforementioned, acknowledgement must also be made of the great value of this written material. Essentially at the time of colonisation there were two primary methods used to retain knowledge for posterity. These were, firstly the Western method of the written word, able to be published for present and future reference and accessible to a wide audience, and secondly, the Maori method of oral transmission.

Mātauranga Māori (Māori knowledge and customs) was committed to memory by conveyed significance and carried forward by repetition and recital. However, the longevity of the knowledge dedicated to the faculty of memory is ultimately limited, unless the same knowledge is consistently and persistently conveyed, and disseminated to a vast number of recipients. Even so, memory is highly susceptible to failure and fading, and in particular to 'fall off' when the mind is exposed to and bombarded with new knowledge. I propose that this would likely have been the

situation for Māori with the arrival and establishment of colonial New Zealanders, with their new technologies and philosophies, and in particular, the written word. Thus, overtime, the discipline and reliance upon transferring knowledge orally would have reduced and ultimately been superseded by the written word. It is my view that the many narratives associated with insects would have rather quickly been relegated into the 'fall off' category of memory by being 'disused' and not particularly useful for self-preservation, as Māori became more and more pre-occupied with the occupation of Māori land by Europeans.

So, the information and narratives pertaining to insects that were incidentally recorded by Polack, Taylor, Best, Smith *et al* in my view, will have ironically contributed to the preservation and survival of this insect knowledge. There is no question that much information will have become lost, as any information provided, would have been largely limited to the specific requests and if not asked for (or earned) then not likely to be volunteered. And, actively seeking knowledge of insects in Māori culture, particularly during the early to mid nineteenth century New Zealand would not necessarily have been a high priority for early Europeans, or perceived as important in providing an insight into the Māori way of life.

One mission of this thesis has been to gather the frayed and dissipated individual strands of knowledge regarding Māori-insect interactions and wind them into a strong thread that can in turn be woven into the kaupapa (body) of the kaitaka (cloak) of historical Māori life to enable the intricate patterns and hues of the 'fabric' to be better appreciated in its entirety.

This thesis is therefore, not about the taking of knowledge away from Māori because it focuses on that which was recorded by Europeans and others for a general audience, but rather, it has assembled the recorded knowledge so that it can be returned – and the limitations of its collection acknowledged.

5.2.1 Whakataukī and waiata

While this thesis has collated historical colonial documentation regarding insects and Māori, the information, as noted, is subject to the European mores, interpretations and values of the time. The whakataukī and waiata also collected however, more

closely reveal the Māori mind-set because they capture and reflect original Māori phraseology.

The Māori language as noted, was once an exclusively verbal form of communication (other than the visual language of Māori art) with subtleties enhanced by voice modulation, supported by hand and body movements that culminated in facial gesticulation. The words conveyed are extracted from memory and reinforced with practice.

About this, Sir Apirana Ngata (1972, p. xxxix) wrote,

> *I learnt one outstanding feature in the education of a Māori, that he must know a thing in one lesson; in two lessons, if his teacher is indulgent. To learn a song in one lesson, words, air and all its graces seemed an impossible feat. But it was demonstrated in many cases within one's knowledge. There were illiterate elders among my relatives in the sense that they read with great difficulty and could barely sign their names to paper. But they could memorise genealogies, land boundaries and strange songs with ease. They took no written notes, showed in fact from the commencement of any narration or recitation that they were committing to and holding the matter by an effort of memory. In that way they acquired the expression, the intonation, the rhythm, all the graces which reveal the meaning of the composition in its many shades. Words received their full signification from the stance of their bodies, the play of the eyes and the movement of the heads of the singers.*

Short pithy word combinations and vivid expressions are more easily remembered and valued for their acute observations, didactics and for the mental pictures incited by their quoting within speeches. They are also therefore likely to carry greater longevity. They are the poetic language devices of great Māori orators. For Māori, creative analogies, similes and hyperboles within whakataukī and waiata can be emblematic methods for speaking about the human character, or provide inspiration and direction. They are tools for teaching, aids for learning, and within waiata like kai-oraora, they are psychological weapons of humiliation. In other waiata the expressed words evoke love or sadness. Some speak of historical events that in their reciting give mana to whānau, hapū, and iwi. And while the words were composed historically, they are equally valid in a modern context and in their recitation the connection with the ancestors is not only reinforced, but also strengthened.

Colenso (1879, pp. 109-111) made the following comments about Māori proverbs,

> *To the ancient New Zealanders, however, the great value of their proverbs and proverbial sayings appeared in their oratory, of which they were passionately fond, and in which they excelled. At such times (as I myself have heard them with delight some 40-45 years ago!) their orators, by some well chosen, some fitting proverb, carried everything before them, winning over their attentive auditory as if they were but one man! In which, doubt, they were ever largely aided by their very genius and structure of their noble Maori language, it being so terse, pregnant with meaning, and abounding in paronomasia and antithesis ... I have been again much struck with their appositeness, propriety, and usefulness, indicative of a high class of thought; though still more struck, in my attempt at classifying them, with their wide range, embracing almost everything objective or subjective that could possibly have entered into the mind of a New Zealander. No doubt not a few of them are of great antiquity, as they refer to the celebrated heroes and exploits of the olden time, of the beginnings of their traditionary times; to the legends of their demi-gods, and to animals and plants now and for sometime extinct.*

And later, Colenso (*Ibid*. p.111) noted that,

> *Referring again, briefly, to the very wide range of their proverbs, the New Zealanders seem to have drawn largely from Nature, - her various works and operations; clearly indicating that he had not only a very attentive natural observer, but well able to make correct deductions.*

It is acknowledged that much of the deeper swirling meanings and subtleties within phrases will have been lost over time by being recorded only in written form, and without the accompanying body language. Nevertheless, the kaitito (composer) has at least for the purposes of this thesis, ascended the paepae, to deliver a message, in his or her, own words.

5.2.2 Dictionaries

For this thesis, many terms and cultural references were found as early dictionary entries. In particular were, Tregear's *The Maori-Polynesian comparative dictionary*, published in 1891 as well as the many editions of the Williams dictionary. Of the latter, the first and second editions of, *A dictionary of the New Zealand language* (Williams' New Zealand Dictionary) were published by Archdeacon William Williams

in 1844 and 1852, while the third and forth editions (including a portion reprinted in 1915) were revised and republished by his son Bishop William Leonard Williams, in 1871 and 1892 respectively. In 1917, this family legacy continued with William L. Williams' son, Herbert William Williams, who published the fifth and most extensive and expanded edition (but still grounded upon those earlier) that established the critical title change to, *A dictionary of the Maori language* (Williams's Maori dictionary).

Spanning such a long period of time has revealed degrees of evolution within the names and naming process. Of interest, are the various changes or refinements afforded definitions (or not, as the case may be) over time. For example, Table 2.48 Sandflies (p. 113) lists the various Williams's dictionary entries for the name **namu** that was initially defined as "A sandfly" (1852), then a "Small fly" (1871), and again, "Small fly" in 1892. It was not until 1917 that the term namu was specified as "*Simulia australiensis*, sandfly." This was again modified in the 1957, sixth edition, to its most current nomenclature, "*Austrosimulium* spp., sandfly." So, what is generally observed, is that specificity, or accurate scientific naming, increased with time-distance from the primary source gathering. This may be in part because William Williams' knowledge of entomological science could have been relatively poor at the time that he was gathering material for the first few editions of his dictionaries. So, while the knowledge that the Māori informants were imparting was certainly extensive, the recipient William Williams, might have struggled to adequately match the information and resorted to the use of common names instead. But equally, it seems likely that some Māori terms were indeed associated with groups of insects rather than specific insects. So the 'drive' for specificity over time, may purely reflect scientific enthusiasm for definitive terms.

The first scientific name to be associated with the Māori name for a particular 'insect' (in a dictionary) was for the vegetable caterpillar under the term **awhato** in Williams' third edition (1871, p. 13). Here it is defined as "A fungus which is parasitic on a kind of caterpillar, *sphaeria Robertsii*[197] [*sic*]", and yet, in Williams' second edition (1852) there were already scientific names noted for many of the botanical entries, such as

[197] The scientific convention is to capitalise the genus and lower case the species as in Sphaeria robertsii.

"Kawakawa, The name of a shrub. (*Piper excelsus*)" (p. 45). It is likely that the association of awhato with the scientific term, *Sphaeria robertsii* originated from Reverend Richard Taylor's 1855 publication of *Te Ika a Maui* where its synonymous Māori name **aweto** (p. 422) was first associated with a scientific name, in print.

Described as a reprint of part of Williams' fourth edition (1892), the 1915 publication included corrections and incorporated the addenda. It also included three additional scientific terms for insects. For **huhu** (p. 35) the entry states, "A beetle found in rotten timber; *prionus reticularis*" [*sic*]. Under **tūngoungou** (p. 204) is "chrysalis of the moth *sphinx convolvuli"* [*sic*] and for **wētā** (p. 218) "deinacrida megacephala [*sic*]; an insect." None of the scientific names had capitalised the genus name. Substantially more scientific terminology was to be associated with Māori names for insects, in the very comprehensive publication of Williams' *A Dictionary of the Maori language,* in 1917.

Some entries appeared and disappeared between editions. The term **anuhe** in Williams (1852, p. 5) for "A large caterpillar, Syn. with hotete" disappeared from the 1871 edition, only to reappear forty years later in 1892 (p. 7) where it is similarly defined as "a large caterpillar, the same as hotete."

Within the entry for the term **namu** (Williams, 1917, p. 252) appeared a second term, **namu katipo** that was defined as "native wasp." This definition underwent, in my view, a dramatic and unfortunate change to become "mosquito" forty years later, with the publication of the sixth edition in 1957. (To read my discussion on this, refer to p. 127). The dramatic leap from one Order of insects (Hymenoptera – wasps, bees and ants) to a completely different Order (Diptera – flies) invariably raises some questions about the reliability of such entries.

It is also interesting to observe lag time in the adoption of 'new' definitions between the various dictionaries. For example, the name **honi** is defined in Tregear (1891, p. 80) as "The mole cricket, *Gryllotalpa vulgaris,*" but despite the publication of two editions of Williams's Maori dictionaries subsequent to this (1892 [1915], 1917), it was not until the publication of the sixth edition (1957), that the definition of **honi**

appears as, “The mole cricket, *Gryllotalpa vulgaris* or *Triamescaptoi* [198] [*sic*] *aotea*. Probably subterranean weta *Onasandrus*[199] spp.” Here we have not only an agreement (or acceptance) as to its attribution to the mole cricket, but a possible association with another ground dwelling Orthopteran, the ground wētā.

5.2.3 The importance of insects over time

While on Captain Cook’s ship the Endeavour during its circumnavigation of New Zealand between 1769-1770, the naturalist Sir Joseph Banks, kept a journal of his impressions and observations of New Zealand. He noted that there was a “scarcity of Animals upon the Land” and about insects his record stated, “Neither are Insects in greater plenty than Birds a few Butterflies, Beetles, flesh flies very like those in Europe, Musquetos, & Sandflies, may be exactly the same as those of North America make up the whole list” (Morrell, 1958, p. 124).

Such a poor ‘showing’ of insects suggests that Banks did not actively search for the insect fauna of New Zealand, or, his account supports the inconspicuous nature of New Zealand’s insects, - or both. But, if a greater importance had been placed on determining the composition of the insects of New Zealand, then it is likely that considerably more specimens would have been noted, especially since Cook’s foray to New Zealand encompassed the months from early October 1769 through to April 1st 1770. These months represent spring through to autumn and a time when insects are most abundant and conspicuous.

For Māori, the value of insects was multi-faceted, but from the literature presented in Chapter Two, the key attributes of the insect-Māori interaction were as,

- Connections with the spiritual world.
- As direct articles of food, and indirect food source for other harvestable items.
- As negative agents impacting upon the cultivation of staple foods.

Broadly speaking however, these three may be further refined to two different conditions of status. The connections with the spiritual world (including connections with the numerous gods) are associated with notions of **tapu** (sacredness and/or

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[198] Should be *Triamescaptor aotea*.

[199] The genus *Onasandrus* has been changed to *Hemiandrus*.

fearfulness), while insects that constitute food (or were associated with food cultivation and gathering), are connected to notions of **noa** (commonness, not sacred). The 'commanding' influence of colonisation, with its influx of new technologies, Christianity, landscape modification, politics and war, - and the plethora of new food options, would have seen these insect 'values,' change dramatically.

5.2.4 Terminology

1. The term **ngārara** appears as the most frequently used generic word to encompass not only all insects in general (and other invertebrates), but also land based reptiles. An analysis of this term is of interest. **Ngā** means 'the many' and is the opposite of **te** 'the one.' The second component, **rara**, has as its second meaning in Williams (1917, p. 379) as, to 'be scattered.' This results in a final interpretation of the term, as meaning *the many scattered* or *the scattered multitudes*, which is an apt attribution to insects in particular, given that the literature has shown that there were many scattered and diverse creators of either insects in general or particular insect groups as shown in Table 5.1.

Table 5.1 Insect creators

Progenitor	Name	Insect progeny - description
Rangi-nui	Aitanga-pekepeketua	Insects of all kinds. Created as part of the clothing for Papatūānuku. Smith, 1913, p. 117
Torohuka and Muhumuhu	Te Whanau-a -Torohuka, Ngarara	Lice of the Earth-mother. Some are evil, some are good. The first animals created of all living things. Smith, 1913, p. 136
Tāne and Punga	Ngarara	All insects. Best, 1982, p. 271
Tāne and Hine-tu-pari-maunga (Mountain maid)		Produced Putoto (personified form of water) who in turn produced taniwha, insects, reptiles and all forms of rock, gravel and sand. Best, 1924a, p.163
Punga	Ngarara, manumanu, Te aitanga a Punga	Insects. Best, 1908, p. 238. Insects – offspring of Punga. Williams, 1917, p. 6
Peketua and Mihamiha	Moka-moka, whe, pepe, purehurehu	Moka-moka (an insect), whe (caterpillar), pepe (butterfly), purehurehu (moth). Smith, 1913, p. 157
Mokehu (Fern)	Waeroa	Mosquitoes. Best, 1902a, p. 49.
Peketua	Te aitanga a Peketua	Offspring of Peketua – the insect family. Best, 1982, p. 319
Hinepeke and Tu-te-ahunga	Ngarara	All insects that can be seen. Smith, 1913, pp. 42, 43, 157
Toro-i-waho (climbing and creeping plants)	Ngarara	Small forms of insects and reptiles. Best, 1982, p. 319
Tuwhaipapa, Ratorua and Kuranui-hipa	Tini o te Ponauwe	Whe (stick insects), rororo (ants) and kēkerewai (manuka beetles). Best, 1982, p. 268
Tāne and Hine-ata-uira (daughter of gentle lightening)	Tahu-whakaaro	Very small insects. Andersen, 1942, p. 344
Tūwhaitara-ki-te-rangi	Tūwhaipapa	Best, 1982, p. 268. Williams (1917, p.543) listed tūwhaipapa and tūwhaitara as *Lasiorhyncus barbicornis*, which is the giraffe weevil.
Hikawaru	Kihikihi	Cicada (Best, 1908, p. 238).

When Ranginui sought to clothe Papatūānuku with shrubs and trees, and in them, the insects of all kinds, it was at a time when the world was in a period of great darkness and nothing could develop or mature (Smith, 1913, 117). But after the separation, and when light, knowledge and potential for growth subsequently entered the world, an opportunity for more insects to be created was made possible. And these could and would occupy a different world, - a world of light (Te ao mārama).

This would therefore explain why insects in general have been attributed as having descended from Tāne and his coupling with Punga in his newly created world of fecundity. But from the literature, these insects may not have been fixed in number, but instead constitute the insects first created, or the primal insects. Leaving therefore an opportunity for other gods to add to the array of subsequent insects (as seen in Table 5.1). These multi lines of descent allow for a greater diversity of the insect types and forms, on earth. And, with the progress of time, even more opportunities for additional insects to be 'created' in response to changing conditions, or, in other words, evolution over time.

2. For many of the individual insects documented, the attribution of the appropriate Māori name is clear, but for others, it is not. Sometimes a name like **anuhe** denotes several species, and in this case, the caterpillar of the pūriri moth, the vegetable caterpillar and the caterpillar of the sphinx moth. Under these circumstances, if there is another term that was strongly associated with a particular caterpillar such as the term **mokoroa** is for the pūriri moth caterpillar then this is the term that appears on the label in the artwork. The other alternate terms may or may not appear.

The general term **tāwhanawhana** has been applied to those species of looper caterpillar (Geometridae) that feed on plant fibre used by weavers. The associated moths have therefore been attributed the term **pepe tāwhanawhana**. Other names for looper caterpillars like **ngata** and **whangawhanga** maybe be dialect variations but for the purposes of this thesis and exhibition have been attributed to looper caterpillars that feed on utilitarian dicotyledonous plants (leaf veins are a network). Their moths were attributed the general term **pepe**.

Some insects have been named for one part of the like cycle only, such as **Raukatauri** for the bag moth cocoon. But, for the sake of completeness and

instruction, I have included another part of the lifecycle for which there may be no name. This being the case, a general term was ascribed that insect. For **puene**, the dobsonfly larva, the included adult dobsonfly was denoted as **pepe**. This latter term is usually considered a general term for a moth or butterfly, and in one instance for the huhu beetle. But Williams (1917, p. 322) listed pepe as an intransitive verb for 'flutter.' The flight behaviour of the adult, nocturnally flying dobsonfly would be aptly described as a 'flutter' and therefore by extension, as 'pepe.'

For the different names of the short-horned grasshoppers I have used key words or descriptions in the documented entries, to assist with the choice of Māori name chosen to represent a particular faction within this group. For example, because Tregear (1891, p. 202) listed **mamawhiti** for 'a species of small grasshopper' I grouped all similar names together with their variants (**mamahiti**, **mawitiwiti**, **mawhitiwhiti**) and attributed them to a representative of small grasshoppers, the very common, *Phaulacridium marginale.* This then enabled the term **kawhitiwhiti** (and its variants, **kowhitiwhiti** and **kauwhitiwhiti**) to be designated to the group of larger short-horned grasshoppers, such as *Sigaus piliferus*. And, for the purposes of the artwork these attributions will hold. However, I acknowledge the recommendation from Wendy Pond (pers. comm. April 2014) that both **kawhitiwhiti** and **mawhitiwhiti** are dialect variations and that all grasshoppers (and perhaps particularly short-horned grasshoppers) were grouped together under any one of the names

While the term **kapapa** has been attributed to the huhu beetle, *Prionoplus reticularis*, it will also be associated with the kanuka beetle, *Ochrocydus huttoni* because they are from the same family of beetles, and their forms are superficially similar.

The terms **rō** and **whē** appear as interchangeable terms for both the stick insect and the praying mantid. This suggests that Māori perceived them as belonging together or being related. And yet, scientifically we know that these insects belong to entirely different orders of insects (Phasmatodea and Mantodea respectively). Behaviourally however, these two groups do share a common trait when resting, and that is of holding up their forelegs, either outstretched (as for stick insects) or retracted (as for preying mantids). In such positions, each insect superficially appears to have (or balances on) four legs only. One might consider therefore that specimens of stick

insects and particularly those that are similar in size to the mantid, do indeed appear outwardly related, thus possibly accounting for this interchangeability of terms.

3. Today, with the exception of kaupapa Māori schools, the Māori names for insects have been mostly superseded by common or scientific terms. The common names would have originated initially from European naturalists who compared and likened insects with those from 'back home,' - in spite of the high degree of endemism within the New Zealand insect fauna.

The one name that has been incorporated into common modern-day usage, is wētā and more recently wētā-punga. The latter term has been heard lately in response to breeding efforts invested into this wētā, which has received both television and radio coverage. Pairs of wētā-punga are being distributed amongst national zoos with the expectation that their breeding successes will substantially increase their population, to enable their ultimate reintroduction into main land enclosures.

Wētā are also an insect that most people in New Zealand have encountered at some point, and this is usually because of the fireplace. Wētā shelter within crevices created when firewood is stacked, and when the wood is brought inside these additional 'passengers' come with the load. When the ambient temperature inside the house is elevated with the fire, an artificial summer is created and at night the wētā become sufficiently active to reveal themselves.

As a precautionary note, users of the term wētā should be mindful of the inclusion of macrons that require that both the 'e' and 'a' are long in their pronunciation. These vowels are invariably clipped however, resulting in vastly different meanings for the word. 'Wētā' pertains to the insect, but the clipped word 'weta' according to Williams (1917, p. 567) means "Dirt, excrement" and also "A wisp of grass used to cleanse the anus of a corpse." This may have unfortunate connotations for the unwary (unless schooled in pronunciation) when using this name in conjunction with a business profile, such as the company *Weta Workshop*.

However, it is gratifying to observe a growing trend in acknowledging and incorporating Māori names into the scientific terminology of some recently 'identified' insects, like the tusked wētā, *Motuweta isolata*, (isolated, island wētā). There is also the stone wētā, *Hemideina maori,* the grass cicada is *Kikihia muta* (and other

members in this genus) and two other cicada, *Maoricicada nigra* and *M. Campbel.* The mole cricket is *Triamescaptor aotea.*

5.3 The outcome and overall artistic analysis

At the completion of this thesis exhibition, sixty-seven insect species were identified as having had some form of significance for Māori. Refer to Appendix 60, pp. 305-307. Well over one hundred and forty unique insects were sculpted once other parts of their lifecycle and additional stances were included. Many were duplicated within the context of the sculptures.

5.3.1 The insects

As previously acknowledged, insects generally are small animals and while each was created as realistically as possible, there were limitations associated with the medium. The practical difficulty of imparting complete detail to such small amounts of wax meant that some aspects of anatomy, like antennae and fine hairs, could not be created to scale. In such cases compromise was necessary with regard to the portrayal of these features and this included integration with other parts of anatomy. Such concessions required the aesthetic judgment that ultimately defines the work as art. Allied to this, is the practical necessity to create most of the insects 'larger than life,' to facilitate the application of detail and more particularly, bring the audience 'closer' to the insect. But also, contrived largeness can evoke a different set of audience responses. Insect features like legs or spines when produced slightly larger than life, act as a supernormal stimulus and can provoke an innate sense of uneasiness and in some cases repulsion. The response to larger, intricately patterned butterflies or moths by the general audience is predictably quite different to the perceived spikiness of a wētā, for example, thereby enabling a gamut of human emotions to be exploited.

Again for practical reasons the size of the actual bronze created depicting very small insects was inversely proportional to the insect's size in life. So, the smaller the insect in life, the greater the insect was magnified in the art. And invariably these were the parasitic insects. Given this considered visual adjustment of insect size, an enhanced perspective was further conveyed, by placing smaller insects at the back of the drawer with the larger ones to the front, or vice versa.

Elizabeth Thompson used extreme largeness of scale to inform the viewer that her insects were pieces of art. By contrast, it is the closeness to real size that differentiates my insect work, and when placed within the context of blatantly distorted cabinets and drawers, the artistic nature of my pieces is affirmed.

5.3.2 The drawers and cabinets

While it was an intense challenge to create each insect accurately, an equally challenging task came with the construction of the collector's drawers and cabinets. They could have been freestanding pieces of 'furniture,' but a more visually stimulating format for presenting these insects, was to hang them on the wall with a selected drawer already pulled open to reveal the contents. This necessitated complete control over the 'feel' of the work as well as the appearance.

To achieve this, the concept required an acute and exaggerated distortion of the drawers using forced linear perspective. The resulting drawer tapers from a broad 'front' towards an attenuated 'back' to create the illusion of perspective and changes in depth while still sitting flat against the wall.

The cabinets by necessity were treated differently. With experimentation, these required a partial two-dimensional plane to 'morph' into a distorted three-dimensional geometrical structure. Both structures were initially trialled as wax 'concept Maquettes.'

However translating a small wax Maquette into full size wax drawers and cabinets revealed inherent flaws in the lost wax process (See Chapter 4: Methods and methodology, pp. 150-153). And, while wax is easily honed and melded, the 'solid' MDF board used for the sand casting patterns that replaced the lost wax process is uncompromising. In order for each face to connect neatly and accurately at the required angle as well as incorporating the diminishing linear perspectives, a multitude of mitre planes had to be calculated and inscribed on each edge and for each face. (See Appendices 43-59) Any mistakes made in the cutting of these mitre joints, would have been amplified when fitted together and would have caused cumulative errors. Many of the angles were very small, and no surface 'squared' onto another. Even a 3D CAD computer program struggled to 'comprehend' the angles.

Effectively, I was trying to transform an impossible illusionary concept, into a reality - and there was considerable resistance.

In mounting the works of art on the wall, I have in effect, presented the sculptures as one would a two-dimensional 'painting.' But, I am encouraging the audience to engage in the illusionary, and actual three-dimensional components of the sculptures in space, by creating an optimal physical body position location, that then allows the full effect of the distorted perspective to be appreciated.

5.3.3 Painting the bronze

Bronze is typically finished in a conventional patina, from a limited palette. This enables the beauty of the medium and processes involved, to be revealed as what could be interpreted as 'engineering on the outside.'[200] And with this semi monochromatic treatment, the primary visual attention is on form. While this may satisfy that part of the audience who view bronzes as 'pure' by virtue of this anticipated patination, my work is well suited to go beyond convention and into the unexpected.

In life, insects are not only highly variable in form, but can display enormous colour variations, even within a species. Therefore for the purpose of this thesis, the conventional patina was replaced with layers of oil paint, to enable each insect to display its own 'cloak of many colours.' After all, for centuries, butterflies and moths have been collected primarily for their differences in colour - as well as form. As sight oriented animals, we constantly use colour to inform all aspects of our lives. Colour informs us of weather conditions, the seasons, recognition of belongings, danger, intersection lights, ripeness of foods and myriad other things. As a strong mental stimulus for the brain, and with regard to this work, colour encourages a focus on parts of the insect anatomy that would otherwise differ if the bronze were monochromatic. And since the brain takes longer to process colours, by painting the bronze, the audience is subliminally coaxed into to spending more time at each drawer to 'process' the colours. And with this, a reconnection is made with one's memory of each insect and a subconscious assessment made of the accuracy or rather the 'convincingness' of the colours. Indeed, the strongly coloured insects

[200] Phraseoligical comment made by P. Sandbrook, (personal communication, January 6th, 2013).

seemed to have received greater attention than those whose colouration is more subdued and earthy. Perhaps in this case, tapping into ones unconscious interpretation of danger when the colour red appears on insects as opposed to the 'quietness' and perceived harmlessness of greens. The colour of the one spider in this exhibition demonstrates the power of red, where the blackness of the legs and abdomen emphasizes the perceived dangerousness of the orange/red cephalothorax. Insects for many people are also a threatening group of animals. They have lots of legs and move in a 'spidery' manner, that is perhaps the substance of nightmares. But here they are contained – and restrained, and therefore, more easily approached, assessed and appreciated.

Comparisons can be made with the painting of this bronze medium, with that of the Grecian marble and bronze sculptures. The production of Greek sculptures began as far back as the middle of the seventh century BC and bronze became a particularly important medium in the second half of the sixth century when hollow casting, replaced hammering of sheet metal. Sculptures preserved by burial or raised from the sea show traces of paint over either their entirety or in selected areas, and this painting of both marble and bronze continued through until the Renaissance period (Cook, 1972, p. 75). So the reality is that most of the innumerable 'bland' archaic marble sculptures viewable today in galleries and museums with their blank staring eyes, were originally painted. But our familiarity with this cold monochromatic presentation has over time altered our expectations and perceptions of their mode of intended presentation.

The body of work presented for this thesis exhibition re-engages with the Grecian philosophy and attitude towards painting sculptural works of art and also checks the purist's attitude towards colour on sculpture as being unconventional.

With the exception of the knobs, by painting the insects and the drawer and cabinet combinations, the bronze is taken further. This is a timeless medium that gives the paint an enduring life span by being on a foundation that will not rot or decay, or subject to the ravages of borer, had the cabinets for example, been made of wood. Yes, it is acknowledged that the primary essence of the art works is as a series of bronze sculptures and that the techniques involved in their creation, have now, because of their having been painted, been relegated to 'engineering on the inside.'

Nevertheless, it is by this very fact that the works have become even more intriguing as aptly described by the Latin phrase, *ars celare artem*, true art is to conceal art.

Illusions of life and light were further privileged, by painting for example, the Noctuidae moths with dots of pink on their eyes, to denote the reflective layer (tapetum) that reflects red when illuminated.

There are several other representational techniques used to challenge the viewer's perception of each piece. While there is some controlled adjustment to size, the insects are the only elements not overtly subjected to distortion. Their proximity to the real is further accentuated by being contained within a framework of considerably altered perspective. And, by painting the insects, the illusion of reality is firmly established with the ultimate and subliminal question posed, are these insects real, (delicate and fragile)? Since the other elements are also painted, the viewer sees a series of 'wooden entomological drawers' containing a multitude of 'fragile' and 'light weight' insects. The continued irony of perceived fragility extends beyond the physical to the actual, where many species hold a tenuous and vulnerable position in nature, with numbers declining as a result of predation and habitat loss.[201]

Just like Jasper Johns's collection of painted bronze brushes in a coffee tin, the layers of oil paint on each element comprising my work, has masked the base metal. They are simultaneously therefore, both painting and sculpture. It is only the 'brass' knobs that hint at the underlying medium used.

5.4 Science versus art debate

The distortion and illusions conveyed in both the cabinets and drawers clearly establish these elements as art. The realistic portrayal of the insect portion, will inevitably however, initiate a debate that interrogates the value of them as expressions of science more than art. And, in essence, they are unashamedly both.

The creation of each insect required practical and aesthetic skills that necessarily required a good comprehension of insect anatomy. And yet, each insect rendition is an illusion in itself. They are not actually insects; they only take, - more or less - the form of insects. The detail left out, shows the work required both artistic and scientific

[201] Examples of such insects at risk of extinction are the mole cricket and the giant wētā, wētāpunga.

judgment. The detail applied, is designed to appeal to and satisfy the audience's memory of each insect. In this sense, the abbreviated insect form, exploits the principle of gestalt where the whole is other than the sum of the parts.

In the words of Alexander (1926, pp. 11, 12),

> *Compared with physical reality, the work of art contains illusions. For in itself it does not possess the qualities, say of life or character, which it possesses in the reality of art through imputation. Such imputation is not deception, for it is the essence of art.*

And, the entire work is a reflection of my own interests, studies and experiences.

> *For though art is self-expression, it is something more. It means the fashioning of existing material so as to be significant, through importation of elements supplied from the personality of the artist, where under personality are included not merely emotions, nor even principally emotions, but thought and fancies, patent or latent – 'what ever stirs the mortal frame.'* (Alexander, 1926, p. 10).

Producing each insect (and the artworks as a whole) has also therefore required what Alexander (*Ibid.*) referred to, as *Einfuehlung,* or empathy, and this too is an integral characteristic that determines the realistic presentation of the insects, as art.

Of course, it is the painting of the insects in particular, that deposits the insects into the world of the real, even though this by its very nature is art. Had the whole of the works been left exhibiting a conventional patina, the works would have largely appealed to the art world only. But my intention has been to attract not just an audience that is drawn to art, but also an audience attracted to the science within the art, and yet another, that is interested in the culture within the art. This then, greatly increases the range of the audience. Thus, the use of colour permits the crossing of audience appeal. The art critic may well prefer the conventional patina, but a child or a scientist may well prefer the illusion that colour confers to the work. The aim has not been to create an immiscible 'emulsion,' where two or three components do not cohere properly, but a 'solution' whereby all parts readily and intimately dissolve and blend to become a new product, and one that I have named, **ento-articulture**. Thus, each of the three audience 'ingredients' are rendered compatible with each other, and changed by the exposure to the work. Of course these 'categories' of audience are not necessarily mutually exclusive with many people appreciating all aspects of the presentation. But essentially, if the audience is left with an indelible impression,

either positive or negative, then the art has been successful by having had an impact upon the senses and emotions.

Further, from a personal point of view, this has been an emotional, expressive journey that has also offered a great sense of accomplishment upon the completion of each insect. And, the aspect of myself that is imparted into each piece, called *mauri,* is an emotional connection that was never lost even though a mould was used to duplicate each insect. The wax copy extracted from each mould was never perfect and often required many more hours of 'handling' before the imperfections were repaired. Each piece is therefore unique, and the mauri remains intact.

5.5 Preliminary response to the work

During the process of creating the artworks, other people would occasionally get a glimpse of the work in progress. At this unpainted stage and without the context of the cabinets, the focus could only be upon the insects. Usually this provoked a reaction, not so much to the created insects, but to the 'idea' of insects in general.

While examining the insects, friend and neighbour, Annie White, upon noticing the wētā, said how she found them disgusting because, they look "crunchy, hard, spiky and ugly" (personal communication, June 29, 2012), and "they grip onto you" (August 2, 2012). Also, while she can tolerate seeing a moth resting on a wall she "hated it" when they flew about because of the distinct flapping sound they produced. These impressions of insects are common.

Indran Gnanamoorthy from Kuala Lumpur when he saw the bronze insects thought they "look so real" (personal communication, July 23, 2012).

Many insects with unusual body forms like the mole cricket and the giraffe weevil were 'new' to people, and one person (Don Sandbrook. pers. comm.) remarked how he particularly liked the flat, slippery form of the black cockroach.

Once the nine drawers were successfully sand cast, the insects could be placed within, for consideration of the themes and to also determine their most aesthetic arrangement.

When assembled together on the ground, the distorted drawers and cabinets were intriguing for some people as they moved to align with the best observational

position. This is the one interactive aspect of the work. But since these elements are essentially inanimate it was apparent that it was the insects that received the greatest attention with their detail being accentuated by the 'plainness' of the drawer.

But predictably, most people responded negatively to the idea that the work was going to be painted, with the general response being that being able to actually see the bronze medium was important in appreciating them as works of bronze art.
And also, that the application of paint, would immediately remove this apparent connection. Interestingly, it is the painting of the works that makes them more 'real,' thus challenging the issue of whether people prefer art, to look like art, rather than the possibility of being fooled by the art. This view perhaps reaffirms our reliance on a visual world for information to enable future judgements to be made.

What is also interesting is that this response was at variance with the response to the works in the exhibition space where there was no pre-loading of information or knowledge of the insects as they were, in their purely bronze state. This *fait accompli* freed the gallery audience response from choice or anticipated change to the visual state of the works. They are, as they are presented, - works of painted bronze.

5.6 The exhibition

The exhibition title **'From Gondwanaland to Gonewonderland'** is a reference to when New Zealand split from the southern landmass Gondwana and became a unique and thriving land of birds and ferns (and also invertebrates), to when human intervention, not only caused a massive decline in New Zealand's unique biota, but also caused the extinction of many. This was our 'paradise lost' or by implication our 'gone wonderland.'

The early migration and settlement of the Pacific ancestors of Māori would have immediately had an influence on the land and biota. Firstly they had to sustain themselves on whatever plants and avian wildlife were easily harvested and palatable, and secondly, the plants they brought with them such as the gourd and kūmara, needed to be cultivated. To achieve this, land would have had to be cleared, and the most expedient and effective means, would have been by fire. Such implements of change would have been powerful in modifying the original landscape. The introduction of the Polynesian dog and principally the kiore rat would have also

represented predators upon the original biota and in particular on the invertebrates and small reptilian and avian vertebrate species. It is likely that the dog would have been useful in the hunting of larger animals species like the moa (McGlone, 1989).

Rapid European colonisation of New Zealand from the late 1830's onwards, saw further massive changes and modifications to the landscape and biota, and also caused a tumultuous upheaval for Māori who were forced to 'accommodate' and adapt, or 'succumb.' It was widely promoted that the Māori of this time were viewed as a 'dying race,' - a notion that apparently appealed to the then Victorian psyche.

Adapting to a colonising force in my view has meant aspects of Māori knowledge has 'dropped off' or become eroded and especially those narratives and customs pertaining to insects. The 'gone wonderland' is also therefore a reference to this dropping away or loss of particular aspects of matauranga Māori coupled with the loss of vast areas of native bush with its accompanied faunal and floral diversity.

The artwork presented for exhibition, comprises a narrative that encapsulates the various cultural responsiveness to insects, set within a museum curator's series of nine entomological drawers. They also demonstrate chronological inversion.

The first drawer presents, more or less, a standard layout of one species of moth, the pūriri moth, *Aenetus virescens*. Broadly based on one drawer from the George Vernon Hudson collection, housed at Te Papa, Wellington, New Zealand, this display typifies many early European approaches to collecting, namely, the assembling of multiple specimens of a single species in neat symmetrical columns, and gender separation. This arrangement is inherently aesthetically pleasing because it is orderly and the moths are large, and, they are all in good 'condition.' However, this regularity ironically makes the specimens more visually predictable, when compared to a collection of different species of large moths. Predictability enables the viewer to disengage from 'seeing' the moths properly and uniformity can foster disinterest. For this reason, I painted one specimen yellow, both as an educational strategy, and to encourage the brain to re-engage with the presentation of insects just long enough to detect that the pattern of venation on the wings of each of the other specimens, is unique, - as it is in nature. Other 'audience stoppers' are the two closed wing moths and the caterpillar.

Essentially, the arrangement of insects in this first drawer is one that is based on acquisition, aesthetics and science. It is the only drawer not to include Māori nomenclature.

The second, through to the eighth drawer, display collections of New Zealand insects, that relate to each other for Māori cultural reasons, rather than for genetic relatedness. This eclecticism demands longer deliberation from the audience. The arrangement is much less orderly, with a greater importance being placed upon different forms fitting together and aesthetic dispersal of colour.

Within each of these drawers there may be mini narratives. For example, in 'Cabinet two, drawer three,' there is the series of insects that are referred to as manu a Rehua because they signify the sounds of summer, while elsewhere in the drawer, is another series of insects associated with the sense of smell. Some drawers represent an artificial collection of insects where my own interpretation of cultural relevance is displayed, such as the drawer of 'beneficial' insects and the drawer of 'pest' insects. Others have been documented as historically significant to Māori, such as Cabinet One, drawer three, that depicts the insect portion of Whiro's war party.

These seven drawers represent an interpretation of the varied importance that Māori placed on the insects of Aotearoa, around the time of colonisation. And, they are displayed using European entomological conventions, with both Māori and scientific nomenclature. These drawers represent the interface between Māori and European values in relation to insects.

A substantial portion of the final drawer is a departure from 'convention' where many of the specimens have freed themselves from the crucifying pin, and have therefore 'escaped' from formal entomological practices. Others have not. This drawer contains insects that can be found in the previous drawers, but the associated labels, only display Māori terminology because they signify insects recognised in some way or another, by the first people of Aotearoa, - Māori.

The last wall showcases insects going about their normal life's activities in the absence of mammalian predators (other than bats), just as they would have thousands of years ago, on a landmass that split from a larger continent referred to as Gondwanaland, that now comprises two large islands and a scattering of smaller

islands, located somewhere in the southern hemisphere. Thus concluding the visual sequence, ‘From Gondwanaland to Gonewonderland.’

5.6.1 Negotiating the exhibition and audience reaction

As mentioned in the previous chapter, a trio of drawers is displayed on each of three walls to represent one cabinet with a different drawer pulled out to allow the contents to be examined. The cabinets were mounted to emphasise the decreasing height above the floor of each successively ‘opened’ drawer – or vice versa if approaching the exhibition in reverse. Refer to pp. 345, 346 (Vol. 3). This permits the lower drawers to be especially viewed by children, - the future knowledge holders and decision makers.

Changing body position to view each unit also encourages additional interaction with each piece because the viewer must also adjust their position to ensure that the front three-dimensional cabinet corner aligns with the two-dimensional lower section.

The overall perception of the insects is that they are subliminally confined and restricted to the cold hard edges of the geometric drawers and cabinets, but the final drawer provides some degree of relief from this tension. This last drawer and cabinet, confronts the audience with the thought provoking and shocking paradox of life versus death. Some insects remain pinned as specimens of death, while others have extricated themselves from their state-changing stake, in a bid for life and freedom.

One then pans around to the fourth wall of the gallery to a display of insects that have only been caught visually as the audience bares witness to an insect carrying out aspects of its ancient life history.

People generally spent less time in front of the drawer of pūriri moths, and this is probably because uniformity is less interesting, although I painted one male specimen yellow (which is an occasional colour variant) in order to create some interest.

The scattering of ‘escaped’ insects over the last wall was a successful component in the exhibition. The ‘less is more’ approach also allowed each insect (or group of insects) to speak for itself, and heightened the impact and sense of ‘escape.’ Initially, there were going to be several hundred insects traversing the wall, but upon

consideration, this would have not only diminished the impact of having escaped from the last drawer but also, have diluted the impact of the drawers in general. This contrasts with Elizabeth Thomson's 'Fearless five hundred' where the large number of elements became the focus and was appropriate for a large school of 'fish.'

5.7 Implications of the artworks

Imagery, for many people is a more powerful way of learning than reading the narratives in isolation. This work is an unconventional visual representation of one aspect te ao Māori, which may afford an educational value not necessarily offered by other mediums. Metaphorically, revitalising some of these Māori narratives could breathe new life into the red earth of Māori spiritual and traditional values.

This is a biological collection of specimens predicated upon cultural significance and art. In the public arena, this work could also be used as a teaching aid for students of biology and entomology. The science is informed and enriched by the cultural aspect while the narratives themselves are revitalised by being presented in a new way.

That each drawer contains a seemingly eclectic array of insects that do not therefore conform to usual conventions is also designed to encourage a desire to become informed as to the reasons. The tensions between reality and illusion are also intended to titillate and arouse not only interest but also an overwhelming desire to touch, what should not be touched. This innate and compelling desire to touch is a fundamental and compelling force that is a teasingly attractive attribute of the works.

The production of accurate 'models' for public teaching is not without precedence. A German father and son team of glass artists (Leopold and Rudolf Blaschka) in the nineteenth and early twentieth century were contracted to produce a series of botanically accurate models for the Harvard Museum of Natural History in Cambridge, Massachusetts. Since all previous methods and mediums for demonstrating botanical specimens were inferior, the quality and outstanding abilities of these two glass artists filled a visually descriptive void like no other at that time. However, being glass, while being spectacular and exquisitely detailed some specimens did still succumb to breakages and novel modes of transport were required when 'specimens' were being relocated to other venues (Schultes & Davis, 1982).

By contrast, using bronze to convey the cultural and entomological narratives has great advantages. The medium is robust, durable and clearly not so vulnerable to breakages. Being inorganic, bronze will not be subjected to the ravages of other destructive insects like carpet beetles (Dermestidae) and book lice (Psocoptera) that commonly destroy natural history collections unless strict fumigation regimes are set in place.

Also, this work demonstrates that learning about insects or similar organisms, does not necessarily require killing specimens. Historically it has been the collectors of specimens that have contributed to the ultimate demise of highly sought after species, like the huia. And yet ironically, collections when displayed publically can serve to stimulate, enrich and fascinate the viewer, which may encourage an interest in and appreciation for small, inconspicuous animals like insects. This is the first step in fostering a need for preservation and conservation of those species and their habitats.

In 1893, George Vernon Hudson (pp. 199-203) read his article on the importance of collections before the Wellington Philosophical Society. He recognized the impact that 'civilisation' had on the living plants and animals of New Zealand and the likelihood that some important species could have already been made extinct. He argued that collections had great importance from an educational point of view because, as generally acknowledged a "far more lasting and accurate knowledge is gained by direct observation than by instruction through the medium of books." Hudson also noted that the best collections were being sent to England since they were not "sufficiently appreciated or looked after here," and that because of a lack of New Zealand based collections, specimens were therefore being sent to England for identification.

This work is primarily a visual presentation. However, by the very fact that it is sculpture, made of bronze and therefore robust, it has a potential role in enabling visually impaired people to also 'see' the work. Bronze is as equally visual, as it is tactile. Of course, this 'handling' could not easily happen in a gallery or museum situation where there are by necessity, rules against 'touching' artwork. But perhaps under a controlled environment, certain pieces or individually selected insects, could be 'experienced' by intimate interaction. This could potentially provide an opportunity

for visually impaired people to learn about insects in a sensory manner. The contrast in textures varies from the smoothness of the drawers to the spiky insects, could provide a stimulating experience for many. Under these circumstances they would not need to be painted.

5.7.1 Implications of some of the insects documented

The natural activity of flies aided the discovery of lost or murdered loved ones, or were specifically sent out as scouts to locate their bodies (See pp. 101, 102, 103). Essentially this is an early use of flies as agents of forensic medicine used in homicide investigations.

Flies from the blowfly family (Calliphoridae) are highly attracted to the odour of rotting flesh and very quickly locate and deposit eggs on a dead body. They have distinct time-connected phases to their life cycle (complete metamorphosis) that can assist in the determination of the probable or approximate time of death of the victim under scrutiny. Heath (1982, p. 346) documented that "The early arrival of Calliphoridae at a corpse and the strict sequence in which species arrive and depart, makes them useful medicolegal indicators particularly within the first month after death."

But, it was the "myriads of flies" that gathered around the baby Māui (wrapped in a tangle of seaweed) that actually helped in his rescue since their 'swarming' activity alerted Māui's ancestor Tama-nui-ki-te-Rangi of his presence.

As recorded in Grey (1885, p. 14, Māori, pp. 11, 12, English),

> *A tau mai ana te tini o te **ngaro** ki te karamuimui i a au, me nga manu hoki, ka puta mai hoki toku tupuna, a Tama-nui-ki-te-Rangi, ka kitea ki te ngaro, me nga manu, e karamui ana i runga i nga tawhaowhao, ka rere mai taua tupuna nei, ka heua ake, ara! He tangata.*

The following long and lavish translation makes negative assumptions regarding the maggots claiming that they would have consumed Māui (detrimentally).

> *Myriads of flies alighted on me to buzz about me and lay their eggs, that maggots might eat me, and flocks of birds collected round me to peck me to pieces, but at that moment appeared there also my great ancestor, Tama-nui-ki-te-Rangi, and he saw the flies and the birds collected in clusters and flocks above the jelly fish, and the old*

man ran, as fast as he could, and stripped off the encircling jelly-fish, and behold within there lay a human being.

However this interpretation is not necessarily correct. In his classic work, Baer (1931/2010, pp. 438-475) documented his observations while a surgeon during the Great War in 1917. In rough country, two soldiers with severe and open wounds remained undiscovered for several days and unable therefore to receive treatment. When they reached hospital it was discovered that while their wounds were a seething mass of maggots, they were without fever or infection. About this Baer[202] wrote,

The sight was very disgusting and measures were taken hurriedly to wash out these abominable looking creatures. Then the wounds were irrigated with normal salt Solution and the most remarkable picture was presented in the character of the wound which was exposed. Instead of having a wound filled with pus, … these wounds were filled with the most beautiful pink granulation tissue that one could imagine … These patients went on to healing, notwithstanding the fact that we removed their friends which had been doing such noble work.

So the swarming flies surrounding Māui, were not only a flag for Tama-nui-ki-te-Rangi, but if Māui had any injuries from his sojourn upon the sea, these maggots, could also have been 'cleaning' or purifying agents, for this soon to be, demi-god. In addition, the swarming birds may have been more attracted to and feeding on the flies and maggots, than about to peck him to pieces.

[202] Much earlier accounts of maggots used in the healing process have also been recorded but Baer went on to intensely study maggots and developed techniques for rearing them under sterile conditions.

5.8 Past, present and future uses of insects

The activities of insects enable people to survive on earth. Their interaction and their 'offerings' are multi faceted and diverse. They act as essential pollinators for the multitude of dicotyledonous plants like fruit trees that will only bare fruit if an insect has visited its flowers.[203] When an animal dies, it is the activities of flies and beetles, which break down and consume the decayed flesh or render it in a state that enables the organic matter to be 'consumed' by plants. Insects are the food source for many other animals that in turn are a source of food for people, like the huhu grub was historically used to catch the tuna (eel) for Māori consumption. The honey produced in the wax combs of the honeybee has been harvested for centuries, just like the silk produced by the pupa of the silkworm, is collected to make cloth for garments.
The courage and fighting spirit shown by captive crickets in China and Japan is and has been a serious sport and livelihood for centuries.

Māori interaction with insects however, would have primarily focused on the contribution they made to sustaining life both physically and spiritually. And, while there was an appreciation that insects are a component of ngā tamariki a Tāne (children of Tāne), it is unlikely that their knowledge of insects extended to an extensive understanding of the various de-compositional roles played by them, that made them significant contributors to the health, diversity and the ecology of the once largely forest covered Aotearoa.

5.8.1 Possible applications of the investigation

This work could lead to additional applications. For example, those insects identified as having had nutritional value for Māori, could potentially also have a commercial value for Māori.

5.8.1.1 Entomophagy

Entomophagy (human consumption of insects) is widely engaged by many cultures and while it would not be feasible or practical to cultivate most so-called edible New Zealand insects, the huhu grub has possibilities.

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[203] The alternative being to hand pollinate with a small brush, the many hundreds of flowers just on a single tree.

In edited proceedings from a workshop in Thailand (2008), Durst and Shono (2010, pp. 2, 3) outlined some of the benefits of insect consumption. They said,

> *Insects offer particular benefits to those who want to reduce their environmental footprint, because they are exceptionally efficient in converting what they eat into tissue that can be consumed by others – about twice as efficient as chickens and pigs, and more than five times as efficient as beef cattle. Factoring in their astounding reproduction rates and fecundity, the actual food conversion efficiency of insects may be 20 times that of cattle. Moreover, insects feed on a far wider range of plants than conventional livestock.*
>
> *Insect consumption may also help to reduce the adverse environmental impacts of livestock production as insect rearing requires far less space and generates less pollution. As a food source, insects are highly nutritious. Many insect species contain as much – or more – protein as meat or fish. Some insects, especially in the larval stage, are also rich in fat and most insects contain significant percentages of amino acids and essential vitamins and minerals.*
>
> *Insects that are collected from forest areas are generally clean and free of chemicals, and in some areas are considered as "health foods".*

Growing and harvesting insects such as the huhu grub could offer a wide range of employment opportunities and financial gain for Māori as a traditional and commercially viable business proposition. This could also have export potential since there are many countries whose populations already eat insects and therefore marketing to these countries would be straightforward. However, this would have to be carried out under tight regulation and rahui (bans) may need to implemented or set in place if there was evidence of decline in the species.

The huhu grub feeds on rotting wood including exotic species such as Pine. Since we have large plantations of pine trees in New Zealand there are also vast areas of stumps left after a felling operation. These could be collected or set aside and let to rot after being 'seeded' with eggs instead of piled up and burned.

5.9 Conclusions

Focusing on three-dimensional insects for this thesis exhibition has allowed me to showcase my long-standing interest in insects, observational skills and ability to sculpt on a small scale against a platform of visual deception. This has not only been an opportunity to amalgamate entomology with art, but is also a tribute to and acknowledgement of my Māori ancestry.

From the investigation, the names attributed insects by Māori have varied in their specificity. Some are generic terms while others are more specific. The variations have arisen from differing levels of significance and impact upon daily life. Some names identified broad groups, like pūrerehua, for moths. Other names like hīhue and kōwenewene selectively identified the sphinx moth. Being able to recognise and specifically name the sphinx moth caterpillar was part of good crop husbandry and a consequence of its importance and significance for Māori. If an insect was collected for food then accurate identification was also essential and pre-European Māori would have invested a great deal of energy, cultivating and harvesting food. Other names like pū a Raukatauri identified a moth of special spiritual significance.

The habits and habitats of insects are varied. They may be aquatic, live in or on the land or may have the ability of flight, - attributes that perhaps reflect their primal ancestral origins and connections with the first parents of the land and sky, Papa-tūā-nuku and Ranginui.

Insects have both helped and hindered all of our early colonising ancestors adjust to a new world, - this Aotearoa, New Zealand. Changing technologies, biology and beliefs, have over time altered and biased our perspectives, but the ancestral Māori world-view was holistic.

It is my hope that this thesis and exhibition will in some way help revitalise appreciation for the historic cultural value Māori had for insects and that this ultimately translates into to an elevated respect for and desire to assist with the preservation and conservation of our country's unique, stunning and mostly camouflaged world, - the insect world, from 'Te wao-tapu-nui-a-Tāne.'

Unlike the historical ‘cabinets of curiosities’ (discussed in Chapter One) these cabinets, contain an assemblage of entomological specimens that are also objects of art and culture that comprise my newly coined term - **ento-articulture**.

To take an amorphous slab of yellow wax and create life-resembling entities is both immensely satisfying and time consuming. It is also a fascinating process that required close examination of, and in most cases a specimen of each insect. The great diversity of forms in the insect world could never be more fully appreciated than when one is charged with creating each part of the insect’s anatomy. And, along with the transformation of each insect rendition from delicate wax into permanent bronze, has come a great sense of achievement that ultimately culminated with the application of the final skin of life, - colour.

With this, I am reminded of the narrative concerning Tāne and how his desire for a female counterpart ultimately resulted in his forming the first human female in his likeness, Hine-ahu-one (Hine-hau-one), out of the amorphous red clay into which he breathed new life. Tihei mauri ora!