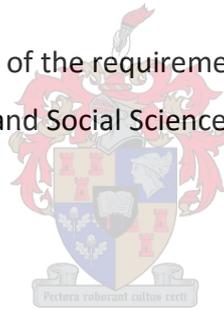


Investigating Salt through Art Jewellery

by

Catherine Ferreira

Thesis presented in partial fulfilment of the requirements for the degree of Master of Visual Arts in the Faculty of Arts and Social Sciences at Stellenbosch University



Supervisor: Nanette Veldsman

March 2016

Declaration

By submitting this thesis/dissertation electronically, I declare that the entirety of the work contained therein is my own, original work, that I am the sole author thereof (save to the extent explicitly otherwise stated), that reproduction and publication thereof by Stellenbosch University will not infringe any third party rights and that I have not previously in its entirety or in part submitted it for obtaining any qualification.

Catherine Ferreira

March 2016

Copyright © 2016 Stellenbosch University

All rights reserved

Abstract

This thesis is a materialist investigation of salt as a vibrant material within the practice of art jewellery. My art jewellery practice, with salt as main material, serves as the basis of this art practice-based research study. I place emphasis on the vital materiality within matter, focusing on salt as catalyst within my practice and theory. Through detailed analysis of my practice, and of the primary role of salt as vibrant matter therein, I aim to investigate how a materialist perspective can generate an interdisciplinary approach within the practice of art jewellery. Salt was the catalyst that changed my practice to an interdisciplinary one, situated between art jewellery, alchemy, metallurgy and chemistry. As such my practice questions themes of wearability, appropriate materials and durability within jewellery practices. In general this study aims to contribute to the discipline of art jewellery by motivating the use of edible, mineral and bodily matter in order to transcend the boundaries and definitions of contemporary jewellery. Furthermore this study aims to create awareness of the significance of salt as a living matter that is able to cause effects within human and non-human matter.

Key terms: salt, vibrant matter, vital materialism, art jewellery, interdisciplinary, alchemy and metallurgy

Opsomming

Hierdie tesis is 'n materialistiese ondersoek na sout as 'n lewendige materiaal in die kunsjuwelierspraktyk. My praktiese kunsjuwelierswerk, waar sout as primêre materiaal dien, is die basis van hierdie praktiese kuns-gebaseerde studie. My praktiese en teoretiese werk lê klem op die lewendige materialiteit in materie, spesifiek in sout wat as die katalisator in my prakiese werk sowel as teorie dien. Deur 'n noukeurige ondersoek van my prakties werk, en die rol van sout as lewendige materie daarin, beoog ek om deur 'n materialistiese perspektief 'n interdissiplinêre benadering tot kunsjuwelierswerk te bereik. My praktiese werk oortref die grense en beweeg binne die praktyke van alchemie, metallurgie en chemie as gevolg van sout se rol as katalisator. As sulks word temas soos drabaarheid, geskikte materiaalgebruik en duursaamheid bevraagteken. Die einddoelwit van die studie is om 'n bydrae te maak tot die kunsjuweliersdissipline, en ek doen so deur die

motivering om meer eetbare, minerale en liggaamlike materiale in die kunsjuwelierspraktyk te gebruik. My argument is dat 'n materialistiese benadering tot meer eksperimentele materiale kontemporêre juweliersware se grense kan verbreed en of herdefinieer. 'n Meer algemene doelwit van my studie is die bewusmaking van die lewendige aard van sout, en die feit dat dit menslike en nie-menslike materie kan affekteer.

Acknowledgements

Thank you to my supervisor Nanette Veldsman, for your support, guidance and motivation. I could not have asked for a better supervisor.

To my friend Vuli, thank you for always listening, advising and helping were you can.

Above all thank you to my parents for giving me this incredible opportunity. Thank you for all your support and for always believing in me.

Contents

Investigating Salt through Art Jewellery	i
Declaration.....	i
Abstract.....	ii
Opsomming.....	ii
Acknowledgements.....	iv
Contents.....	v
List of Figures	vii
Introduction	1
0.1 Topic.....	1
0.2 Problem Statement.....	3
0.3 Literature Review and Theoretical Framework	3
0.3.1 Vital Materialism.....	3
0.3.2 Contemporary Art Jewellery	9
0.3.3. Alchemy	11
0.4 Research Methodology.....	13
0.4.1 Theoretical Explication of Practical Methods/Methodology.....	13
0.4.2 Materials	15
0.5 Chapter Outline.....	17
0.6 Historical Overview: Salt	18
Chapter 1: Salt: an enchanted and vibrant art jewellery material	25
1.1 Introduction	25
1.2 Initiating the Practical Process.....	25
1.3 The Enchantment of Salt.....	36
1.4 Salt, the Vibrant Matter	40
1.5 My Art Jewellery practice	44

1.6 Conclusion.....	52
Chapter 2: Salt, a vibrant mineral in Alchemy, Metallurgy and art jewellery practices.....	53
2.1 Introduction	53
2.2 A Historical Overview: Alchemy and Metallurgy	54
2.3 An Alchemical and Metallurgical Process	59
2.4 Metal Vibrancy.....	84
2.5 Conclusion.....	88
Chapter 3: Salt, jewellery and bodily sensations.....	91
3.1 Introduction	91
3.2 Jewellery and the Body: A Brief Overview.....	93
3.3 Salt and the Body	99
3.4 Salt Art Jewellery.....	106
3.5 Conclusion.....	113
Conclusion.....	115
Bibliography	117

List of Figures

Figure 1: Benvenuto Cellini, *Saltcellar of Francis I* (1540-1543). Gold, enamel and ebony, 26 x 33.3cm. Collection: Kunsthistorisches Museum, Vienna. (Kleiner 2015:666; Figure 22.52).

Figure 2: Catherine Ferreira, *Salt Crystallized Occhi*. (June/July 2011). Fine salt and blank pure cotton perlé thread. Stellenbosch and Kimberley.

Figure 3: Catherine Ferreira, *Salt Crystallized Occhi: A Brooch*. (June/July 2012). Fine salt, blank pure cotton perlé thread size 16 and silver. Stellenbosch and Kimberley.

Figure 4: Catherine Ferreira, *Salt Crystallized and Steel Coloured Occhi Glove*. (June/July 2011). Fine salt and thread. Kimberley.

Figure 5: Catherine Ferreira, *Reagent II.II*. (October 2011). Copper and fine salt patination. Stellenbosch.

Figure 6: Catherine Ferreira, *Experimental Crochet Blocks*. (January 2014). Crochet thread and fine salt. Kimberley.

Figure 7: Catherine Ferreira, *Reagent I*. (March 2014). Plastic and fine salt. Stellenbosch.

Figure 8: Catherine Ferreira, *Reagent II.I*. (March 2014). Steel and fine salt. Stellenbosch.

Figure 9: Kerianne Quick, *Material Matters*. (2011). MFA Exhibition: Krannert Art Museum, Champaign (Quick, 2011).

Figure 10: Kerianne Quick, *Material Matters*. (2011). North Ronaldsay sheep fleece. MFA Exhibition: Krannert Art Museum, Champaign. (Quick, 2011).

Figure 11: Kerianne Quick, *Untitled*. (2011). Hawaiian Turbinado Sugar. MFA Exhibition: Krannert Art Museum, Champaign. (Quick 2011:22,23).

Figure 12: Kerianne Quick, *Untitled*. (2011). Photographs. MFA Exhibition: Krannert Art Museum, Champaign. (Quick, 2011).

Figure 13: Kerianne Quick, *Material Matters*. (2011). Photographs. MFA Exhibition: Krannert Art Museum, Champaign. (Quick 2011:14-15).

Figure 14: Catherine Ferreira, *Reagents Transformed*. (2014-2015). Fine salt, steel and glass.

Figure 15: Catherine Ferreira, *Work in Process I*. (2014-2015). Salt, thread, steel, copper and glass.

Figure 16: David Teniers II, *The Alchemist* (1649). Oil on canvas. John G. Johnson Collection: Philadelphia Museum of Art. (Wamberg 2006:252; Figure 10.1).

Figure 17: David Teniers II, *Alchemist in his Workshop* (mid. 17th century). Oil on canvas. Chemical Heritage Foundation Collections, Eddleman Collection: Philadelphia Museum of Art. (Wamberg 2006:227; Figure 9.3).

Figure 18: Franz Christoph Janneck, *The Uroscopy* (18th century). Oil on copper. Chemical Heritage Foundation Collections, Fisher Collection: Philadelphia Museum of Art. (Wamberg 2006:236; Figure 9.8).

Figure 19: Ruudt Peters, *SHEN bai se peng gu, Brooch* (2013). Agate by laser cut and silver, 11.5 x 13 x 1.2 cm. Photo by Rob Versluys (Peters, 2013).

Figure 20: Inge Marais, *Josie se Borspeld* (2005). Soap, chicken bone, paper, acetate, adhesive tape, enamelled copper and sterling silver, 7 x 2 x 1.5 cm. (Marais 2008:10; Figure 1a).

Figure 21: Catherine Ferreira, *Rochelle Salt Crystal Cluster I*. (2014). Rochelle salt, copper wire, glass and silver.

Figure 22: Catherine Ferreira, *Rochelle Salt Crystal Cluster II*. (2014). Rochelle salt, copper wire and silver.

Figure 23: Catherine Ferreira, *Epsomite I*. (2014). Epsom salt and thread.

Figure 24: Catherine Ferreira, *Epsomite II*. (2014). Epsom salt and thread.

Figure 25: Catherine Ferreira, *Epsomite II in process*. (2014). Epsom salt, thread and glass.

Figure 26: Catherine Ferreira, *Borax and Crochet*. (2014). Borax and thread.

Figure 27: Catherine Ferreira, *Three Actants (salt, water and steel)*. (2014-2015). Coarse non iodized pink salt, steel and glass.

Figure 28: Catherine Ferreira, *Actant/Reagents*. (October 2011, 2014). Fine salt and Copper.

Figure 29: Catherine Ferreira, *Actants (compartment and reagents)*. (October 2011, 2014-2015). Coarse non iodized pink salt, steel and copper.

Figure 30: Catherine Ferreira, *Actant/Reagents*. (October 2011, 2014-2015). Coarse non iodized pink salt and copper.

Figure 31: Catherine Ferreira, *Actant/Reagents*. (October 2011, 2014-2015). Coarse non iodized pink salt and copper.

Figure 32: Gijs Bakker, *Shadow Jewellery*. (1973). Photograph on linen. (den Besten 2011).

Figure 33: Tiffany Parbs, *Blister Ring*. (2005). Skin. (Cheung, Clarke & Clarke 2006:123).

Figure 34: Tiffany Parbs, *Etched (pulse)*. (2004). Ephemeral bracelet, skin. (Cheung, Clarke & Clarke 2006:125).

Figure 35: Barbara Uderzo, *Untitled*. (2013). Dark chocolate and pure gold foil. (Rovereto, 2013).

Figure 36: Barbara Uderzo, *Free.zero -nuage*. (2004). Snow and rope. (Uderzo, 2015).

Figure 37: Natalie Smith, *Of the Sun*. (2011). Textiles, steel and sugar, 11.5x6.5x6.5 cm. (Smith, 2014).

Figure 38: Natalie Smith, *Crush*. (2012). Clay, paint, textiles, steel and sugar, 14.7x2.5x3 cm. (Smith, 2014).

Figure 39: Salt Cave Johannesburg. (2010). (<http://www.saltcave.co.za/photos.html>)

Figure 40 (figure 3): Catherine Ferreira, *Salt Crystallized Occhi: A Brooch*. (2012, 2014). Fine salt, blank pure cotton perlé thread size 16 and sterling silver.

Figure 41: Catherine Ferreira, *A Rochelle Salt Brooch*. (2014). Rochelle salt, blank pure cotton perlé thread size 16 and sterling silver.

Figure 42: Catherine Ferreira, *Occhi Neck/Piece*. (2014). Fine salt, cotton perlé thread, steel binding wire and sterling silver.

Figure 43: Catherine Ferreira, *Occhi Neck/Piece*. (2014). Fine salt, cotton perlé thread and steel binding wire.

Figure 44: Catherine Ferreira, *Pink Neck/Piece*. (2015). Glass, pink Himalayan salt, cotton perlé thread, silver plated copper wire and sterling silver.

Figure 45: Catherine Ferreira, *Pink Neck/Piece*. (2015). Himalayan salt, cotton perlé thread, silver plated copper wire and sterling silver.

Figure 46: Catherine Ferreira, *Acting Steel Necklace I*. (2015). Glass, Himalayan salt, cotton perlé thread, silver plated copper wire, steel binding wire and sterling silver.

Figure 47: Catherine Ferreira, *Acting Steel Necklace*. (2015). Himalayan salt, cotton perlé thread, silver plated copper wire, steel binding wire and sterling silver.

Figure 48: Catherine Ferreira, *Black Neck/Piece*. (2015). Glass, Hawaiian Black salt, cotton perlé thread, silver plated copper wire and sterling silver.

Figure 49: Catherine Ferreira, *Black Neck/Piece*. (2015). Hawaiian Black salt, cotton perlé thread, silver plated copper wire and sterling silver.

Introduction

0.1 Topic

Each time our gaze strikes the surface of any material or substance, a small miracle occurs. That which was nothing before becomes something for a few moments, and then nothing again once our gaze is averted. Looking at jewels makes us aware that we are aware, integrating the mind with the body at a particular instant in time while simultaneously incorporating the non-human world into our innermost being...that mental state when we are so involved in an activity that nothing else seems to matter.

(Stafford 2013:189).

This thesis serves as the theoretical component to a practice-based research investigation of my art jewellery practice from a vital materialist perspective. The main focus in my practice, and therefore in this thesis, is the material agency within matter that leads and transcends my practice. This study is a materially conscious and process driven investigation of salt (my primary material), copper, steel and lace. Salt serves as the catalyst within my practice and therefore also within my theory; salt is the driving force, aggravator, motivator and connector in this project. I believe salt is able to manifest its power and influence in my practice because it is a living organism with an intrinsic vitality. I came to this conclusion by adapting a materialist perspective to my practice, perceiving my materials (primary and secondary) as things that are alive, and therefore able to cause affect.

My fascination with salt probably started at an early age. My father is a salt miner and I have many memories of playing on the salt dunes and in the salt pans. However I only recognized this fascination when I started experimenting with salt in my art jewellery practice. After my first practical experiments involving salt I was hooked. I started conducting research on not only the chemical facet of this fascinating element, but also on the history of this almost magical substance. The more I learned of the practical and theoretical sides of salt, the more salt situated itself as my primary material and subject matter.

In *Visual Analogy: Consciousness as the Art of Connecting*, the distinguished art historian, writer, curator and speaker Barbara Maria Stafford states that undergoing a project is not

always about understanding the rules that led to conclusions, but that it is about how we were made to see or become aware of the bodily operations and transformations we sustain while we are in the process of experiencing it (Stafford 1999:179). I believe a practitioner experiences an inner connection to the vitality of the materials at hand within a practical process. This connection can be enhanced through certain processes, methods and techniques which acknowledge the agency within matter. Similarly a viewer or wearer can experience interconnectivity when he/she comes into contact with or encounters an art work/art jewellery piece. I understand this moment as an enchanted moment where the human and non-human connect. Therefore in a general sense I am discussing the human/non-human duality by arguing for the vital materiality in all matter.

Since I am creating art works from a jewellery practitioner's perspective my work has a natural association with the human body. My practice addresses the themes of wearability, durability, the body and the definition of art jewellery. These themes surface because of my chosen materials and chosen practical processes. Salt is an essential element in the human body and an ephemeral and somewhat unwearable jewellery material. For this reason salt questions wearability, durability, the body and the definition of adequate jewellery materials. Furthermore, my practical processes transcend the boundaries of jewellery as a discipline and thus my interdisciplinary approach to art jewellery, fine art, alchemy, metallurgy and chemistry questions the themes of wearability, durability, the body and what defines art jewellery. I argue that the interdisciplinary course of my practice, while still termed as art jewellery, is a result of my vital materialist take - I allowed the materials to transform and transcend my practice and therefore the boundaries of my discipline.

My practical work and this theoretical component is my *mettre son grain de sel* – to add one's grain of salt, originality or creativity (Laszlo 2001:xxiii). In general the aim of this project is to contribute to the vibrant discipline of art jewellery. Salt serves as the perfect catalyst in this endeavour because of its corrosive yet colouring relationship with metals and its enchanting crystallizing qualities. I argue that these material characteristics of salt can contribute to the discourse of art jewellery in order to transcend the boundaries of materials used in art jewellery. My practice playfully oscillates between discipline boundaries by questioning and making connections between the disciplines of jewellery, fine art, alchemy, metallurgy and chemistry. I aim to argue that discipline boundaries can be

transformed by enabling a vital materialist perspective, and in this manner new or different ways of making, seeing and understanding can start to develop. In general I argue for the acknowledgement of material agency especially within the practice of art jewellery.

0.2 Problem Statement

The research question is as follows:

Can a vital materialist investigation into salt contribute to an interdisciplinary approach in Art Jewellery?

The following objectives will aim to answer this question:

- I will aim to establish salt as a vibrant matter and catalyst within this study.
- I will aim to defend salt as a transcending vibrant material within art jewellery practice.
- I will aim to determine an interconnectivity not only between practitioner and his/her materials but also between viewer/wearer and the art work, thus an interconnectivity between human and non-human bodies.
- I will aim to discuss how a materialist and process-driven practical investigation could contribute to art jewellery as a transdisciplinary practice.

0.3 Literature Review and Theoretical Framework

0.3.1 Vital Materialism

In *The Enchantment of Modern Life: Attachments, Crossings, and Ethics* the political theorist Jane Bennett¹ explores the connection between political theory, ethics and aesthetics. In her book she investigates how experiencing moments of enchantment within the everyday (nature, commodities and cultural products) can affect and “propel ethical² generosity” (Bennett 2001:3). Bennett claims that the contemporary world possesses an enchanting

¹ Jane Bennett is a political theorist at Johns Hopkins University and head of their Political Science department (Bennett 2010:n.pag.).

² According to Bennett, ethics should be understood as “a complex set of relays between moral contents, aesthetic-affective styles, and public moods” (Bennett 2010:xii).

quality, the power to enchant humans. This enchantment can be cultivated through deliberate strategies such as encouraging a sense of play, to practice sensory receptivity to the wonder in things, and by “resist[ing] the story of the disenchantment of modernity” (Bennett 2001:4).

In her critique against Max Weber’s claim that modernity has left the world disenchant³, Bennett draws on the writings of Franz Kafka and Walt Whitman as well as the philosophies of Immanuel Kant, Gilles Deleuze and Félix Guattari, Michel Foucault, Theodor Adorno, Bruno Latour, and Carl Marx, amongst others. Bennett focuses on how, through experiencing enchantment, humans could give effect to ethics (Bennett 2010:xi). For Bennett affect is a central concept in politics and ethics. In another of her books, *Vibrant Matter*, Bennett moves from the “enchantment to human relational capacities resulting from affective catalyst...to the catalyst itself as it exists in nonhuman bodies” (Bennett 2010:xii).

As human beings we inhabit an ineluctably material world. We live our everyday lives surrounded by, immersed in, matter. We are ourselves composed of matter. We experience its restlessness and intransigence even as we reconfigure and consume it. At every turn we encounter physical objects fashioned by human design and endure natural forces whose imperatives structure our daily routines for survival. Our existence depends from one moment to the next on myriad micro-organisms and diverse higher species, on our own hazily understood bodily and cellular reactions and on pitiless cosmic motions, on the material artefacts and natural stuff that populate our environment...How could we ignore the power of matter and the ways it materializes in our ordinary experiences or fail to acknowledge the primacy of matter in our theories? (Coole & Frost 2010:1).

Jane Bennett’s ‘vital materialism’ builds on the writings and concepts of Benedict de Spinoza⁴, Friedrich Nietzsche, Henry David Thoreau, Charles Darwin, Theodor Adorno, Gilles

³ The ‘disenchantment of the world’, a phrase by Friedrich Schiller, was used by Weber to express the “extent and the degree to which magical elements of thought are displaced” (Weber 2009:51). For Weber ‘disenchantment’ refers to a kind of liberalism and rationalization, which in turn forms the principle element within his philosophy of history (Weber 2009:51).

⁴ Baruch Spinoza or Benedict de Spinoza was a Dutch (Jewish-born) philosopher of political theory, theology, metaphysics and ethics (Montag & Stolze x,xi). In *The New Spinoza* (1997) Warren Montag and Ted Stolze states Spinoza’s philosophy can be characterized as “an inexhaustible productivity that is thus capable...of producing, and not simply reproducing, itself endlessly” (Montag & Stolze ix,x).

Deleuze⁵ as well as the vitalists Henri Bergson and Hans Driesch. In *New Materialism: Ontology, Agency, and Politics*, Diana Coole and Samantha Frost defines Bennett's 'vital materialism' or new materialism as an ontological "orientation that is post-humanist in the sense that it conceives of matter itself as lively or as exhibiting agency" (Coole & Frost 2010:7). Additionally, new materialists argue for "materiality that materializes", the ability or method that enables an understanding of complex agents (causes and effects) within multiple interconnected systems (Coole & Frost 2010:9). Moreover materiality describes matter as "an excess, force, vitality, rationality" and as "active, self-creative, productive, [and] unpredictable" (Coole & Frost 2010: 9).

As a political theorist, Bennett's *Vibrant Matter: A Political Ecology of Things* seeks to utilize a vibrant materiality in analysing or even solving political events and problems (Bennett 2010:viii). Bennett refers to 'vitality' as the capacity of things, which includes organic/inorganic and animate/inanimate, to affect and influence humans as well as having their own agentic capacity and will power (Bennett 2010:viii). Coole and Frost state that new materialists are attracted to vitalists who contradict or refuse the traditional organic/inorganic (dead/alive) matter binary (Coole & Frost 2010:9). In formulating vibrant materiality, Bennett was inspired by Gilles Deleuze and Félix Guattari's notion of "material vitalism" and shared their interest in Spinozist and vitalist traditions, amongst others (Bennett 2010:x).

Concepts within Spinoza's *Ethics* serve as a guide within *Vibrant Matter*. Bennett shares Spinozist ideas of conative bodies⁶, affects and the similarity of all substance⁷. Bennett draws on the vitality Spinoza assigns to bodies when he proposes that "everything, in so far as it is in itself, endeavours to persist in its own being" (Spinoza 1901: part 2, proposition VI). Everything can continue and preserve its own being as far as its own inner power allows. However, Spinoza sees a difference between human and other bodies, but as Bennett clarifies, "every nonhuman body shares with every human body a conative nature...a 'virtue'

⁵ Gilles Deleuze was a French philosopher and professor at the University of Paris and he is still considered one of the most influential thinkers of the 20th century (Deleuze & Guattari 1987).

⁶ Bennett describes Spinoza's idea of conative bodies as bodies "that strive to enhance their power of activity by forming alliances with other bodies" (Bennett 2010:x).

⁷ Spinoza defines *substance* as "that which is in itself, and is conceived through itself: in other words, that of which a conception can be formed independently of any other conception" (Spinoza 1901: part 1, definition III).

appropriate to its material configuration”⁸ (Bennett 2010:2). Lastly Bennett utilizes Spinoza’s notion of affect, which she defines broadly as “the capacity of any body for activity and responsiveness” (Bennett 2010:xii). Spinoza states that the human body can be affected in various ways *by* external bodies as well as cause affect *to* external bodies (Spinoza 1901: part 2, proposition xiv). As a new materialist, Bennett states that *all* bodies, whether they are organic or inorganic, are affective (Bennett 2010:xii).

Building on Spinoza’s notion of affect, Bennett refers to Bruno Latour’s concept of *an actant* that can cause affect, or act. In *Politics of Nature: How to Bring the Sciences into Democracy*, an ‘actor’ or ‘actant’ is defined by Latour as referring to both human and non-human. A thing becomes an actant when it can modify other things (which then become actants) in a trial or experimental process. Furthermore Latour states that the competence of actants is determined by how they perform an act (Latour 2004:237). By conducting a series of experiments in which humans and nonhumans act, and thus modify each other within a trial, conclusions can be reached that human and nonhuman can associate, whereas Latour states that ‘objects’ and ‘subjects’ cannot (Latour 2004:75-76). In his opinion, ‘object’ and ‘subject’ can never fuse, and continuous associations between ‘objects’ and nonhumans could deny them becoming actants (Latour 2004:72,76). Latour thus suggests that we stop associating nonhumans with ‘objects’, since this would allow them to form new entities with their own boundaries and enable them to become actants (Latour 2010:76). Bennett draws on Latour’s various descriptions of effectivity in order to start a more “disruptive agency” (Bennett 2010:viii-ix).

In *A Thousand Plateaus* Gilles Deleuze and Félix Guattari describes Spinoza’s notion of affect⁹:

We know nothing about a body until we know what it can do, in other words, what its affects are, how they can or cannot enter into composition with other affects, with the affects of another body...to destroy that body or to be destroyed by it,...to exchange

⁸ Spinoza states “everything, whether it be more perfect or less perfect, will always be able to persist in existence with the same force wherewith it began to exist; wherefore, in this respect, all things are equal” (Spinoza 1901: part 4, preface).

⁹ Spinoza states in *Ethics* “for, in proportion as the body is capable of being affected in a greater variety of ways, and of affecting external bodies in a great number of ways, so much the more is the mind capable of thinking” (Spinoza 1901:part 4, appendix xxvii).

actions and passions with it or to join with in composing a more powerful body” (Deleuze & Guattari 1986:257).

We can come to understand a body by how it affects another, in other words what is its mode is and how can it modify and be modified (Bennett 2004:353). Spinoza states that the nature of an external body can be determined by how it affects the human body in a mode. Furthermore, when the body is affected in modes it increases the power of activity only when the mind can conceive such things (Spinoza 1901: part 3, proposition xii). Additionally, Bennett states that Spinoza’s conative bodies are associative: they create alliances with other bodies, since the mode or process of modification cannot occur with only one body or mode, but through multiple encounters with other modes (Bennett 2004:353). What Bennett aims to deduct from both Deleuze and Spinoza is that bodies can enhance their power by being “*in or as a heterogeneous assemblage*” (Bennett 2010:23). Thus Bennett perceives Deleuze and Guattari’s “*machinic assemblages*” as materialist (Bennett 2010:xvi).

Bennett draws on Spinoza’s concepts of conative bodies, affect and modes, together with Deleuze and Guattari’s assemblage concept, in order to conceptualize her ‘thing-power’ concept. She states that “a material body always resides within some assemblage or other, and its thing-power *is a function of that grouping*. A thing has power by virtue of its operating in *conjunction* with other things” (Bennett 2004:354). Bennett’s ‘thing-power’ is a kind of agency which forms part of an assemblage (Bennett 2004:354) or, as she terms it, thing-power or actants are members of an assemblage (Bennett 2010:24). In her own words, Bennett defines her understanding and approach to Deleuze’s concept of assemblage:

An assemblage is, first, an ad hoc grouping, a collectivity whose origins are historical and circumstantial, though its contingent status says nothing about its efficacy, which can be quite strong. An assemblage is, second, a living, throbbing grouping whose coherence coexists with energies and countercultures that exceed and confound it. An assemblage is, third, a web with an uneven topography: some of the points at which the trajectories of actants cross each other are more heavily trafficked than others, and thus power is not equally distributed across the assemblage. An assemblage is, fourth, not governed by a central power: no one member has sufficient competence to fully determine the consequences of the activities of the assemblage. An assemblage, finally, is made up of many types of actants: humans and nonhumans; animals, vegetables, and minerals; nature, culture, and technology (Bennett 2006:445).

“How would political responses to public problems change were we to take seriously the vitality of (nonhuman) bodies?” This is the question that guides Bennett’s vital materiality (Bennett 2010:viii). In doing so Bennett investigates an ecology of matter, the place where matter resides, lives and acts. This place, in her opinion, would be “a dynamic flow of matter-energy that tends to settle into various bodies...that join forces, make connections, [and] form alliances” (Bennett 2004:365). Bennett understands ‘thing-power’ as ecological, since it moves and affects within a network of modes and assemblages (human or nonhuman), therefore ‘thing-power’ or vital materialism “can contribute to an ecological ethos” (Bennett 2004:365).

Within *Vibrant Matter* Bennett connects her field of study, political theory, with vital materialism in order to investigate concepts of “the public, political participations and the political” (Bennett 2010:xviii). Her aim here is to identify whether nonhuman body actants have a *political* capacity; she asks: “what is the difference between an actant and a political actor?” - and is there even a difference? (Bennett 2010:94). Bennett concludes that the different kinds of power of each nonhuman actant should be considered when acknowledging the participation of nonhuman actants within a ‘political ecology’ (Bennett 2010:108).

Bennett’s vital materialism forms the theoretical foundation and framework of my study. I conduct a process- and material-conscious investigation perceived and explained from a materialist perspective. My objectives are, however, not aimed at contributing to a political theory, but to a contemporary art jewellery theory (discussed in section 0.3.2).

I utilized Bennett’s notion of enchantment to enable material thinking, which is the awareness of the intelligence within materials through joining hand, eye and mind (Carter 2004:xiii). Within this study the concept and practice of material thinking¹⁰ is defined and discussed by the writer, artist and professor Paul Carter (in *Material Thinking*) and by the writer and artist Barbara Bolt (in *Materializing Pedagogies and Practice as Research: Approaches to Creative Arts Inquiry*). After establishing a material thinking mind state that is

¹⁰ More on this concept is discussed in section 0.4.1, theoretical explication to my practice, where I discuss sources consulted from the international peer-reviewed journal *Studies in Material Thinking*.

cultivated to experience enchantment, I was able to identify my practice, processes, materials and final art work as actants affecting within multiple assemblages. In sum, *Vibrant Matter* perfectly discusses my main concepts (material agency, actant, affect and assemblage) and is therefore the primary resource I consulted.

I understand my materials according to Bennett's terms: vibrant matter, material agency, vital materiality, vibrancy, life force, 'thingly-power', 'mineral/metallic life', 'edible matter', actants and actant-members. I refer to all of these terms throughout my thesis. My materials are vibrant matter because their intrinsic vitality enables them to act and affect, identifying them as actants. Furthermore my materials can participate as actants within assemblages, or they can be the agentic assemblage consisting of various other members. My process and final art works obtain similar vitalities and develop agentic assemblages because of the affecting actant materials.

0.3.2 Contemporary Art Jewellery

Liesbeth den Besten's¹¹ book *On Jewellery: A Compendium of international contemporary art jewellery* (2012) and a few of her articles¹² and interviews¹³ serve as the base theoretical material on contemporary art jewellery. Additional sources include *New Directions in Jewellery I* (2005), by Paul Derrez¹⁴, Jivan Astfalck¹⁵ and Caroline Broadhead¹⁶; *Unexpected Pleasures: The Art and Design of Contemporary Jewellery* (2012) edited by Susan Cohn; and *Contemporary Jewellery in Perspective* (2013) edited by Damian Skinner¹⁷. Furthermore, the journalist Lisa Goudsmit's article *Jewellery Unleashed! Crossing Borders* and the symposium *Jewellery Unleashed!* (2012) held by the Netherlands Institute for Design and Fashion in Arnhem also contributed to my discussions on contemporary art jewellery.

¹¹ Liesbeth den Besten is an art historian, writer and curator in the field of contemporary craft, design and jewellery. She is also an advisor and lecturer at Gerrit Rietveld Academie in Amsterdam (Skinner 2013:253).

¹² Articles are retrieved from the online website Klimt02, Art Jewellery Forum (AJF) and ThinkTank a European Initiative for the Applied Arts.

¹³ *Jewellery Unleashed! Crossing Borders* conducted by Lisa Goudsmit (Goudsmit, 2012).

¹⁴ Paul Derrez a collector, writer and the director of the influential contemporary jewellery gallery, Galerie Ra which is in Amsterdam (den Besten 2012:103).

¹⁵ Jivan Astfalck is a contemporary jeweller, writer, researcher and lecturer at the Birmingham Institute for Art and Design (Astfalck, Broadhead & Derrez 2005:202).

¹⁶ Caroline Broadhead is a contemporary jeweller, textile and installation artist and writer on these topics. Broadhead is currently the course director of the University of the Art London's Jewellery and Textiles Program (Grant 2005:6).

¹⁷ Damian Skinner is an art historian and curator with interest in contemporary jewellery, studio craft and indigenous art in New Zealand (Skinner 2013:257).

Contemporary art jewellery, according to Liesbeth den Besten, developed in the 1960s during a period of reconstruction and change to deep-rooted structures (den Besten 2011:7-8). Furthermore, den Besten states that this new form of jewellery was more than just a style but "a loose, international and vital tendency that breathed new life into jewellery" (den Besten 2011:7). The jewellers of that time started to reconstruct their own boundaries by experimenting with alternative materials and methods which led to more sculptural and avant-garde developments (den Besten 2011:8). Moreover, jewellers started to critique and question the historical prejudices¹⁸ that accompany jewellery (den Besten 2011:20). Their interests moved from clients, fashion and economics to the meaning of jewellery and the ways in which it relates to the human body (den Besten 2011:60). An anti-aesthetic style developed as decoration, beauty, aesthetic value, symbolism, wearability and bodily adornment was questioned (den Besten 2013:109). Jewellery became a social phenomenon (den Besten 2013:107) as jewellers emancipated themselves and became artists with a new-found freedom (den Besten 2011:60).

In *New Directions in Jewellery I* Catherine Grant states that jewellery as a social phenomenon started challenging the boundaries of traditional jewellery by crossing over into other disciplines such as fashion design and fine arts, including sculpture, video, photography, installation and performance art (Grant 2005:6). Den Besten describes "[i]nternationalization [as] an essential characteristic of contemporary jewelry" (den Besten 2013:113). Styles, methods, ideas and concepts are shared within this "global jewelry" scene and, according to den Besten, the future will "call for more local identification" within contemporary jewellery (den Besten 2013:113).

Subsequently naming and identifying this new trend created difficulties. Various terms¹⁹ are used across the world; particular to this study is 'contemporary jewellery' and 'art jewellery'

¹⁸ These prejudices about jewellery includes, but is not limited to, characteristics of vanity, social and cultural gender constructions, material culture of the bourgeoisie and social class constructions (den Besten 2011:20).

¹⁹ Studio jewellery: a somewhat limited terminology referring to 'where' and how' jewellery is produced by a one jeweller in his/her own studio (den Besten 2011:9).

Research jewellery: this term (mainly practiced in Italy) refers to artistic research and artistic practice within more conceptual and philosophic terms (den Besten 2011:10).

Jewellery design: an old term from the 1960's indicating the difference between a craftsman and a designer (jewellery designer). Practically this term indicated the difference between content and handwork (den Besten 2011:10).

(den Besten 2011:9). Although the term ‘contemporary’ refers to the now, to present time, contemporary jewellery refers to this new trend that started in the 1960s and still continues today. Art jewellery, as the name indicates, refers to jewellery as a form of art (den Besten 2011:9). These terms aim to distinguish a discipline different to “fine, precious, fashion, costume or commercial jewellery” (den Besten 2011:9). Den Besten clarifies that the discipline of jewellery continues to hold on to its restrictions but this new trend, this new phenomenon of jewellery as an artistic medium, can contain various interpretations.

Within my practice I explored these various interpretations that jewellery as a phenomenon is able to contain. I conducted my own investigation into other disciplines, namely fine arts (sculpture), alchemy, metallurgy and chemistry. My art jewellery practice is based on den Besten’s statement that “[j]ewellery is the source and – mostly, but not necessarily – the outcome” (den Besten 2011:10). I define my practice as art jewellery, for it is made from a jewellery perspective and it still has a strong relation to the body because of my chosen materials and methods.

0.3.3. Alchemy

The main literature on alchemy which I consulted is Mircea Eliade’s *The Forge and the Crucible: The Origins and Structure of Alchemy* (1978), Cathy Cobb and Harold Goldwhite’s *Creations of Fire: Chemistry’s Lively History from Alchemy to the Atomic Age* (1995), and Mark Haeffner’s *The Dictionary of Alchemy: From Maria Prophetissa to Isaac Newton* (1991).

Mircea Eliade was an academic and literary writer and historian of religion as well as an interpreter of myths and symbols (Allen 2013:xi)²⁰. Eliade takes a phenomenological approach to religion and myth within a hermeneutical framework (Allen 2013:xiv). Consequently his approach to religion, myth and symbols was very controversial. Some academics or scholars deemed him the most influential historian of religion and interpreter of myths and symbols (Allen 2013:xii). Others, however, criticised his approach as uncritical, unscientific, too subjective and personal (Allen 2013:xi-xii). For Eliade an ambiguous,

Author jewellery: this term originates from French auteur film “Cinéma d’auteur” (den Besten 2011:10) French artistic films were seen as an art practice since it reflected the artistic vision of the director, thus in jewellery, Author jewellery terms and refers to the individual jewellery makers artistic vision, stamp (den Besten 2010:11).

²⁰ Douglas Allen discusses the work of Mircea Eliade in this book *Myth and Religion in Mircea Eliade* (2013).

mystical and contradictory nature is needed when discussing the nature of myths and religion and not a linear, rational and scientific approach (Allen 2013:xv).

The chemistry professors Cathy Cobb and Harold Goldwhite's *Creations of Fire* presents the rich history of chemistry (Cobb & Goldwhite 1995:n.pag.). They conducted an historical investigation of chemistry, from its origin in alchemical laboratories to its current manifestations. Their approach is not a technical treatise but more a "humanized theory of chemistry: one that tracks social history along with chemical history" (Cobb & Goldwhite 1995:x).

Mark Haeffner's *Dictionary of Alchemy* aims to provide an educational selection of entries on the terms, meanings, philosophies and the main alchemists within alchemical practices (Haeffner 1991:ix-x). Haeffner also aims to broaden the scope by including the different cultural practices of alchemy such as Indian and Chinese alchemy (Haeffner 1991:ix). His dictionary covers the ages from the earliest alchemical personality, Maria Prophetissa ('Maria the Jewess') of the Hellenistic period, to the last "Babylonian and Sumerian magi", Isaac Newton (Haeffner 1991:x).

Eliade's mystical yet anthropological take on alchemy and metallurgy contributes a different perspective to my practice, still materialist but from an alchemical-materialist point of view. I draw on the terms of transformation, transmutation, 'Prime Matter', elixir and Philosopher's stone. All of these alchemical terms can be understood from a vital materialist perspective, especially Bennett's enchantment and vibrant matter theory. I perceive salt as an elixir or Philosopher's stone (that which can cause transformation) and/or transmuting agent, for in my practice salt does provoke and enforce transformation of matter. Furthermore the concept of 'Prime Matter' can be understood through Bennett's vibrant matter theory. 'Prime Matter' is the intrinsic vitality and life that reside within matter, which transforms it from a mere object into a living organism. Associating alchemical terms and concepts with Bennett's vital materialism is deemed important because of the alchemical characteristic of my practice.

0.4 Research Methodology

My study is first and foremost an art practice-based research²¹ investigation which is defined by Patricia Leavy in *Method Meets Art* as “a set of methodological tools used by qualitative researches across the disciplines during all phases of social research” (Leavy 2009:2). My practice serves as my ‘methodological tool’ and my main source of information, therefore this thesis is the theoretical and explanatory component to my practice. Theoretical research conducted in this study was guided by and based upon my practice; this includes the production process, materials, final outcomes and experiences of the finished product.

In *Art-Based Research* Shaun McNiff explains that art-based research “is grounded upon a comprehensive and systematic integration of empirical and introspective methods” (McNiff 2009:50). He explains that during the making process the artist or researcher should be observant, self-reflective and self-conscious of his/her actions, decisions, motivations, experiences and influences in order to develop empirical data (McNiff 2009:56-57). As I have said, my practice is a process-driven and material-conscious investigation. My theoretical research methods are thus based upon the ways in which I initiated my practice, how it developed and the various affects and outcomes. My research methodology during this study is therefore an integration of an introspective and empirical research method centred on my practice.

0.4.1 Theoretical Explication of Practical Methods/Methodology

My practical methods and processes discussed in this thesis are playful and experimental, unconscious and intuitive decision making, repertoire and ‘handiness’. In theoretically explaining my practical methods and processes I refer to a number of theorist/practitioners. Their writings and philosophies aim to assist me in verbalizing my practical methods.

Two articles from the journal *Studies in Material Thinking* by Dr Rachel Philpott and Greg Piper substantiate my playful, experimental, intuitive and unconscious decision-making practical processes. Dr Philpott is a textile designer, lecturer and researcher in practice-based and practice-led methodologies (Philpott 2013:16). Her article *Engineering*

²¹ Art practice based research refers to the “imaginative and intellectual work” of an artist as a form of research, as explained by Graeme Sullivan in *Art Practice as Research* (2005).

Opportunities for Originality and Invention discusses practice-led design research through focus on playful practice methods to enhance original outcomes (Philpott 2013:1). Greg Piper is a graphic design lecturer and researcher (Piper 2013:8). His article *The Visible and Invisible in Making* discusses the various elements at work during the making process (Piper 2103:1). Both writers aim to verbalize a practitioner's tacit knowledge during the making process.

Lillegerd Hansen and Donald Schön assist me in discussing the significance of my repertoire within my practice. Lillegerd Hansen is a professor, artist, designer and researcher (Hansen 2013:14). Her article *Living in the Material World*, published in *Studies in Material Thinking*, discusses the tacit knowledge artists and designers depend on (Hansen 2013:1). Her article is based on Donald Schön's *The Reflective Practitioner* (1995). Schön was a professor, writer and researcher in the social sciences (Schön 1995:n.pag.). One of his famous concepts, 'reflection-in-action', is a method practitioners can use to foster the vital tacit knowledge they rely on during a process (Schön 1995:n.pag.). Hansen bases her article on Schön's use of the term 'repertoire' within *The Reflective Practitioner*. For Schön a practitioner's repertoire is an accumulation of personal experience and knowledge acquired through time that forms part of one's tacit knowledge (Schön 1995:138).

Tacit knowledge can also be gained through physical interaction with things. Martin Heidegger's notion of 'handiness' is the last practical method I discuss. Barbara Bolt provided assistance in understanding Heidegger's *Being and Time*²² with particular focus on 'handiness', a term for the tacit knowledge learned by physically handling materials (Heidegger 2010:69). Barbara Bolt is an artist and art theorist who investigates the materiality of painting while in dialogue with theory (Bolt & Barrett 2012:xiii). She utilizes Heidegger's notion of 'handiness' and proposes that the experience and process of handling materials, and not theory, should be the basis of research and discovery (Barrett & Bolt 2009:9). *Being and Time* is the renowned German philosopher Martin Heidegger's "ground-breaking philosophical work" which inspired new ways of thinking, "a new epoch" (Stambaugh (eds.). 2010:xv). During his quest for a fundamental ontology in *Being and Time*,

²² Heidegger's *Being and Time* was first published in 1927 by the *Jahrbuch für Phänomenologie und phänomenologische Forschung* (vol viii) and it was edited by Edmund Husserl, the German phenomenological philosopher (Stambaugh (eds.). 2010:xxvii).

Heidegger conducts a phenomenological analysis on 'being, time and Dasein' interpreted through various topics such as time, language, tools, death, truth and existence, amongst many others (Stambaugh (eds.). 2010:xviii). Particular to this study is Heidegger's analysis of tools and their 'handiness':

The less we stare at the thing called hammer, the more actively we use it, the more original our relation to it becomes and the more undisguisedly it is encountered as what it is, as a useful thing. The act of hammering itself discovers the specific "handiness" of the hammer. We shall call the useful things's kind of being in which it reveals itself by itself *handiness*. It is only because useful things have *this* "being-in-themselves",... No matter how keenly we just *look at* the "outward appearance" of things constituted in one way or another, we cannot discover handiness. When we just look at things "theoretically" we lack an understanding of handiness. But association which makes use of things is not blind, it has its own way of seeing which guides our operations and gives them specific thingly quality (Heidegger 2010:65).

0.4.2 Materials

Materiality is a primary concept within this study. Through my practice I acquired the 'handiness' of my materials, and their influence and effect on my processes and outcomes define my practice. In essence this study is a material-based research investigation, and therefore the theoretical explication of my materials are crucial in verbalizing the specific tacit 'handiness' I acquired and experienced during this project.

The French chemist and Professor Pierre Laszlo's *Salt the Grain of Life* (2001) and the writer Mark Kurlansky's *Salt: A World History* (2003) are two essential sources for this study. Both books elaborate extensively on the subject of salt, its histories, wonders and deep-rooted relationship to man. In reading these two books it became clear to me that both authors are enchanted by salt. Their captivating historical analysis of salt fascinated and encouraged me to initiate my own investigation of salt. These two sources supplied the necessary information about the social, political, historical, chemical and biological significance and influence of salt.

The German gemmologist Walter Schumann's book *Gemstones of the World* (2008) and the author, lecturer and photographer Chris Pellant's book *Rocks and Minerals* (2000) provided the required information on the gemmological properties, crystallographic structures and chemical compositions of my salt crystals (NaCl, Epsom, Borax and Rochelle salt).

Additionally Alan Holden and Phylis Morrison's *Crystals and Crystal Growing* (1982) provided assistance in discussing and explaining the crystallization processes of my salts. It was necessary for me to understand the qualities and characteristics of each salt in order to argue for the material agency embedded in each. Furthermore, crystallization is a central process within my practice because in essence it is a transformative process that generates vitality and change.

With regards to my metals, Oppi Untracht's²³ *Jewelry Concepts and Technology* (1982) and Dr Erhard Brepohl's²⁴ *The Theory and Practice of Goldsmithing* (2001) provided me with sufficient information regarding the general and physical properties of copper and iron/steel. More specifically, Richard Hughes²⁵ and Michael Rowe's²⁶ *The Colouring, Bronzing, and Patination of Metals* (1991), Tim McCreight²⁷ and Nicole Bsullak's²⁸ *Color on Metals* (2001) and Joseph R. Davis's *Corrosion: Understanding the Basics* (2000) assisted me in discussing the corrosive (patina and rusting) effects of salt on my two metals. These sources support my explanations and discussions of salt as an activator and catalyst of vital materiality within my practice. It was through salt's corrosive effect on my metals that I learned and understood the vitality within metal. However these sources also provided evidence of the significance of metals as vibrant matter in their own right, especially regarding their intrinsic crystallographic crystal structure.

It is important to note that the information (tacit knowledge) I gained from my materials was obtained through practical experience, or 'handiness'. These sources regarding my materials serve as explanatory information on this tacit knowledge: how I researched and understood my materials, and especially how I came to understand my materials as vibrant matters. I will reiterate that this is primarily a material investigation; my chosen materials lead my practice as well as my theory, and thus also my main research method.

²³ Oppi Untracht was a metalsmith, author, photographer and teacher (Untracht 1982:n.pag.).

²⁴ Dr Erhard Brepohl is a mechanical engineer, industrial designer, philosopher, professor and author (Brepohl 2001:n.pag.).

²⁵ Richard Hughes is an industrial designer, metalsmith, author and Dean of art history and conservation at Camberwell Collage of Arts (Hughes & Rowe 1991:n.pag.).

²⁶ Michael Rowe is a London-based artist, designer and metalsmith, and the co-author of *The Colouring, Bronzing, and Patination of Metals* (Hughes & Rowe 1991:n.pag.).

²⁷ Tim McCreight is an American metalsmith, designer, teacher and author of various jewellery and metalsmith handbooks (McCreight & Bsullak 2001:n.pag.).

²⁸ Nicole Bsullak is an artist jeweller and specialist in metal colouring (McCreight & Bsullak 2001:n.pag.).

0.5 Chapter Outline

In Chapter One I introduce the importance of materials and look at ways in which they can regulate the practical process and outcomes. I conduct an in-depth analysis of my practice, looking at how it was initiated through specific processes, methods and materials within certain environments. I focus on the time, place and history of each art work and analyse all contributing influences. Through my analysis I establish my line of thought about and perspective on my work as material thinking and the cultivation of enchantment. Additionally I identify my theoretical basis as vital materialism, and with the assistance of salt I discuss my main concepts: vibrant matter, affect and actant. I conclude this chapter by locating my practice within a vibrant interdisciplinary art jewellery practice.

Building on Chapter One, Chapter Two discusses the alchemical and metallurgical characteristic within my practical processes, materials and presentation. In a mystical and historical overview of alchemy and metallurgy I discuss the shared magical beliefs, myths and rituals concerning practical processes and materials in these two practices. Through a second in-depth analysis of my practice I identify the correlations between my art jewellery practice and that of alchemy and metallurgy (and also chemistry). In my analysis I focus on my salt experiments (salt (NaCl), Rochelle salt, Borax and Epsom salt) and metal (copper and iron/steel) experiments with salt. The analysis of my practice reveals an alchemical and metallurgical perspective to Jane Bennett's vital materiality and illustrates my interdisciplinary approach. Lastly I elaborate more on Bennett's vibrant matter theory by arguing for a mineral and metallic life within inorganic matter, and I discuss how actants can act and affect within assemblages.

In my last chapter I discuss the relationship between salt, jewellery and the body by moving my focus from actants affecting non-human bodies to actants (as 'edible matter') affecting human bodies. I discuss salt's relationship to the human body by examining the different ways salt can influence the human body. Then, in a brief overview of jewellery's relationship to the human body, I discuss how this practice has transformed from concepts of wearability and durability. From these two discussions I identify three actants or agentic assemblages: salt, art jewellery and the body. Lastly I discuss a few of my art jewellery pieces which directly address and investigate these three interrelated concepts.

0.6 Historical Overview: Salt

A French folktale relates the story of a princess who declares to her father, “I love you like salt,” and he, angered by the slight, banishes her from the kingdom. Only later when he is denied salt does he realize its value and therefore the depth of his daughter’s love. (Kurlansky 2003:6).

My research on salt during this master’s project was the most fascinating exploration. Salt transfixed my senses during the making process and its rich history transported my mind; I was enchanted by salt, “struck and shaken by [this] extraordinary [substance] that lives amid the familiar and the everyday” (Bennett 2001:4). This is only a short introductory overview of the history of salt.

Aside from the body’s need for salt the origins of salt’s significance could be traced back to food preservation. Salt is an antiseptic agent, making it the perfect substance for preventing decay and sustaining life. According to Pierre Laszlo, salt curing can date back to prehistoric times, but the salting of herring and cod more or less started in the fourteenth century²⁹ (Laszlo 2001:2). Salt’s ability to preserve made it an essential substance in a time with no refrigeration or food canning technologies. Mark Kurlansky states that salt obtained a “broad metaphorical importance”, referencing an “irrational attachment” to an outwardly trivial object, since we associate salt with permanence and sustaining life (Kurlansky 2003:6-7). And it was exactly this quality of salt that caused it to be “one of the first international commodities of trade, its production was one of the first industries and, inevitably, the first state monopoly” (Kurlansky 2003:12).

The indispensability of salt and its production makes it the perfect source for state income (Kurlansky 2003:29). Salt and iron were the key ingredients in a “price-fixing monopoly” during the Qin dynasty (around 200 B.C.) in China, the first time in history that two vital commodities were controlled by the state (Kurlansky 2003:31). The taxes on salt and iron caused uprisings, and controversial debates were held between Confucianism³⁰ and legalism

²⁹ Robert Multhauf states in *Neptune’s Gift* fish curing peaked in 1875 when the “North Sea trade amounted to 3 billion herring, requiring 123 million kilograms of salt” (Multhauf 1978:9).

³⁰ Confucius (551-497 B.C.) was a Chinese philosopher of morality and human behaviour concerning social harmony, love and respect. Confucianism terms his system of thought (Kurlansky 2003:29-30).

and, according to Kurlansky, issues³¹ around this debate still continue (Kurlansky 2003:35). Venice, on the other hand, never owned any salt sources but monopolised the trade by regulating it in their favour (Kurlansky 2003:85). Venice emancipated itself from salt imperialism³² by seizing competitors (Laszlo 2001:58). A subsidy was payed to salt merchants for delivering salt to Venice (1281), and as a result a contract with Venice was desired by salt merchants (Kurlansky 2003:85). According to Kurlansky, no other state except China has created their whole economy on salt like the Venetians did (Kurlansky 2003:86); even the city of Venice is based on the grid-like structure of a salt works (Laszlo 2001:67).

Salt not only contributed to the abuse of power but also aided in struggles for independence. By obstructing the Iberian salt production from the Spanish, the Dutch contributed to the bankruptcy of Phillip II and aided in their struggle for national independence in the 16th century (Laszlo 2001:58). More prominently was Gandhi's nonviolent salt march (1930) against British dominance and salt monopoly. Gandhi realized the need for salt and "[h]e reasoned that when Indians became aware of their ability to get their own salt - at the level of each household and each village - this simple recognition would lead them to free themselves form domination by the English" (Laszlo 2001:80). Salt became a symbol of colonial independence (Laszlo 2001:87).

Careless eye-witness of the spawning tides of men and women
 Swarming always in a drift of millions to the dust of toil, the salt of
 Tears,
 And blood drops of undiminishing war.
 ("Momus" (1916) by Carl Sandburg 48:1994)

Kurlansky states that throughout the history of America there has been constant war over salt; whoever possessed it was in power (Kurlansky 2003:203). During the American Civil

³¹ The salt and iron debate questioned "the need for profits, the rights and obligation of nobility, aid to the poor, the importance of a balanced budget, the appropriate tax burden, the risk of anarchy, and the dividing line between rule of law and tyranny" (Kurlansky 2003:35).

³² Laszlo states salt imperialism included various other commodities from the Mediterranean and Orient counties (Laszlo 2001:58).

War (1861-1865) the Union (North) realized a tactical advantage in denying the Confederacy (South) access to salt (Kurlansky 2003:260). In war times salt was used as medicine, food preservative, and livestock feed supplement; and maintaining horses in short salt was essential (Kurlansky 2003:258). The Union targeted salt works, destroying them at every chance and slowly weakening the South (Kurlansky 2003:261-276).

The Gabelle is another example of how salt was used to exploit and oppress. Gabelle, the most hated term, was an unpredictable and intolerable French tax on salt (Laszlo 2001:74). The French people suffered under the strict law³³ of Gabelle and by the crude and abusive hands of the *gabelous*, collectors and enforcers of the Gabelle (Kurlansky 2003:232). From the rich to the poor, all had to pay taxes on salt, for all used salt (Kurlansky 2003:225). In this way value is placed on an essential commodity, all to enrich the Crown, for personal and military purposes (Laszlo 2001:58-59). "The costliness of salt renders it so rare that it causes a kind of famine in the kingdom, felt most acutely among the common people, who, for lack of salt, cannot salt-cure meat for their use", hence the phrase "addition salée", "a salted bill", meaning too high or costly (Laszlo 2001:78,59). By the end of the 18th century the French revolted against oppression, leading to the French Revolution and the fall of the monarchy (Kurlansky 2003:234).

"The quest for salt had turned unexpected corners and created dozens of industries", and as such it has been at the forefront of many discoveries, especially in chemistry and geology (Kurlansky 2003:317, 12). Chemically speaking, before the 17th century little was known of salt except for its appearance as a white crystal with many essential uses (Kurlansky 2003:295). In the search for new materials, medicine and discoveries many chemists experimented with brine³⁴. The English-born (1778) chemist Sir Humphry Davy's discovery of electrolysis ("the decomposition of salt water by passing an electric current through it" (Laszlo 2001:105)) opened the doors to many chemical discoveries. Electrolysis enabled

³³ Crimes against the Gabelle would incur an immediate prison or even death sentence; and by the end of the 18th century more than 3000 French people were sentenced every year (Kurlansky 2003:233).

³⁴ Salt in liquid form is no longer a compound but a collection of positive and negative ions (Multhauf 1978:131). This is explained in more detail in chapter 2, section 3 'An Alchemical and Metallurgical Process' footnote 96.

Davy to isolate various elements including sodium³⁵ in 1807 (Kurlansky 2003:293). Laszlo explains that Davy ran an electric current through caustic soda which isolated sodium; similarly he isolated potassium from potash (Laszlo 2001:111). These discoveries of Davy's caused numerous industrial developments, for example a Swedish chemist Jöns-Jakob Berzelius theorized the dualistic law of positive and negative charges in all matter (Laszlo 2001:111). The British chemist John Brown discovered how to subtract Epsom salt³⁶ from mother liquor. From Epsom salt or magnesium chloride more discoveries were made, such as the new element magnesium (used as a metal alloy, in lightbulbs, explosives and as corrosion preventer) discovered by Davy in 1808 (Kurlansky 2003:296). Research on and experiments with salt/brine created a ripple effect of discoveries.

The structure of the earth had many geologists or natural philosophers curious in the 17th and 18th centuries, and salt production techniques, especially salt drilling, contributed to their investigations (Kurlansky 2003:310). Developments in salt production techniques led to various other discoveries, for example the Chinese were pioneers in salt production techniques, from boiling brine in clay and later iron vessels (around 450 B.C.) to salt well drilling³⁷ (Kurlansky 2003:19). Their drilling techniques and brine extruding pipeline systems were highly advanced and led to other developments such as plumbing and irrigation systems (Kurlansky 2003:27).

The necessity of salt generated numerous myths and rituals mostly based on salt's associations with protection, permanence, life and longevity (Kurlansky 2003:7). There are many references to and stories about salt in the Bible, especially concerning rituals and worship (Laszlo 2001:143). In Christianity salt is a symbol of truth, wisdom, longevity and permanence, therefore holy water is often distributed with holy salt, "the Salt of Wisdom" (Kurlansky 2003:7). Laszlo states that salt was "inseparable from religion" for the Jewish people (Laszlo 2003:144), for salt symbolized eternity, God's eternal bond with Israel (Kurlansky 2003:7).

³⁵ Davy named Sodium, "the seventh most common element on earth", after soda the elements most common compound. And sodium carbonate (soda) is subtracted from the mother liquor which is the liquid left when sodium chloride (salt) is removed from brine (Kurlansky 2003:297, 296).

³⁶ Nehemiah Grew discovered Epsom salt in a spring in England (Kurlansky 2003:296). Read more on Epsom salt in chapter 2, section 3 'A Alchemical and Metallurgical Process' footnote 100.

³⁷ According to Oliver Kuhn, around the 3rd century AD salt wells were already being drilled in China and around 61 B.C. natural gas was discovered in these wells (Kuhn 2004). The boiling of brine from natural gas escalated salt production, especially in Zigong, one of China's leading salt producing cities (Kuhn 2004).

In medieval times salt was handled in a certain way at the table. Salt was never to be touched by hand but only with the tip of a knife (Kurlansky 2003:9). In another custom salt was only to be picked up with two middle fingers: “if a man uses his thumb in serving salt, his children will die, his little finger will cause poverty, and uses of the index finger will cause him to become a murderer” (Kurlansky 2003:9). Salt cellars symbolized wealth and luxury for those who could afford it - the larger, more extravagant the cellar, the richer the owners (Laszlo 2001:149). For this reason salt cellars became more and more elaborate in use of materials and symbols, for example Cellini’s *Salt cellar*, commissioned by the French king, Francois I (Laszlo 2001:149). According to Laszlo, Cellini’s *Salt cellar* is one of the “most illustrious saltcellar[s] in history” (Laszlo 2001:15). Furthermore, Laszlo states that Cellini aimed to create a salt cellar that would illustrate salt as “a product of the fertile union of earth and sea” (Laszlo 2001:150). A salt cellar on the table also indicated the hierarchy of the seating arrangement: the more distinguished guests were seated “above the salt” and those less important “below the salt” (Laszlo 2001:149).



Figure 1: Benvenuto Cellini, *Saltcellar of Francis I* (1540-1543). Gold, enamel and ebony, 26 x 33.3cm. Collection: Kunsthistorisches Museum, Vienna. (Kleiner 2015:666; Figure 22.52).

In Japanese culture salt was believed to chase away evil spirits (Kurlansky 2003:8). It was customary for sumo wrestlers to throw salt on the mat before a fight, in a ritual known as

Shio maku, which means “to scatter, to sprinkle, [or] to throw” salt in a space in order to sanctify and protect against evil spirits (Laszlo 2001:149). Another Japanese proverb, *teshio ne kakeru*, translated into English means “to help oneself to salt on one’s own” or more figuratively “to raise a child in taking great care of him or her”, just like great care is taken when handling salt (Laszlo 2001:153).

Since salt preserves, protects and is essentially constant it became a symbol of friendship, loyalty, durability and incorruptibility (MacGregor & de Wardener 1998:15). The Polish proverb “to have eaten a cask of salt with someone” suggests a durable friendship and sharing a meal with a lasting companion especially when “this costly commodity was shared in a cask” (Laszlo 2001:8). Sharing bread and salt with someone was considered a sign and gesture of hospitality, but spilling salt was believed to be a bad omen that could lead to quarrels and ruin a friendship (MacGregor & de Wardener 1998:16).

By embracing salt’s vibrant nature I came to understand its rich history and associated myths and beliefs. Therefore within my master’s project salt is respected and handled as the primary matter it is.

Chapter 1: Salt: an enchanted and vibrant art jewellery material

1.1 Introduction

I employ a material consciousness which enables a process-driven study. I relied to a considerable degree on the intrinsic characteristics of my materials and allowed them to guide and alter my processes. I will therefore be discussing my practical processes: play, experimentation, intuitive decision making, unconsciousness, 'handiness' and material thinking. Elaboration on my practical processes will reveal the material agency within my chosen materials. This chapter will focus on how I initiated my practice by discussing the first five objects with which I experimented in this project. I will be conducting an in-depth analysis of these five objects, how they were made, where they were made, under what conditions and initially for what purpose I made them. Most importantly I will include detailed descriptions of my materials, emphasising their material agency and the causes and effects they can create within my practice. Furthermore, this chapter will introduce salt as my primary material practically and theoretically, assisted by Jane Bennett's enchantment and vibrant matter theory.

Finally I will discuss the position of my practice within the discipline of art jewellery. Even though my practice has transformed across boundaries, I still approach my work from a jewellery perspective. I will aim to draw the conclusion that through taking a vital materialist viewpoint and practicing material thinking methods I can start to transform my jewellery practice into a transdisciplinary art jewellery practice, and in doing so I hope to make a contribution to this new and still developing field.

1.2 Initiating the Practical Process

My practical process consists of playing with materials I enjoy working with, and applying methods and techniques I am most comfortable with, to enhance unconscious thought and decision making. Dr Rachel Philpott writes in her article, *Engineering Opportunities for Originality and Invention*, that, in order to let the unknown take control, a particular mind state is needed where one is relaxed and comfortable, and to such a degree control is surrendered. This particular mindset can be cultivated, according to Philpott, through play

because of its “purposeful purposelessness” (Philpott 2013:2). Philpott defines play as a “process of exploration and explication as well as a means of individual expression” and an act or movement which is spontaneous, free and light (Philpott 2013:2). I do not define my practical process as an exploration of play, but play, clearly defined by Philpott, as a definition of the methods I used from the start during my practical process. Decisions made during my process are guided by my unconscious or, according to Philpott, acting with intuition which inspires new techniques, concepts and processes to develop (Philpott 2013:2).

Greg Piper³⁸ uses the term ‘flow’³⁹ to describe the state of the maker where he/she forgets about the world around them and gets lost in the making process (Piper 2013:3). In his article *The Visible and Invisible in Making: Reflecting on a personal practice* he states that “people in flow are so absorbed in the task at hand that they lose all self-consciousness” but interestingly enough they are still able to perform their skill, technique or method with experienced control (Piper 2013:3). In reflecting on the time I created something, especially lace work, I always remember where I was, if I was sitting or standing, who and what surrounded me. When I am in the process of making something I do not move into a place of such involvement that everything else around me becomes indistinct. However I am not able to explain my decisions clearly while I am in the process of making. I understand my physical making process and method (this entails critical reflections and decision making during the making process) as intuitive, flow, or being in an unconscious state. I believe that my surroundings, even if I am not aware of it at the time of making, influence my making process. Therefore I find it important to recall the time and place of making each object in order to find a pattern or perhaps a key to the tacit⁴⁰ part of my process.

³⁸ Greg Piper is a senior lecturer at the School of Art and Design at Auckland University of Technology (Piper 2013:8)

³⁹ ‘Flow’ a theory of optimal experience developed by Mihály Csíkszentmihályi. “Flow – the state in which people are so involved in an activity that nothing else seems to matter; the experience itself is so enjoyable that people will do it even at great cost, for the sheer sake of doing it” (Csíkszentmihályi 2013:4).

⁴⁰ ‘Tacit knowledge’ is a human knowledge that cannot be put into words easily (Polanyi 1967:x), thus considering that “we can know more than we can tell” (Polanyi 1967:4). Tacit knowledge is a ‘embodied knowledge’ a knowledge or a skill learned or developed during a practical process naturally, ‘intuitive knowledge’ (Barrett 2007:4).

At the beginning of my master's research I used play as a discovery method, and Figures 5 and 6 are of the first experiments I did. Both pieces are old unfinished occhi⁴¹ pieces which I crystallized in salt. The artist and professor, Lillegerd Hansen⁴² writes in her article, *Living in the Material World*, that when she starts a project she relies on her former skills and experiences, termed by Donald Schön as her repertoire. "A practitioner's repertoire includes the whole of his experience insofar as it is accessible to him..." (Schön 1995:138). Schön states in *The Reflective Practitioner*, that a repertoire is a practitioner's personal accumulation of various things like images, objects, examples, understandings and actions which include skills, methods and techniques (Schön 1995:138). My repertoire is filled with many objects (which I made or found), skills and techniques, and many ideas that have not yet realized. One of these ideas was to use salt crystals in my jewellery for its personal meanings and interesting experimental opportunities within art jewellery. However, during my play process, at the beginning of my masters studies, I started to experiment with the different states of salt. I wanted to make my own crystals and I remembered experimenting with salt crystals in the fourth or fifth grade at school. A simple salt solution⁴³ with a piece of string is needed to create your own crystals, and I wondered what would happen if my piece of string was more intricate, like a piece of lace, or a piece of occhi.

⁴¹ The term tatting is defined by Elgiva Nicholls, as "a kind of knotted lace, made on the hand, the thread carried upon a shuttle" (Nicholls 1962:125). Tatting is the English term, 'Frivolité' is the French term for tatting and 'Occhi' is the Italian term (Nicholls 1962:124,18). I was taught by an Austrian woman, Barbara Schädler and she used the term occhi, therefore I refer to the term occhi. Occhi is a form of lace making; Nicholls defines lace as "a combination of open spaces and compact texture, of transparent and opaque patterns, of light and heavy parts" (Nicholls 1962:7). Nicholls thus states that tatting conforms to the definition of lace (Nicholls 1962:7). I will be referring to 'lace making' and/or 'a / the occhi piece'.

⁴² Lillegerd Hansen is an Associate Professor at Oslo Akershus University College in Oslo, Norway. She teaches Art and Design with the focus on textiles. She is also a textile artist and designer (Hansen 2013:14).

⁴³ A solution is defined as "a mixture formed when a substance (the solute) is dissolved in a liquid (the solvent)" (Compact Oxford English Dictionary for Students 2006. S.v. 'solution'). The term solution is only used when a substance is dissolved into small particles, but when the substance has only dissolved into fragments it becomes a 'mixture' (Holden & Morrison 1982:60). Salt is my solute and water is my solvent and my crystal making process varies between solutions and mixtures. Solution can also be referred to as liquefaction, when a solid material transforms into a liquid, similar to the melting of materials (such as metals) through heating (Multhauf 1978:135).



Figure 2: Catherine Ferreira, *Salt Crystallized Occhi*. (June/July 2011). Fine salt and blank pure cotton perlé thread. Stellenbosch and Kimberley.

In my making process I do not rely on occhi patterns, however the piece in Figure 2 is the only occhi piece I made from a pattern. This piece was intended for my grandmother, seeing as she was the one who gave me the pattern, and its purpose was to be a tray cloth before it was crystallized with salt. Unfortunately I cannot remember the type of thread I used for this piece but I would guess a thicker DMC cotton perlé⁴⁴ than what I normally use. The place and time I made this piece plays a role in the essence of the piece. Schön states that practitioners work in particular situations where materials, mediums, languages, moves, norms and interrelationships occur which cause a complex making process (Schön 1995:78-79). Similarly Piper states that the life of an artwork is defined by the process in which it was made, in other words the physical and spiritual space occupied by the maker during the making process (Piper 2013:5). I agree with Schön and Piper, and therefore I find it important to indicating where each piece is made, for each place and time influence my state of mind, which in turn influences the outcome of the object in making.

This particular piece was made in Stellenbosch (where I live and study) and Kimberley (my home town) during the winter holiday (from mid-June to mid-July) in 2011. I find that

⁴⁴ DMC is an international organization which manufactures consumer, industrial and other textile related threads (*About DMC*, 2014). DMC was established in 1800. DMC stands for Dollfus-Mieg & Compagnie named after the founding family Dollfus and Daniel Dollfus's wife, Anne-Marie Mieg (*DMC History*, 2014). DMC cotton perlé (Pearl) is produced in France. The thread is highly mercerized which means the thread is treated with caustic alkali under tension, which increases strength, lustre and affinity (Compact Oxford English Dictionary for Students 2006. S.v. 'mercerized'). The non-divisible thread is twisted, which causes a soft and silky pearl sheen, hence the descriptive name "Pearl" (*DMC Pearl Cotton Balls*, 2014)

seasons influence my productivity and also the type of work I am comfortable in making; for example I usually do handwork like occhi in the winter time. At the end of the holiday I came back to Stellenbosch University and soon became preoccupied with other work and thus never completed this occhi piece. It then formed part of my collection of unfinished objects, but also part of my repertoire because it became an object to be used for another project in the future. During my undergraduate studies I accumulated a collection of objects, experiments of techniques I learned or designed, half-made jewellery pieces and unfinished occhi work. This collection helped me during my playful experimentation process at the start of my master's degree.



Figure 3: Catherine Ferreira, Salt Crystallized Occhi: *A Brooch*. (June/July 2012). Fine salt, blank pure cotton perlé thread size 16 and silver. Stellenbosch and Kimberley.

The history of Figure 3 is similar to that of the occhi piece in Figure 2. The lace work was my own design and intended to be a tray cloth for my godmother⁴⁵. The location where I made this piece was similar to Figure 2, but I made it in the following year, during the winter of 2012. This was a very time-consuming piece because I was working with the thinnest DMC cotton perlé (size 16) thread, and as a result it took longer. I was also never able to finish

⁴⁵ My godmother is my mother's sister, thus my aunt and it is custom for the women in my family to give gifts of personal handwork whether it be embroidery, crochet, or lace work to each other.

this piece before the winter ended. Just like the first piece it ended up in my repertoire, to be picked up and used on another day. I immersed both pieces (Figures 2 and 3) in the salt solution at the same time so both were a surprise to me when I took them out. I bundled this piece up before I placed it into the salt solution and the crystallization ensured that it stayed in this bundled-up form.



Figure 4: Catherine Ferreira, *Salt Crystallized and Steel Coloured Occhi Glove*. (June/July 2011). Fine salt and thread. Kimberley.

The third piece (Figure 4) was made of a much thicker, synthetic and less costly thread. The conditions and situation in which this piece was created are similar to that of the pieces in Figures 2 and 3. This piece, however, was intended to be a lace glove for myself. It consists of only a simple five-leave flower occhi pattern that was repeated randomly. The thickness and roughness of the thread resulted in an uncomfortable glove therefore I only made this one. The lace glove was unwearable and so it also became part of my repertoire collection. After the success of the first two pieces I became interested in the salt crystallization. I started to experiment with all my unfinished and left-over pieces of occhi. The salt had the magic ability to complete my incomplete pieces and I thought it could have the same effect on the unsuccessful occhi pieces.

This particular piece took very long to crystallize and therefore I pushed this piece aside thinking that it was unsuccessful even with the addition of the salt solution. It was for this reason that I used it for other experiments. I started wondering about colouring and stains but I did not want to add artificial colouring to my salt solutions, so I used metals such as steel⁴⁶ and copper as reagents⁴⁷. The brown colour on the piece is the result of a picked up piece of scrap metal (steel) reacting to the salt. I cannot recall the incentive of this idea; I guess it was part of my repertoire. I have collected scrap metals before and used it in an art work so I have the knowledge of handling it, and I have been working with copper since the start of my undergraduate studies. In Barbara Bolt's article *Materializing Pedagogies* she refers to Martin Heidegger's notion of 'handling' which entails the knowledge we obtain through handling materials or processes (Bolt 2006:3). In *Being and Time*, Heidegger discusses a way of seeing through dealing with things physically. By using a tool and physically coming in contact with a specific material we learn the specific "handiness" of that material or object (Heidegger 2010:69). "Handiness is not grasped theoretically at all, nor is it itself initially a theme for circumspections" (Heidegger 2010:69). I find that my understanding of materials comes from physically working with it in my hands and so learning its physical properties first hand. This knowledge, this "handiness" Heidegger talks of, can in my opinion be tacit knowledge. The knowledge I have of steel and copper comes from physical contact with it and physically working with it. However, I am not always aware of the knowledge I gain, therefore I call it tacit knowledge. I argue that my decision to use steel and copper as colouring and staining agents is a result of the 'handling' knowledge of the materials I have gained in the past.

After placing the lace glove (Figure 4) in the salt solution with a piece of scrap metal, nothing happened for a few weeks and I lost interest in this piece. All it needed was a little more time, however, and one day I noticed how the salt transformed this unsuccessful occhi piece into an interesting object. This piece took the whole year (2014) to grow before I took notice of it, and it is still growing and changing. Since I did not pay attention to this piece I

⁴⁶ I use mild steel in my work, which is an alloy of iron (predominantly) and carbon, which means it is vulnerable to corrosion such as rusting (Chaline 2012:82,182). Throughout my thesis I will however be discussing the mythical and factual history, physical properties, metallurgical properties and crystalline structures of iron which is the predominant metal in steel alloy.

⁴⁷ Reagent is a substance that is used to cause a chemical reaction (Compact Oxford English Dictionary for Students 2006. S.v. 'reagent'). I add steel and copper to my salt solution to cause a colouring or staining effect (a chemical reaction) to my lace

did not refill the container with water when it evaporated. Just because there was no extra added water did not mean the crystallization stopped. On the contrary: it kept on growing using the elements surrounding it to stay alive.

The crystals on this piece are different to the other two pieces; they are more misty and cloudy in colour and not cubic but more irregular in form. Alan Holden and Phylis Morrison explain this occurrence in their book, *Crystals and Crystal Growing*. When a salt, or in this case a crystallization of salt crystals, dehydrates the crystals turn a powdery white (Holden & Morrison 1982:290). These 'dehydration figures', according to Holden and Morrison, start at isolated areas on the surface and in time they spread at random (Holden & Morrison 1982:290). This particular piece showed me that I cannot rush the crystallization process; consequently I cannot rush my own process. This feeling of the unknown and the surprise of what it will look like was pleasing, satisfying and exciting.

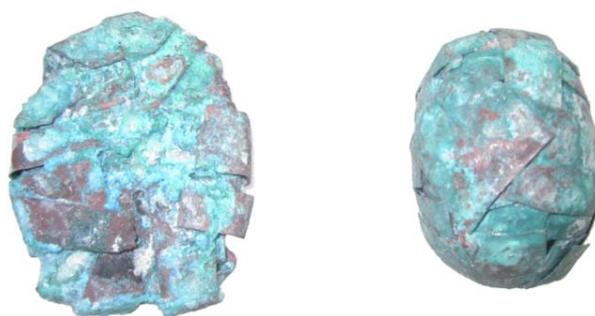


Figure 5: Catherine Ferreira, *Reagent II.II.* (October 2011). Copper and fine salt patination. Stellenbosch.

These two objects (Figure 5) were made in the second year of my masters studies as research examples for a project. The project was to find joining methods without soldering. This method I designed is a random weave which stays connected through heat and pressure. I am then able to create three-dimensional shapes from this weaved plate. These copper objects formed part of my repertoire collection. As I have said, I started experimenting with colouring and stains and these two copper objects were available to use for experimentation. My aim was to colour and stain the three crochet squares (Figure 6) I

made just before I started with my masters project. I learned to crochet in January 2014 in Kimberley and these were the first crochet squares I made. They were only used for experimentation purposes to see what effect salt, steel and copper will have on the thread. Figure 7 is the container in which I placed the three crochet squares (Figure 6) and copper objects (Figure 5). I also added a piece of scrap metal (a piece of square steel rod, Figure 8) in one of the compartments of the container and then I just filled it with the salt solution.



Figure 6: Catherine Ferreira, *Experimental Crochet Blocks*. (January 2014). Crochet thread and fine salt. Kimberley.



Figure 7: Catherine Ferreira, *Reagent I*. (March 2014). Plastic and fine salt. Stellenbosch.



Figure 8: Catherine Ferreira, *Reagent III.I.* (March 2014). Steel and fine salt. Stellenbosch.

When I realized that the salt crystallization of my lace work was successful I tried to establish a pattern or recipe. Through observing these three lace objects (Figures 2-4) I realized six influencing factors on my work and its particular outcome. First the thread size and ultimately the size of the piece, the environment, the weather conditions, reagents (copper and steel) and of course my involvement. The difference in thread thickness influences the crystal growth, form of crystals, formation and duration. Figure 3 was made of really thin DMC cotton perlé thread, and after about two weeks beautiful cubic crystals started to form on the lines of my occhi piece. The first piece (Figure 2), however, was made from a thicker thread and it took about two to three weeks longer to crystallize. The cubic crystals were also denser and not individually spaced like in the second occhi piece in Figure 6. Then there is the occhi glove (Figure 4) which was made of a much thicker thread than the previous two and took months to crystallize to its current form. All three pieces are more or less the same size but I assumed if the thread thickness affected the crystallization then so would the actual size of the piece. The thread absorbs the salt solution and when it dries or when the water evaporates the salt crystals start to grow. I came to the conclusion that size (thickness of thread and actual size of the piece) will influence the duration of the crystallization process and of course the form and formation of crystals.

The second influencing factor is me because I can make the decision when I want the crystallization to stop: after two weeks or after six months. I removed the occhi piece in Figure 3 from the crystallization process after two weeks, while I left the lace glove in Figure 4 in the crystallization process for almost a year. I can create the crystallizing environment, add water or not and remove pieces from crystallizing containers or not, but I cannot control the natural process; in other words I cannot stop salt from crystallizing by using the moisture in the air. Consequently I came to the understanding that time is a main factor in my work, and my objects need time to develop. Despite the fact that my process is time consuming it is also continuous. The salt can just keep on crystallizing, as in the case of the lace glove in Figure 4.

Through working with salt, even at this small size, I have learned so much of this element; I acquired “handiness”. Heidegger states that “a dealing which makes use of things is not blind; it has its own way of seeing which guides our operations and gives them their specific certainty” (Heidegger 2010:69). According to Bolt, art practice research should not only be about articulating how and what the artist does, but should also articulate what was learned and gained through the making process and handling of materials, for it contributes knowledge to the artist and the discipline (Bolt 2009:34). By physically working with salt and seeing it work, grow on and influence my threads I acquired knowledge of it. This new knowledge also provoked old but recognized knowledge. Since my father is a salt miner I actually do have knowledge of salt, but this knowledge was more habitual, a tacit knowledge (Bolt 2006:5). Our salt farm is in the Northern Cape⁴⁸, a place where the rain is scarce and the sun is hot. I remembered that my dad made salt in the sunny warm days and that he was angry when it rained because it delayed salt production⁴⁹. In other words, to make salt from brine⁵⁰ one needs sun for the water to evaporate. Once the water has evaporated, the salt crystals are left.

⁴⁸ The salt farm is located on the Karoo plateau and towards the Kalahari Desert in the Northern Cape Province. The Karoo is very dry and gets even more so towards the Kalahari Desert. This area has hot summers and very cold winters with summer rain falls (South Africa’s geography, 2012).

⁴⁹ There are different methods in the production of salt depending on the natural source. Rock salt is mined (this includes drilling) or water can be added to it creating a brine (solution) and after evaporation salt is left to be gathered. Secondly sea water can be subjected to evaporation, naturally or artificially. Evaporation can be done naturally, with the sun, or it can be boiled down (Multhauf 1978:20).

⁵⁰ A salt solution is often called brine (Heys 1958:91)

The third influencing factor is the weather conditions which are commonly affected by the changing of the seasons. I realized a slight difference in the rainy season (Stellenbosch has a winter rain fall), when the crystallization was slower and the crystal forms were more irregular. Since I am working in Stellenbosch⁵¹ its specific weather conditions influence my practice, as it can influence the crystal form and crystallization period. Salt gets influenced by its surroundings thus if there is a lot of moisture in the air, the salt absorbs the moisture and I can see the results in my work. For example the lace glove (Figure 4) received no additional water from me, as a result it started to use the moisture in the air, and it started growing by itself.

My practice reminded me of the embedded knowledge I have and knowledge I have forgotten or never regarded as relevant or important. It also reminded me of the wonder of the materials and elements surrounding me. My practice created awareness of the physical materials in my hands and how they react to the elements of the earth, the sun and the rain and its oscillation. By gathering just this small amount of knowledge I began to see salt as more than just a commodity, and it started to evolve into something different in my eyes.

1.3 The Enchantment of Salt

Jane Bennett's theories on enchantment and vibrant matter seemed to be the best theory to discuss and explain in words what salt is and what role it plays in my work and also in some ways in my life. Jane Bennett states in her book, *Enchantment of Modern Life: Attachments, Crossings and Ethics*, that in order to see the enchantment around us we need to cultivate ourselves (Bennett 2001:4). "Enchantment is something that we encounter it hits us", but we need to be open to see it (Bennett 2001:4). However this does not mean it is completely uncontrollable. Bennett states that through deliberate strategies there are components concerning enchantment that could be fostered. Play is one of the methods that could be used to foster enchantment; the other is to carefully develop our senses so we could be willing to see the magic in things (Bennett 2001:4).

⁵¹ Stellenbosch is located in the Western Cape about 20km from the south western corner coastline. This area is very windy and has wet winters and hot summers (South Africa's geography, 2012).

I have three arguments regarding enchantment within my practice. Firstly I argue that salt is what Bennett calls enchanted. Since salt is referred to as a common commodity its enchantment is hidden and not grasped or understood. According to Bennett, through certain strategies we can reveal and foster the enchantment in objects, even in common commodities such as salt. Secondly I argue that, through my use of play as an experimental method, at the start of my masters project I was able to develop my materials to reveal their inherent enchantment that was hidden. Lastly I argue that my process itself is an experience of enchantment.

“To be enchanted is to be struck and shaken by the extraordinary that lives amid the familiar and the everyday” (Bennett 2001:4). Salt is produced by the reaction of an acid and a base. Sodium, an unstable metal which can spontaneously burst into flames, reacts to chlorine, a deadly poisonous gas, and produces salt (NaCl) (Kurlansky 2003:6). Blood, sweat, tears and almost every part of the human body contains salt, without which the cells in our bodies will malfunction by, for example, dehydrating, which is a result of insufficient water and salt (Kurlansky 2003:5). “Chloride is essential for digestion and in respiration, whereas sodium is essential in the transportation of nutrients and oxygen, the transition of nerve impulses and helps with muscle movement including the heart” (Kurlansky 2003:6). Salt is essential for our bodies to function and it is a commodity used in everyday life⁵²; it lives in us and around us. Through my practice I was able to be enchanted by this familiar and common commodity. In addition my practice also encouraged me to explore more of the history, biology, chemistry and geology of salt⁵³ which amplified the feeling of enchantment even more. Not only was my research enticing, my practice obtained magical and mesmerising qualities. For example the occhi piece in Figure 2 is made of only thread and salt crystals, but it gave the impression of a higher value and delicacy: ‘it looks like a tiara for a bride’ (Kovats, 2014). I reason that, because I used play and experimentation at the start of my process, I was able to see and reveal salt as enchanted, in other words my practical

⁵² Salt is most commonly known for its culinary use but it is also used in other food industries such as salting of fish and meat, canning of food as well as refrigeration. Other industries that rely on salt are the chemical, textile, leather, soap, glass, agriculture, petroleum, metallurgy, rubber, and pulp and paper industries. Furthermore it is used in the softening of water and salt is also used to melt the ice off roads (Multhauf 1978:216).

⁵³ My findings on the history, biology, chemistry and geology of salt it discussed in the introductory chapter, Historical Overview of Salt.

process played a role in the discovery of the enchantment in the ordinary objects I use. Salt had the ability to transform my lace objects into something more enchanting.

My third argument here is that during my process, when I made the lace objects or when I was playing and experimenting with the salt, I found myself in an unconscious, intuitive state or 'flow', as Csíkszentmihályi terms it (Csíkszentmihályi 2013:4). Bennett explains this state as being enchanted; when experiencing enchantment one is temporarily suspended in time and in a state of wonder. Movement is limited and transfixed, and one is spellbound within a "moment of pure presence" (Bennett 2001:5). She explains that when an object is different and unique it affects the mind and keeps it in a sort of mesmerized state where nothing else is able to distract it, it is a captured delayed state (Bennett 2001:5). However, while the mind is at rest the body's senses become more sharp and intense, an "exhilaration or acute sensory activity" kicks in (Bennett 2001:5). Enchantment thus creates a double act in the body, since it simultaneously transfixes and transport. The mind is caught up and transfixed while the senses are transported away to a heightened state of overwhelming smells, sounds, colours and sensations (Bennett 2001:5). All of the above descriptions (unconscious, intuitive and flow states) are relevant in describing my practical process and decision making, but Bennett's theory of enchantment has relevancy to my process as well as to the outcome of my art work and how it is perceived.

Furthermore Bennett defines enchantment as "a surprising encounter, a meeting with something that you did not expect and are not fully prepared to engage" (Bennett 2001:5). However, fear should not deny engagement for it could deny the enchanted experience. Bennett states that this "uncanny feeling of being disrupted or torn out of one's default sensory-physic-intellectual disposition" should be embraced, for in the end a sense of fullness and liveliness takes over the uncanny feeling (Bennett 2001:5). I find this is the perfect description of my practical process. I used play and experimentation and I had no idea what the outcome would be. The unknown can create fear and deny continuing with an idea. I also remember not knowing why I experimented with certain materials and not others, or to be more specific not experimenting with new materials and techniques. My only explanation of why I chose to play and experiment with objects and methods from my repertoire is because of intuition or unconscious decision making. Perhaps I felt there was something in my repertoire that still needed to be developed or revealed. Then perhaps my

conclusion should be to trust intuition and the knowledge of 'handiness', since this method of using or starting with your repertoire turned out to be successful in my case. I understand my process and my mind's state during my process as accessing my unconsciousness which includes tacit knowledge and 'handiness'. I also feel that this is a state of intuitive thinking and decision making. Overall I experience enchantment during my making process and perhaps that is why I am able to reveal the enchantment within the materials I use and the objects created from them.

Lastly I would like to refer to another corresponding concept, namely material thinking. When practicing material thinking your hand, eyes and mind start to join and bring awareness to the intelligence of the materials as well as realizing the art-making place and time (Carter 2004:xiii). For Barbara Bolt material thinking happens when the new shocks us as a particular understanding acquired during the handling of materials, the practice of methods and the use of tools (Bolt 2009:31). In other words, material thinking as a concept aims to provide a space for thinking about everything that happens during the process of making (Bolt 2009:29). Through material thinking materials and methods of production can be discussed as matter with their own intelligence that interacts with the artist's intelligence (Bolt 2009:30). Bolt finds importance in the collaboration between the artist and the materials⁵⁴. According to Bolt, material thinking (joining of the hand, eye and mind) occurs when the artist is attentive to the materials at hand (Bolt 2009:30). Words only become the articulating method to describe the material thinking, thus Bolt defines material thinking as the "logic of practice" (Bolt 2009). I started practicing a material thinking as I started to pay more attention to my materials, to how time and place affected them, and to how they react to one another in different settings. A connection started to happen between me and my materials; I no longer saw them as things I can use or manipulate for my own purpose. They became, as Bolt states, matter with their own intelligence actively participating with me in my practical processes.

⁵⁴ In Paul Carter's book, *Material Thinking*, he places importance on the collaboration between artists, when they come together discussing and talking (Carter 2004:xiii). For Carter it is at this moment when the hand, eye and mind join (Carter 2004:xiii).

1.4 Salt, the Vibrant Matter

I have discussed how, through my practice and practical processes, I discovered salt and my process as a form of enchantment. In *Vibrant Matter*, Bennett places the focus on the catalyst itself that affects enchantment to “human rational capacities” (Bennett 2010:xii). Firstly she states that enchantment points “towards the humans who feel enchanted and whose agentic capacities may be thereby strengthened, and secondly towards the agency of the things that produce (helpful or harmful) effects in human and other bodies” (Bennett 2010:xii). So salt is the catalyst that affects enchantment in humans and strengthens their agentic capacities⁵⁵, and at the same time salt has its own agency which has the power to affect other human or non-human bodies.

It is clear to see salt’s harmful effect on other non-human bodies in my practice. My lace objects are enticing, but at the same time they are invaded by the salt. The salt does not deteriorate the thread but it does embody it and transform it into something else. Not only does the salt enforce its power over my lace objects, but it also affects the containers and reagents I use for crystallizing the lace work. The salt has started to grow over the edges of my container in Figure 7 and it has also started to grow on the steel rod (reagent) in Figure 8. In this sub-chapter I will firstly establish salt as an ‘actant’ and secondly I will argue for the vibrancy in salt as well as in the other materials, steel, copper and thread, I use. Finally I will discuss how, through establishing my practical process, I was able to establish my own vital materiality that connects with the vital materiality within my materials.

The French philosopher Bruno Latour uses the term ‘actant’ which he defines as “any entity (human or non-human) that modifies another entity in a trial...the action, in turn, is always recorded in the course of a trial and by an experimental protocol...” (Latour 2004:237). He states that the best defining word for actors that act are *recalcitrance*, which means to resist authority and control, to be uncooperative and not obedient or compliant (Compact Oxford English Dictionary for Students 2006. S.v. ‘recalcitrance’). Furthermore, in *The Politics of*

⁵⁵ Throughout history salt was used, in many different ways, to strengthen human agency and enforce dominance and power over others. In the historical background I discussed different examples of how salt has strengthened human capacities. For example taxes on salt came to an all-time high when the British East Indian Company increased taxes on salt in the 1830s in India bringing the Indian people to their knees under British colonisation. A hundred years (1930s) later Ghandi started the salt march and lead the Indian people to their freedom (Laszlo 2001:74-88). The abusive history of salt helps me to understand how salt can have the ability to activate enchantment in humans and strengthens their agentic capacities.

Nature Latour asks the question whether the mutual disgust between 'subject' and 'object' can come to an end in order to create space for a new or different life to start around them (Latour 2004:73). Latour states that an association between human and non-human has not yet been fully structured. However, a series of experiments can come to a conclusion that the human and non-human participants can act, "that they modify other actors through a series of trials that can be listed thanks to some experimental protocol" (Latour 2004:75). In other words human and non-humans can associate, but 'objects' and 'subjects' cannot (Latour 2004:76). Latour suggests that we stop associating non-humans with objects. Once we allow them to form new entities with their own boundaries, we can understand them as actors (Latour 2004:76). Bennett aims to do the same by focusing on non-human bodies through depicting them as actants instead of objects (Bennett 2010:10).

Actants have the efficiency to do things with coherence in order to "make a difference, produce effects and alter the course of events" (Bennett 2010:viii). Salt serves more as an *actant* than an object, since it modifies other entities during my experimentation processes, and it is also disobedient when it starts to crystallize and grow on the containers or the reagents. I have indicated how I am not able to control the crystallizing process, in other words I cannot control the salt because it is an *actant*. I did not intend for the containers and reagents to become part of my work, but the salt changed the course of events in my practice.

Salt has a willpower of its own, a power that cannot be controlled or told what to do. Bennett states that this vitality⁵⁶ in matter should be advocated, because their powers deserve our respect or at least our attentiveness. In her opinion, we cannot overlook their abilities to "aid or destroy, enrich or disable, ennoble or degrade us" (Bennett 2010:ix). Bennett does not suggest that this is a separate life force that is entering a physical body but she associates *affect*⁵⁷ with materiality, in other words a vitality that is intrinsic to

⁵⁶ Bennett refers to vitality as the ability for things to block or delay the will of humans and also the capacity of things to have their own agency, a life force where they (things or non-humans) can have tendencies and willpowers of their own (Bennett 2010:viii).

⁵⁷ For Bennett all bodies (organic, inorganic, natural or cultural) are all *affective*. Bennett refers to Baruch Spinoza's notion of *affect* and Deleuze and Guatari's views on *affect*. Bennett shares Spinoza's idea "of conative bodies that strives to enhance their power of activity by forming alliances with other bodies" and "that everything is made of the same substance" (Bennett 2010:x). She draws on Spinoza's notion of *affect*, which broadly refers to any body's capacity to be actively aware (Bennett 2010:xii). Furthermore Bennett also associates with Deleuze and Guatari's discussions on how to understand another body through

materiality (Bennett 2010:xiii). Bennett is aiming to theorize a vitality for the basic nature in materiality and, in doing so, she distinguishes between the intrinsic value and the passive or mechanistic associations of materiality (Bennett 2010:xiii). She calls this life force; this intrinsic power in a matter (human or non-human body) a vibrant matter, intrinsic vibrancy, material agency or 'thingly-power'⁵⁸; and I argue that salt has this life force inside it. Furthermore I argue that the other materials (thread, steel and copper) also have vitality, and an intrinsic vibrancy of their own which reacts to and with the salt. My work captures the *affect* that occurs when two or more vibrant matters collide, whether it is salt and thread, salt and steel or salt and copper, or a combination of those. The salt, however, has a stronger intrinsic life force; it modified and enriched my lace work. It did not destroy the lace work but instead only made it harder and stronger and served as a type of protective cover for the thread. The collision between salt and my thread has no degrading *affects* but more illusionary⁵⁹ and preserving *affects*.

The collision between the vibrancy of salt and that of the metals are different. I will be conducting a more thorough investigation into 'the life of metal'⁶⁰ in Chapter Two. Salt has a corrosive *affect* on steel and it is clear to see that salt is the stronger vibrant matter. However what I find most interesting is the colour and smell released during this rusting process. In other words the reaction between the two vibrant matters *affects* our senses⁶¹ creating a double *affect*. Then again, when salt and copper collide, a thin layer of green

understanding first their *affects* towards other bodies. To elaborate an understanding about a body that can or cannot blend or fuse with another body or destroy or be destroyed (Bennett 2010:xii-xiii). What Bennett is "calling impersonal *affect* or material vibrancy is not a spiritual supplement or "life force" added to the matter said to house it" (Bennett 2010:xiii). I understand Bennett's use of *affect* as a body *affecting* another body, a body practicing a vital force inherit form inside on another body's inheriting vital force.

⁵⁸ In explaining her vital materialist theory, Bennett refers to 'thing-power' and 'out-side'. 'Thing-power' terms the ability for ordinary objects (man-made) to find some independence or aliveness exceeding the status of mere objects (Bennett 2010:xvi). These objects, or rather actants become vibrant and obtain their own effectivity, though small but still independent form our (subjective) words, images and feelings of the objects (Bennett 2010:xvi).

⁵⁹ I have mentioned earlier in this chapter ('initiating the practical process' page 15) how the salt crystals on my lace work create an illusion of a higher value or delicacy.

⁶⁰ "A Life of Metal" is a chapter in Bennett's book, *Vibrant Matter*, which discusses the life/matter binary through the concept of "a life". In this chapter Bennett focusses on inorganic matter and uses metal (steel) as an example (Bennett 2010:xvii). I will be referring to this chapter more in depth in my chapter 2

⁶¹ I will be focusing more on the relationship between salt (an enchanted vibrant matter) and the senses in chapter 3.

patina⁶² occurs on the surface of the copper. Thus salt does not have a corrosive *affect* on copper, instead the thin patina layer serves as a kind of protective coating. Then of course I use the steel and copper as reagents to *affect* the thread by utilizing the reaction between salt and the metals. All in all my work reveals vibrant matters *affecting* each other and the results thereof.

Up until now I have argued for the material agency in salt and the other materials I use, but I have not yet mentioned my role. I have discussed my practical process and methods at the start of this chapter as unconscious or intuitive decision making, and I associated this process with Jane Bennett's enchantment theory. I find myself only co-responsible for the outcome of my work (Bolt 2006:6), and therefore I need to readjust my status as a human actant (Bennett 2010:10). The unconscious and intuitive decision making can be evidence of my own intrinsic vital materiality. Bennett states that "human power is itself a kind of thing-power" (Bennett 2010:10). However, I am not talking about the power of man or the internal workings of the human body, but what Bennett aims to theorize, namely that materials are alive and "self-organizing" vibrant matters, whether it is metals, salt or humans (Bennett 2010:10). As I have mentioned, Bennett said that we need to cultivate ourselves in order to see enchantment in objects (Bennett 2001:4). Perhaps the same cultivation can be applied to develop enchantment within.

In *Vibrant Matter* Bennett refers to Adorno's "clownish traits"⁶³, according to which we should need a certain "willingness to appear naïve or foolish" but at the same time have the patience to wait in a sensory attentiveness for the forces of nonhuman objects (actants) to move in or outside our own bodies (Bennett 2010:xiii-xiv). Although naivety and foolishness could aid us in seeing the enchanted, we need caution not to mistake human agency projected into objects (actants) as the intrinsic agency of the object (Bennett 2010:xiv).

⁶² Patina is a colouring technique. It is defined by McCreight and Bsullack as a thin layer of corrosion that appears on certain metals, usually copper and copper alloys (McCreight & Bsullak 2001:8). This will also be discussed in more depth in chapter 2.

⁶³ "He must not deny his clownish traits, least of all since they alone can give him hope for what is denied to him" (Adorno 2003:14). In other words thought and thinking should not deny clownish traits, Adorno himself used a combination of seriousness and irony mixed with a little clownishness and hope in his literary criticism (Plass 2007:xxvii). Bennett states that we should read *Negative Dialectics* as a pedagogy that includes intellectual and aesthetic exercises to find Adorno's "specific materialism". For example applying a more "playful element" as a philosophical method (Adorno 2003:14), in other words the willingness to play the fool (Bennett 2010:15).

Perhaps the solution to this could be to identify the vital materiality within and adopt a certain *nonidentical* experience, as Adorno terms it. Brian O’Conner defines Adorno’s *nonidentity* as an experience where one is open to encounters with objects, people and nature without distortion and manipulation⁶⁴ (O’Conner 2013:15-16). Bennett defines *nonidentity* as “that which is not subject to knowledge but is instead “heterogeneous” to all concepts” (Bennett 2010:14). In *Vibrant Matter*, Bennett explores the correlation between Adorno’s *nonidentity* and her thing-power. She states that if we practice Adorno’s *Negative Dialectics* correctly then *nonidentity* will serve as a reminder to us that “life will always exceed our knowledge and control” and we should learn to accept the uncontrollable (Bennett 2010:14). This can of course be understood in the broadest of terms, but I understand *nonidentity* through my experiences with my practice, especially with salt. I gave in to the uncontrollable and adopted a notion similar to Adorno’s *nonidentity* in order to truly reveal the intrinsic vibrancy within my materials and myself.

I do, however, find Bennett’s vital materialism more appealing, since it is more concerned with a shared vital materiality: “we are vital materiality and we are surrounded by it” (Bennett 2010:14). According to Bennett, vital materialists will want to linger in those fascinating moments they share with other vital materials (actants human or non-human) and understand these moments as connections between shared vitality (Bennett 2010:17). I find that the more I create these connected moments with my materials, the more I am able to see and understand the vital materiality within the salt and also the other materials. I also believe that creating these connected moments with my materials enhanced my practice and my processes. I argue that, through a vital materialist take on my practice, and on my practice-based research methodology, I am able to make a contribution to unleash art jewellery from only being bound to the body.

1.5 My Art Jewellery practice

I identify my field of practice as art jewellery and in this last subchapter I will be discussing my understanding of art jewellery from a vital materialist viewpoint. I will also be referring

⁶⁴ O’Conner explains that when experiencing the *nonidentical* is not passive but an interactive process where the subject realizes its capacities when recreating itself through a responsive relationship to the world, thus a truly experiencing subject (O’Conner 2013:16-17).

to the practice of the art jeweller Kerianne Quick⁶⁵ and ways in which she interprets the concept of material thinking. I share Quick's views on what defines art jewellery and admire her practical methods and transdisciplinary practice. Furthermore I will argue that through material thinking and connecting with the materials at hand, creating that shared vital material space can broaden the scope of art jewellery.

According to Liesbeth den Besten, the term art jewellery refers to the similarities between art and jewellery or how they are one in the same form of art making (den Besten2011:9). Den Besten bases these similarities upon the lack of functionality⁶⁶ in both disciplines and the direct connection between fine artists and jewellers concerning their practical and logical techniques and methods (Den Besten 2011:7,10). In other words there is a commonality in their practical processes, whether it is similar techniques, use of materials or the capacity for material thinking. In 2012 Premsele⁶⁷, the Netherlands Institute for Design and Fashion held a symposium in Arnhem titled *Jewellery Unleashed!* which coincided with the MMKA's Jewellery Unleashed!⁶⁸ exhibition curated by Liesbeth den Besten (*Jewellery Unleashed!*, 2012). The participating speakers⁶⁹ of the symposium discussed, as the title states, the unleashing of jewellery and the crossing of boundaries between design, fashion and art (*Jewellery Unleashed!*, 2012).

⁶⁵ Kerianne Quick is a practicing art jeweller, a current professor at New Paltz state university school of fine and performing arts and she has also recently joined the faculty of the College of Professional Studies and Fine Arts at San Diego State University (Quick, 2015).

⁶⁶ I do not refer to functions of aesthetics and adornment here, but how art and jewellery pieces have no practical function and utility. Den Besten states an art object has no practical function other than aesthetics and jewellery is the same (den Besten 2011:10). Apart from tie pins or cufflinks "the function of jewellery is manifold and rather complex compared to that of other examples of applied arts, crafts and design, such as cups, cars, curtains or cutlery. Decorating, embellishing and signalling can, in essence, be seen as the main functions of jewellery" (den Besten 2011:11). Jewellery is dependent on humans, it is the wearer that has the ability to give his or her jewellery piece function and meaning which makes the concept of function "difficult to grasp" for it is subjective (den Besten 2011:11). Even though we can wear jewellery it is "practically useless" and therefore den Besten questions the practical function of wearing something hence her argument for jewellery as an art form (Goudsmit 2012:4).

⁶⁷ As of 1 January 2013 Premsele has merged with Nederland's Architecture Institute and Virtual Platform (*Jewellery Unleashed!*, 2012).

⁶⁸ *Jewellery Unleashed!* was a joint project with the MMKA (the Museum voor Moderne Kunst Arnhem) and ArteZ Institute of the Arts. The exhibition focused on the cross-disciplinary relationship between art, fashion and other design fields. The exhibition illustrated contemporary jewellery crossing borders as it breaks free of the body and wanders on the walls, floors and out into the city streets (*Jewellery Unleashed!*, 2012).

⁶⁹ The speakers were Alba Cappellieri, Benjamin Lignel, Roseanne Bartley, Noom Passama, Monica Gaspar and Naomi Filmer (*Jewellery Unleashed!*, 2012).

Lisa Goudsmit⁷⁰ explores the themes discussed at the symposium including an understanding of the definition of art jewellery in her article, *Jewellery Unleashed!: Crossing Borders*. In an interview with Goudsmit, Liesbeth den Besten states that there are restrictions in the definition of jewellery as a discipline but the phenomenon of jewellery as an artistic medium has various interpretations. According to den Besten, jewellery makers should create work from a jewellery perspective, from jewellery thinking, in order for it to be viewed as jewellery (Goudsmit 2012:10). In other words it is the starting ideas, processes and working methods that can define something to be jewellery or art jewellery (Goudsmit 2012:12). I see my work as art jewellery because it not only has similarities to art but it can also be defined as art. Jewellery can in some ways be said to be my artistic medium.

My work lacks utility and practical function (see footnote 30) and mostly it is not even wearable. I am able to define my work as art jewellery because, according to den Besten, it was made from a jewellery perspective, with initial jewellery methods, techniques and processes. Jewellery in a general sense is my source, my starting point; but it is not necessarily my outcome (den Besten 2011:10). Sometimes I intend or plan for a more wearable jewellery piece but as the idea or the materials develop, as I let the vibrancy of my materials surface, the outcome changes. The vital materiality within my materials directs the processes and therefore alters the decision-making process. For example, after the first two lace works (Figures 2 & 3) crystallized successfully, I immediately started on designs to transform them into wearable jewellery pieces. Figure 3 has a brooch pin and can be worn on the body, but the salt crystallized occhi piece in Figure 2 presented itself better as a more sculptural piece. It was this piece that motivated me to move across the boundaries and explore my work in a more intuitive way, to embrace a more material thinking method. Through the inability to transform my salt crystallized lace work into jewellery, I was able to see them as *actants* instead of objects that still needed to become jewellery.

Goudsmit asks whether perhaps jewellery as a discipline lies at the periphery of art, design and craft. If this is true it has an advantage of knowledge from all the cross-over disciplines (Goudsmit 2012:5). Den Besten states that jewellery artists should use their freedom to

⁷⁰ Lisa Goudsmit is a journalist, project manager and concept developer in the field of design (lisagoudsmit.com)

discover new forms, materials, techniques, constructions and concepts (Den Besten 2007:1).

In an interview with Goudsmit, the art jeweller Kerianne Quick states that:

Jewelry can be anything that relates to or is in confluence with the body. (...) The definition of the body can be questioned. Is the human body the only body, or can jewelry be made for other bodies? And further, can the body itself be jewelry? (Goudsmit 2012:7)

Goudsmit states that jewellery makers are challenging the conventional restrictions of jewellery's connection to the human body (Goudsmit 2015:15). The boundaries of what define jewellery or art jewellery is broadening. It is because of the change and the crossing of disciplines that den Besten places emphasis on jewellery *makers*, instead of jewellers, or jewellery designers (Goudsmit 2012:5). Jewellery makers are "material boys and girls", as den Besten terms it, who work more intuitively creating their own processes as they go along (Goudsmit 2012:5). Goudsmit concludes that the borders are able to be crossed because of their flexibility; they are being crossed in a natural way, "like material being shaped in jewellery making" (Goudsmit 2015:15). In other words, the materials are leading the crossing of boundaries between disciplines. I was able to cross boundaries between art and jewellery through acknowledging the material agency within my work: by unleashing the *actants* I was able to unleash my jewellery practice. In my opinion I would not have been able to liberate it if it was not for the salt. The recalcitrant characteristic of salt in some ways forced my hand, opened the door for me to a more transdisciplinary practice.

In her thesis⁷¹ statement, Quick elucidates her interest in the source of materials. She explores the relationship between source and material through investigating the material's origins, its history and the ways in which the material collects an identity until it ends up as objects (Quick, 2011). Quick aims to create a tangible bond by personally gathering the materials and information, thus personalizing the connection to the source of the materials (Quick, 2011). Thus she sees herself as a "liaison", bringing the source world to the viewer's world in order to discover how her role as connector influences the form of the object and the way in which the viewer interprets this formulation⁷² (Quick, 2011). Quick investigates

⁷¹ Quick received her Master of Fine Arts (Metals) at the University of Illinois at Urbana-Champaign. Her thesis is titled *Material Matters* which coincided with a collaborative MFA exhibition held at the Krannert Art Museum in Champaign on 16 April 2011 (Quick, 2011).

⁷² Quick's work aims to create awareness in the viewer of the "historical, economical, and geopolitical forces that brings an object into existence" (Quick, 2011). In a broader context her work "is about the global

three materials, namely copper, sugar and wool, as well as their sources for her masters in fine arts and metals. She descriptively took notes of each process and step that was taken from the point of origin to the end art work at her MFA exhibition. I am particularly interested in her work because she uses a material thinking method, or vital materialist viewpoint when working with her materials, in the way that she foregrounds the history and identity of each material. Furthermore she sees herself as an art jeweller and her practice is transdisciplinary, an approach with which I associate.



Figure 9: Kerianne Quick, *Material Matters*. (2011). MFA Exhibition: Krannert Art Museum, Champaign. (Quick, 2011).

context in which objects are made and cross-cultural negotiation” (Quick, 2011). She aims to question “consumer habit and notion of authenticity” in creating a role for the “artist as a consumer and promotor of a product” (Quick, 2011).



Figure 10: Kerianne Quick, *Material Matters*. (2011). North Ronaldsay sheep fleece. MFA Exhibition: Krannert Art Museum, Champaign. (Quick, 2011).

Quick personally visited North Ronaldsay sheep farm and investigated the diet, environment, and habits of the sheep. She took part in the collecting of the fleece and the sorting, washing, drying, carding and transporting to Champaign, where she created the final art work (Quick 201:28-29).



Figure 11: Kerianne Quick, *Untitled*. (2011). Hawaiian Turbinado Sugar. MFA Exhibition: Krannert Art Museum, Champaign. (Quick 2011:22,23).

In the same way Quick traced the route of the Hawaiian Sugar, from the sugar cane farm, to the milling, shipping, processing, packaging, and distribution, to where she purchased the sugar and created sugar neckpieces (Quick 2011:20).



Figure 12: Kerianne Quick, *Untitled*. (2011). Photographs. MFA Exhibition: Krannert Art Museum, Champaign. (Quick, 2011).



Figure 13: Kerianne Quick, *Material Matters*. (2011). Photographs. MFA Exhibition: Krannert Art Museum, Champaign. (Quick 2011:14-15).

Lastly Quick experimented with the effect copper has on the skin. Just as the case with the previous two examples, Quick followed the copper's origin from its natural state at the White Pine mine in Michigan, through all the mining procedures, refining, cleaning, and casting, to where she bought the copper (Quick 2011:12). Thereafter she used jewellery casting and wire drawing methods to create four rectangular copper wires which were worn tight against the human skin for two weeks (Quick 2011:13). Quick photographed the effect copper has on the human skin over a period of time, and exhibited these photographs.

Quick is guided by the materials; by acknowledging the importance of the source and origin of each material she acknowledges their material agency. She places them first, gives them space to reveal themselves to her. She states that, "as a maker, I cannot create what the material holds within it, thus I borrow the power of the material to communicate. In turn, as a maker I release a form of the material's own agency that it cannot release itself. This is a cooperative act" (Quick 2011).

I agree with Quick: as a maker I cannot create, control or manipulate the inherent vibrancy within my materials, especially not salt. However, I am not borrowing this power to convey some kind of message. I am creating a space where my materials are able to reveal their material agency. By providing my materials with this space they are able to reveal their own histories and inherent identities. I do acknowledge the importance of the history and origin of my materials; I am particularly interested in the vast history of salt, and working with it continuously reminds me of this history. However, this is my personal knowledge of salt and the viewers may or may not share my knowledge; but they can experience it on a smaller scale, or in fragments thereof. For example, a viewer may experience a sense of time - the time it took for the salt to grow - and history. Time creates history, and if an art piece is time consuming it has a history. The viewer may also be able to recognize the dominance of salt in the way it crystallizes over the other materials, and the way the steel and copper react to the crystallization of salt. In this way, through experiencing my art works, the viewer can come to understand the power and influence salt has over other materials. In a general sense this is my message: to create awareness of the histories within materials, and the ways in which they influence our histories.

1.6 Conclusion

My practice consists of materials and techniques with which I am familiar. In my first sub-chapter I discussed how, through play, experimentation, unconscious and intuitive decision making, I acquired a deeper knowledge of these familiar materials and techniques. Constantly working and spending time with a material or a specific technique can expand and develop your understanding of that material or technique. A specific knowledge of “handiness” is learned, and an embedded but ‘habitual’ knowledge can be accessed (Bolt 2006:5). After I analysed my processes, methods and practical work, I came to the conclusion that this process, my process, is time consuming and it acquires attentiveness and awareness.

It took time and awareness for me to see my materials as *actants*, vibrant matters that live in and around me. Jane Bennett’s strategy for cultivating enchantment through play and developing of the senses was my starting point. Through experimenting with play I was able to create the space for salt to shock and entice my senses to awareness. After salt cultivated my initial ability to see, I was able to realise and understand the enchantment in my other materials too. Salt not only paved the way for me to see and understand all my materials as enchanted; it also aided in revealing my practical process as enchanted. I came to understand my unconscious and intuitive process as a form of Bennett’s enchantment that transfixed my mind and transported my senses.

The enchantment in my materials and processes created awareness, and I started to pay more attention to the intrinsic vitality of my materials. A joining of my hands, eyes and mind started to connect with the life force of my materials, and I started to practice material thinking. This caused me to become aware of the intelligence in my materials, and realised they are what Latour refers to as *actants*. My materials became vibrant matters of the material world, living and *affecting* human and non-human bodies. By starting to practice material thinking, and accepting the material agency in my materials, I was able to define my role as a participating vital materialist creating moments of connection between human and non-human bodies. In the end this role enabled me to cross the boundaries in my practice to where it is now: Art Jewellery.

Chapter 2: Salt, a vibrant mineral in Alchemy, Metallurgy and art jewellery practices

2.1 Introduction

In this chapter I discuss the alchemical and metallurgical characteristics of my art jewellery practice and processes, with special focus on my salt experiments and the vibrancy of the metals, steel and copper, which greatly influence my work. Mircea Eliade (*The Forge and the Crucible*), Cathy Cobb, Harold Goldwhite (*Creations of Fire*) and Mark Haeffner (*The Dictionary of Alchemy*) will aid me in a brief and somewhat mystical historical overview of alchemy and metallurgy. My objective is to draw on the mysticism and magic in the practice of alchemy and metallurgy in order to perceive my work from this perspective. Following the historical overview I will conduct a thorough analysis of the alchemical and metallurgical characteristic within my practice regarding the use of different salts and the metals steel and copper. I will discuss the similarities between my practice and alchemical practice, which, according to Eliade, originates from prehistoric practices of metallurgy.

First I will discuss experiments I conducted with salt (NaCl), Epsom salt, Borax and Rochelle salt; and secondly I will discuss the two metals, steel (an iron carbon alloy) and copper, and their physical and chemical effects within my practice. Throughout this chapter I will also focus on the practitioner by discussing the shared vital materialist characteristic in the art jeweller, alchemist and metallurgist.

Since this chapter will in part focus on the metals I used in my practice, I will lastly draw on Jane Bennett's vibrant matter theory, especially focussing on her investigation of the 'life of metal'. Bennett uses metal as an example of an inorganic matter to substantiate her claim that materiality itself is vital (Bennett 2010:53). In her opinion there is such a thing as a "mineral or metallic life" (Bennett 2010:53). Bennett discusses a double vitality in metals: metal has a chemically tested intrinsic vitality, and metal is an *actant* with the life force and power to *affect* human and non-human matter. Bennett's use of iron as an example of a vibrant inorganic matter is particularly appropriate because it corresponds to Eliade's descriptions of the mysticism surrounding iron, and iron's presence in my work. In this

chapter I will aim to argue for the enchantment, vibrancy and ‘a life’ within myself (an art jeweller), within my practice, my chosen materials and the final art works, as seen through an alchemical and metallurgical lens.

2.2 A Historical Overview: Alchemy and Metallurgy

The history of chemistry starts with artists, healers and metal workers. It is through the observation of the artisan that early philosophers were led to chemical theories (Cobb & Goldwhite 1995:xii). Aristotle's theory of the four elements⁷³ (fire, water, earth and air) was one of these theories. Alchemy⁷⁴, also known as Alexandrian practice⁷⁵, is a popular theory which lasted for about two thousand years because of its intuitive appeal and, no less important, its promise of creating gold (Cobb & Goldwhite 1995:xii). Mark Haeffner defines alchemy in his *Dictionary of Alchemy* as "the arcane art of transmuting base metals into gold" (Haeffner 1991:xii) and the alchemist as an "extinct species of proto-scientist who dealt in delusion" (Haeffner 1991:xiii).

Alchemy was born through the merging of philosophy and practice, thus chemistry and the practice of the artisan (Cobb & Goldwhite 1995:30). Alchemy was ‘hypothesis testing’; it was experimental, and all the knowledge obtained from the different techniques and observations was in turn used in practical chemistry of medicine, metallurgy and art (Cobb & Goldwhite 1995:30). In *The Forge and the Crucible*, Mircea Eliade states that the alchemists contributed to natural sciences without knowing, their only concern was “mineral

⁷³ Salt is one of the three principles in the *Tria Prima*, the doctrine of Theophrastus Paracelsus, a Swiss physician and medical alchemical practitioner (Haeffner 1991:225). Within this doctrine *Salt* is “the fixed principle of a body, weighty, solid, and uniting the greatest strength, yielding neither to iron or fire” (Haeffner 1991:225). The *Tria Prima* doctrine is based upon the three mystical principles, salt, sulphur and mercury, which are the fundamental principles of all matter (Haeffner 1991:198).

⁷⁴ The word *alchemy* has Arabic origins; *alchemy* is derived from the Arabic word *the chymia* which translates as the practice of chemistry (Cobb & Goldwhite 1995:29).

⁷⁵ According to Cathy Cobb and Harold Goldwhite, alchemy and its origin date back to 300BCE Greece where Aristotle was the educator of Alexander, most commonly known as Alexander-the-great (Cobb & Goldwhite 1995:27). Alexander himself had the ability to wave contradiction away as seen through his mass conquering in the East and West (Cobb & Goldwhite 1995:28). He was known for being "one of the great homogenizing influences of ancient world" (Cobb & Goldwhite 1995:28). Most of the cities he conquered were renamed after him; one of them was Alexandria of Egypt, a port on the Nile (Cobb & Goldwhite 1995:29). Within this city a new and hybrid culture started to grow. Philosophical traditions started to blend with practical knowledge to create alchemy, thus alchemy is referred to as Alexandrian practice (Cobb & Goldwhite 1995:29). There are also variations of alchemy such as Indian alchemy, Islamic, Chinese alchemy, and many more variations with small differences but overall the goal is more or less the same, to find gold or everlasting life, thus finding the Philosopher’s stone or the Elixir (Eliade 1978:160). I will mostly be referring to Alexandrian practice if not indicated otherwise.

substances and living matter” (Eliade 1978:183). Thus alchemy became the platform to test and experiment, and the alchemist’s only goal was transmutation of one material into another (Cobb & Goldwhite 1995:30) or “to change the alchemist’s own mode of being” (Eliade 1978:183). Mostly the goal was to find gold, or obtaining the Philosopher’s stone⁷⁶; however, for some alchemists the goal was an inner transmutation, for example transmutating the old into the young, creating immortality and finding the elixir that could give them eternal life (Cobb & Goldwhite 1995:30). The alchemists truly believed that transmutation was possible because they saw transmutation happening all around them (Cobb & Goldwhite 1995:30).

There were two methods to produce gold within the Alexandrian alchemy practice. The first approach was to make a material appear gold-like, in reference to the theory that if the material obtained enough qualities of gold then it would in the end become gold⁷⁷ (Cobb & Goldwhite 1995:34). The second method was to treat the metals as living organisms. The aim of this approach was to transfer the soul within the gold to another base metal and make it gold (Cobb & Goldwhite 1995:35). Haeffner states that it is difficult to find and truly understand alchemy's true meaning, for most concepts are "hidden within a complex structure of archetypical images and symbols", and it was because of this secrecy that the practice of alchemy is commonly associated with magic⁷⁸ tricks, forgery, witchcraft, and which in the end led to its condemnation (Haeffner 1991:xii-xiii). According to Haeffner, most leading alchemists came in contact with magic at some time or other in their practice, as magical universe theories or in the form of magical “energetic and experimental practice” (Haeffner 1991:134). For Haeffner the true alchemist would "seek a mystical insight into the divine secrets of nature through a rigorous course of study involving both practical chemistry and religious meditation” (Haeffner 1991:xvii).

⁷⁶ The Philosopher’s stone has many different descriptions and meanings, but Mark Haeffner describes it as “a pure substance which could transform, transmute or perfect gross matter” (Haeffner 1991:214). The stone presented in the form of “a glorified matter” with transcendental dual qualities (Szulakowska 2011:1). The stone is considered as synonymous with the elixir which is also a transmuting agent (Haeffner 1991:216). Carl Jung interpreted the stone as the symbol of opposites in union and inner balance, whereas other alchemists interpreted the stone or the elixir as “a magic source of wealth, health and long life” (Haeffner 1991:216).

⁷⁷ This approach became popular when it was discovered that arsenic sulphides could dye metal surfaces white and with polysulfide’s yellow, thus giving gold-like appearance (Cobb & Goldwhite 1995:34-35).

⁷⁸ Since earliest times alchemy has been associated with magic, ideas of rituals, spell casting, charming and summoning of spirits (Haeffner 1991:133-135). Most of these magic associations come from astrological theory and occult influences (Haeffner 1991:133).

The alchemist and metallurgist used similar methods within their practice which "included distillation, sublimation⁷⁹, fusion (melting), solvation (dissolving), filtration, crystallization, and calcination⁸⁰" (Cobb & Goldwhite 1995:35). Eliade finds a connection between alchemy and metallurgy in the primitive myths of these two practices (Haeffner 1991:149). For Eliade alchemy originates from prehistory and primitive times, when stories of metals being born from the womb of the earth mother was part of a belief system (Haeffner 1991:xiv). In Eliade's opinion, alchemy derived from these magical concepts and animistic theories⁸¹ where natural objects like plants and metals have an innate soul, and thus alchemy is an adaptation of these myths surrounding mines, minerals and metals (Haeffner 1991:xiv).

According to Eliade it is because of mythical and primitive theories that smiths⁸² and metal workers have been branded as secretive and magical because of their ability to deliver metals from the "womb of the Mother Earth" (Haeffner 1991:xiv-xv). Eliade draws a connection between the smelter, the smith and the alchemist and their shared concern with "transformation of matter, its perfection and transmutation", for, according to him, all three groups share a magical and religious practice (Haeffner 1991:xv). Eliade refers to the alchemist and the smith as 'masters of fire', for the alchemist and smith control their

⁷⁹ Sublimation is the process of "transforming a heated solid into a gas with no liquid phase" (Cobb & Goldwhite 1995:35)

⁸⁰ Calcination is the process of "heating to a high temperature without melting, this usually leads to oxidation"(Cobb & Goldwhite 1995:35).

⁸¹ There are various interpretations of what defines animism. One of these interpretations is respecting other persons (which could be human or non-human) as beings instead of objects (Harvey 2006:xi). Another interpretation is knowing what it means to be 'alive' and what can be considered as 'alive' (Harvey 2006:xi). Animism is also in broader terms referred to as the 'belief of spirits' which in itself is a broad and very complex term (Harvey 2013:3-4). However 'spirit' can be interpreted as the life or vitality in human and non-human bodies and being an Animist can then define a personal relationship between 'spirits' that reside in human or non-human bodies (Harvey 2013:4). Thus humans can have a soul or 'spirit' than can connect with an animal or plant's 'spirit' then animism could be defined as the "performative act in which people engage with other species or material things" by recognising the consciousness of matter (Harvey 2013:6).

⁸² A smith is an iron worker and according to Eliade the smith had nomadic qualities because he was always on the quest to find raw materials (Eliade 1978:25). The smith was known for spreading "myths, rites and metallurgical mysteries" (Eliade 1978:25). These characteristics of the smith remind me of the salt merchant. Consumer goods, especially salt, can be bartered with and thus it is a form of communication which in turn creates social structures (Laszlo 2001:59,69). Historically speaking, when bartering took place, for example between salt workers, wood cutters, sailors or mule drivers, an interrelationship was created. A language or traces thereof is left behind together with social practices (Laszlo 2001:60). In other words salt is responsible for interrelations between different people and cultures and this reminds me of the smith who spreads myths and metallurgical mysteries as he travels in search of his raw materials. According to Eliade the smith was once referred to as an expert; if he made armour he was named a lord or master, he was honoured like a prince and obtained positions at court (Eliade 1978:87). Today the smith is a humble and a poor person (Eliade 1978:87) and this also reminds me of the former status of salt as a sought-after white gold and its current status of mundane commodity.

medium with fire and transform them from one state to another⁸³ (Eliade 1978:79). The alchemist, smith and smelter use fire to speed up time-consuming natural processes (Eliade 1978:79). Being a 'master of fire' and having the ability to speed up natural processes was a specialised and sacred gift and it was practiced by shamans, medicine-men and magicians. Having the ability to make and control fire meant you had a "magico-religious power which could modify the world" (Eliade 1978:79). The sorcerer, alchemist and smith "have gone beyond the human condition and have achieved the level of spirits" (Eliade 1978:81) to have some kind of 'inner heat'⁸⁴ to be able to enchant, to create and to transform matter through fire or this 'magico-religious power' (Eliade 1978:80).

As I have explained with the help of Eliade and Haeffner, the origin of alchemical traditions lies at the secrecy of the ancient craft traditions of smithing and metallurgy. The main technique in metallurgy is using "acids to separate and purify metals" from their natural state (Haeffner 1991:150), which in short also defines the practice of alchemy. The rarity of a mineral influences its value; for example to the Aztecs iron was of higher value than gold (Eliade 1978:22). Similarly in 3000BCE Egypt iron was regarded as a heavenly metal but between the 13th and 15th centuries silver was the rarest and most costly metal in Egypt (Cobb & Goldwhite 1995:7-9). In Southern Africa iron was more precious and practical than gold, which was in abundance (Eliade 1978:42). Many "myths and magical theories arose concerning the origin and birth" of these rare and valuable metals (Haeffner 1991:149), and only the smiths and metal workers had the crafting and metallurgical abilities to transform and rework these treasured and valuable metals. Even though copper⁸⁵ was discovered

⁸³ The salt boiler is in my opinion also a 'master of fire', boiling the brine to transform the liquid into a solid salt. According to Multhauf, boiling brine or salt water to produce salt is one of the earliest salt production techniques along the European coast (Multhauf 1978:21). This technique can be practiced on a small scale using copper or ceramic pots or on a larger scale like the Salina salt works in New York which burned out an entire surrounding wood supply in the 1820s in order to produce salt by daily boiling gallons of brine in kettles (Laszlo 2001:54).

⁸⁴ According to Eliade, these sorcerers and magicians drank salt, amongst other things, to increase their 'inner heat' and power (Eliade 1978:80).

⁸⁵ The technical discoveries made with copper and bronze helped with the metallurgy of iron (Eliade 1978:25). According to Eliade, copper has been used since the Neolithic Age (Stone Age) and it was handled as if it was stone or bone since it is soft enough to work by hand, unlike iron (Eliade 1978:25). Copper is the eighth most common metal on earth and therefore it was easily obtained on the earth's surface before the discovery of mining the ores (Chaline 2012:14). It was only around 4000 - 3500 BCE that techniques for smelting copper was discovered and or practiced (Eliade 1978:25). Copper is an aesthetically attractive metal with its red, yellow and orange hues and corrosive but pleasing green patination (Chaline 2012:14). The metallurgy of copper and bronze transformed civilizations but was soon replaced by the earth's "fourth most common element": iron (Chaline 2012:16, 82).

before iron, it did not possess the metallurgical rites and symbolism like iron, in fact iron superseded bronze and copper and their mythologies (Eliade 1978:25). It is for this reason I will be focusing more on the mystical history and myths of iron instead of copper.

We know today that iron is extracted from the earth but it was once believed to be a heavenly substance charged with sacred powers, a symbol of the 'beyond' and a strange and unfamiliar transcendental object (Eliade 1978:27). It is because of iron's otherworldliness that it was believed to possess powers and the ability to perform miracles (Eliade 1978:28). Eliade states that "...iron contains in itself a magic force which is the enemy of life and of peace" (Eliade 1978:29). The smith had the ability to work with this magical metal and was thus gifted with extraordinary powers, almost a "demi-god" (Eliade 1978:28). Iron was used to make tools such as knives and axes which can keep demons away or embody evil spirits; consequently iron retains an ambivalent character⁸⁶ (Eliade 1978:28-29). The power starts with the smith, moves through the "magical instruments"⁸⁷ to create a powerful object and, according to Eliade, this "art of creating tools is essentially superhuman - either divine or demonic" (Eliade 1978:29). This "magic in instruments" is not only applicable to iron but it is a good example to illustrate the 'magic' in the maker, the process and the end product. Steel knives, for example, have the power to cause injury or take a life, but on the other hand it can also be used to protect and defend. Either way it has an *effect* on human and non-human bodies.

As I have discussed in the previous chapter, my art-making process aided me in understanding my materials as vibrant matters. I argued that using play, unconscious and intuitive decision making enabled me to understand my process as enchanted and activated my material thinking. This in turn allowed me to see my materials and work as *actants* and me as a participating vital materialist in my practical process. In this chapter I argue that by

⁸⁶ Eliade's mystical description of iron as an ambivalent character reminds me of the ambivalence of salt. Salt can preserve and destroy matter (human or non-human) at the same time. For example salt can preserve food but it corrodes metals like iron and copper and living organisms cannot survive in high concentrated salt areas, except for the microorganism *Halophile* who lives in very high concentrated environments (Laszlo 2001:92). Salt is needed for the human body to function but too much salt can cause diseases (Kurlansky 2003:5-6). Salt enriched colonizing countries, but also lead to their downfall. Similarly iron can destroy or enrich, great victorious iron armoured armies destroyed numerous cities for centuries (Chaline 2012:283). Iron was the main driver behind the Industrial Revolution and its aftermath (Chaline 2012:184).

⁸⁷ The "magical instruments" are the iron tools like hammers and anvils that are used to make other iron tools or objects like knives, swords, or armours. Eliade states that these "magical instruments" also share the "sacred quality" (Eliade 1978:29).

using a somewhat alchemical and metallurgical process I am also able to come to understand the 'magic' in myself (the maker), my process and my work (*actants*). The alchemical process is based on understanding metals as living organisms with a 'soul' and it promotes a 'magical, energetic and experimental' practice. Alchemy, according to Eliade, originates from the primitive myths and stories of metallurgy, thus there are similarities in the processes and between the practitioners in both practices. The alchemist, smith and smelter practice similar processes and essentially have the same 'inner heat' and "magico-religious power" (Eliade 1978:80). Through this 'inner heat' they use various processes to transform their medium, causing the process and instruments utilized to also obtain a similar "magico-religious power".

This historical overview of alchemy and metallurgy created a different perspective to understand my practice. The alchemist and metallurgist use their magic, 'inner heat' and "magico-religious power" to activate the magic in the instruments in order to transform and transmute their materials into something even more mystical. I argue that this 'inner heat' flows within me (the vital materialist art jeweller) through to the process (enchanted, unconscious, intuitive and material thinking) and materials (*actants*) to the final art work. Thus this intrinsic 'inner heat' creates an internal connection between me, my process, my materials, instruments and final art works

2.3 An Alchemical and Metallurgical Process

In Chapter One I discussed how I initiated my practical process. In this chapter I will further discuss more focused experimentation. First I started with steel and copper as reagents to colour and stain the lace, and in the end the steel, copper and containers reacted to the salt and became art works themselves (see Figure 14). It was at this point, when my making process and instruments became part of my work, that I realised there is an alchemical and metallurgical characteristic to my work. My process became a magical "energetic and experimental practice" (Haefner 1991:134) and my containers and reagents became "magical instruments" (Eliade 1978:29). In this sub-chapter I will discuss this characteristic that exists in my practice, processes, materials, instruments and final art works. I will argue that there are similarities between my practical and theoretical process and the practice and

theory of alchemy and metallurgy. The similarities include the physical and mystical⁸⁸ transformation of matter, the physical making process and presentation thereof as well as the presentation of final art works, mysticism in shared materials and instruments and finally the correlation of magical and experimental practical processes.



Figure 14: Catherine Ferreira, *Reagents Transformed*. (2014-2015). Fine salt, steel and glass.

⁸⁸ Here I am referring to what Jane Bennett calls the intrinsic vibrancy of matter. I am using the word mystical rather than spiritual when referring to the vitality in matter. Bennett states that the intrinsic vibrancy is not a spiritual “life force” added to matter but it is a life force and vitality that is inherent and essential within matter (Bennett 2010:xiii). Thus I understand my practice from an alchemical viewpoint, as physically changing the form or state of a material as well as transforming or activating its intrinsic vitality, therefore transforming matter in a mystical way, a double transformation.



Figure 15: Catherine Ferreira, *Work in Process I*. (2014-2015). Salt, thread, steel, copper and glass.

Throughout this chapter I refer to the similarities between the presentation of my practice and that of alchemical practice. This presentation of my work is based upon how I arrange and display my work during my making process and how I exhibit my final work. My making process and final art works are interrelated, and as a result my work is exhibited as a continuing process. I find similarities between the presentation of my work and that of alchemy from visual representations of the alchemist, alchemy as a practice and the laboratories of the alchemist. There are numerous paintings, drawings and prints with alchemy as a theme, but I will briefly identify a select few 17th century ‘Netherlandish’ alchemy paintings⁸⁹ from the Chemical Heritage Foundation⁹⁰ in Philadelphia’s art and

⁸⁹ I will predominantly be referring to Jacob Wamberg’s *Art and Alchemy*; with special focus on chapter 9 and 10. Chapter 9 is Lloyd DeWitt and Lawrence Principe’s essay on *Alchemy and Its Images* from the Eddleman and Fisher collections at the Chemical Heritage Foundation, and chapter 10 is Jane Russell Corbett’s essay on *Convention and Change* of alchemical depictions in 17th century paintings from the Netherlands.

alchemy collection. I chose to mention these selected paintings in order to correlate any further discussion conducted within this thesis on my practical presentation to that of alchemical practices. The only visual representations of what alchemical laboratories looked like are available from paintings, drawings and prints. Therefore these paintings serve as examples when I compare the presentation of my practice to that of alchemy. In addition, alchemy as genre, especially depicting alchemists working in their laboratories, was in vogue in 17th century painting from the Netherlands (Corbett 2006:250). I am aware that these paintings are not factual but subjective depictions of what actual alchemical laboratories looked like, but I refer to them for the imagery and fascination they present, which coincide to an extent with the presentation of my practice. Together these art works capture the practice of alchemy and chemistry ('chymistry'⁹¹) revealing practices of transmutation, refining of metals, refining of bodily elixirs and the ambiguous attitude towards 'chymistry' (DeWitt & Principe 2006:223-224). Thus various practices and activities of alchemy are depicted in these paintings filled with symbolic elements (Corbett 2006:249-251).

David Teniers II, according to DeWitt and Principe, was famous for painting within the alchemical genre and depicting alchemists as successful in their endeavours (see figure 16 and 17) in contrast to many negative imagery by other painters of that time (DeWitt & Principe 2006:222, 227). Teniers illustrated (Figures 16 & 17) alchemists as "studio men" in reference to scholars at work, experimenting and discovering (Corbett 2006:251). I can relate to Teniers's paintings as I too am a scholar at work experimenting in my studio and constantly discovering and acquiring new knowledge from my materials and processes. Figure 18 shows Franz Christoph Janneck's *The Uroscopy* which illustrates the close ties between chemistry and alchemy ('chymistry') by depicting a physician with questionable and pretentious methods (DeWitt & Principe 2006:237). What attracted me to this painting is the "cupboard of sparkling glassware" in the background (DeWitt & Principe 2006:237). It reminded me of the glass and steel containers on my shelves, each containing lively materials crystallizing, growing and transforming constantly.

⁹⁰ One of the largest alchemy themed paintings and prints collections is currently housed at the Chemical Heritage Foundation at the University of Pennsylvania in Philadelphia (DeWitt & Principe 2006:222).

⁹¹ 'Chymistry' is the term used by DeWitt and Principe instead of individually referring to alchemy and chemistry. This term was used in English in the 17th century (DeWitt & Principe 2006:223). I will only be using this term with reference to their thoughts.



Figure 16: David Teniers II, *The Alchemist* (1649). Oil on canvas. John G. Johnson Collection: Philadelphia Museum of Art. (Wamberg 2006:252;Figure 10.1).



Figure 17: David Teniers II, *Alchemist in his Workshop* (mid. 17th century). Oil on canvas. Chemical Heritage Foundation Collections, Eddleman Collection: Philadelphia Museum of Art. (Wamberg 2006:227; Figure 9.3).



Figure 18: Franz Christoph Janneck, *The Uroscopy* (18th century). Oil on copper. Chemical Heritage Foundation Collections, Fisher Collection: Philadelphia Museum of Art. (Wamberg 2006:236; Figure 9.8).

Many theorists argue that the alchemists' search for gold through transmutation of base metals is not a practical but a psychological search. As I have briefly discussed in the historical overview, the goals of the alchemists vary. Cobb, Goldwhite⁹², Haeffner⁹³ and Eliade⁹⁴ mention the psychological goal of the alchemist for self-transformation, and Carl

⁹² In *Creations of Fire*, Cobb and Goldwhite are more concerned in discussing the physical practice of alchemy relating to chemistry, but they do state there are different goals and they vary from alchemist to alchemist. For some transmutation meant turning the old into young and creating the elixir for immortality, but for others it was simply to find gold (Cobb & Goldwhite 1995:30).

⁹³ According to Haeffner Eastern alchemy and alchemist was more concerned with life transformation which included enhancing life quality, vitality and immortality instead of physical transmutation of metals, which he states, was more practiced by Indian and Chinese alchemist (Haeffner 1991:222).

⁹⁴ In *The Forge and Crucible*, Eliade draws a correlation between tantric Hatha yoga and alchemy within Indian alchemical practices (Eliade 1978:128). He states both methods are concerned with transmutation and transformation of matter (this includes the body) since "both Tantrists and alchemist strive to dominate 'matter'", defy time and transform the world to an ontological freedom (Eliade 1978:129). The Chinese alchemical discipline, according to Eliade, consisted of various myths around elixirs of "immortality and immortal saints", experimental methods for prolonged life, ultimate happiness, blessings and spontaneous spiritual experiences (Eliade 1978:112). Lastly Eliade states Jung's *Mysterium Coniunctionis* contributes to

Jung used an alchemical model in explaining his psychoanalytical theories of the unconscious mind. Jung used alchemy as a model to explain the unconscious self: instead of transforming matter, the alchemist essentially aims to transform or free him- or herself (Haeffner 1991:xxiii). According to Jung, the unconscious mind seeks methods to communicate with the conscious mind in the same way that the alchemist works to uncover symbols and myths (Jung 1976:395-396). It is understandable that the alchemist truly believed in the life of matter, for, according to Jung, matter was their own psychic life and through finding the right stone, elixir or method they could save or free their own life and in the end the “soul of the world” (Haeffner 1991:xxiii).

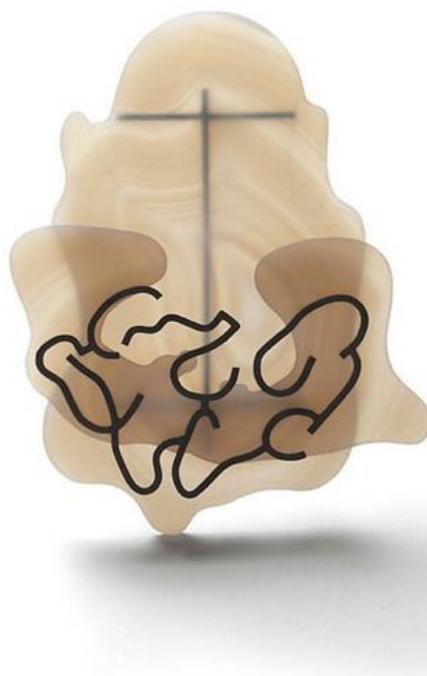


Figure 19: Ruudt Peters, *SHEN bai se peng gu, Brooch* (2013). Agate by laser cut and silver, 11.5 x 13 x 1.2 cm. Photo by Rob Versluys (Peters, 2013).

Jung’s psychological take on alchemy has been utilized by many contemporary art jewellers such as Ruudt Peters⁹⁵ and Inge Marais, a former post-graduate jewellery design student from Stellenbosch University. Ruudt Peters has had an alchemical theme in his work

“rediscover the fascination of alchemical symbolism and grasp the historical importance of the alchemist’s dream” (Eliade 1978:196).

⁹⁵ The Dutch conceptual jewellery artist Ruudt Peters is a pioneer in challenging and transcending the boundaries of jewellery. He questions traditional definitions of jewellery such as wearability, adornment, context, materials and the presentation of jewellery (Peters, 2013).

throughout his career (Peters, 2013). However, Peters is more interested in Chinese alchemy which mainly focuses on the inner life force Qi (also the title of his exhibition), instead of Western alchemy's more materialist principles (Peters, 2013). Within his practice, Peters embraces alchemy as a 'proto-science' which is concerned with intuition instead of rationality (Peters, 2013). In making his *Shen* (spirit) series, Peters laser cuts his blind intuitive drawings from a transparent agate. These blind drawings served as a visual journal for Peters during his journey in China while he was researching Chinese alchemy. Thereafter silver lines were incorporated in the design, which can be seen through the transparent agate (Peters, 2013). Peters is thus more concerned with the elixirs of life, vitality and inner transformations or explorations aspect of alchemy (Chinese in particular) instead of a materialist transformation of matter into gold which is commonly practiced in Western or Alexandrian alchemy.



Figure 20: Inge Marais, *Josie se Borspeld* (2005). Soap, chicken bone, paper, acetate, adhesive tape, enamelled copper and sterling silver, 7 x 2 x 1.5 cm. (Marais 2008:10; Figure 1a).

Inge Marais explored her art jewellery practice as a transformative process through Jung's alchemical model in her thesis *Juwelierskuns en Transformasie* (Marais 2008). In her abstract she outlines her main argument, which proposes that the handling of materials is a process of self-transformation, a concept she understood through alchemical terms, especially that of Carl Jung. She explains that Jung proposes that a complete self can be created when the conscious and unconsciousness are brought into balance (Marais 2008:9). Marais aimed to "unite opposites" in her own practice by experimenting with finding a balance between contradictory materials. In Figure 20, for example, she combines soap, a cleaning product, with a piece of putrid chicken bone, unifying both materials within an enamelled brooch

(Marais 2008:11). Her practice served as a metaphor for self-realization since she saw herself as the transmuting agent (stone or elixir) who aimed to find a balance between contradictory materials (Marais 2008:9-11).

The manner in which I 'handle' my materials, as I have said, has many similarities to the practice of alchemy, however I do not see this as a self-transformational process. The alchemical approach within my practice focuses more on the mystical and magical section of alchemy and not on a psychological one. I understand my materials, especially the salt, as the trans-mutating agent, stone or elixir, and myself as a participant in the whole process. Furthermore I have discussed in Chapter One how my practice and experiments with salt, as an *actant* or transmuting agent, activated my material thinking and helped me to understand my own vital materiality. I do not see this as a self-transformational process, but rather as an awareness that has been activated by participating in this whole process. In other words, I aim to create an understanding and awareness of the vital materiality and mysticism within my materials, and not only within myself.

In the previous chapter I discussed my practical work in a kind of chronological order, from the oldest lace work to the latest metal work. I will not follow a chronological order when discussing my practice in this second chapter, but I will discuss my work under the same categories, namely play and experimentation, unconscious and intuitive decision making, repertoire, time and place as well as any other relevant influencing factors. Most importantly, I will discuss the similarities within the process of making each art work to that of alchemical or metallurgical practices. The work that I will discuss in this chapter are mostly (but not all) new work made in the first year of my masters studies, and they were made almost simultaneously. I used similar methods and processes like those I discussed in Chapter One, but with more focused experimentation for more development. For example, I no longer used lace work from my repertoire, but I created my own with crystallization in mind and I started to become more aware of the containers and reagents, choosing them carefully in order to incorporate them in my work, in other words accessing my 'handiness' knowledge (Heidegger 2010:69). The outcomes of my work continued to create enchantment and surprise, even with more planned handling and knowledge of my materials and processes.

As I have said in this subchapter, I will discuss further experimentations with copper, steel, lace work and other salts⁹⁶. I experimented with three salts, namely Epsom salt, Borax and Rochelle salt⁹⁷, which I made myself from sodium carbonate and potassium bitartrate with the help of Steven Dufresne's article on rimstar.org⁹⁸. I chose these three salts because they are transparent in their crystallized form, and my idea was to create lace work in a colour other than white (I used white thread predominantly with the first salt crystallized lace work) and let the Epsom, Borax and Rochelle salt crystallize around it completely so the lace work can be seen through the crystals. Common salt (NaCl) is white and more opaque and thus it was not suitable for my idea. I started to experiment with these three salts more or less at the same time, but the Epsom and Borax crystals grew much faster than the Rochelle salt, because the process of making Rochelle salt was very time consuming, as was the crystallization process.

With the new lace work I started to experiment with bigger and smaller pieces, and different threads and sizes. I also started to experiment with occhi and crochet techniques, sometimes combining them. As I have said, I will not discuss my work in a chronological order from this point on, because of the process I follow when making the lace. I would sometimes work on two or three occhi or crochet pieces at the same time, and at other times I would make one piece and spend all my time on that one piece until it was finished. As soon as one piece was finished I would place it in a salt solution or mixture, consequently

⁹⁶ Salt is the harmonising reaction between the compounds acid (sodium) and base (chloride). 'Salt' is also the terminology used for a class of substances. Common salt is generally 95-98 percent sodium chloride but this can vary for example in sea water there are only 73 percent sodium chloride in the total salt contents and the rest are "chlorides and sulphates of calcium and magnesium with smaller amounts of other elements, of which potassium is the most important" (Multhauf 1978:130-131). This percentage is influenced by the mode of production, man-made or natural (Multhauf 1978:131). In a salt solution compounds become positive or negative ions (they dissociate) and then a combination of ions can be subtracted, for example magnesium and sulphate can be subtracted creating Epsom salt (Multhauf 1978:131). I decided to work with four salts in my practice: common salt (sodium chloride), Epsom salt (magnesium sulphate), Borax (sodium borate) and Rochelle salt (potassium sodium tartrate). I used these compounds separately and did not combine or mix them in anyway. They were, however, combined with reagents such as copper or steel and manipulated with lace work which served as 'seed crystals'.

⁹⁷ Since I could not find any Rochelle salt I had to make it myself from sodium bicarbonate (baking soda) and potassium bitartrate (cream of tartar). Rochelle salt was first discovered by the French pharmacist Pierre Seignette in La Rochelle (Sirvastava 2011:335). The most famous characteristic of Rochelle salt is its ferroelectric property (Sirvastava 2011:335) which is when a substance, in this case a Rochelle salt crystal, displays an electric polarization (Compact Oxford English Dictionary for Students 2006. S.v. 'ferroelectric').

⁹⁸ Rimstar.org was founded by Steven Dufresne in 1999 with the aim to provide information on maintaining a more sustainable world (Dufresne 2011). Rimstar.org provided me with the best guidelines to making Rochelle salt.

there were also various crystallization processes happening at the same time. Firstly I will discuss the three salts I experimented with, followed by further experimentations with steel and copper as primary work instead of reagents. The thread work will be discussed as secondary within this chapter mainly because their influences on the specific examples discussed are supplementary, and not because of any lesser importance.



Figure 21: Catherine Ferreira, *Rochelle Salt Crystal Cluster I*. (2014). Rochelle salt, copper wire, glass and silver.

The first salt I discuss is Rochelle salt. Similar to salt (NaCl), this colourless orthorhombic crystal varies according to the surrounding temperature; it dehydrates easily (Holden & Morris 1982:111), absorbs moisture from the air, and it can dissolve in water (Rajagopal 2011:489). The property of Rochelle salt that attracted my attention was its ability to grow from a seed crystal⁹⁹ and the fact that it is colourless. The process I followed in creating my own Rochelle salt included transforming baking soda (sodium bicarbonate) into sodium

⁹⁹ A seed crystal is that which a crystal grows from and typically it is a singular grown crystal from which larger crystals of the same material can grow from (Holden & Morrison 1982:97-100). Lace also serves as a type of seed crystal for me in my practice.

carbonate and then creating a perfectly measured sodium carbonate and cream of tartar solution. When the solution was completely dissolved to a clear liquid it was filtered and immediately placed in a cool area. Over time the solution evaporated and the sodium carbonate and cream of tartar solution was transformed into clear Rochelle salt crystals (Dufresne 2011). It took five attempts before I created the perfect clear solution and it took a further two months for the solution to form small crystals before I knew my process was a complete success.

The Rochelle salt was created and crystallized in the Stellenbosch area where it also still resides. It has been a year since I created the Rochelle salt crystals and I have not seen a significant difference or change in the crystals due to weather conditions or other influences, except that it has dehydrated slightly. In *Crystals and Crystal Growing*, Alan Holden and Phylis Morrison clarifies that Rochelle salt's solubility varies according to surrounding temperatures which can also influence the growth of the seed crystals (Holden & Morrison 1982:111). Contradictory to what I have noted, Holden and Morrison state that Rochelle salt crystals dehydrate easily to such an extent that they advise keeping the crystals in a closed jar and moistening the crystal frequently (Holden & Morrison 1982:111)., My experience with Rochelle salt has been contradictory in many ways to what I have read in Dufresne, Holden and Morrison's works. For example, my production process and crystallization process took much longer and I found no rapid dehydration in my crystals so far.

Unlike salt (NaCl) the Rochelle salt does not *affect* the instruments and containers and it is also not *affected* by the containers, reagents or other materials. The lace work I decided to combine with the Rochelle salt was very thin copper wire, which also had no effect on the Rochelle salt, or vice versa. My aim was to use a piece of lace as 'seed crystal', however Rochelle salt was different to salt (NaCl) in that regard. I first had to make a Rochelle salt seed crystal and wrap the lace around it and then let it crystallize a second time. The Rochelle salt never completely covered my lace work; I would guess that if I had left it in longer the crystals would have enclosed the lace. The thin copper wire was very fragile and as a result I was not able to create perfect occhi patterns. My decision to use this particular thin copper wire was done unconsciously and intuitively. The making process for creating lace work from hair-thin copper wire was quick, playful and experimental. As I have said, my

initial idea was to cover the lace work with the clear crystals, and the Rochelle salt crystals were able partially to cover the copper wire occhi work. The Rochelle salt crystals grew on top of each other and not so much around the lace work like salt (NaCl) does. This process takes time and it is unpredictable. My initial idea was not executed to perfection but the crystals transformed my idea into something successful. The Rochelle salt crystals can crumble under medium pressure so I created silver casings for the two most successfully formed crystal clusters to finalise the art work. The Rochelle salt has an indistinct life force, which I argue is because of the time-consuming production and crystallization process. The Rochelle salt is *affected* by its surroundings but it is less prominent compared to salt (NaCl), therefore its vital materiality is also less prominent and not easy recognisable.



Figure 22: Catherine Ferreira, *Rochelle Salt Crystal Cluster II*. (2014). Rochelle salt, copper wire and silver.

As I have said, I became aware of the alchemical and metallurgical characteristic within my practice when the containers and reagents themselves became art works, and the process of making Rochelle salt just established this characteristic for me. The whole process, from start to finish, can be associated with alchemical practice (or 'chymistry'), from experimental trial and error, to the transformation of matter, to creating a magical and aesthetically

pleasing third material. The process I followed in making the Rochelle salt is as much an alchemical process as it is a chemistry experiment. I had to source the right base materials (for example only a certain brand of cream of tartar worked), which contributed to the many trials and errors I experienced. Additionally I also had to learn through trial and error which was the right measurements, containers and instruments for optimal results. In order to create the Rochelle salt crystals I conducted two transformations of three base materials to create the final crystals. This whole process reminded me of the alchemists and their continued experimentation, learning from each failed attempt to perfect the process and find the right recipe for gold. Moreover this whole process has many similarities to alchemy, from the physical and mystical transformation of matter to the experience of a magical and experimental practical process and the presentation of the practical processes and final work.



Figure 23: Catherine Ferreira, *Epsomite I*. (2014). Epsom salt and thread.

The second salt I would like to discuss is Epsom salt¹⁰⁰, a magnesium sulphate compound most commonly used medically, in the textile industry, for explosives, fireproofing and various agricultural uses (Kurlansky 2003:295). Epsomite, the term for Epsom salt or magnesium sulphate in crystal form, is a transparent to translucent white, colourless, occasionally green, red and yellowish orthorhombic crystal with a glassy and silky lustre (Pellant 2000:113). Epsomite is most commonly found in salt springs, ores and salt lake regions with Halite, amongst other minerals (Schumann 2008:30). Epsomite has a perfect cleavage and low hardness of 2 on the Mohs hardness scale (Schumann 2008:30), and therefore it is very brittle. Epsomite is also soluble in water (Pellant 2000:113) and because it is an hygroscopic mineral, it actively absorbs the moisture in the air.

I chose Epsom salt for its transparent and colourless crystals and effortless crystallization process. The process of creating Epsom salt crystals is similar to that of salt (NaCl) regarding measurements and surrounding influences, unlike the process of making Rochelle salt. An estimated quantity of Epsom salt and water was needed to create a saturated solution, and within two weeks the Epsomite crystal had grown into its current size. In order for the Epsomite to grow successfully I had to create a complete solution with boiling water, since a cold water mixture turned out to be unsuccessful during my experimentation process. Both Epsom salt crystals (Figures 23 & 24) were created in the Stellenbosch area in winter time, thus it took another week or two for the crystals to completely dehydrate. I do at times find both crystals damp, which means the crystals constantly absorb the moisture in the air, clearly revealing their intrinsic life force. The overall round form of both Epsom salt crystals (Figures 23 & 24) were *affected* by the shape and size of the glass container in which it crystallized, and the size of both crystals is the result of the duration of the crystallization process. In other words, the size is evidence of the two week duration of the crystallization process. There were no other added reagents or instruments which could *affect* or be *affected* by the Epsom salt crystallization and crystals.

¹⁰⁰ According to Kurlansky, Epsom salt was first discovered in spring water near Epsom, Surrey, in England by the plant physiologist Nehemiah Grew (Kurlansky 2003:296). The chemist Casper Neuman discovered that adding sulphuric acid to mother liquor can also result in Epsom salt, but it was John Brown who discovered that Epsom salt could be boiled out of the mother liquor (Kurlansky 2003:269). Mother liquor, as explained by Kurlansky, "is the dark blood-red water that remains after common salt (NaCl) precipitates out of brine" (Kurlansky 2003:269) thus Epsom salt, magnesium sulphate, can be subtracted from a salt solution/brine.

Lace work was submerged into the Epsom salt and water solution and the crystals formed in and around the lace work. With the first Epsomite in Figure 23, I used a white occhi piece from my repertoire to experiment with. This occhi piece was made from the thin DMC cotton perlé, thus it is a thin and delicate piece. The Epsomite completely covered the occhi and even though the crystal is transparent, the white occhi work is invisible. For the second crystal I made a crochet piece in colour and with this particular lace piece I unconsciously and intuitively experimented with different crochet stitches. This lace work was made from thicker DMC cotton perlé thread and the crochet technique is less delicate than the occhi technique in Figure 23. The crystallization process, duration and environment of both Epsomite crystals are the same but the colour, technique and thread thickness of the submerged lace work contribute to the difference in appearance of both pieces.



Figure 24: Catherine Ferreira, *Epsomite II*. (2014). Epsom salt and thread.



Figure 25: Catherine Ferreira, *Epsomite II in Process*. (2014). Epsom salt, thread and glass.

The process of making Epsomite also shares similarities with the alchemical process. The process consists of physical transformation of matter, from making a saturated solution, which entails Epsom salt dissolving in water, to the evaporation of the solution leaving the Epsomite crystal behind. Furthermore, the Epsomite crystal reacts to its surroundings, creating a mystical transformation and revealing the intrinsic life force of the crystal. In creating both Epsomite crystals I experienced a mystical and experimental process similar to the alchemical process.



Figure 26: Catherine Ferreira, *Borax and Crochet*. (2014). Borax and thread.

The last salt I experimented with is Borax (sodium borate), a transparent to opaque mineral with a glassy, greasy and sticky lustre (Schumann 2008:30). Borax is white in powder form and white, colourless, sometimes grey, green or bluish in its monoclinic crystal form (Pellant 2000:108). Borax has a low hardness of 2 and a perfect cleavage, making it very brittle, similar to Epsomite (Schumann 2008:30). Borax is also soluble in water and in time the crystal can dehydrate turning opaque white (Pellant 2000:108). After a year the crystallized colourless and transparent crystals on my crochet lace have not yet turned white, which means no dehydration has occurred, or the process is slow, which could be because of the Stellenbosch environment.

In a salt (NaCl) solution the salt crystals can grow from a seed crystal, which can be threaded lace work, and in time the salt can crystallize the entire container. Sodium chloride is the only salt I experimented with that crystallized and occupied the entire container. Rochelle salt, in my experience, could not grow from a seed crystal such as lace, but Rochelle salt crystals could be used as seed crystals. In my Rochelle salt experiment the crystals formed at the bottom of the glass container. With Epsom salt I immersed lace work in a saturated Epsom salt and water solution, and the crystals also formed at the bottom of the glass container, regardless of the lace work. Epsomite crystals grows through extensive evaporation, in other words a crystal mass replaces the solution. In my experience borax

does not crystallize from a seed crystal either but at the bottom of the container, similar to Rochelle salt and Epsom salt.

I conducted two experiments with borax; the first was unsuccessful since the crystals only formed at the bottom of the container and not on the immersed lace work. I disregarded the crystal cluster from my first attempt because it did not grow on the lace work and I found it lacking enchantment. With the second experiment I immersed the lace to settle at the bottom of the container filled with a saturated borax and water solution, which is why borax crystals are found only at the bottom of the lace. It took five weeks for the colourless transparent borax crystals to form at the bottom of the crochet piece seen in Figure 26.

The lace was made from Coats O number 8 threads, which, compared to DMC's cotton perlé, is a fairly silky and inexpensive thread. With this particular piece I was experimenting with patterns from Jan Eaton's *200 Crochet Blocks* book. I was playfully experimenting with different stitches and patterns with no particular intentions to create a final piece, or part thereof. The part I playfully experimented with from the pattern book is the top part of the lace work. The bottom part, which is partly crystallized, is one repetitive crochet stitch made unconsciously and intuitively. Many of my lace pieces and crystallization processes were all done as playful experiments with no anticipated successful outcomes, thus it was an enchanting surprise each time a piece came out successful and interesting.

All four salts (salt (NaCl), Rochelle salt, Epsom salt and Borax) experiments resemble alchemical practice, not just in presentation or process but in my own experience as well. I repeatedly went through trial and error phases, re-evaluations and considerations, especially in the forming of the Rochelle salt crystals, and in the end I acquired 'handiness' of these four salts (especially Rochelle salt) from direct handling of materials during all of the experimentation processes. The salt experiments cross the boundaries between art, alchemy and chemistry, creating an interstitial space where the agentic capacities of the materials can develop, a space where matter can reveal their properties and transformational abilities. I came to the conclusion that the vibrancy within salt (NaCl) is much stronger than that of Rochelle salt, Epsom salt and borax. All three salts are influenced by their surroundings, some more than others, similar to salt (NaCl). However, the three salts do not *affect* the containers, instruments or reagents; therefore, in my opinion, salt has

a stronger life force or a more prominent vital materiality. Salt *affects* and can be *affected* by other materials, clearly demonstrating dual transformations at the same time. Thus salt, sodium chloride, serves as the perfect example to demonstrate practically the vibrancy within non-human matter and their *affects* on human and non-human bodies.

In the first chapter I discussed how salt's reaction to steel and copper revealed the intrinsic vibrancy of the metals themselves, causing the reagents to become art works themselves. With reference to the following images I will discuss further experiments done with steel and copper as primary art works instead of reagents. I understand my experiments with steel and copper to a certain degree as metallurgical. Ronald Tylecote defines metallurgy in *A History of Metallurgy* as the science of metals. I would argue that it also includes chemistry experiments with salt. I am not conducting extensive metallurgical experiments, but rather focusing on the chemical and corrosive reaction of copper and steel when coming into contact with salt. Joseph Davis defines corrosion in *Corrosion: Understanding the Basics* as "a chemical or electrochemical reaction between a material, usually a metal, and its environment that produces a deterioration of the material and its properties" (Davis 2000:2). This environment is all surroundings that come into contact with the material or metal, including surrounding gasses, liquids, solids, "chemical compositions, constituents, concentrations" and temperatures, aside from specific influencing factors (Davis 2000:2). An environment cannot be understood as corrosive without a metal being corroded, and corrosion cannot occur on a metal without a surrounding corrosive environment, thus both are necessary in order for corrosion to take place (Davis 2000:2).

My practice can be defined as the creation of a corrosive environment which depicts materials acting and reacting with each other and with their environment. I create corrosive environments to react to the metals and even though these environments are man-made, they still copy and repeat natural processes. My 'artificial' environments are designed to speed up the corrosion process, but it should also be noted that I do not treat my metals against corrosion, so if copper and steel were naturally exposed to highly concentrated salt environments, like mine, it would have similar reactions. Davis defines the corrosion which occurs in my environments as aqueous corrosion, which is corrosion caused with water. When metals are in aqueous environments their nature changes to become electrochemical, which causes reactions to take place. These reactions can result in

elements within the metal transforming into non-metallic states, causing the metals to lose energy; this is what we call corrosion or rusting (Davis 2000:49). So when iron is placed into an aqueous environment, elements, especially on the surface, start to transform into non-metallic states; this is the rusting that occurs on the surface, and it can slowly move deeper until no metallic states are left. According to Davis, the driving force of the rusting is the loss of energy in the metal: the more energy is lost the more the rusting takes over (Davis 2000:49). The best example of this process is seen when steel is placed in an aqueous corrosive environment. Evidently my interest in iron or steel and copper are for their corrosive abilities such as rusting and patination when in contact with moist air, salt and salt solutions. Steel and copper do not react to the Rochelle salt, borax or Epsom salt but only to sodium chloride; therefore I only used sodium chloride (salt) in my experiments with steel and copper.

Iron is a hard but transformable and adaptable ferrous metal (Untracht 2011:59) with a bluish white colour, well-known for its magnetic characteristics (Brepohl 2001:14). Iron is actively responsive to its surrounding environment especially water and oxygen which creates corrosion (Untracht 2011:60). Within my practice I use steel, which is an iron and carbon alloy, with iron predominating (Untracht 2011:31), and with no protective coatings¹⁰¹. My salt solution containers or environments create extensive rusting on my steel work, which in turn colours the salt and salt solution as well. This can clearly be seen in Figure 25. The steel reacts to the corrosive salt solution environment, causing reddish-brown rust to be released. In turn the salt reacts to the reaction of the steel, causing discolouration. This is a perfect example of *actants affecting* each other in oscillation. Furthermore my 'artificial' salt aqueous environment causes the steel to lose energy, in other words the salt combined with the water is an *actant* environment which steals the energy within the steel and uses this energy to create the rust. Consequently it is a replacement of energy, the transformation of energy from one state to another. The rusting then slowly replaces the steel, creating a slow process of complete transformation of matter; the metal elements are replaced with non-metal elements. This art work presents

¹⁰¹ Wrought iron is low in carbon and is resistant to corrosion because of its slag content (Untracht 2011:59-60). Artificial coatings for iron include paint and chemical coatings. It is interesting to note that the chemical coating, according to Untracht, can be created by immersing clean iron into a high concentrated salt solution at a temperature of 145 degrees for about 15 minutes before rubbed with a 'sweet oil' film (Untracht 2011:60).

three active vibrant matters: the salt, the aqueous environment and the steel. All three are acting and *affecting* each other simultaneously.



Figure 27: Catherine Ferreira, *Three Actants (salt, water and steel)*. (2014-2015). Coarse non iodized pink salt, steel and glass.

The steel *actant* in Figure 27 was sculpted from polyurethane foam (a polymer) and cast in mild steel. The process of sculpting the polyurethane foam and casting in metal is similar to sculpting wax for lost wax casting. In other words, I first started to create this piece by experimenting with a jewellery technique in a new material. The foam has a texture similar to that of a sponge, and when cast in metal it has a unique roughness to the texture. I find the texture appealing and the experimental technique offering various possibilities. After casting the polyurethane foam sculpture into steel, I placed the steel *actant* into a salt solution glass container, and within a few weeks rust started to grow on the steel *actant*. The salt also started to react to the surrounding corrosion by transforming from white to brown and growing on the glass container, consuming it. The piece in Figure 28 is a perfect example of a salt aqueous corrosive environment creating a dual transformation of energy and matter, as well as revealing the aggressive transformative power of salt which is acting and reacting upon its surroundings. Furthermore this process is the perfect example of how

I cross the boundaries between fine art, jewellery practice, alchemy, chemistry, and metallurgy.

The following images (Figures 28-31) are examples of copper's reaction to a corrosive salt aqueous environment, as well as the reactive effect when salt and steel are combined in this corrosive environment. Copper has a natural reddish colour, and is able to change colours to black and green because of different reactions to sulphates and salts, which makes it a very appealing metal to work with (Brepohl 2001:11). Copper forms a black layer on the surface when it reacts to sulphur in the air, and the green patina layer is caused when it comes into contact with various salts and sulphates (Brepohl 2001:11). Copper has no corrosive reactions to water and oxygen; it does, however, develop a reddish oxide on the surface from oxygen but, according to Brepohl, this is not corrosive but a surface characteristic (Brepohl 2011:15). My 'artificial' salt aqueous environments influence both copper and iron in different ways. In moist air a dense coating of green patina grows on the surface of copper, but this is from various copper salts which is basic copper carbonate, which can be found on bronze and brass as well (Brepohl 2001:15). Dirt and dust can also get caught up in the patina, which can explain the more black-brown patinas compared to the desirable green turquoise patina (Brepohl 2001:15). In *Color on Metal*, Tim McCreight and Nicole Bsullak define patina as a thin layer of corrosion that appears on certain metals, usually copper and copper alloys such as bronze and brass, because of oxidation (McCreight & Bsullak 2001:8).

Within jewellery practices patinas are artificially created to colour surfaces for aesthetic purposes. A metal object is immersed in or sprayed with a chemical solution and sometimes placed in a closed space for optimal oxidation (McCreight & Bsullak 2001:8). Patination is a natural process that is mostly unpredictable, but certain factors, such as the shape of the metals used, the metal alloy, their cleanliness or surface texture, the solution and the general atmosphere, do affect the outcomes (McCreight & Bsullak 2001:8-9). Over the years many jewellers have compiled recipes for creating certain patinas, but there is always a tension between science and chance when it comes to natural processes (McCreight & Bsullak 2001:9). In *The Colouring, Bronzing and Patination of Metals*, Richard Hughes and Michael Rowe state that bronze and brass workers, sculptors and metalworkers historically operated in isolation from one another, guarding their recipes for metal colouring. This was

a typical characteristic of bronzing and colouring practitioners within the 20th century, a characteristic similar to that of the alchemist (Hughes & Rowe 1991:21-22).



Figure 28: Catherine Ferreira, *Actant/Reagents*. (October 2011, 2014). Fine salt and Copper.



Figure 29: Catherine Ferreira, *Actants (compartment and reagents)*. (October 2011, 2014-2015). Coarse non-iodized pink salt, steel and copper.

The small copper pieces in Figures 28-31 are from my repertoire. These pieces form part of the same research examples discussed in Chapter One (Figure 5) from a second-year project at Stellenbosch University. After the successful patina reaction of the two cold joint copper pieces in Figure 5 to my salt solutions, I decided to submerge all the copper pieces from my repertoire, and each piece reacted differently. Instead of using glass containers I experimented with a steel container, creating contrasting corrosive effects from the two metals. In Figures 29 and 31 a patina as well as a reddish-brown colour (what looks like rust) can be seen on the copper objects. The salt grew on the copper pieces and started to react with the steel container, which caused the reddish-brown colour. This piece creates an interesting tension between the two very different corrosive reactions. It is difficult to determine if one corrosive reaction is stronger and more actively aggressive than the other at this time.



Figure 30: Catherine Ferreira, *Actant/Reagents*. (October 2011, 2014-2015). Coarse non iodized pink salt and copper.

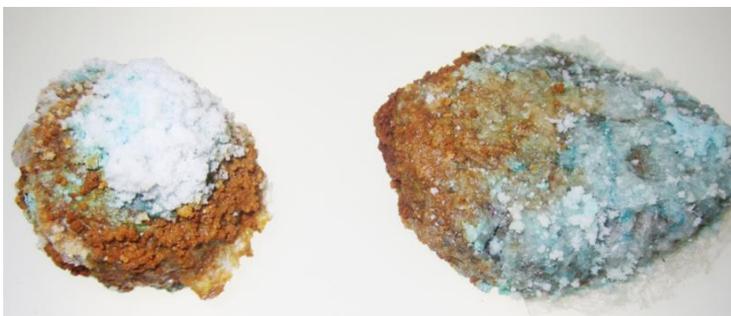


Figure 31: Catherine Ferreira, *Actant/Reagents*. (October 2011, 2014-2015). Coarse non iodized pink salt and copper.

In this sub-chapter I discussed further and more in-depth experimentation with different salts, lace work and the metals steel and copper. These experiments not only emphasised the intrinsic vibrancy in my materials but it also revealed the alchemical, metallurgical and chemical characteristic in my practice. Jane Bennett's enchantment and vibrant matter theory, discussed in Chapter One, can be understood through alchemical and metallurgical writings, especially that of Mircea Eliade. My practical processes consist of physical transformation of matter, whereas my theory explains a mystical transformation of matter, similar to alchemy and metallurgy. The visual presentation of my studio and the exhibition of my work can be compared to that of alchemical laboratories as depicted in 17th century Netherlandish paintings. I understand my materials and instruments as vibrant matters, and for that reason they share the mysticism of alchemical beliefs and metallurgical myths. And lastly, viewing my practice as enchanted is similar to the magical and experimental practical processes of alchemy and metallurgy. By looking at my practice through an alchemical lens I started to perceive salt as the transmuting agent, the Philosopher's stone and elixir within my practice. Salt is present in each experiment, and it is the main driving force in revealing the vital materiality within my practice. Salt leads the line of vitality from me through my processes and materials to the final art works.

2.4 Metal Vibrancy

I started to recognise a different vibrant life in the metals steel and copper through my practical and theoretical investigations. Within my practice, steel and copper are the only two materials able to *affect* salt by changing its colour from white to brown or green. I started to recognise a particular vibrant and energetic life within the metals, a 'life' that has the ability to create dual transformations in continuous oscillation with the 'life' in salt. In this sub-chapter I will be focusing on the 'life' inside metals and the ways in which this life can connect with the life in other human and non-human bodies. Furthermore, until now I have only discussed *actants* as individual bodies *affecting* other human or non-human bodies. Bennett states that actants are 'affective'¹⁰² within 'assemblages'¹⁰³ (Bennett 2010:21). The steel and copper experiments reveal different *actants affecting* within a group or 'assemblages'.

¹⁰² Spinoza's concept of cause and affect is discussed in the Literature Review, section 0.3.1

¹⁰³ Gilles Deleuze and Félix Guattari concept of 'assemblages' is discussed in Literature Review, section 0.3.1

According to Bennett, *actants* depend on a collaboration of various bodies and forces¹⁰⁴ (Bennett 2010:21). An 'affective' body continuously *affects* bodies while being *affected* by other bodies, thus it is a process where *actants affect* within continuous oscillation (Bennett 2010:21). If a body has the power to *affect* another, then it has the capacity to be *affected*. In other words, there are two powers: one that actively *affects* others, and one that has to accept being *affected*, for this 'affect' is a "corresponding and inseparable¹⁰⁵" capacity (Bennett 2010:21). These *affects* may vary, but they always stay *affecting* in some form or other (Bennett 2010:21). If salt has the capacity to *affect* then it also has the capacity to be *affected* in various ways. The only two materials within my practice that have shown the ability to *affect* salt, are steel and copper. I emphasise how salt has the *affecting* ability to reveal the agency within other materials. Bennett states that "bodies enhance their power *in or as a heterogeneous assemblage*" (Bennett 2010:23). Thus the agency within bodies becomes more powerful when different kinds of bodies come together in a group or assemblage. In creating a group consisting of salt, an aqueous environment and steel/copper, I enhanced the agency or vital force within each of them.

Bennett defines assemblages as "ad hoc groupings of diverse elements, of vibrant materials of all sorts" (Bennett 2010:23). She continues to define assemblages as "confederations" that are just as vibrating and alive as the vibrant matters within them (Bennett 2010:23). The powers within assemblages are unevenly distributed, since the vibrancy of the matters within assemblages is different (Bennett 2010:24). Furthermore, as collaboration, the *affects* produced from assemblages are developing properties with "the ability to make something happen" (Bennett 2010:24). Consequently assemblages have their own agency, which is formed through the collaboration of "member-actants". However, within an assemblage these "member-actants" still uphold their own individual intrinsic vitality; in other words, the agency of assemblages is not the same as the agency of the "member-actants", nor is it a sum of the "member-actants" agencies (Bennett 2010:24). From a practical perspective, salt, steel, copper and water (aqueous environment) still maintain their individual material agency, but when they come together in an assemblage they fight against and with each other, creating a different energy and life that is unique to the

¹⁰⁴ Bennett relies on Spinoza's concept of 'affective' bodies and Deleuze and Guattari's concept of 'assemblages' in explaining her theory on the 'agency of assemblages' (Bennett 2010:21).

¹⁰⁵ As explained by Gilles Deleuze in *Expressionism in Philosophy* (Deleuze 1990:93)

assemblage. In my practice I consider all my materials to be vibrant matters, but the double *affect* is best seen in the salt and steel/copper experiments. This, in my opinion, is because of the ‘metallic life’ within metals that has the ability to connect with the ‘mineral life’ within salt.

Metals have a crystallographic crystal structure in nature, which means that the atoms are structured and ordered throughout the crystal structure of the metal (Davis 2000:25). Each atom has its place within a “well defined, repeatable, and orderly relationship to one another” (Davis 2000:26). Metals consist of many individual grains or crystals, each with its own orientation and discontinuities¹⁰⁶ (Davis 2000:27). In substantiating her claim of a “mineral or metallic life”, Bennett focuses on the “imperfections in the array”, where she finds ‘a life’ in metal (Bennett 2010:59). In other words, between the structured and orderly grains there are discontinuities which hold imperfections in the form of loose atoms belonging to no crystal structure (Bennett 2010:59). Thus Bennett states that the “crystalline structure of metal is full of holes or inter-crystalline spaces” which all contribute to the overall properties of a metal (Bennett 2010:59). According to Bennett, “a metallic vitality” can be found amongst these loose or “free atoms”, a vitality which roams between the structured grains (Bennett 2010:59). When stating that metal has an intrinsic vibrancy, she confirms that it truly has vitality within its very nature. Besides a metal’s internal crystalline structure, Bennett also finds vitality in the properties of a metal (Bennett uses iron as an example). Metal conducts heat and electricity which, according to Bennett, are “series of self-transformations” which are not orderly but a “tumbling” of transformations occurring continuously. Bennett also states that the metal itself, and not only the metallurgists, can create these “tumbling” transformations (Bennett 2010:59).

In the historical overview I mentioned the influential relationship between the maker or metalsmith and the metal (specifically iron), and the magic and ‘inner heat’ that was needed to transform a ‘heavenly substance’ (Eliade 1978”27, 80). Bennett states that “metal is always metallurgical” and always influenced by a combination of many bodies and agencies, ranging from geological to biological to human (Bennett 2010:60). In addition, the metal workers are themselves *affected* and influenced by the materials with which they work.

¹⁰⁶ According to Davis, these individual orientation and discontinuities of the grains is what affects the unique corrosive behaviour of a metal (Davis 2000:27).

Eliade discusses the many rites, rituals and offerings of the metal workers in *The Forge and the Crucible*. Eliade states that miners had their own rituals of “cleanliness, fasting, meditations, prayer and acts of worship...” (Eliade 1978:56). Miners thus needed to follow certain *rites of passage* when moving into this sacred space of the metals, so as not to disturb the natural order (Eliade 1978:56). In addition, Bennett says that it was the metal workers’ intimate and hands-on relationship with their metals that shaped their ‘handiness’ knowledge of the properties of the metal, which means they came to understand the crystalline structure of the metals through physically working with the metal (Bennett 2010:60).

This physical and intimate relationship between the maker and his materials triggered enchantment within the maker, activated material thinking and generated a connection between the ‘life’ of the maker and the ‘life’ of his materials. Therefore Bennett comes to the conclusion that the desire of the metal worker to learn what the “metal can do” revealed ‘a life of metal’ to the metal worker, allowing outcomes that are more “collaborative and productive” than those resulting from processes initiated by the scientist aiming to discover what a metal *is* (Bennett 2010:60). Thus Bennett acknowledges the role humans play, the *affecting* role of the maker during the making process. I bring the materials together and create the situation for them to reveal their intrinsic life force.

Through an intimate and hands-on relationship with my materials I am able to open up the passage to connect the intrinsic ‘life’ between myself and my materials (human and non-human bodies). Understanding my materials through ‘handiness’ knowledge activated my material thinking and enabled me to understand my materials as vibrant matters and my art works as *actants* that are constantly alive and transforming according to other surrounding *actants*. In other words, my role is creating awareness for the agentic capacity and ‘life’ force within human and nonhuman bodies.

When Bennett refers to ‘a life of metal’, she refers to the intrinsic life force and agency within metals and minerals. Because of metal’s internal crystalline structure and properties it has a physical ‘life’ and the ability to go through self-transformations. The alchemists and metallurgists understood Bennett’s theory, for they believed metals were living organisms with magical and transformative abilities. Eliade also discusses the ambivalent character of

metal, specifically iron, for it can both keep evil spirits away or embody them (Eliade 1978:28-29). Thus metal is what Bruno Latour defines as an *actant*, for it has the ability to *affect* human and non-human bodies constructively or destructively. Within my practice the agency of metal is less *affecting*, because salt has a more overpowering life force; in alchemical terms, salt serves as the transmuting agent within my practice. Salt has the ability to connect with the 'life' within metals, especially iron, and transform it from a metallic to a non-metallic material. Salt has the ability to activate 'life' and agency in matter to become more visible. To put it in other words: salt can be used as a cultivating strategy to reveal a hidden enchantment.

This 'life' also exists within human bodies. Eliade poetically calls it an 'inner heat' or 'magico-religious power' that enables the alchemist, metallurgist and metalsmith to work with and transform their materials. There exists a vital materialist characteristic within the alchemist, metallurgist, chemist, artist and art jeweller. It is a 'life' that enables them to comprehend, connect and cultivate 'a life' in other matter. Bennett defines 'a life' as "a restless activeness, a destructive-creative force-presence..." that dwells in the interstice of human *affects*, within the "non-personal, a-human forces, flows, tendencies, and trajectories" (Bennett 2010:54, 61). This 'life' can be an internal connecting power line between the maker (art jeweller), the mystical and vibrant process, the active materials (*actants*) and the vibrant matter final (art) works.

2.5 Conclusion

The practical work discussed in this chapter shared various similarities to the practices of alchemy and metallurgy. These similarities include the physical and mystical transformation of matter, the presentation of my process and exhibition of final work, the mysticism (vital materiality) in shared materials, instruments and experimental process. My work acquired this alchemical and metallurgical characteristic when I started conducting more in-depth investigations in and experiments with various salts and the metals steel and copper. Similar to the practice of alchemy¹⁰⁷, my practice became a platform to experiment and gain 'handiness' knowledge of my materials. Through my experiments and investigations I was able to identify salt as my transmuting agent, Philosopher's stone and elixir, since salt has

¹⁰⁷ As discussed on page 55 in the sub heading: A Historical Overview: Alchemy and Metallurgy.

the ability to transform and transmute my other materials. In the first chapter I discussed how salt aided me in understanding the enchantment in my practice, and my materials as vibrant matters. Now from an alchemical perspective I argue that salt is the transmuting agent capable of transforming human and non-human bodies. Salt not only transformed my processes and materials, but it also cultivated a vital materialist connection between me, the art jeweller, and my practice and materials.

This chapter also discussed the crossing of various boundaries within my practice. I mainly focused on the alchemical and metallurgical characteristic within my art jewellery practice, but aspects of chemistry and fine art can also be found. I identified these characteristics within my role as maker, my practice, materials, instruments (containers and reagents) and final art works. As an art jeweller I am able to associate with the roles of the alchemist, metallurgist, smelter and, in some ways, chemist too. Eliade found a connection between the alchemist, metallurgist and smelter in their ability to transform matter, which they are only able to do through what Eliade calls their 'inner heat' or "magico-religious power" (Eliade 1978:80). I understand this 'inner heat' and "magico-religious power" as a material vitality or as 'a life' that exists within the maker that enables him or her to connect to the vitality and 'life' inside his or her materials.

In the first chapter I was able to define my role as the vital materialist art jeweller who is able to connect to the intrinsic vibrancy within my materials. I was able to create these connections through various practical methods that enabled my material thinking. I activated my vitality or intrinsic 'life' once I understood my materials as *actants* and vibrant matters with agentic capacities. By perceiving my work through an alchemical and metallurgical lens, this understanding became even clearer. Cobb, Goldwhite and Jung¹⁰⁸ state that the alchemist truly believed in transformation of matter, for they believed that matter was living organisms with a soul (Cobb & Goldwhite 1995:35). Furthermore, Eliade states that, when the practitioner uses his 'inner heat' to transform matter, that 'power' is transferred through his instruments to the materials, causing the instruments to become 'magical instruments' (Eliade 1978:29). In other words, my containers and reagents became

¹⁰⁸ As discussed on pages 395-396 in Jung, C.G. 1967. *Alchemical Studies*. R.F.C Hull (tr.). New York: Princeton University Press.

'magical instruments' with their own vitality when I connected my 'inner heat' to that of salt, and as a result my whole process became enchanted. A line of vitality can be drawn from me (the vital materialist art jeweller) through the process (enchanted, unconscious, intuitive, material thinking, alchemical and metallurgical) and materials (*actants*) to the vibrant matter art work. All are interrelated and 'co-responsible' for the creation of the end result.

Chapter 3: Salt, jewellery and bodily sensations.

3.1 Introduction

The indistinct yet amazing way “scents, savors, sights, and sounds manage...to make our heart-strings crack” (Stafford 1999:155).

In my third and final chapter I will discuss the relationship between salt, jewellery, the body and senses. Throughout this thesis I have discussed salt’s agentic capacities that *affect* human or non-human bodies, but I have mostly focused on non-human bodies. In this final chapter I will focus on ways in which salt, a non-human body, *affects* the human body. As in the previous two chapters, the physical effects of salt on the human body will be understood through Jane Bennett’s theory of vibrant materiality together with Bruno Latour’s *actant* concepts. In Chapter Two I discussed the internally connected ‘inner heat’ that links the maker with his materials. This ‘inner heat’ moves through the maker, processes and materials to the final product; but what happens then? In this chapter I will argue that the vitality in the final product or art work can connect to whoever experiences or comes into contact with it. To put it differently: this interconnectivity and enchantment I had experienced within my making process can extend to viewers and wearers.

The body and wearability have been a central theme for jewellers since the 1970s (den Besten 2011:8). In *Unexpected Pleasures* Susan Cohn states that jewellery has a “vital relationship to the body” (Cohn 2012:34). Since my interest of study is art jewellery it automatically associates my practice with jewellery’s relationship to the human body, and I perceive this deeply rooted relationship from a vital materialist perspective. I understand jewellery as an agentic assemblage that can and does affect the human body, especially when the different *actant*-members or materials are able to physically *affect* the human body, like salt does. In this chapter I will discuss how I utilize both salt and jewellery’s relationship to the human body in order to reveal the agency within matter, and how they connect with the agency and vitality within human matter.

Salt has a strong effect on the senses, on the internal and external physical and mental human body. Salt is significant to the inner workings of the human body, where it plays an integral part in bodily functions. It can be therapeutic, but can also lead to various diseases. By discussing the various ways in which salt can physically affect the human body I will aim to emphasise the strong and deep-rooted relationship between salt and the human body.

I base my argument on Bennett's theory of 'edible matter'. Bennett explains that food affects our senses through taste and smell, but it is more than just an *actant* on the senses of human bodies. It has a diverse and scattered materiality that has the ability to enter human bodies and affect their "moods, cognitive dispositions, and moral sensibilities" (Bennett 2010:51). Food, according to Bennett, can also be understood as part of an assemblage, so food itself and the act of eating can be an assemblage. In Bennett's opinion, outside and inside boundaries are diffused when food, as a non-human body, collides with human bodies in an eating assemblage. When food (non-human body) and human bodies collaborate it causes enhanced assemblages and *actants*. In other words, a heightened *affect* is created and experienced when a mineral 'edible matter' such as salt encounters a human body in an assemblage.

Lastly I will discuss how my art jewellery utilizes the following concepts: salt's relationship to the human body, Jane Bennett's 'edible matter' theoretical concept and contemporary art jewellery's continued investigations of the concepts of wearability and durability. Throughout my thesis I have discussed the boundaries of jewellery, and how those boundaries are continuously transformed and redefined. In my first chapter I discussed how jewellery can move beyond wearability and bodily adornment and become objects and space activators around the body. Within this chapter I discuss how jewellery can also physically become part of the human body, thus moving not only beyond the body but also within the body. I argue that the boundaries to the inside of the human body can also be crossed by using different materials such as salt or other edible and vibrant matters within the practice of jewellery. At the end of this chapter I discuss my art jewellery work that has wearable qualities in order to place emphasis on how salt or vibrant matters can penetrate and *affect* the human body from the outside inwards.

3.2 Jewellery and the Body: A Brief Overview.

In the article *Jewellery? What Kind of Jewellery Are We Actually Talking About?* Paul Derrez states that contemporary art jewellery started in the 1960's as a deconstructive movement against "traditional social, political and cultural structures" (Derrez 2005:12). This 'new jewellery' questioned the intrinsic and embedded prejudices associated with jewellery, such as social and cultural gender constructions, characteristics of vanity, material culture of the bourgeoisie and social class constructions (den Besten 2001:20). Jewellers questioned these prejudices by experimenting with different materials, methods and concepts which led to transdisciplinary practices (den Besten 2011:8). The 1970s saw the development of "the cult of the body" movement, in which contemporary jewellers started to question wearability and how far this boundary can be stretched or broken down (Cohn 2012:230). Jewellery became avant-garde; wearable sculptures and even fashion became objects to wear (den Besten 2011:8). Aside from pushing the boundaries of what wearable art jewellery can be, the body itself started to be questioned as a display, medium or material. The process of making took centre stage, and instead of being everlasting and stable precious objects, jewellery became a "temporary, open ended, changeable and ephemeral" act (den Besten 2011:122).



Figure 32: Gijs Bakker, *Shadow Jewellery*. (1973). Photograph on linen. (den Besten 2011).

The Dutch jeweller Gijs Bakker was one of the leading contemporary jewellers within this movement. His conceptual jewellery piece *Shadow Jewellery* captures and materializes a momentary 'mark making' or imprint left on the skin by a yellow gold band (Drutt & Dormer 1995:106). Bakker captured an ephemeral action created on the body by a bracelet. He recorded this momentary mark on the arm by taking a photograph¹⁰⁹ which is the only evidence left of this *affect*. Den Besten questions what the real art work is here: the photograph, the gold band or the imprint, or perhaps it is a combination of all three. She states that the title, *Shadow Jewellery*, refers to the ephemeral action and result, whereas the photograph is just the evidence of an action or happening that took place (den Besten 2011:35).

Bakker's *Shadow Jewellery* is an early example of how contemporary art jewellers experimented with the body as a material, as well as the definition of jewellery and wearability. I understand *Shadow Jewellery* as an example of two *actant* bodies *affecting* each other. Here the 'life of metal' and the 'life' in the wearer react to one another, and the imprint on the skin is the result or *affect* left by the collision that took place. The 'life' in gold is defined by its characteristics, which means that the gold band is incapable to stretch or adjust to the arm of the wearer. As a result of the forced encounter the gold band or *actant* leaves a mark on the skin which is only momentary because of the 'life' within the wearer.

Since jewellery can move so very close to the body, various contemporary jewellery artists have investigated the body as a theme or a medium. In *Contemporary Jewelry in Perspective*, Monica Gaspar states that jewellery "inhabits the liminal space at the boundary of the body, yet the skin becomes an interface as well as a limit that eventually can be trespassed" (Gaspar 2013:71). Jewellery artists examined ways in which people augment their bodies through piercings, tattooing, scarification, prostheses and cosmetic surgical enhancements (Cohn 2013:62). They argued that any kind of augmentation or infliction on the body can be considered jewellery, even if these impressions are ephemeral. Various contemporary jewellers started to explore jewellery's intimate and interdependent

¹⁰⁹ Photography became an 'artistic tool' for contemporary art jewellers in the 1960s and 1970s. "They used photography in a documentary and expressive way as a means for research and comment" (den Besten 2011:33). Photography was also used to "re-establish the relationship between the object and the subject, or between jewellery and the body" (den Besten 2011:34).

relationship with the body, which caused the skin to become a popular and experimental material to work with (den Besten 2011:125).

The human skin becomes the main material for the contemporary jeweller Tiffany Parbs, as she investigates items or particles that people allow into their bodies and private spaces (Cheung, Clarke & Clarke 2006:122). Similar to Bakker's conceptual *Shadow Jewellery*, her contemporary jewellery is realised in the momentary traces left on the body when a jewellery piece is removed, specifically the sensations and marks left on the body (Cheung, Clarke & Clarke 2006:122). As soon as a ring or bracelet is removed after being worn for a long time it leaves a mark on the skin, a trace of its existence. For example, a wedding band is commonly worn every day, and when it is removed from the finger a momentary imprint remains on the skin. Bracelets also leave similar imprints. In Kerianne Quick's *Material Matters* (Figure 16 in Chapter One) she experimented with the imprint left by copper bracelets on the skin. When copper has been worn for a long time, it leaves a distinctive greenish mark on the skin. The imprint and green mark become a momentary visual example of an *affect* that took place between two *actants* bodies. Parbs takes this concept further by creating jewellery pieces that can physically be inflicted on the wearer's body, creating momentary *affects/jewellery* on the body (Cheung, Clarke & Clarke 2006:122). So the bruises, burns and scars become the jewellery pieces, or part of the jewellery piece.



Figure 33: Tiffany Parbs, *Blister Ring*. (2005). Skin. (Cheung, Clarke & Clarke 2006:123).



Figure 34: Tiffany Parbs, *Etched (pulse)*. (2004). Ephemeral bracelet, skin. (Cheung, Clarke & Clarke 2006:125).

The skin is not only the delineation between the outer world and the self, a neutral screen, a boundary; it is also a surface upon which the inner self can manifest itself. (den Besten 2011:126).

Den Besten states that each person's skin is unique to him/her, it reveals "inner emotions as outward reactions" like when a person blushes or gets goose-bumps. Various skin conditions or diseases like acne or eczema (dermatitis), for example, can visually reveal inner stress or a sick body (den Besten 2011:126). Then there are other marks that can reveal the life, memories and histories of the person on the skin, like "scars, wrinkles and age spots" (den Besten 2011:126). Looking at the human skin from this vantage point, it is evident that skin has similarities to jewellery in the way that it can also gain memories and histories through time. An old piece of jewellery can have various nicks and scratches, through which it reveals its life time.

Furthermore, the human skin can be used and altered for personal adornment through tanning or tattooing. Tattoos and scarification can also serve as "methods of self-expression and presentation" (den Besten 2011:126). However, den Besten states that these alterations on the skin are in "union with the body", whereas jewellery stays external, since it does not blend with the body or, if it does, it is only temporary (den Besten 2011:126). Then again, tattoos are permanent; and some scars leave a mark on the skin forever - even piercing holes cannot heal after a period of time. If scars, holes or tattoos are considered a form of jewellery, then jewellery can blend with the body. The skin can then be considered the main material of the jewellery piece; or more conceptually, the human skin can be considered as jewellery.

These 'skin jewellery' can transform or change over time, since the human skin is a living organism that has the ability to transform and heal itself; scars and tattoos, for example, may become lighter. The skin is therefore an *actant*-member in the human body assemblage and in the jewellery assemblage. This causes the skin to become a transformative *actant* material and the unifying *actant*-member between two assemblages: the human body and jewellery. Or, in more conceptual terms, the skin itself becomes an agentic assemblage when it is perceived as the piece of jewellery or main focus.

In the twenty-first century, the body itself has become a material to work with and to work on...body jewellery is more radical in the methods it uses and not necessarily aesthetical in a material and ornamental respect. It really tries to get 'under the skin', not only physically but also mentally. Skin becomes flesh, jewel becomes tool, scar, bruise or blemish becomes ornament... (den Besten 2011:138-139).



Figure 35: Barbara Uderzo, *Untitled*. (2013). Dark chocolate and pure gold foil. (Rovereto, 2013).



Figure 36: Barbara Uderzo, *Free.zero -nuage*. (2004). Snow and rope. (Uderzo, 2015).

Jewellery can also be used to investigate other bodily sensations, such as smell and taste. In collaboration with *The Food Project: The shape of taste*¹¹⁰, Barbara Uderzo¹¹¹ created edible chocolate jewellery. Uderzo is “convinced that every material has its own identity” and she aims to discover and reveal these identities (Uderzo, 2012). In doing so, Uderzo explores different methods and materials such as chocolate, sugar, ice and snow. These ephemeral materials are meant to interact with the body and blend with the body’s sensations. Her wearable chocolate necklace can be eaten, and it also reacts to the temperature of the body which causes the chocolate to melt. Likewise the ice necklace melts when it comes into contact with the body’s inner heat. These two wearable jewellery pieces of Uderzo (Figures 35 & 36) reveal how jewellery can interact with the sensations of the body and even be consumed or absorbed by the body. Contemporary art jewellery objects no longer reside on

¹¹⁰ Curated by Beppe Finessi, *The Food Project* is a collaborative exhibition of “food designers” who investigate food as an experimental design material (Rovereto, 2013).

¹¹¹ Barbara Uderzo is an Italian-born artistic and industrial designer and jeweller. She currently practices her contemporary art jewellery in Vicenza (Uderzo, 2012).

the boundary of the body, but they can actually “merge or be in confusion with the body” (Broadhead 2005:25).



Figure 37: Natalie Smith, *Of the Sun*. (2011).
Textiles, steel and sugar, 11.5x6.5x6.5 cm. (Smith, 2014).



Figure 38: Natalie Smith, *Crush*. (2012). Clay, paint, textiles, steel and sugar, 14.7x2.5x3 cm. (Smith, 2014).

Another contemporary art jeweller that follows this line of thought is the British contemporary jeweller Natalie Smith¹¹². She creates sugar jewellery that investigates the themes of “growth, transformation and disintegration” (Smith, 2014). Smith creates wearable sugar jewellery that crystallize on textiles, and in this way she combines the permanent with the temporary (Smith, 2014). Sugar as a material is similar to salt in the way it reacts to its surrounding environment; sugar dissolves or melts when in hot or humid atmospheres. Smith also uses textiles as a source for the sugar crystals to grow on; when the sugar melts off, the wearer is left with a different and new jewellery piece (Smith, 2014). The wearer is constantly experiencing transformation when wearing a sugar piece, which

¹¹² Natalie Smith is a practicing contemporary art jeweller in the UK (Birmingham City) (Smith, 2014).

creates an “element of surprise” (Smith, 2014). Smith’s sugar jewellery reminds me of Jane Bennett’s theory of enchantment; this surprising and transformative quality creates a moment of enchantment where the wearer’s senses are transported.

Furthermore, Smith activates the senses by using an edible material like sugar for wearable jewellery. Like Uderzo’s edible jewellery, Smith’s sugar jewellery can be tasted and even smelled. The sugar jewellery as an agentic material interacts with the senses and vitality within the body of the wearer. In addition, Smith’s jewellery also reacts to the spaces in which the wearer moves and lives. Consequently sugar is an active and vibrant material that reacts to human bodies and surrounding atmospheres. Both Uderzo and Smith utilize the vitality within their materials to create jewellery pieces that are alive and transformative, especially when it is worn on the body. When worn, these jewellery pieces become agentic assemblages that interact with and react to the agentic assemblage of the human body.

3.3 Salt and the Body

Continuing with her theory of vibrant matter, Bennett uses ‘edible matter’ as another example of material agency. She argues that the foods we eat are *actants* with abilities to physically *affect* our bodies from the inside to the outside. More importantly, *actant* edible matter also has the ability to *affect* our “moods, dispositions and decisions” (Bennett 2010:xvii). Thus edible matter can *affect* human bodies physically and psychologically¹¹³. In *Vibrant Matter*, Bennett regards food as bodies with a mental life and intentions to act inside and beside complex human bodies. Thus eating can create transformations internally and externally between human and non-human bodies (Bennett 2010:39-40). According to Bennett, it is not difficult to see the agentic capacities within food, for their influence is so common and ordinary (Bennett 2010:41). Food reacts differently from body to body and it can even have different reactions in the same body at different times. The intensities and patterns of *affect* can also differ, making the influence of food on the body very unpredictable¹¹⁴ (Bennett 2010:41-42). From the perspective of a human body, food or

¹¹³ According to Nietzsche, there is an exchange between the eater and the eaten. Whatever is ingested by human bodies can psychologically influence their morals, cognitive and aesthetic abilities (Bennett 2010:43).

¹¹⁴ For example, fatty acids “can make prisoners less prone to violent acts, inattentive schoolchildren better able to focus, and bipolar persons less depressed” (Bennett 2010:41).

‘edible matter’ is a very influential agentic material because of its unpredictable, uncontrollable yet essential effect on human bodies.

Bennett states that we also need to understand food as actors acting within assemblages¹¹⁵, or that food itself can be an agentic assemblage. Food or ‘edible matter’ is a powerful agent, since it can influence human bodies in multiple ways; but human bodies are just as powerful. So when ‘edible matter’ and human bodies engage within an assemblage their powers are enhanced immensely (Bennett 2010:44). The act or experience of eating can be an assemblage that consists of two powerful *actants* (Bennett 2010:49). During the assemblage of eating the human body and non-human body react in response to each other, causing multiple transformations. The human body *affects* but is also *affected by* the non-human body (food), and food *affects* and is *affected by* the human body. This oscillation blurs the lines of the inside and outside; as Bennett states: “my meal both is and is not mine; you both are and are not what you eat” (Bennett 2010:49).

Salt is most commonly known as an ‘edible matter’, a flavouring spice. For the human body, however, salt is more than just flavour. In this sub-chapter I aim to place emphasis on the various ways in which salt can influence the human body. I will argue that the traits and intrinsic ‘mental life’ and ‘intentions’ of this particular edible and absorbable matter can *affect* the human body severely in multiple ways. Since salt is transformative by its very nature, it can influence the human body in various forms and ways which I find particularly interesting, since it relates to my practice. To reiterate: I investigate the intrinsic vitality within matter, especially salt, through art jewellery practice; and both salt and jewellery are directly associated with the human body.

Sodium and chloride are two of the eleven major elements¹¹⁶ present in the human body that are essential for life (Fraústo da Silva & Williams 2004:8). In the *Handbook of Nutritionally Essential Mineral Elements*, Boyd O’Dell and Roger Sunde state that an

¹¹⁵ A collective or assemblage of multiple food actants can, for example, affect obesity within human bodies. Examples of these multiple food actants can be snack foods, fast foods, advertisement systems of fast food restaurants or other, food distribution, cooking methods, metabolism, to name just a few (Bennett 2010:43).

¹¹⁶ There are eleven constant elements in the human body. The four basic elements in living organisms, which constitute 99% of the atoms present in the human body, are carbon, oxygen, hydrogen and nitrogen. The other seven elements are sodium, chloride, potassium, calcium, magnesium, phosphorus and sulphur which constitute the remaining 0.9% (Fraústo da Silva & Williams 2004:8). The average salt content within an adult body is about 250 grams (Kurlansky 2003:6).

essential element “is one that is required to support adequate growth, reproduction and health throughout the life cycle, when all other nutrients are optimal” (O’Dell & Sunde 1997:2). Within the human body sodium and chloride play an important role in maintaining water balance, osmotic pressure as well as cell, nerve and muscle function (O’Dell & Sunde 1997:4, 94). Sodium and chloride function as a team, and there are various mechanisms in place to control the sodium and chloride concentrations in the body (O’Dell & Sunde 1997:93). In *Salt: A World History*, Mark Kurlansky poetically reminds us that salt is “any substance caused by the reaction of an acid and a base¹¹⁷” (Kurlansky 2003:300). The acid chloride (Cl^-) lacks an electron, whereas the base sodium (Na^+) has an extra electron to give; both seek completion for the perfect balance, or, as Kurlansky states, “acids and bases make each other more complete” (Kurlansky 2003:300). When there is an imbalance¹¹⁸, a lack or over-supply of sodium or chloride in the body, the effects could be severe.

There are various controversies and disputes in medicine regarding the benefits or afflictions salt can cause¹¹⁹. During my research on the effects of salt there were never any indications that salt should be completely removed from the human diet, only recommendations to reduce the salt intake¹²⁰. Nonetheless, a small and balanced amount of sodium chloride remains vital to the human body. Sodium and chloride are thus vital *actant*-members in the assemblage of the human body, and if they are not in harmony their *affects* can become even more powerful.

¹¹⁷ In classifying salt, Guillaume-François Rouelle stated in his paper *Memoire on the neutral salts* (*Mémoire sur les Sels neutres*) in 1744, that “neutral salt [is] a salt formed by the union of an acid with any substance, which serves it as a base and gives it a concrete or solid form” (Rappaport 1960:82). Rouelle was a French chemist, teacher and member of the French Royal Academy of Sciences from 1742-1768. Today Rouelle is most famously remembered as the teacher of Lavoisier the “founder” of modern chemistry (Rappaport 1968:68).

¹¹⁸ In *An Evidence-based Approach to Vitamins and Minerals*, Jane Higdon and Victoria Drake discuss the various influences salt has on the human body. They state that salt deficiency can lead to hyponatremia which is caused when the body loses sodium; this affects the central nervous system and prolonged sodium and chloride loss can lead to various other diseases¹¹⁸ (Higdon & Drake 2012:215). On the other hand epidemiological studies has been conducted on the effects of excesses salt in the body which could cause hypertension (high blood pressure), kidney diseases, cardiovascular diseases, gastric cancer and osteoporosis (Higdon & Drake 2012:214-219).

¹¹⁹ In his article *The (Political) Science of Salt* the American author Gary Taubes states that some physicians and epidemiologists argue that salt should be reduced for the public on a universal scale since it can increase blood pressure whereas other physicians and epidemiologists argue that there is not enough data to support the success of a universal salt reduction (Taubes 1998:898).

¹²⁰ The body constantly loses salt through fluid loss and should be replenished and according to Higdon and Drake approximately 1.5 grams of salt is an adequate intake for a healthy and nutritious diet¹²⁰ (Higdon & Drake 2012:216).

Salt can move in and out of the human body, which means it can *affect* the human body from within as an *actant*-member of the body's assemblage, and it can penetrate the human body from an outside assemblage. Inside the body salt, or sodium chloride, is part of the essential and major elements, whereas on the outside moving in, for example, salt can be an *actant*-member in a food assemblage which could cause imbalances to the sodium chloride ratio (1:1) within the human body. Salt can therefore transform from being an 'edible matter' to being an essential and influential element. Salt can thus be part of the body or apart from the body.

A Chinese proverb says: Without salt there is no end to blandness. The salty and the sour each play a part in all that can be loved, but the supreme taste of salt – which is never ending – is to be found inside (Pierre Laszlo 2001:45-46).

Aside from ingestion, salt in a liquid or gas form can also be absorbed by the body through the skin, nose and ears. There have been various studies conducted on salt therapy¹²¹ or halotherapy as a treatment for respiratory diseases and skin conditions (*Salt Cave UK*, 2014). Halochambers or Salt Caves¹²² are rooms completely covered with salt from the floor to the ceilings, in which people can sit and relax while breathing in the salty air. These "microclimates" were made to be similar to the dry saline aerosol of salt mines which can clear and widen internal airway passages in the respiratory system (*Salt Cave Africa*, 2010). The doctoral candidates Ioan Sandu, Maria Canache, Victoria Vasilache and Ioan-Gabriel Sandu states in their article *The Effects of Salt Solutions on the Health of Human Subjects*, that the body can either inhale or absorb the salty aerosols and when absorbed through the skin the salty aerosol works in an assemblage with oxygen, humidity and the temperature in

¹²¹ In *Is That a Fact?* doctor Joe Schwarcz states that salt therapy has plausibility because of its antibacterial properties but not enough scientific studies have been conducted to prove its validity (Schwarcz 2014:n.pag.). The doctorates Ioan Sandu, Maria Canache, Victoria Vasilache and Ioan-Gabriel Sandu investigate the traditional sodium chloride solution therapies for performance improvement in humans in the article *The Effects of Salt Solutions on the Health of Human Subjects*. In agreement with the Salt Cave, they state that salt solutions are beneficial to internal organs and it especially affects the lungs. Salt has an overall harmonising effect on how the organs function (Sandu, Canache, Vasilache & Sandu 2011:67).

¹²² These Salt Caves claim salt therapy can treat asthma, chronic bronchitis, hay fever, respiratory allergies, sinusitis, cystic fibrosis, tonsillitis, psoriasis and even ear infections (*Salt Cave Africa*, 2010). Sodium chloride is most effective when in perfect balance so in order for the best results the salt concentrations and dimensional circulations in these salt rooms need to be calculated and controlled for optimal therapeutic and protective effects in the human body (Sandu, Canache, Vasilache & Sandu 2011:73).

the air¹²³ (Sandu, Canache, Vasilache & Sandu 2011:67). Thus there are numerous variables¹²⁴ constantly and actively at work in these Salt Caves, influencing and entering the human body.



Figure 39: Salt Cave Johannesburg. (2010). (<http://www.saltcave.co.za/photos.html>)

Salt's ability to move between three states of matter (solid, liquid and gas) enables it to transform and transfer through various assemblages. Consequently this enables salt to *affect* the human body in multiple ways.

The development of human sensory and perceptual functions depends highly on environmental stimulation. In the second chapter of *Biological and Behavioral Aspects of Salt Intake*, James Weiffenbach, Patricia Daniel and Beverly Cowart state that organism development relies on environmental interaction, or in other words, learning (Weiffenbach & Daniel & Cowart 1980:14). How an organism develops and learns from its environment determines how their senses and perceptions will develop. There are certain time periods, "critical periods" of development, during which environments are particularly important in

¹²³ According to Sandu, Canache, Vasilache and Sandu the perfect environment is a temperature of 10°C, a high humidity between 80-100% and an airflow of 0.72 meters per second (Sandu, Canache, Vasilache & Sandu 2011:74).

¹²⁴ Aside from the room or salty atmosphere it is important to remember that salt in itself consist of various minerals in its composition especially when in liquid form. Sodium Chloride based solutions contains various particles each with their own properties and unique physical implications to the human body (Sandu, Canache, Vasilache & Sandu 2011:67).

affecting and developing sensory function¹²⁵ (Weiffenbach & Daniel & Cowart 1980:14). Similarly our senses of smell, sight, touch and hearing are stimulated by our direct environment. Bennett states that food ('edible matter') can react differently from body to body, which means each person's senses are different. In a general sense my practice provokes four of the five human senses: smell, taste, sight and touch. These senses are incited by the overpowering presence of salt in my art jewellery practice.

In Chapter One I discussed how enchantment can transfix your attention and at the same time transport your senses to a heightened state of experiencing overwhelming smells, sounds, colours and sensations (Bennett 2001:5). I argued that salt is enchanted and that the presence of salt in my work activates and transports the senses. Evidently enchantment relies on the senses, but Bennett says not all sensuous experiences are enchanted for it requires a sort of pattern, amongst other things. Bennett explains this pattern as an "assembling of sounds, smells, tastes, forms, colour and or textures" (Bennett 2001:36).

Bennett refers to the alchemist Paracelsus¹²⁶ who also found importance in repetition; for him "enchantment is not only a property of the natural world - it is also the joyful human mood that results from a special way of engaging that world" (Bennett 2001:37). In other words: to perceive the enchanted one needs to be cultivated and practice this insight (Bennett 2001:37). "Paracelsus could see how one thing mirrored another and could experience this repetition as itself wondrous"; he used this perception in his alchemical practice, and through repetition he aimed to find a path to transformation (Bennett 2001:37). For example, Paracelsus sees the herb (which was used for medicinal purposes) as repeating its inheriting knowledge in our bodies when we consume it (Bennett 2001:37). Paracelsus aimed to find an elixir that would be able to transmute a diseased body into a

¹²⁵ For instance, if the taste for salt is environmentally stimulated, then gustation would start to develop in the first environment ("critical periods") which is in the womb and the amniotic fluid inside the womb is salty according to Weiffenbach, Daniel and Cowart. After infancy the use of salt becomes habitual influenced by cultural food, food preparations, eating patterns, water from the surrounding area and even persuasive commercial advertisement on salted and processed foods. Therefore Excessive salt intake and our taste receptors need for salt is habitually learned from an early age (Weiffenbach, Daniel and Cowart 1980:25).

¹²⁶ Theophrastus Paracelsus was a Swiss physician who practiced medical alchemy and occult theories of the world (Haeffner 1991:xx). Paracelsian alchemy is regarded as significant in the history of medicine (Haeffner 1991:xi). His philosophy, in short, viewed man "as the microcosm, the lesser world, with inner heavens within his psychic constitution" and the inner heavens were governed by health and sicknesses (Haeffner 1991:xx). Thus man was always viewed in relation to the universe, man was not separate from the universe and vice versa (Haeffner 1991:xx).

healthy one (Cobb & Goldwhite 1995:99). In order to do so he conducted a series of tests in which he took a large amount of metals and exposed them to a standardized set of procedures, the outcome of which was a series of salts. He used these salts, which in actual fact was solutions he called oils, and made medicine concoctions from it (Cobb & Goldwhite 1995:99). As I have discussed in Chapter Two, the history of chemistry started with the alchemists. Paracelsus believed that the most important use of alchemy was to find an elixir and to utilize the 'Prime Matter' within to heal an infected body. In fact Paracelsus saw all things as enchanted matter, "expressions of the Iliaster" or 'Prime Matter' (Bennett 2001:37).

Bennett explains Paracelsus's term 'Iliaster' as "the basic 'matrix' of being, the general structure of possibility or potentiality of matter" (Bennett 2001:37). In Walter Pagel's book *Paracelsus* he defines 'Iliaster' as a "primordial matter", an original matter that is a "supreme pattern of matter, a principle that enables coarse visible matter and all activity of growth and life in it to develop and exist". It is the force that moves and activates "activity, life and growth" in other more earthly matter and substances (Pagel 1982:112).

Paracelsus's term 'Iliaster' is similar to the concept of 'Prime Matter'. In his doctrine of Elements and Principles, Paracelsus perceived 'Prime Matter' as spiritual or, as Pagel elucidates, 'Prime Matter' is the "basis of all Being", it is the beginning, being and living (Pagel 1982:229). 'Prime Matter', similar to 'Iliaster', can also create transformation in other matter; in some alchemical terms 'Prime Matter' is also seen as that which purifies (Pagel 1982:112-113). In Paracelsean terms 'Prime Matter' is also perceived as the "Mother" of all things, the invisible force within that is the "source of all substance, matter, form, essence, nature and destination of things mortal or corruptible" (Pagel 1982:337). The concept of 'Prime Matter' is also similar to the 'Elements' in Paracelsus's theory: the invisible and true element within the elements earth, water, air and fire. Pagel states that the concept of "Elements" can be understood as the soul that is alive within a body (Pagel 1982:337).

Hence an object does not consist of four elements, but only of one. For an element is not what appears as such to our senses...What is visible is but the cover of the real element – which is a spirit, alive in the thing, just as the soul is alive in the body. "The element proper is the invisible and incomprehensible Prime Matter of the Elements" – the "Element" of the elements. Yet it is everywhere and in everything, for prime matter of the elements is but the life that is in the creatures... (Pagel 1982:93)

There resides a 'Prime Matter', a mineral 'life', an intrinsic vibrancy, an *actant*, an enchantment, vitality and a material agency, within salt. All of these terms refer to the same invisible 'life' within salt which enables it to influence, *affect* and transform itself and others (human or non-human). It is this invisible 'life' that defines salt as *actant*, an agentic assemblage and an *actant*-member within various other assemblages. This invisible 'life' within salt can be experienced when salt crystallizes on my threads, corrodes my metals, transforms my reagents and instruments into art works. It is this 'life' that can interact with and become part of the human body or wearer. More importantly, this 'life' within salt defuses the boundary between jewellery and the body of the wearer. The salt, which is the main material in my art jewellery work, can thus be absorbed by the wearer and become one with the wearer. The boundary between the body and jewellery can start to disappear if we can understand materials as living things and *actants* that live within and among us and not as just mere objects.

3.4 Salt Art Jewellery

In *New Directions in Jewellery*, Jivan Astfalck defines jewellery as "a multi-faceted and vibrant art form" (Astfalck 2005:18). She states that, through transdisciplinary practice, objects can accept and adopt new identities within their specific affecting environments (Astfalck 2005:20-21). Jewellery has moved beyond being only bodily adornment; to reiterate, Liesbeth den Besten states that an object (wearable or not) is defined as art jewellery when it is made from a jewellery perspective (Goudsmit 2012:10). As art jeweller I generate ideas, designs, processes and methods based upon my habitual knowledge of jewellery practices. Therefore various practical pieces in this research project were brought forth by jewellery methods in some way or other. Consequently some of the pieces in my collection can be worn on the body, but most of my practical pieces have moved beyond bodily adornment to sculptural art jewellery.

In the previous two chapters I discussed the more sculptural quality in my practice. However, towards the end of my master's project I started to create more wearable art jewellery with the same techniques, methods, processes and materials. Even though these

pieces can be worn they still linger on the boundaries between what is wearable and what is not, and they question what can be worn on the body. The following images will illustrate a few of my art works that can be worn on the body while still retaining sculptural qualities.



Figure 40 (figure 3): Catherine Ferreira, *Salt Crystallized Occhi: a brooch*. (2012, 2014). Fine salt, blank pure cotton perlé thread size 16 and sterling silver.



Figure 41: Catherine Ferreira, *A Rochelle Salt Brooch*. (2014). Rochelle salt, blank pure cotton perlé thread size 16 and sterling silver.

Figure 40 (discussed in Chapter 1 as Figure 3) was one of the contributing pieces which initiated my practice. I discuss it in this chapter for its wearable qualities. At the start of this research study, while still in my playful and experimental phase, I generated ideas for wearable jewellery pieces, of which the pieces in Figures 40 and 41 are examples. However, when the flow of my unconscious process and intuitive decision making took over, my pieces started to exceed discipline boundaries and became sculptures with wearable qualities and not wearable pieces that are sculptural. Thus the *actant*/brooch in Figure 40 can be worn on the human body, but it will collide with vitality of the *actant*/brooch. For example, the movement of the human body can cause the cubic salt crystals to wear off, or the salt can leave a residue on the wearer's clothing from reaction to the moisture in the air or body perspiration.

I made a similar *actant*/brooch (Figure 41) with Rochelle salt crystals. The occhi in Figure 41 was made from the same thin DMC blank cotton perlé thread, but it is much smaller than the occhi in Figure 40. With the second brooch I wanted to see how the Rochelle salt would crystallize around lace made from cotton instead of copper wire (Figures 21 and 22 in

Chapter Two). Since the occhi cannot act as a seed crystal for Rochelle salt, I placed pieces of Rochelle salt crystals under, between and on top of the occhi piece in an attempt to catch the lace work between the crystals while they are growing on top of each other. In comparison to salt (NaCl), Rochelle salt reacts differently to the thread. The threads do not absorb the Rochelle salt solution; instead they just get caught in between a crystallization process.

Similar to the piece in Figure 40, I attached a brooch pin to the Rochelle salt crystallized lace piece which enables wearability. This piece also serves as an *actant*/brooch with an *affecting* vital materiality. Rochelle salt reacts to its surroundings, which means it can dehydrate easily and absorb moisture from more humid atmospheres. When the Rochelle salt absorbs moisture it becomes unctuous, and when it comes into contact with human skin this oily substance rubs off. Thus the vitality in the Rochelle salt crystals can react to the moisture in the air or the vitality in a human body and leave behind its unctuous residue.

These salty or unctuous residues or *affects* are an example of a collision between the intrinsic vibrancies of two agentic assemblages. One assemblage is art jewellery, “a multifaceted and vibrant art form” with salt, threads and silver as *actant*-members; and the other assemblage is the human body which consists of many complex *actant*-members (Astfalck 2005:18). In this particular case the prominent *actant*-members in the human body assemblage would be the ability to move between various *affecting* atmospheres, body perspiration, wearing clothing to which the brooch pin can attach, and the overall activeness of the human body. This activeness can, for example, cause the cubic salt crystals and Rochelle salt crystals to wear off or break off. Liesbeth den Besten writes in *On Jewellery* that when jewellery is exhibited in a gallery or placed in a space as a work of art, it has all the influencing factors important to painting or sculpture. However “...the wearer, the personality of the wearer, the clothing and the situation where the wearer’s moving, sitting or standing” also need to be considered (den Besten 2011:62). Thus the vitality within my art jewellery can also be “triggered” by the wearer. Mobility and wearability can also activate vitality in the art jewellery piece by placing emphasis on the *affect*.

The wearer becomes an artificial influencing environment that can quickly move between influencing atmospheres that can *affect* the *actant*/brooch. If the wearer moves into a more

humid atmosphere the *actant*/brooch will react and leave a residue behind on the wearer's clothes. This *affect* or residue reaction of the *actant*/brooch can also be understood as a form of language. In the book *Things That Talk* Lorraine Daston states that "the language of things derives from certain properties of the things themselves" (Dastone 2008:15). For example, by leaving a residue (*affect*) behind the *actant*/brooch reveals a like or dislike of the atmosphere by physically showing signs of it on the wearer. By reacting to the environment the salt brooch visually communicates feelings or opinions about the environment. Material agents (human or non-human) that are reacting to or *affecting* other material agents (human or non-human) can be understood as a form of language, things talking to each other through reactions.



Figure 42: Catherine Ferreira, *Occhi Neck/Piece*. (2014). Fine salt, cotton perlé thread, steel binding wire and sterling silver.

The *Occhi Neck/Piece* in Figure 42 was made from a greyish blue DMC cotton perlé thread and thin steel binding wire for structure. This particular occhi technique moves in a spiral form which creates a third dimension. The form and shape is preserved by the steel binding wire and the hardening of the salt crystals while still providing enough flexibility for the piece to be worn. During the crystallization process the salt and thin steel wire react to each

other, causing the brownish discolouration, therefore the steel binding wire not only served as a constructing material but as a reagent as well. As I discussed in my first and second chapters, my reagents became part of my work (contributing materials), or in some cases became art works themselves. The steel binding wire became a contributing *actant* material which assisted in the success of this piece.

The *Occhi Neck/Piece* was made with the intentions to be both sculptural (illustrated in Figure 43) and wearable. However the salt crystals can irritate the skin, making this neck/piece slightly uncomformable. In *Thinking Jewellery*, Lothar Brügel, Ute Eitzenhöfer and Theo Smeets discuss new trends in which jewellery cross boundaries from only bodily adornment to environmental adornment (Brügel, Eitzenhöfer & Smeets 2011:23). Thus jewellery can be worn or displayed, both still in contact with the body.

In a similar vein, in *New Directions in Jewellery* Caroline Broadhead sees jewellery as a space activator between the wearer and the viewer (Grant 2005:6). She states that simply “positioning objects close to the body engages complex sensibilities” (Broadhead 2005:34). When an object or *actant* activates complex capacities of sensation in a human body, a connection takes place between the intrinsic ‘life’ of an object or *actant* and the human body. As discussed in Chapter Two, the ‘life’ within an object, thing or *actant* can connect with the ‘life’ within a human body (Bennett 2010:60). So art jewellery as a vibrant art form can connect with the vibrancy of the viewer and wearer; whether the art jewellery piece is thus sculptural or wearable, it can engage with the body.

Broadhead also states that an object close to the body connects with the sensibilities of the human body and stimulates the senses, which activate enchantment. In my opinion my main material, salt, enhances this connection between jewellery and the human body even more, since salt can physically activate the senses and even be absorbed by the human body. Salt as an *actant*-member within my art jewellery assemblages allows for a physical and mystical connection with the wearer.



Figure 43: Catherine Ferreira, *Occhi Neck/Piece*. (2014). Fine salt, cotton perlé thread and steel binding wire.

A pure salt crystal is completely colourless, and according to Pierre Laszlo, each impurity absorbed by the salt crystals causes different colours (Laszlo 2001:49). For example, humidity as an impurity together with the diffusion and refraction of light causes the salt crystals to become white (Laszlo 2001:49). The red or pink colour in salt is caused by *Dunaliella salina*¹²⁷ or halophiles, which are microorganisms that live in environments with high salt concentrations, higher even than that of sea water (Laszlo 2001:49). Mark Bitterman discusses the properties of pink Himalayan salt in *Salt Block Cooking*. He states that Himalayan salt is particularly rich in iron oxide, which coincidentally influences the distinctive pink colour together with numerous other minerals such as calcium and potassium (Bitterman 2013:2). According to Bitterman, minerals affect and influence each other's unique properties (Bitterman 2013:4). Salt that is not colourless (pure sodium

¹²⁷ *Dunaliella salina* is a bacteria that lives in aqueous sodium chloride solutions that are completely saturated (Laszlo 2001:101). There are only a few organisms that can live in these environments. *Dunaliella* also causes the red impurity in red or pink salt. *Dunaliella* is a green organism which turns red at a certain level of salinity. This reddish colour from *dunaliella* intensifies solar heat which speeds up the evaporation process (Kurlansky 2003:287). Thus when *dunaliella* turns red it signifies that the brine is ready. Furthermore there are also micro shrimps and reddish salt-loving bacteria that live in brine (Kurlansky 2003:287).

chloride) contains various other minerals (*actant*-members) which react to each other within assemblages, which causes colouration.

I conducted a few experiments with coloured salts. Figures 44-49 show the results of my experiments with black Hawaiian salt and pink Himalayan salt. Their distinctive black and pink colours are evident, but similar to all my other salt experiments (white fine salt and coarse non-iodized pink salt) once the salt dissolved in the water and then crystallized, they ranged from translucent (sometimes transparent) to white. The compound disperses within water, and when crystallization occurs only sodium chloride crystallizes without the other minerals that cause the colour. The reason why the black and pink crystals remain is because I did not dissolve them in a solution, I only made a mixture.

The following art jewellery pieces (Figures 44-49) were inspired by the *Occhi Neck/Piece* in Figure 42 and 43. I used the same technique but just on a smaller and shorter scale. The neck/pieces are all made from DMC cotton perlé thread (different sizes and colours) and silver-plated copper wire for structure. I submerged two lace pieces in Himalayan salt mixtures (Figures 44-47) and one in black Hawaiian salt (Figures 48 and 49). I created a mixture instead of a solution because I did not want all of the salt crystals to dissolve; and that is why whole pieces of salt can be seen together with the new white crystals on the neck/piece and glass bowls. This process also illustrates how my containers become art works, with the container in this case becoming part of the whole piece. When a neck/piece is removed it leaves a circular mark in the glass container where it crystallized, thus leaving behind traces of its presence and its relationship to the container. This causes the container and neck/piece to be connected, forming one art work.



Figure 44: Catherine Ferreira, *Pink Neck/Piece*. (2015). Glass, pink Himalayan salt, cotton perlé thread, silver-plated copper wire and sterling silver.



Figure 45: Catherine Ferreira, *Pink Neck/Piece*. (2015). Himalayan salt, cotton perlé thread, silver-plated copper wire and sterling silver.



Figure 46: Catherine Ferreira, *Acting Steel Necklace I*. (2015). Glass, Himalayan salt, cotton perlé thread, silver-plated copper wire, steel binding wire and sterling silver.



Figure 47: Catherine Ferreira, *Acting Steel Necklace*. (2015). Himalayan salt, cotton perlé thread, silver-plated copper wire, steel binding wire and sterling silver.



Figure 48: Catherine Ferreira, *Black Neck/Piece*. (2015). Glass, Hawaiian Black salt, cotton perlé thread, silver-plated copper wire and sterling silver.



Figure 49: Catherine Ferreira, *Black Neck/Piece*. (2015). Hawaiian Black salt, cotton perlé thread, silver-plated copper wire and sterling silver.

Barbara Maria Stafford states in *The Jewel Game* that jewellery has the ability to reach deep into our senses and emotions and allow us to relive a past or present moment. As special

enchanted objects, jewellery can trigger an "incredible cognitive richness" and bring us to total awareness and involvement in the present (Stafford 2013:190). According to Stafford, "jewels and gems play a critical role in the acute education of the senses", thus evoking and serving as a catalyst of a surreal state of imagining (Stafford 2013:190). These more wearable pieces can move even closer to the human body and activate the senses and enchantment, which in turn brings about awareness of the vitality within matter.

Both salt and jewellery have long and deep-rooted relationships with the human body. By combining salt with jewellery I aim to elucidate how materials and matter can *affect* the human body physically and mystically. Den Besten states that, when jewellery is worn on the body, there is a connection between the jewellery piece and the body (den Besten 2011:31). Thus the wearer's personality and agency connect to the jewellery piece in the where and when of the act of wearing. I argue that on top of this connective ability, my art jewellery pieces can connect to the internal assemblage of the human body, which includes the senses and essential elements or minerals for organ functionality. Thus the agentic assemblage of my more wearable art jewellery pieces not only connects to the exterior agentic assemblage of the human body, but to the internal agentic assemblage as well. In fact the line between the exterior and interior fades, since salt can effortlessly move between the two. As a result it becomes more than just the relationship between the body and the object, or the wearer and the jewellery piece; it is material body between and against material body.

3.5 Conclusion

The 'inner heat' or 'life' connection can take place between the viewer or wearer and my art jewellery pieces. My work can activate the senses and cultivate enchantment which makes the viewer/wearer aware of the vitality within my materials (*actants*) and art works (assemblages). This awareness immediately activates material vitality and opens a connection of 'inner heat' between the viewer/wearer and art jewellery work. In a general sense my work aims to provoke and activate a material thinking within the viewers or wearers, to create awareness of the 'life' within materials and of the fact that they are not just mere objects or lifeless things, but living things with powers that can affect us; or more accurately, that they do affect us and live within and amongst us.

In this chapter I focused more on the body and the ways in which my art jewellery not only activates an enchantment or mystical inner connection but also a physical connection. The use of salt as my main material aided me in understanding how matter can physically *affect* the human body internally and externally. Salt exists within and outside the human body, and it can move in and out of the human body. I combined this ability of salt with my art jewellery practice, and by creating pieces that can be worn on the body I aim to contribute to broadening the boundaries of what is defined as contemporary art jewellery.

Conclusion

This thesis aimed to investigate if a vital materialist investigation into salt can contribute to an interdisciplinary approach within art jewellery. Main conclusions that can be made from this study is that a vital materialist perspective on art jewellery can initiate an interdisciplinary practice which questions, redefines and transforms the boundaries and definitions of jewellery. Furthermore, from my practice and theory I was able to come to the conclusion that salt is a living acting material with agency able to be the catalyst within my project. Salt as catalyst created awareness of the vitality within all matter, human and non-human.

In my first chapter I introduced my practice and the development of my theory. I conducted a detailed analysis of my practical processes, techniques and most importantly my materials. From this analysis I could identify that my line of thought was that of material thinking, and that the knowledge gained was through 'handiness'. This analysis also revealed the enchantment within my materials, and the many ways in which I experienced enchantment during my making process. Once enchantment is cultivated an understanding of vital materiality takes over, and the materials transform from objects to living acting actants with agency and a power to affect other bodies (human or non-human). At this point I came to the conclusion that my process enabled my awareness of the enchantment and material agency within matter. I was able to embrace the vitality within matter through play, experimentation, unconscious and intuitive decision making. These methods or processes created a platform for my materials to reveal their vitality and agency.

A further deduction that can be made from the acceptance of vibrant matters is how it activated my own vital materiality. In my first chapter I argued that a vital materialist perspective on art jewellery can generate transdisciplinary practices, which it did. Embracing the vitality within matter, allowing them to become, to transform and to move, naturally led me to question discipline boundaries and embedded jewellery themes such as wearability, materials and durability.

In Chapter Two I discussed in more detail my interdisciplinary practice of art jewellery alchemy and metallurgy. I conducted an in-depth analysis of my practice and emphasised the similarities between my art jewellery practice and that of alchemy, metallurgy and

chemistry. Additionally, I found similarities between myself, as vital materialist art jeweller, and the alchemist. I also found similarities between my vibrant matter (vital materiality) theory and that of alchemical writings, doctrines and philosophies. The comparisons drawn between my art jewellery practice and theory and that of alchemy emphasises the inner connectivity between the practitioners, his/her processes, materials, techniques, tools and final products. In this manner I was able to draw the conclusion that my entire process, including my materials, tools (containers and reagents) and methods, possess a vitality of its own. And it is for this reason why I exhibit my containers, reagents, lace work and metal work as art works, for they all possess a vital materiality, and thus they are all art works in their own right.

Chapter Three focused on the capacity of non-human vibrant matters to affect human bodies in multiple ways. As in the previous two chapters, I discussed this affect through an analysis of the ways in which my own art jewellery work can affect and influence the wearer or viewer. Furthermore I discussed a more conceptual notion of how jewellery can become one with the body (wearer). By using vital minerals, such as salt, and metal as art jewellery materials, I argued for the capacity of vibrant matters physically to affect the human body internally and externally. In this way I aimed to question and transcend the boundaries and definitions of contemporary art jewellery by motivating experiments with more edible, mineral and bodily matters. This chapter addressed a deeper relationship between jewellery and the human body, a relationship in which jewellery objects can incite the senses and even become part of and one with the human body. Thus art jewellery can even transcend the boundaries of the human body by moving even closer to or deeper into the body.

From this investigation I was able to discuss the significance of salt through my art jewellery practice. By using salt as my model, I discussed in general how materials can cause effects, and therefore should be respected. I used this model within the discipline of art jewellery and illustrated how awareness of material agency can transcend boundaries and cross over between disciplines. I came to the conclusion that salt is a living thing with a power to change course, change material compositions and change perceptions of traditional jewellery conventions.

Bibliography

Adorno, T.W. 1973. *Negative Dialectics*. London: Routledge.

About DMC. 2014 [Online]. Available: <http://www.dmc-usa.com/About-DMC.aspx> [2015, May 21].

Allen, D. 2002. *Myth and Religion in Mircea Eliade*. London: Routledge.

Anker, S. & Flack, S (eds.). 2013. *Embodied Fantasies: From Awe to Artifice*. Switzerland: Peter Lang AG, International Academic Publishers.

Anker, S. & Nelkin, D. 2004. *The Molecular Gaze*. New York: Cold Spring Harbour Laboratory Press.

Astfalck, J. & Broadhead, C. Derrez, P. 2005. *New Directions in Jewellery*. London: Black Dog Publishers.

Astfalck, J. 2005. Jewellery as a Fine Art Practice, in Astfalck, J. & Broadhead, C. Derrez, P. 2005. *New Directions in Jewellery*. London: Black Dog Publishers.

Bader, A. 2006. A personal exploration of the creative process. Unpublished masters thesis. Stellenbosch: Stellenbosch University. [Online]. Available: <http://scholar.sun.ac.za/handle/10019.1/1546> [2014, March 20].

Barrett, E. & Bolt, B. (eds.). 2010. *Carnal Knowledge: Towards a 'New Materialism' Through the Arts*. New York: I.B. Tauris & Co Ltd.

Barrett, E. & Bolt, B. (eds.). 2009. *Practice as Research: Approaches to Creative Arts Enquiry*. New York: I.B. Tauris & Co Ltd.

Barrett, E. 2009. Foucault's 'What is an Author': Towards a Critical Discourse of Practice as Research, in Barrett, E. & Bolt, B (eds.). *Practice as Research: Approaches to Creative Arts Enquiry*. New York: I.B. Tauris & Co Ltd. 135-146.

Bennett, J. 2001. *The Enchantment of Modern Life: Attachments, Crossings, and Ethics*. Princeton: Princeton University Press.

- Bennett, J. 2004. The Force of Things: Steps toward an Ecology of Matter. *Political Theory* [Online], 32(3):347-372. Available: http://www.jstor.org.ez.sun.ac.za/stable/4148158?seq=1#page_scan_tab_contents [2015, August 23].
- Bennett, J. 2006. The Agency of Assemblages as the North American Blackout, in De Vries, H. (eds.) & Sullivan, L.E. (eds.). 2006. *Political Theologies: Public Religions in a Post-Secular World*. New York: Fordham University Press.
- Bennett, J. 2010. *Vibrant Matter: A Political Ecology of Things*. United States of America: Duke University Press.
- Bernabei, R. 2011. *Contemporary Jewellers: Interviews with European Artists*. New York: Berg Publishers.
- Bitterman, M. & Schloss, A. 2013. *Salt Block Cooking: 70 Recipes for Grilling, Chilling, Searing, and Serving on Himalayan Salt Blocks*. Missouri: Andrews McMeel Publishing
- Bitterman, M. 2010. *Salted: A Manifesto on the World's most Essential Mineral, with Recipes*. New York: Ten Speed Press.
- Bolt, B. 2006. Materializing Pedagogies. *Working Papers in Art and Design* [Online], 4. Available: http://www.herts.ac.uk/_data/assets/pdf_file/0015/12381/WPIAAD_vol4_bolt.pdf [2015, May 12].
- Bolt, B. 2009. The Magic is in Handling, in Barrett, E. & Bolt, B. (eds.). *Practice as Research: Approaches to Creative Arts Enquiry*. New York: I.B. Tauris & Co Ltd. 27-34.
- Botha, J. C. 1986. *Salt Producers in the Republic of South Africa*. Johannesburg: The Minerals Bureau of South Africa.
- Brephol, E. 2001. *The Theory and Practice of Goldsmithing*. Portland: Brynmorgen Press.
- Broadhead, C. 2005. A Part/Apart, in Astfalck, J. & Broadhead, C. Derrez, P. 2005. *New Directions in Jewellery*. London: Black Dog Publishers.

Brugger, M., Broadhead, C., Vigarello, G. & Alandete, C. 2009. *Monika Brugger, Heimat 1992-2008*. Stuttgart: Arnoldsche Art Publishers.

Campos, A. 2015. *Contemporary Jewellery as Art: A Philosophical Study*. [Online]. Available: <http://klimt02.net/publications/books/contemporary-jewelery-art-philosophical-study-uab-ana-campos> [2015, Mei 20].

Candy, L. 2006. Practice Based Research: A Guide. *Creativity & Cognition Studios* [Online], 1(0). Available: <http://www.creativityandcognition.com/resources/PBR%20Guide-1.1-2006.pdf> [2007, April 8].

Carter, P. 2009. Interest: The Ethics of Invention, in Barrett, E. & Bolt, B (eds.). *Practice as Research: Approaches to Creative Arts Enquiry*. New York: I.B. Tauris & Co Ltd. 15-25.

Carter, P. 2004. *Material Thinking: The Theory and Practice of Creative Research*. Victoria: Melbourne University Press.

Chaline, E. 2012. *Fifty Minerals That Changed the Course of History*. Cape Town: Struik Nature.

Cheung, L., Clarke, B. & Clarke I. 2006. *New Directions in Jewellery II*. London: Black Dog Publishing.

Cob, C. & Goldwhite, H. 1995. *Creations of Fire: Chemistry's Lively history from Alchemy to the Atomic Age*. Cambridge: Perseus Books Group.

Cohn, S. (eds.). & Sudjic, D. 2012. *Unexpected Pleasures: the Art and Design of Contemporary Jewellery*. New York: Rizzoli International Publishers.

Compact Oxford English Dictionary for Students. 2006. S.v. 'ferroelectric'. Oxford: Oxford University Press.

Compact Oxford English Dictionary for Students. 2006. S.v. 'mercerized'. Oxford: Oxford University Press.

Compact Oxford English Dictionary for Students. 2006. S.v. 'reagent'. Oxford: Oxford University Press.

Compact Oxford English Dictionary for Students. 2006. S.v. 'recalcitrance'. Oxford: Oxford University Press.

Coole, D. & Frost, S. 2010. *New Materialism: Ontology, Agency, and Politics*. New York: Duke University Press.

Corbett, J.R. 2006. Convention and Change in Seventeenth-Century Depictions of Alchemists, in Wamberg, J. (eds.). *Art and Alchemy*. Copenhagen: Museum Tusulanum Press. 249-271.

Csíkszentmihályi, M. 2013. *Flow: The classic work on how to achieve happiness*. London: Random House.

Cummins, S. 2012. *Sorcerer's Stone Curated by Bruce Hoffman*. [Online]. Available: <http://www.artjewelryforum.org/curators/sorcerer%E2%80%99s-stone-curated-by-bruce-hoffman> [2014, November 6].

Cummins, S. 2007. *Ruudt Peters / QI*. [Online]. Available: <http://www.artjewelryforum.org/artists/ruudt-peters-qi> [2014, November 6].

Daston, L. 2008. *Things That Talk: Object Lessons from Art and Science*. New York: Zone Books.

Davis, J.R. 2000. *Corrosion: Understanding the Basics*. United States of America: ASM International

De Freiras, N. 2009. Material Thinking as Document. *Studies in Material Thinking* [Online], 3(1). Available: <https://www.materialthinking.org/papers/18> [2015, January 28].

Deleuze, G. & Guattari, F. 1987. *A Thousand Plateaus*. Massumi, B. (tr.). New York: University of Minnesota.

Deleuze, G. 1990. *Expressionism in Philosophy*. New York: Urzone Inc.

Den Besten, L. 2013. Europe, in Skinner, D. *Contemporary Jewelry in Perspective*. Asheville: Lark Books

Den Besten, L. 2011. *On Jewellery: A Compendium of International Contemporary Art Jewellery*. Stuttgart: Arnoldsche.

Den Besten, L. 2007. *Answers to the interview Market, lies and websites*. [Online]. Available: <http://klimt02.vet/forum/interviews.liesbeth-den-besten-answers-to-the-interview-market-lies-and-websites> [2015, January 28].

Den Besten, L. 2006. Place(s) Papers and Exhibition 2006: Making Places. *ThinkTank* 3:14-18.

De Spinoza, B. 1901. *The Chief Works of Benedict de Spinoza*. Elwes, R.H.M. (tr.). London: George Bell and Sons [Online]. Available: <http://oll.libertyfund.org/titles/1711> [2015, August 22].

Dethier, V.G. 1980. Biological and Behavioral Aspects of Salt Intake: A Summation, in Kare, M.R. & Fregly, M.J. & Bernard, R.A. (eds.). 1980. *Biological and Behavioural Aspects of Salt Intake*. New York: Academic Press.

Derrez, P. 2005. Jewellery? What Kind of Jewellery Are We Actually Talking About?, in Astfalck, J. & Broadhead, C. Derrez, P. 2005. *New Directions in Jewellery*. London: Black Dog Publishers.

DeWitt, L. & Principe, L.M. 2006. Alchemy and Its Images in the Eddleman and Fisher Collections at the Chemical Heritage Foundation, in Wamberg, J. (eds.). *Art and Alchemy*. Copenhagen: Museum Tusculanum Press. 221-247.

DMC History. 2014 [Online]. Available: <http://www.dmc-usa.com/DMC-History.aspx> [2015, May 21].

DMC Pearl Cotton Balls. 2014. [Online]. Available: <http://www.dmc-usa.com/Products/Needlework-Threads/Embroidery-Threads/Pearl-Cotton-Balls.aspx> [2015, May 21].

Dormer, P. 2012. The Body and Jewellery, in Cohn, S. (eds.). & Sudjic, D. 2012. *Unexpected Pleasures: the Art and Design of Contemporary Jewellery*. New York: Rizzoli International Publishers.

Drutt, H. W. & Dormer, P. 1995. *Jewelry of our Time: Art, Ornament, and Obsession*. London: Thames and Hudson.

Dufresne, S. 2011. *How to make Rochelle salt piezoelectric crystal*. [Online]. Available: http://rimstar.org/materials/piezo/how_to_make_rochelle_salt_piezoelectric_crystal.htm [2015, June 17].

Dupré, S. (eds.). 2014. *Laboratories of Art: Alchemy and Art Technology from Antiquity to the 18th Century*. London: Springer.

Eaton, J. 2010. *200 Crochet Blocks for blankets, throws and afghans*. London: David & Charles.

Eliade, M. 1978. *The Forge and the Crucible: The Origins and Structure of Alchemy*. Chicago: University of Chicago Press.

Fisch, A. M., McFadden, D. R., Rigby, I. K. & Bell, R. 2000. *Elegant Fantasy: the Jewelry of Arline Fisch*. Stuttgart: Arnoldsche.

Fraústo da Silva, J.J.R. & Williams, R.J.R. 2004. *The Biological Chemistry of the Elements: The Inorganic Chemistry of Life*. New York: Oxford University Press.

Fregly, M.S. 1980. Salt and Social Behavior, in Kare, M.R. & Fregly, M.J. & Bernard, R.A. (eds.). 1980. *Biological and Behavioral Aspects of Salt Intake*. New York: Academic Press.

Gaspar, M. 2013. The Body in Jewelry, in Skinner, D. 2013. *Contemporary Jewelry in Perspective*. Asheville: Lark Books.

Gaspar, M. & Ruudt, P. (eds.). 2010. *Anima*. Amsterdam: Voetnoot.

Goudsmit, L. 2012. *Jewellery Unleashed! Crossing Borders*. [Online]. Available: <https://docs.google.com/viewerng/viewer?url=http://www.lisagoudsmit.com/wp-content/uploads/2013/03/Jewellery-Unleashed-article.pdf> [2015, May 18].

Grant, C. (eds.). 2005. Introduction, in Astfalck, J. & Broadhead, C. Derrez, P. 2005. *New Directions in Jewellery*. London: Black Dog Publishers.

- Haeffner, M. 1991. *The Dictionary of alchemy: From Maria Prophetissa to Isaac Newton*. Aquarian Press.
- Hansen, L. 2013. Living in the Material World. *Studies in Material Thinking* [Online], 9(6). Available: <https://www.materialthinking.org/papers/126> [2015, January_28].
- Harvey, G. 2013. *The Handbook of Contemporary Animism*. Durham: Acumen Publishing Limited.
- Harvey, G. 2006. *Animism Respecting the Living World*. New York: Columbia University Press.
- Heidegger, M. 2010. *Being and Time*. J. Stambaugh (tr.). New York: State University of New York.
- Heys, H. L. 1958. *Chemistry experiments at home for boys and girls*. London: Harrap.
- Higdon, J. & Drake V.J. 2012. *An Evidence-based Approach to Vitamins and Minerals: Health Benefits and Intake Recommendations*. New York: Thieme
- Holden, A. & Morrison, P. 1982. *Crystals and Crystal Growing*. London: Heinemann Educational Books Ltd..
- Holmyard, E. J. 1957. *Alchemy*. New York: Penguin Books.
- Hughes, R. & Rowe, M. 1991. *The Colouring, Bronzing, and Patination of Metals: A Manual for the Metalworkers, Sculptures and Designers*. London: Thames and Hudson.
- Jewellery Unleashed!*. 2012. [Online]. Available: http://www.premsele.org/en/activities/jewellery-unleashed_1/ [2015, May 18].
- Jung, C. G. 1963. *Mysterium Coniunctionis: An Inquiry into the Separation and Synthesis of Psychic Opposites in Alchemy*. New York: Pantheon.
- Jung, C.G. 1967. *Alchemical Studies*. R.F.C Hull (tr.). New York: Princeton University Press.
- Jung, C.G. 1953. *Psychology and Alchemy*. R.F.C Hull (tr.). London: Routledge & Kegan Paul, Ltd.

- Kare, M.R., Fregly, M.J. & Bernard, R.A. (eds.). 1980. *Biological and Behavioural Aspects of Salt Intake*. New York: Academic Press.
- Kleiner, F. 2015. *Gardner's Art through the Ages: Backpack Edition, Book D: Renaissance and Baroque*. Boston: Cengage Learning
- Kovats, N. 2014. Personal interview. 14 May, Stellenbosch.
- Kuhn, O. 2004. Ancient Chinese Drilling. *CSEG Recorder* [Online], 29(6). Available: <http://csegrecorder.com/articles/view/ancient-chinese-drilling> [2014, November 13].
- Künnap, J.M. 2008. *Alchimia: Via dell'Orto 35/rosso*. Tallinn: Printon AS.
- Kurlansky, M. 2003. *Salt: A World History*. London: Vintage Books
- Laszlo, P. 2001. *Salt the Grain of Life*. New York: Columbia University Press.
- Latour, B. 2004. *Politics of Nature: How to Bring the Sciences into Democracy*. Cambridge: Harvard University Press.
- Leavy, P. 2009. *Method Meets Art: Art-Based Research Practice*. New York: Guilford Press.
- Lindemann, W. & Clough, J. 2011. *Thinkingjewellery: On the way Towards a Theory of Jewellery = SchmuckDenken: unterwegs zu einer Theory des Schmucks*. Stuttgart: Arnoldsche.
- MacKinnon, J. 2013, October 26. Why is pink salt pink and the many colours of salt explained. *Cooking with Qualifirst* [Weblog post]. Available: <http://www.qualifirst.com/en/blog/many-colours-salt-explained/> [2015, July 26].
- MacGregor, G.A. & de Wardener, H.E. 1998. *Salt, Diet and Health*. Cambridge: Cambridge University Press.
- Marais, I. 2008. *Juwelierskuns en Transformasie*. Unpublished masters thesis. Stellenbosch: Stellenbosch University. [Online]. Available: <http://scholar.sun.ac.za/handle/10019.1/2672> [2014, March 20].
- McCafferty, E. 2010. *Introduction to Corrosion Science*. New York: Springer

- McCreight, T. & Bsullak, N. 2001. *Color on Metals: 50 Artists Share Insights and Techniques*. Wisconsin: GUILD Publishing.
- McNiff, S. 2009. *Art-Based Research*. London: Jessica Kingsley Publishers.
- Multhauf, R.P. 1978. *Neptune's Gift: A History of Common Salt*. Baltimore: Johns Hopkins University Press.
- Nicholls, E. 1962. *Tatting*. New York: Taplinger Publishing Company.
- Montag, W. (eds.) & Stolze, T. (eds.). 1997. *The New Spinoza*. Minneapolis: University of Minnesota Press.
- O'Conner, B. 2013. *Adorno*. New York: Routledge.
- O'Dell, B.L. (eds.) & Sunde, R.A. (eds.). 1997. *Handbook of Nutritionally Essential Mineral Elements*. New York: Marcel Dekker, Inc.
- Pagel, W. 1982. *Paracelsus: An Introduction to Philosophical Medicine in the Era of the Renaissance*. New York: Karger Medical and Scientific Publishers.
- Pellant, C. 2000. *Rocks and Minerals*. London: Dorling Kindersley Limited.
- Peters, R. 2013. *Ruudt Peters: Jeweller*. [Online]. Available: <http://klimt02.net/jewellers/ruudt-peters> [2015, September 7].
- Philpott, R. 2013. Engineering Opportunities for Originality and Invention: The importance of playful making as development method in practice-led design research. *Studies in Material Thinking* [Online], 9(5). Available: <https://www.materialthinking.org/papers/127> [2015, January 28].
- Piper, G. 2013. The Visible and Invisible in Making: Reflecting on a personal practice. *Studies in Material Thinking* [Online], 9(3). Available: <https://www.materialthinking.org/papers/129> [2015, January 28].
- Plass, U. 2007. *Language and History in Theodor W. Adorno's Notes to Literature*. New York: Routledge.
- Polanyi, M. 1967. *The Tacit Dimension*. New York: Doubleday & Company, Inc.

Quick, K. n.d. *kerianne-quick.com*. [Online] Available: <http://kerianne-quick.com/About-Kerianne-Quick> [2015, May 19].

Quick, K. 2011. *Material Matters*. Champaign: Krannert Art Museum. (Catalogue for the Master of Fine Arts exhibition held at the Krannert Art Museum, Champaign, 16 April 2011).

Quick, K. 2011, May 28. Thesis Statement of Interest. *Source Matters: Thinking About Origin blog*. [Weblog post]. Available: <https://sourcematters.wordpress.com/2011/05/28/thesis-statement-of-interest/> [2015, May 20].

Quick, K. 2011, May 28. Why it Matters to Me. *Source Matters: Thinking About Origin blog*. [Weblog post]. Available: <https://sourcematters.wordpress.com/2011/05/28/thesis-statement-of-interest/> [2015, June 6].

Rajagopal, K. 2011. *Engineering Physics*. Second Edition. New Delhi: PHI Learning Private Limited.

Rappaport, R. 1960. G.F. Rouelle: An Eighteenth-Century Chemist and Teacher. *Chymia* [Online], 6: 68-101. Available: <http://www.jstor.org.ez.sun.ac.za/stable/pdf/27757193.pdf> [2015, August 10].

Rovereto, M. 2013. *The Food Project: The shape of taste*. [Online]. Available: <http://klimt02.net/events/exhibitions/food-project-shape-taste-mart-rovereto> [2015, August 2].

Salt Cave UK. 2014. [Online]. Available: <http://saltcave.co.uk/> [2015, July 30].

Salt Cave Africa. 2010. [Online]. Available: <http://www.saltcave.co.za/> [2015, February 22].

Sandburg, C. & Smith, P. (eds.). 1994. *Chicago Poems*. New York: Dover Publications, Inc.

Sandu, I., Canache, M., Vasilache, V. & Sandu, I.G. 2011. The Effects of Salt Solutions in the Health of Human Subjects. *Present Environment and Sustainable Development* 5(2), 67-88.

Schön, D.A. 1995. *The Reflective Practitioner: How Professionals Think in Action*. London: Ashgate Publishing Limited.

Schumann, W. 2008. *Minerals of the World*. New York: Sterling Publishing.

- Schwarcz, J. 2014. *Is That a Fact?: Frauds, Quacks, and the Real Science of Everyday Life*. Toronto: ECW Press
- Seetharaman, S. 2005. *Fundamentals of Metallurgy*. London: Woodhead Publishing Limited.
- Skinner, D. 2013. *Contemporary Jewelry in Perspective*. Asheville: Lark Books.
- Skinner, D. 2013. *A Kunzli for our Time*. [Online]. Available: <http://www.artjewelryforum.org/exhibition-reviews/a-k%C3%BCnzli-for-our-time> [2014, November 6].
- Smith, N. 2014. *Natalie Smith: Jeweller*. [Online]. Available: <http://klimt02.net/jewellers/natalie-smith> [2014, November 9].
- South Africa's geography*. 2012. [Online]. Available: <http://www.southafrica.info/about/geography/geography.htm#.VXSjw8-qqko> [2015, June 7].
- Srivastava, J.P. 2011. *Elements of Solid State Physics*. Third Edition. New Delhi: PHI Learning Private Limited.
- Stafford, B.M. 2013. The Jewel Game: Gems, Fascination and the Neuroscience of Visual Attention, in Skinner, D. *Contemporary Jewelry in Perspective*. Asheville: Lark Books
- Stafford, B.M. 1999. *Visual Analogy: Consciousness as the Art of Connecting*. Cambridge: MIT Press.
- Sullivan, G. 2005. *Art Practice as Research: Inquiry in the Visual Arts*. California: Sage Publications.
- Szulakowska, U. 2011. *Alchemy in Contemporary Art*. England: Ashgate.
- Taubes, G. 1998. The (Political) Science of Salt. *Science* 281 (5379): 898-907.
- Twice Upon A Time: Magic, Alchemy and the Transubstantiation of the Senses*. 2014 [Online]. Available: <http://cfar-biad.co.uk/index.php/conferences/564-twice-upon-a-time-magi-alchemy-and-the-transubstantiation-of-the-senses-2014/497-cfar-conference-twice-upon-a-time> [2015, July 28].

Tylecote, R.F. 2002. *A History of Metallurgy*. Second Edition. London: Maney Publishing.

Uderzo, B. 2015. *Barbara Uderzo: Jeweller*. [Online]. Available:
<http://klimt02.net/jewellers/barbara-uderzo> [2015, August 2].

Untracht, O. 1982. *Jewelry Concepts and Technology*. London: Robert Hale Limited.

Wamberg, J. 2006. *Art and Alchemy*. Copenhagen: Museum Tusulanum Press.

Weber, M. 2009. *From Max Weber: Essays in Sociology*. Oxon: Routledge.

Weiffenbach, J.M. & Daniel, P.A. & Cowart, B.J. 1980. Saltiness in Developmental Perspective, in Kare, M.R. & Fregly, M.J. & Bernard, R.A. (eds.). 1980. *Biological and Behavioural Aspects of Salt Intake*. New York: Academic Press.

Wilson, S. 2014. *Jewellery and Wellbeing: From Superstition to Placebo* [Online]. Available:
<http://cfar-biad.co.uk/index.php/conferences/564-twice-upon-a-time-magi-alchemy-and-the-transubstantiation-of-the-senses-2014/626-sandra-wilson-jewellery-wellbeing-from-superstition-to-placebo-panel-4-q-a> [2015, July 28].

Young, R. D. 2000. *Contemporary Patination*. California: Sculpt-Nouveau.