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A multimodal social semiotic approach to jewellery design pedagogy

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This work has not been previously submitted in whole, or in part, for the award of any degree. It is my own work. Each significant contribution to, and quotation in, this dissertation from the work, or works, of other people has been attributed, and has been cited and referenced.

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Abstract

This thesis presents a multimodal social semiotic theoretical framework to explore jewellery design pedagogy. The role of the designer, meaning making and the semiotic functions of resources used within the practice of jewellery design are analysed. This research explores what resources are used, interrogates how they are used and what prompts change in the production of designs. The jewellery design process and the resources used and produced are explored in terms of their potential for making meaning. These resources include students' visual and written texts, conceptual drawings, technical drawings and three dimensional artefacts. The design process is interrogated within the context of jewellery design pedagogy with the aim of understanding and informing practice. This is based on data gathered in a higher education institute which, after the successful completion of a three year program, presents students with a Diploma in Jewellery Design.

The research focuses on the transformation of meaning in the artefacts produced within the jewellery design process, and aims to define and understand changes in materiality. A social semiotic approach emphasises that materials construct meaning. Furthermore, all meaning is understood and interacted with in a social environment. By exploring the ways meaning is constructed and defining the various resources used within the designing process, the research aims to recognise the students' design process. It argues that jewellery design pedagogy could be enriched by recognising the student's resources and the way their interests affect their uses of these resources.

The process of designing jewellery is analysed using a multiliteracies approach which looks at available designs, designing and the redesigned (NLG 2000). The approach has been developed further to include the notions of 'prompt' which is defined as the cause or reason for designing and 'site of display' which is where the jewellery will live. This methodological framework is used to analyse the various methods and resources which are employed when designing jewellery.

This research makes explicit the environment of learning and its relationship to meaning making, the signs of the students' interests observed within the design process and the challenges which have arisen regarding assessment.

Chapter 1: Introduction

1.1 Aim

This thesis presents a theoretical framework which claims that jewellery design pedagogy is a multimodal social semiotic practice. The role of the designer, the semiotic function of meaning making and the semiotic functioning of resources used within the practice of jewellery design are grounded theoretically within the framework. The research is defined within the environment of design which encompasses the pedagogical context and notions of knowledge and learning from a social semiotic viewpoint.

This research is based on data gathered in a higher education institute which, after the successful completion of a three year program, presents students with a Diploma in Jewellery Design. The jewellery design process and the resources used and produced within this process are explored in terms of their potential for making meaning. These resources include student's visual and written texts, conceptual drawings, technical drawings and their final three dimensional artefact. The design process is interrogated within the context of jewellery design pedagogy with the aim of enlightening the practice of this research. It is intended to influence jewellery design pedagogy by exploring what resources are used, interrogating how they are used and what prompts change in the production of designs within the context of jewellery design pedagogy.

The research aims to define the concepts which make up the process of jewellery design and then, using this understanding, analyse the changes in meaning making that students display when designing jewellery. It would be unrealistic to think that research of this nature could present case studies of all the possible variations seen within jewellery design pedagogy as the design process is not fixed or necessarily linear. Designs are processed differently by each student due to the personal nature of design. However, the analysis focuses on a group of students' design books and then on one student's design process to explore the conveying of meaning.

In order to understand jewellery design pedagogy, the research aims to draw attention to existing design practices, highlight them and account for these practices in terms of a framework. The intentions are for this framework to allow for development within the field of jewellery design by making explicit the defining aspects which pertain to the practice. Students are seen as designers who are not bound to pedagogical scenarios, but rather life-long professional identities.

Various techniques are used to communicate the development of a concept such as drawing on paper or creating prototypes from materials which differ to those materials used in the final artefact. Students use these techniques to conceptualise and develop a designed item of jewellery, all of which form part of their visual language. The research aims to explore the stages and methods used within the design process in order to enlighten jewellery pedagogy.

1.2 Rationale for the study

The motivation for undertaking this research has arisen out of my educational practice which includes the teaching of jewellery design. Over the years I have observed consistencies which exist in aspects of jewellery design. These consistencies are seen in the ways students' research design and then develop concepts using various techniques. Each part of the design process has variations regarding the materials and techniques used to communicate design. There are also variables

regarding the sequencing of the design process which emphasises the flexibility and fluid nature of jewellery design.

This research is important within the context of jewellery design pedagogy as there is no common or meta level conversation within the field. There are many books and journal articles which look at the historic and cultural aspects of jewellery, but these are generally factual accounts into the world of jewellery. Few articles address the process of jewellery design from a perspective of design pedagogy.

The recognition of visual forms of communication is paramount regarding the understanding of the transformation of meaning in this research. The conceptualisation that occurs is realised materially and communicated visually using various genres and modes such as conceptual drawings, technical drawings, visual research and three dimensional artefacts. This research aims to explore the ways meaning is constructed, and to define and recognise the various resources used within the designing process. Jewellery design pedagogy could be enriched by recognising the students' resources and the way their interests affect their uses of these resources.

As a result of my years of teaching I am aware that the lecturer is not a neutral prompt within the design process. It is important to define the role of prompts which influence the design process and recognise the multiple prompts which exist within the design process. The prompt could be the pedagogical brief, professional client or the lecturer who is involved in each student's design process. It is important to make explicit these influences in order to create a pedagogical design process which is directed towards the interests of the student as designer. It is also important to create awareness for the student as to when the interest of the client is more important than that of the designer.

In pedagogy within the creative fields, an account of the student as an individual must be made explicit in order to develop students into designers driven by their personal interests. The recognition of student's interests is made possible by recognising the environment in which learning takes place. In order to achieve this within a formal educational context both the formal and informal learning which occurs, needs to be highlighted. The combination of both formal and informal learning is evident within the environment of design pedagogy. Students learn within their own time frame, yet are assessed based on the timeframe of the curriculum. Each student begins the learning process with diverse existing knowledge which needs to be developed differently. The interest of the individual as designer begins with the understanding of the context of the individual, the requirements of the jewellery designer and the pedagogical environment.

The research focuses on changes in meaning using the products of the design process as data. Students' design books have been analysed in order to make explicit and gain understanding of the environment of design for individual students. Similar design processing is identified across the range of design books prior to a fine grained analysis of one design process undertaken by one student. Visual research, drawings and a final materialised artefact form the foundation of this in depth analysis of one student's design process within the research. The design process is analysed and understood based on the artefacts produced in the available design, design, and redesign stages.

1.3 Research questions

- How does transformation of meaning occur within a jewellery design process?
- What are the implications for jewellery design pedagogy?

1.4 Outlining the thesis

The thesis begins by outlining a theoretical framework for looking at jewellery design pedagogy. It draws on social semiotics, multimodality and concepts from multiliteracies in theorising the process of design.

The methodology chapter proposes a multiliteracies methodological framework. Multiliteracies is employed in order to understand 'practice' and 'process' which divides the practice of designing into available designs, designing and redesigned. The approach has been developed further to include notions of a 'prompt' and 'site of display'. This methodological framework is used to analyse the various methods and resources used when designing jewellery.

The analysis chapter focuses on making explicit the interests of the student and their learning scenarios, by analysing the design books of nine students. This chapter then goes on to analyse the design process of a single student in order to make explicit the transformation of meaning within a jewellery design process.

Finally the conclusion outlines the environment of learning, the challenges of assessment and the signs of interest explored within the context of jewellery design pedagogy.

Chapter 2: Theoretical framework

This chapter explores the approaches of social semiotics, multimodality and concepts from multiliteracies in theorising the process of design.

Jewellery is first contextualised theoretically and then defined by its potential for making meaning. The chapter then turns to exploring meaning making as defined by social semiotics and multimodality. The environment of design pedagogy is explored in order to contextualise this research and define the scope of learning which occurs within jewellery pedagogy. Students are explored as designers of meaning using the concepts from multiliteracies of available designs, designing and redesigned. The chapter concludes with an exploration of jewellery pedagogy and the various contexts where this learning occurs.

2.1 Jewellery in context

Jewellery literature tends to be confined to historic (Tait 2001) and cultural (Gere and Rudoe 2011) accounts regarding jewellery and adornment or to the documentation of contemporary jewellery (Grant 2005, Sackville and Broadhead 2006). There are books on the topic of technical jewellery manufacturing which define the 'how to' regarding the production of jewellery (Codina 2000, 2003, 2005) or books highlighting aspects which pertain to jewellery design (Olver 2002). There is little theorising of jewellery design outside of University contexts. These papers generally remain within the walls of the institution along with the rich debates as to the purpose and meanings associated with jewellery. Lindemann (2011) deals with a tentative theory of jewellery which foregrounds the function of jewellery in a social context.

Adornment is understood as the beautification of the body with artefacts or markings placed on or in the body. There are degrees of adornment which are limited by the construct of the body. Adornment has an ancient and diverse history throughout all cultures (Lindemann 2011:13). The awareness of how we make meaning and communicate this in jewellery forms the foundation for the potential of semiotic representational practice (Birgit and Grunwald 2011).

Jewellery is defined as an object worn on the body which acts as ornamentation or is functional in its use. As jewellery is worn on the body, it interacts with the wearer. This research concentrates on the process of designing jewellery which constructs meaning through the materialised artefact, yet the prompt and the site of display are also foregrounded as these aspects form an integral part of the design concept and final materialised artefact.

Distinctions regarding the classification of jewellery are important within the realm of jewellery pedagogy as students develop an understanding of the affordances and constraints that they encounter when designing and manufacturing each artefact. Jewellery can be made for aesthetic or functional purposes, all of which are encountered during a student's studies as well as within their professional practice. Debate exists between jewellery being an art form or a craft (Lindemann 2011: 12). The theorising of this occurs within pedagogical institutions while the verbal discussions occur in society primarily between those who produce jewellery and craft.

There are varying reasons for designing and manufacturing jewellery in today's society. Consumerism defines an aspect of jewellery where designs are mass produced, with the largest design and material constraints being the selling price. There is a market for once-off designed

jewellery produced specifically for a single client to their specifications. Constraints for this type of jewellery lie with the designer/ manufacturer in what they can potentially produce, and with the clients who have their specific affordances and constraints.

Jewellery requires different degrees of knowledge for design and manufacture. Jewellery made by a person who has been taught the intricate techniques of 'the trade' can be referred to as a Goldsmith or Silversmith who manufactures fine jewellery. Both the techniques and the materials help to define the various jewellery genres (Lindemann 2011:12). Fine jewellery is made from high quality materials and is generally designed to be worn for many years. Many people make jewellery using alternative materials or techniques which include unconventional processes such as crochet, felting or beading. Costume jewellery is seen as having a shorter life span because the materials or manufacturing techniques are generally low cost and not intended to last. Contemporary jewellery is defined by its context as it is subjectively viewed as being 'ground breaking' by those who view it.

This research explores a theoretical framework which enables the process of jewellery design to be interrogated. The framework draws on theory which comes from three broad overlapping areas. These include multimodality, social semiotics and multiliteracies.

2.2 A multimodal approach to communication

Jewellery design involves multiple modes for communicating the various stages of the design process. These modes of communication include visual resources such as photographic images, conceptual drawings, realistically drawn representations and writing. A mode is context dependant as meaning potential can change within a different context or use. A mode is defined as a 'socially and culturally shaped resource for making meaning' (Bezemer and Kress 2008: 171). Modal resources are the aspects which make up the mode such as colour, shape and spatial relations (Bezemer and Kress 2008: 171).

Multimodal representation places language as one mode among many for making meaning. Different modes offer different potentials for making meaning (Kress, 2010:79). In a jewellery design context modes include writing, drawing, images and three dimensional artefacts. The resources that are produced within the design process are beneficial in tracking the design process and analysing the transformation of meaning as each resource carries meaning within each part of this design process.

Multimodality has been conceptualised and defined by writers such as Archer (2006, 2008), Bezemer and Kress (2008), Jewitt (2009), Kress (2010), and Stein and Newfield (2006). Each writer approaches multimodality from their chosen context and, according to Jewitt (2009), from amongst three main theoretical approaches to multimodality. The differences in these three approaches 'stem from the historical influences and directions that have shaped them' (Jewitt 2009: 28). These approaches include social semiotics, multimodal discourse analysis and multimodal interactional analysis (Jewitt 2009:29). Multimodal discourse is strongly influenced by systemic functional linguistics as developed by Halliday and adapted by O'Halloran (Jewitt, 2009: 31) while multimodal interactional analysis focuses on context and situated interaction between 'the social actor with or through multimodal mediation' (Jewitt, 2009; 33).

The social semiotic approach has its foundations in the linguistic work of Halliday (1978) and is the approach taken in this thesis. Halliday argued for 'the need to socially situate language and to

understand texts as complex signs' (in Jewitt, 2009:29). Kress and van Leeuwen began with Halliday's work and developed it into a loosely woven version where the focus changed from a system of available resources to emphasising context and the ways in which the sign-maker shaped signs and meaning (Jewitt, 2009: 29). Social semiotics can be seen in the work of Kress (2000, 2010), Kress and van Leeuwen (2001, 2002, 2006), Jewitt (2009) and Jewitt and Oyama (2001). Within these texts the social uses of multiple modes of communication are highlighted. There are empirical studies within this literature which cover a vast variety of areas such as museums (Kress 2010), art (Brenner 2004), architecture (Kress and van Leeuwen 2006), website pages (Jewitt 2006), children's drawings (Keatin et al 2000), text books (Bezemer and Kress 2008), furniture (Bjorkvall and Karlsson 2011) and adverts (Jewitt and Oyama 2001).

Multimodal social semiotics is concerned with 'sign-making as a social practice' with the emphasis on 'the sign-maker and their situated use of modal resources' (Jewitt, 2009:30). There is an understanding of the fluidity and dynamism of signs, modes and meaning-making which are connected socially within their specific context. Multimodal social semiotics has an interest in the sign-maker and the context of the making of these signs. The perspective that multimodal social semiotics brings to the research of the jewellery design process is therefore one of a contextually driven relationship between the sign and the sign-maker.

Semiotics points to the sign having transferable meaning in a visually recognisable representation, such as a road sign. Multimodal social semiotics is based on the meaning making of complex signs with a specific focus on the contextual aspects forming a basis for representation of the sign. Kress has further developed Halliday's theory and termed it a 'social semiotic approach to contemporary communication' which he defines as being meaning which exists in 'all appearances, in all social occasions and in all cultural sites' (Kress, 2010:2). The significance of this approach is that it recognises that the dominant forms of communication such as reading and writing do not dominate any more (Cope and Kalantzis 2000). This dominance has negatively impacted societies regarding the way in which their ability to communicate has been understood. Multimodality brings mean-making across modes together in theory which allows for an all encompassing understanding of communication (Kress, 2010:3). The social semiotic approach goes beyond written language and looks rather at multiple modes of communication and meaning-making.

This research focuses on the process of 'transformation' and 'transduction' of meaning in the process of designing three dimensional jewellery artefacts. Transduction is defined as being the movement of semiotic resources from one mode to another. This is different to transformation which can be defined as changes within a mode which result in minimal changes in meaning making. Kress (2010) has made use of the concepts of transformation and transduction to define and contextualise the transformation of meaning either generally or relative to a specific research context. For instance, Bezemer and Kress (2008) analysed the representation of the divider within maths textbooks over a period of time, tracking the transformation of meaning within different modes and contexts.

A social semiotic approach emphasises that materials convey meaning. Furthermore, all meaning is understood and interacted with in a social environment. This research analyses the transformation of meaning in the artefacts produced within the jewellery design process, and aims to define and understand changes in materiality. In exploring materiality, the research refers to Bjorkvall and

Karlsson (2011) who present an in depth social semiotic argument regarding materiality and meaning. They argue that material artefacts carry meaning within a social context as meaning is developed through the interaction with other people or objects. Their research is based on two empirical studies; one of Australian dining room tables and the other of post-it stamps used within a work environment. Their research focuses on representation of existing artefact as whereas my research looks at the process of materiality being transformed as the design changes from a concept into a final three dimensional artefact.

2.3 The environment of design pedagogy

This research takes place in a pedagogical environment with the implications of the study intended to influence jewellery design pedagogy. It has drawn on various studies to theorise the environment of design. Cohen et al (2000) analyse a broad spectrum of educational contexts with the intention of theorising how to research in education. This is useful in understanding the epistemological and ontological viewpoints which exist in education (Lillis and Scott 2007). The 'environment of design' (Kress 2011) includes the institution, the lecturer (Davis and Reed 2003, Reed 2008), learner contexts (Casakin 2011, Archer 2008), the learning environments (Guile and Young 1998) and the notion of learning through experience (Fenwick 2001).

Kress (2011: 137-139) refers to the environment of design as social with the creation of meaning being either a broad scenario for communication or specifically one which is directed towards teaching and learning. Within the realm of teaching and learning, Kress (2011: 178-179) describes learning as the result of the process of meaning making. Learning is defined by the context in which it occurs as the environment has certain constraints and affordances. This research is contextualised within a pedagogical environment with knowledge and learning being driven not only by the power of the curriculum but also by the individual. Social semiotics views designing as meaning-making which gives rise to the interests of the individual and is therefore concerned with identity. In a pedagogical context the notions of identity, knowledge and the process of learning are foregrounded. This results in concluding that when learning occurs, knowledge is gained and therefore a change of identity occurs.

The learning that occurs within this pedagogical environment is intended to extend into the broader social environment which forms part of the professional identity of a jewellery designer. In order to function within the broader social environment it is necessary for the individual to have an understanding of the affordances and constraints of materials, modes and the social interactions characteristic of the jewellery design environment. It is also necessary for the designer to understand that they are communicating the realisations of their interests in the world through a variation of materialised artefacts.

Pedagogical research has the potential to omit areas where research can or will take place due to the theoretical stance taken within the research. The constraints of this are seen in the researcher overlooking aspects of learning and teaching which do not fit into the presumed pedagogical context. This research therefore draws on multiple theories to theorise the pedagogy. Social semiotics does not specifically address pedagogy yet it does offer an in depth way of looking at design, meaning making, knowledge and the social context in which this research takes place. This approach is augmented by a 'multiliteracies approach' drawing on the notion of literacy practices and events in which meaning is communicated through multiple resources. It does address

pedagogy (Cope and Kalantzis 2000) and design (NLG 2000) yet does not make explicit the learning within this specific institutional pedagogical context. In order for this research to encompass the variety of possibilities regarding learning and meaning-making it needs a theory that encompasses both formal and informal learning. It is common practice to overlook informal learning when researching a formal learning context. Within design pedagogy and possibly within all formal learning environments, students learn more than the curriculum intends.

Within one learning context both formal and informal learning occurs. In order to observe this, the entire environment within which the pedagogy takes place must be understood and contextualised. The notion of learning being defined by a single pedagogical context is challenged within this research as learning occurs both within and outside of the curriculum. The inclusion of informal learning within this formal learning context is incorporated within the environment of design. This is critical as the data shows learning which extends outside of the 'boundaries' of the formal curriculum. Not all students learn within the timeframe of the curriculum nor do they all learn in the same sequence prescribed by the curriculum. Learning has the potential to transform meaning making and is evident in the artefacts that are produced to communicate meaning. The theoretical framework developed here values learning and views jewellery design pedagogy as a process of development for future professional jewellery identities. The research shows how multimodal social semiotics makes explicit the learning that occurs no matter whether it is intended by the pedagogy or not.

The 'environment of design' is partly formal within the educational institution. Formal learning consists of learning that occurs within a structured context that is designed specifically for learning. This process of learning has a specific timeframe and may lead to a formal recognition such as a diploma or certificate (Colardyn et al 2004:71). Within the formal learning context, knowledge is seen as transmitted, gained, transferred or acquired by an individual. This knowledge is viewed as objective as it is based on content and theory which is explicit in nature. Formal learning has a notion of quantifiable knowledge which can consequently be assessed and assigned a 'level' relative to the knowledge produced. It is due to formal knowledge's claim to be objective that it underpins the outcomes based education processes that we find in formal education institutes.

Formal learning contexts always include a specified timeline which is directed by the teacher, curriculum or institution. This learning therefore often happens in a 'top down' approach as the knowledge is believed to be held by those directing the education process and is disseminated to those who have sought the knowledge. With students enrolling wilfully for a formal education programme, it is taken as a given that each student is present within the programme willingly with the intention to learn. The jewellery curriculum is designed to teach students over three years with the final outcome being specialised knowledge which earns them a Diploma in Jewellery Design.

By contrast, informal learning is defined by its unstructured learning context and is often referred to as experiential learning. It can, to a certain degree, be understood as accidental or unintentional learning. Typically, it does not lead to certification yet the knowledge is used in everyday contexts (Colardyn et al, 2004:71). The unstructured aspects seen within the informal learning environment are at the centre of this learning. With undefined learning structures comes tacit and implicit knowledge as the objectives for the learning context are not necessarily implied. The learning process is foregrounded within this approach to learning and on occasions viewed as being equally

important to the final outcome (von Kotze, 2002). This is partly due to the fact that within this context the outcomes are fluid and unpredictable. Learning is seen as an 'everyday practice' which could be conscious or unconscious but involves a process of participation (Lave, 1996).

Informal learning is defined by its qualitative and subjective aspects which recognise the emotional and humanist qualities involved within learning. Critical reflection and experiential learning form part of the theories which inform informal learning (Foley, 2004). As design is linked to the interests of the designer so the process of design is taught with a humanist methodology. Critical reflection becomes part of each student's learning process as they self reflect in order to develop their design orientation. The qualitative aspect of this learning makes it difficult to place a quantifiable outcome upon the learning.

Informal learning does not have a specific timeline. Programmes exist yet they are fluid and generally self-directed even if they are facilitated. Within the jewellery design context there is a mixture between timeline specific learning and the development of the individual at their own pace. The knowledge that a student brings with and that which they have to learn in order to meet the final outcomes of the curriculum are not all the same. The facilitator or mentor is seen as the more knowledgeable but from a 'bottom up' approach where learning includes the inclusion of the student's social, cultural and historic attributes. Learning utilises the students existing knowledge and transforms or develops considering the purpose and desire of each specific learning context.

Views regarding formal and informal learning have developed, from being seen as practices that are from opposite polarities to more recently being viewed as two sides of 'learning' (Hodkinson et al, 2003). This polarisation is too complex a debate to enter into here. Changes can be seen in the formal education system where practice is becoming more of a required and integral part of accredited programmes. An example of this is demonstrated in the formalisation of the jewellery apprenticeship into a certified qualification. It is not the informal learning practice of previous centuries. In the formalisation of learning, aspects of the practice can be lost, ignored or misunderstood. Pedagogy can benefit by observing and understanding what kind of learning occurs within formal learning contexts as all learning makes up knowledge which changes the individual and their ways of making meaning. These aspects are the unrecognised learning processes which exist within knowledge gain and remind educators that they are working with people who exist within their own contexts, existing knowledge, personal interests and undefined parameters.

This research aims to analyse learning related specifically to jewellery design pedagogy whether it presents itself as formal or informal. Learning happens as a result of the curriculum relative to the context and social, cultural and historic nature of the individual. Each student arrives with a different knowledge base and each must learn and adapt to the expectations of the curriculum. Students exit the programme having developed sufficiently with regard to the curriculum and their interests. Learning is necessary for the development of the designer yet this learning happens in multiple aspects relative to the individual. For instance, some need to learn time management while others require patience.

In order to be a successful jewellery designer, a student does not only need content knowledge but also to make the connections between their identity, modes of communication and the etiquette of the professional designer. Learning happens when making meaning (Kress 2010). This research

explores the environment of learning and its relationship with the resources produced within jewellery pedagogy.

2.4 A multiliteracies approach: Students as designers of meaning

A related approach used as a theoretical underpinning in this research is 'multiliteracies'. The New London Group's (NLG 2000) paper "A Pedagogy of Multiliteracies: Designing Social Futures" is used to theorise the design process. The NLG, and others (Kress 2000) look at design as a transformative concept. This differs to the approach taken in certain strands of linguistics where language for communication is seen as being derived from a stable and existing system. A multiliteracies approach accounts for ongoing changes in social, cultural, economic and technological domains (Kress, 2000: 155). The NLG interrogates multiliteracies as an indicator of social change where society is changing towards a multi-skilled and also a multiliteracies-based communication system. This system of communication includes multimedia technologies and multimodal forms of communicating information. The NLG advocate the concept of 'design' as a forerunner of change regarding pedagogy. They speak about teachers and managers as designers of learning processes and present a metalanguage of multiliteracies which interrogates meaning and learning using three designs of meaning: available designs, designing and redesigning.

Literature which defines and utilise the multiliteracies approach include Cope and Kalantzis (2000), Lea (2008), Mills (2006), Pahl and Pollard (2008), Archer (2006) and Street et al (2009). A multiliteracies approach legitimises the practice of the designer by recognising the social practices and literacy events possible within the design arena. Social practice includes the identity and social position of those involved, whereas the event is the occasion where literacies are 'integral to the nature of the participant's interaction and interpretive process' (Street et al 2009:192). Multiliteracies encourages research within the practice of design, specifically in an educational framework (NLG 2000:73). A social semiotics approach defines design similarly with design being described as a process of translating the social and contextual interests of the individual into semiotically shaped materials.

In a multiliteracies pedagogy the process of designing is emphasised as being 'meaning-making [that] is an active and dynamic process, and not something governed by static rules'(NLG 2000:74). The design process represents meaning differently at different points in the process. In terms of jewellery pedagogy, this research makes explicit the processes involved in jewellery design by analysing five stages in the design process. Each stage is seen as demonstrating significant differences, yet they are all reliant on each other in order to reach the desired outcome. The stages are the prompt, available design, designing, redesigning and the site of display. In the process of making explicit these changes in the design process, I am not advocating a static method for teaching design, but rather an explicit understanding of the processes involved in designing in order to improve jewellery pedagogy overall.

Stein and Newfield (2006:8) define design as the 'representation of meaning from a range of possible options which are continuously shaped by culture, identity and history.' They omit to bring in the materialisation of the design. Bezemer and Kress (2008:174) describe design as the 'process of giving shape to the interests, purposes and intentions of the rhetor in relation to the semiotic resources available for realising/ materialising these purposes as apt material, complex signs'. Design encompasses the conceptual and the material artefact, both of which communicate meaning. This

means that the materialised artefact realises conceptual meaning which can be observed in the interests, purposes and intentions which form the underpinning of the artefact. The artefact also realises meaning in its materialisation which includes the actual materials used in terms of their texture, shape, form, colour and durability.

Multiliteracies brings to this research a theoretical approach which encourages the analysis of practice as human experience. The design process is foregrounded in this research, yet it is important to acknowledge that design is all about the individual's experience and communication of the world.

2.5 Jewellery pedagogy

Jewellery design pedagogy traditionally uses an apprenticeship model. This type of learning has a dynamic history which sees people learning a trade that was passed down through generations where the intention was to obtain a primary 'skill' which allowed the individual to earn a living wage. Lave (1996) has done extensive research on this field of practice, recognising the intricate dynamics of learning within an informal scenario which she terms 'situated learning'. She has made explicit the diverse learning scenarios that are present in this type of learning. No theorising regarding jewellery design pedagogy within a formal institutional context has been found, yet the apprenticeship model has been researched in various ways (Gamble 2001, Guile and Young 1998). Such research includes the exploration of the nature of learning and knowledge within an apprenticeship model.

The present choices of jewellery pedagogy are either to follow the traditional apprentice route or to study in an institution which offers formal academic learning scenarios. Both routes offer affordances and constraints yet the common threads that run through them are the visual and tactile aspects that form the foundation for communication in jewellery pedagogy. This does not negate writing as a mode as written theory underpins the development and historic recording of jewellery. Hence, this research advocates an approach to jewellery design using theories which encompass multiple forms of conveying meaning.

The most prominent aspect which separates the apprentice route and formal learning is that of design. The apprentice learns to manufacture jewellery yet is not normally taught how to design separate to the manufacturing process. Design is viewed as being owned by the 'master jeweller' and therefore the apprentice creates jewellery generally from drawings supplied by the 'master' in a 'top down' approach. There is an aspect of design that happens while a piece of jewellery is being manufactured yet the conceptualisation and development prior to this by the student is nonexistent within the apprentice route. The academic route largely focuses on the process of developing a student's design competencies which include the conceptual underpinning and use of various genres for communicating using artefacts as the carrier of meaning.

'Jewellery design' as a subject is supported by other subjects whose techniques alone and not the subject as such, appear within the subject of design. In order to design jewellery one will benefit from the knowledge of various drawing genres which develop an understanding of three dimensional objects represented in a two dimensional form. The techniques are developed within the subject 'illustration' which is the representation of the materialised artefact in colour; 'technical drawing' which is the linear construct of the artefact and 'drawing' involving the representation of the artefact as an object with shape and form. These subjects represent meaning on the same two

dimensional medium of paper yet they employ different modes which use a variety of mediums to convey meaning such as ink, gouache, water colours and pencil. Design can also be represented as a prototype which is three dimensional in nature yet is a simulation of the final artefact produced from materials which are not the same as will be used in the final artefact.

2.6 Theoretical overview

The theoretical framework is grounded in the notion that jewellery design is best analysed using the theories of multimodal social semiotics. The artefacts that are produced in the jewellery design process are signs which carry meaning. These same artefacts are presented in multiple modes, specifically a mixture of writing and imagery. According to Kress (2010: 1), multimodality defines what modes are used, whereas social semiotics defines the meaning making presented by the mode. This theoretical approach therefore approaches the designer, meaning making, and the process of designing from a multimodal social semiotic approach.

Kress has emphasised the importance and potential that design holds. He refers to design as being the representation of the individuals interests using available resources which exist in the world (Kress 2000: 158). Due to the interests of the individual, design is a transformative notion which gives the designer agency in their meaning making. The environment of design introduces the contextual defining of jewellery pedagogy bringing the interests of the designer into the research. As design is transformative in nature and is driven by the interests of the individual, this research seeks to make explicit the scenarios of learning presented in the resources which are produced within the design process. The next chapter outlines a methodological approach based on the theoretical framework described here.

Chapter 3: Methodology

In order to present a fine grained qualitative study of one student's design process it is first necessary to define the context in which the study is placed and the framework of design. In defining the framework, the research attempts to outline the artefacts which are used in constructing meaning within the design process. As the design process is fluid no one process is the same.

This chapter describes the site of study, namely a 3 year jewellery design diploma. It then goes on to outline the data gathered and the ethical considerations which form part of using the data. A multiliteracies framework is presented which details the stages found within the design process. These include the prompt, available design, design, redesign and site of display.

3.1 Environment of design

The environment of design includes both the context in which design occurs and an account of the designer. It is not only the context that influences the design, but also the interests of those involved. In order for 'design to enact its transformative nature', the culture and interests of the individual must be recognised (Kress 2000:155). The context of the designer includes the "recognition of the 'interested action' of socially located, culturally and historically formed individuals, as the remakers, the transformer, and the re-shapers of the representational resources available to them" (Kress 2000:155). The context in which the practice takes place includes the institution, classroom and the design book itself.

I have worked as a jewellery lecturer for eleven years. During this time I have been part of countless jewellery design processes and therefore have experienced a variety of students grappling with their own processes. It is due to these experiences relating to pedagogy within this specific institution that I am inspired to interrogate the jewellery design process. I bring into the pedagogical field the knowledge and experience of a practising goldsmith. This knowledge allows for the programme to remain relevant to professional practice. My interest in jewellery pedagogy is seen in the ways in which teaching and learning occurs.

The institution which forms the site of this study is a higher educational art institution situated in South Africa. There are a maximum of 140 students who attend full-time classes in the institution, with the jewellery department making up 35 of the total student body. The rest of the students are divided between the fine art, graphic design and photography departments. Students who complete the three year programme receive a Diploma in their respective field.

The School is a private higher education institution which has implications for the class size, attrition rate and the diversity of students. The relatively high price of tuition fees tends to limit the diversity of students as the affordability of the Diploma makes it not easily accessible to lower income groups. This is in contrast to public institutions whose fees are subsidised. Bursaries are available, yet funding is scarce and not many bursaries are allocated to first year students. The advantages of private higher institutions are evident in the small classes (on average 15 students) which allows for each student to be taught individually. This generally implies that few students fail or drop out of the 3 year programme. Due to the nature of South African schooling, an institution such as this generally attracts students who attended privileged high schools where classes were also small and fees expensive. These types of schools have individualised attention and demonstrate successful learning for each student.

The 3 year jewellery design programme includes a variety of subjects. These range from practical subjects to theory, with subjects being taught by a variety of specialist teachers. The programme design is attached (appendix 1) so as to give an overview of the academic subjects, their credit weighting and academic level relative to the South African standards set by the National Qualifications Framework (NQF). In order to apply for the diploma programme, a student must meet the minimum requirements which include a grade 12 pass with specific subject requirements and a practical portfolio as set out in the institutions admissions requirements. Acceptance thereafter is based on the standard of the applicant's practical and theoretical submissions.

Due to the nature of the application process, students who enrol have existing creative and three dimensional understanding or demonstrate an affinity towards developing this understanding. It does not however mean that every student has the same knowledge, social and cultural contexts. The curriculum is intended to take into consideration the richness of the existing knowledge that students bring with them into the environment of design and to develop them based on their specific interests.

Design as a subject is taught in one specific classroom which has large tables running down the middle of the room, allowing the students to work in a group environment. The first, second and third year students are all present within the same classroom, yet sit within their class group. The class times are staggered in order for each group to receive individual tuition. This three hour class is held once a week with the lessons consisting of both theoretical lectures and practical assignments. Students are expected to complete an extra two hours a week researching, designing or manufacturing prototypes outside of the classroom. The students produce all their work in a design book which forms the basis of evidence for assessment purposes.

The jewellery design curriculum has been constructed to afford each student a process of self discovery using jewellery as a means for conveying meaning. The curriculum takes into account the three years that a student studies by utilising the time allocated and scaffolding the knowledge. The environment of design includes the group within which an individual studies, as this same group will interact in a classroom environment for the duration of their studies. Group critiques form a fundamental part of the design process as students interact with each other regarding the concepts and outcomes of each project. The group critique allows for students to learn from each other's processing and design outcomes. The interaction that occurs within the group is designed to advance the group as a whole as they learn to use discourse and analytical processing regarding design. Students need to understand how a project is assessed in order for them to grasp analytical techniques for their own design processing and problem solving. Students tend to further their discussions regarding design outside of the group critique once they have gained confidence in how to speak about design.

The students are briefed regarding each project with a platform for questions which are answered within the group in order to clarify the parameters and expectations for the final outcomes of the project. The brief defines the possible conceptual range, technical production, material choices and intended pedagogical focus for the project. The brief is the 'prompt' for the design. Within the environment of design, students' learning is initiated by the brief. The curriculum has specific outcomes, yet each brief is flexible and diverse to suit the needs of the group. Each project strengthens an aspect of the students' knowledge and therefore the group is assessed throughout

their education to acknowledge the developing strengths and further develop any weaknesses into strengths.

Pedagogy in this context occurs in various forms such as the group critique or individual interaction. It is verbal and visual with individual development being one-on-one as each student interacts with the lecturer to discuss steps within their design process. This individual interaction can happen many times or only once within a design process. By presenting the conceptual underpinning of a student's design, the lecturer is able to understand and encourage development within the design. For example students present their available designs, showing where they intend to find their inspiration for the design. From here the student interacts with the lecturer to develop the design into a final design. Much of the interaction regarding the concept is verbal while the refining of a design requires drawing to define clear communication. These drawing are usually done by both the lecturer and the student to enable each other to grasp the exact details of the design and how it is understood.

The interests of the students are made explicit by the types of projects that are given and the way in which they are interpreted. Initial projects focus on identity and the self with the artefact not necessarily being an item of jewellery but rather a three dimensional object. From this focus on the self, the curriculum develops into the discovery of the student's world through their views regarding culture, beliefs and society. The projects which are given in the second half of the first year are jewellery orientated with specific criteria such as a considered site of display, specific material choice or a defined professional prompt. Only two design projects are manufactured into materialised artefacts in the first year. These are the mid year and end of year exam projects which are designed to develop the student's holistic understanding of the design to redesign process.

In second year students are required to interrogate the site of display relative to the conceptual underpinning of the design. The students develop a holistic approach to the relationship between their interests and jewellery design. A professional identity can now be developed as students enter the design environment with a personal understanding of their interests, three dimensional design and the materials that they are working with. This professional identity is developed in role playing client projects, the inclusion of costing, professional presentation and the manufacturing of the artefact that was developed in the design process.

The design book acts as a historic record and a visual demonstration of the interests of the individual. It is a record of a year's worth of processing designs and over time can demonstrate growth or changes in a student's communication techniques such as drawing, research techniques or technical understanding of how to manufacture jewellery. This book forms part of the environment of design as it acts as the student's personal space where their interests are recorded and developed.

3.2 Data

The research includes two sets of data. The first data is made up of nine student's design books. The jewellery department, made up of sixteen students, was asked to offer their design books. The design books that have been used range from first to third year students yet all the students who did submit their design books passed the subject of design for the year. Each student is known to me as are their design books. I have kept the data anonymous by giving each student a pseudonym. Each

student was consulted on the choice of pseudonym and they all gave their consent. It is challenging to create anonymity when presenting visual data as the data itself communicates the origin by virtue of the techniques and interests displayed.

From this choice of available design books I have chosen one student's design process for a single project. She was chosen based on the depth and explicit uses of the various drawing genres within her design processing. The student's data can act only as one possible process amongst many as the design process is fluid and transformative. The theoretical framework which this research presents offers the bases upon which one could understand the transformation of meaning in jewellery design relative to a variety of design processes. The single design process extends over numerous pages and is motivated by the brief.

The brief given prior to this particular project will be discussed in order to contextualise the project. The choices in available designs that are used in this design process are determined by the parameters of the brief and the interest of the designer. Both of these aspects act as prompts for the design concept and define the basis for the choices made during the design process.

The final materialised three dimensional artefact is used as a realisation of the design. This artefact has been photographed in order to present the data within this research. The photograph highlights the jewellery artefact as a three dimensional object as best as can be done within this medium. Constraints exist in the conveying of proportion and three dimensionality when presenting a two dimensional image. The presentation of this research cannot give the reader a bodily or a three dimensional experience of the artefact due to the nature of the presentation of such a document. Interaction with the materialised artefact has implications on the readers understanding of a three dimensional artefact which is embodied, has a specific size and three dimensionality.

3.2.1 An overview of the data analysis

The nine design books help to contextualise the possibilities of what can be communicated and by what means. Each book is observed from its cover to the contents, presentation of information and the use of genres and mediums.

The intention of this research is to make explicit the transformation of meaning within the processes of jewellery design. Therefore, intricate detailing of each aspect of the process, the prompts and resources used for meaning making are analysed. The various resources and genres pertaining to the design process are defined in order to create a detailed framework for the analysis of the data.

The question this research is asking is how and what transformation of meaning occurs? The analysis reveals and explores how transformation of meaning across modes is communicated. The changes in mode and context are the result of either internal or external prompts. These prompts occur externally in the form of a pedagogical prompt such as the interaction with the design lecturer or as a result of situated pedagogical interaction. Internal prompts occur cognitively and appear as similar 'changes' within the design process. The transformation in meaning can also be the product of learning therefore design processes are analysed in order to observe comparative changes in the design books and changes in meaning making within a design process.

Visual data is used as an indicator of change in meaning, mode or context. This is seen in the transformation which occurs within the variety of drawing genres, the transformation between

written/ and or visual research and the designing process, and the changes of meaning as the design transducts into the three dimensional object.

A framework that is temporal in nature presents the clearest theoretical framework with which to understand the various stages in the design process. This framework is by no means static but rather fluid and dynamic with many options regarding the combination of genres used within each stage in a design process. The specific stages are available designs drawing on the response to a prompt, designing and redesign. A design starts with a prompt which instigates the collection of available designs which in turn can be developed into a new design. The design process does not necessarily end with a considered final design or a materialised three dimensional artefact. The framework presented in figure 1 shows the transformation of meaning between processes as well as a brief definition of each process.

Each design process is directed by the interest of the designer, is context dependant and therefore varies from design to design. It is not possible to demonstrate every known variable but rather to present a framework which can illuminate the aspects which are present within the design process.

3.2.2 Ethical considerations

I enter the research process as the design lecturer which has both advantages and constraints. In terms of the context I am what Lillis and Scott (2007) term a 'teacher-researcher' which in this specific context means that I have inside information. This has to be balanced as it allows the research to have a depth distinguishably different to an outsider yet it can hinder an unbiased collection of data. The data cannot be gathered anonymously as the design books belong to students who are known to me. Yet as an insider I do have a contextual understanding of the students which enables a richer understanding of the data.

All the students whose design books have been used have given verbal consent. Pseudonyms have been used for each student in order to offer anonymity. Each student is in agreement with the name given. The naming of each image is a standard referencing practice yet these names are anonymous. The use of visual images exposes the producer of the artefact in a way that writing might not. Each student has been acknowledged for their contribution with as much sensitivity as is possible within a thesis of this nature.

The specific student whose single design process is used in this research has given written permission for her design book and final jewellery artefact to be used as data within this research.

3.3 The design book

The only prerequisite that is placed on the design book is that each student has one and it must be used for their design projects throughout the year. The book can be filled with anything else that interests the student such as images and ideas which could lead to future designs. The students choose the kind of book, namely size, line or blank pages, spiral bound, stitched spine or a homemade book. Students do tend to chose an A4 format which has blank pages yet there are bigger and smaller design books and even some with lined pages. However, the onsite art shop only sells A4, spiral bound books with blank pages. The majority of students purchase their design books from the art shop making this by default the predominant book.

The design book is used for each project that is given within the subject of design. This therefore acts as a compilation of the student's design processes within a year. The book becomes a recording and trajectory of a student's strengths and weaknesses regarding the various drawing genres and design processing. It is evident where and when a student strengthens their drawing skills over a period of time or learns new techniques regarding mediums such as watercolours or gouache. These appear as rendered designs or simple introductions of colour into the design process within the trajectory. The modes used by the students to communicate their designs are either existing or learnt. Students are taught the skills of drawing; technical drawing and illustration within the specific subjects but the interrogation of the techniques learnt within these subjects are seen within the design book.

The design book reflects each student's understanding of three dimensionality and the manufacturing of a jewellery artefact. As the students' understanding develops regarding materials and how they will be worked, so the designs become technically more precise. In the beginning of first year, students are given projects which are never made. There is a level of abstraction to the design process as the students generally do not realise the close relationship that exists between the design and the actual manufacturing of the artefact. This understanding develops over time and students are given projects which are then materialised. This further develops the design understanding as students become aware of new affordances and constraints within their designs prior to them materialising.

The space between the design projects and the manufacturing of the artefacts form one of the scenarios where informal learning takes place. Students do not learn at the same pace and each learner arrives with different strengths. Yet, it is generally understood, that first year students do not have both the conceptual understanding and manufacturing skills to produce the designs. The design processing demonstrates whether a student has this combination of understanding, where the gaps are and how to develop each student accordingly. This process is one of 'give and take' as some students are not convinced as to the necessity of the design book. Yet, as they bridge the divide between design and manufacture, they tend to realise that there are benefits to having developed a design before manufacturing it.

The interests of the individual are recognisable within the design book. A single project is evidence of the interests of an individual, yet an entire book demonstrates processes of communicating interest and how this is developed into a designed artefact. The choice of book, its cover, the medium chosen, the manner of collecting available designs and the choices of available designs all are specific to each student. Some students write to develop their design process, others draw their available designs, while some print imagery and place this into the design book. Each student demonstrates their interests through their choice of colour, swatches, pen, pencil, prints, writing or the lack thereof.

The interests of the student as designer are noted in the spaces between design projects and within them. Students are encouraged to use their design book as a visual journal where they can place anything of interest which might act as inspiration for later designs. Students tend to make more use of this by the end of second year and into their third year of studies. First year students tend to keep within the boundaries of what they perceive the design book to be, namely a source of assessment. The development of the individual as a professional designer begins with the design book.

3.4 The design process

The design books demonstrate various design processes. The New London Group (2000) refer to the process of design as the transformation and transduction of available designs. We exist in a world that has already been designed, leaving room for designing to be a response only to what already exists. That which already exists is termed 'available designs'. Designing is seen as a process of taking existing resources and transforming them into new interpretations influenced by the interest of the designer. Because of this, there are usually 'threads' of the original resources visible within a new design. Design is transformative due to the reshaping of that which already exists and can therefore be termed innovative (Kress 2000:153). It is in this process of transformation of meaning that designs are developed.

Each design process has different intentions regarding the outcome of the design yet there are a set of stages which the designer takes in the development of a design. The stages include responding to the prompt, drawing on available designs, designing, redesigning and the placement in the site of display. The prompt is the initial reason for the designing process to take place and can be pedagogical, personal or professional. Available designs are made up of resources from which the designer collects their supply of resources for potential transformation into their own design. Within designing, the jewellery designer goes through a cyclical process of critically working with a design to develop it into a finalised blue print. The materialised artefact is not always a prerequisite for a brief, yet it can be and therefore is included as a part of the design process and is represented as redesign. Within the redesigning stage the design is produced into a three dimensional object which implies a change in representation and materialisation and therefore is termed a process of transduction. A redesigned resource is transformed back into an available design as it is a resource for future designing. The site of display is where the designer's work ends and the artefact is viewed within a new context.

Students' display variations in representation of the design within each stage which demonstrates their individual method of working through the process of design. The significant points in the design process are when there is a change across modes (from available designs to drawing, designing to materialised artefact) or changes within the same mode (especially drawing to technical drawing). Transduction is the term used in multimodality when referring to a change in mode and therefore movement in meaning (Bezemer and Kress 2008:175). Transformation is the term used when referring to a 're-ordering of elements within the same mode, leading to a change of the semiotic object' (Kress 2010:129).

The process of jewellery designing is presented as a series of different stages of meaning making which are defined by their use, materiality and medium. Available designs, designing and redesigning are stages which have defining functions within the design process. In order to understand the design process it is necessary to define each stage in detail. Each stage has a range of resources which are used to convey meaning including the use of various drawing genres, writing and images.

It is evident that individual students' interests are visible within the design process by observing their choices of available designs, the conceptual underpinning, genres used to communicate the design and the size, format and presentation of the overall design book. No design book is the same. There are specific variations which demonstrate the individual's ability to communicate meaning such as a student who uses a book which has lines as opposed to blank pages. Generally weaker

drawing is evident in design books which have more text, printed available designs or short under developed conceptual processing. Inadequate drawing ability does not equal poor conceptualisation yet a student who cannot develop the design on paper generally displays unexpected design changes when the artefact is manufactured.

3.4.1 The prompt

Prompts are defined as either that which initiates the initial design process or external influences that exist during the design process. Designing an artefact such as jewellery requires a reason for the original undertaking. The parameters that exist based on the prompt are important to the design process as they create the foundation for the affordances and constraints within a design. These parameters can be seen in the features which make up the artefact such as the use, purpose, site of display, materials, financial or conceptual underpinning. The prompt defines, affords and constrains specific design choices.

The prompt can never be neutral or void of power, yet it can be designed to foreground the interests of the designer or the person for whom the artefact is being designed. Prompts occur throughout the design process and can be either pedagogical, professional or self motivated. Pedagogical prompts are either the lecturer who interacts with the student during their design process or the brief which is given at the outset of a design project. The two work in tandem as the lecturer is governed by the brief, yet the brief is part of a curriculum which is designed by the lecturer/ institution. The lecturer prompts the students during their design process in order to teach them methods of interrogation and analysis of their own designs. This process is intended to develop self reflection regarding the design process which feeds into the concept of lifelong learning.

The briefs in the design curriculum are designed to scaffold the design expertise of students as they develop their design ability over a period of three years. Over this period the students are taken through a variety of design methodologies which enable critical thinking regarding aspects such as three dimensional understanding, material understanding, professional practice in the form of client/ business development and the use of various available designs. A design identity is also developed.

The brief itself acts as a pedagogical tool which has multiple purposes. The interpretation of the brief that is the initial prompt influences not only the choices of available designs used but also the outcome of the design. Students are taught how to interpret the prompt as it is possible to misinterpret the requirements. This ability is developed over time and is important in understanding and interpreting the interests of future clients. This aligns with the intentions of the curriculum where students are taught to become professional jewellery designers. The client is a potential prompt creating constraints and affordances for the design, including choices in proportion, materials, occasion, costing and design interests.

In order to demonstrate the use of the prompt in design it is worth examining an example. Figure 2 presents the work of a student which includes her rewriting of the prompt into her design book. The brief required the student to design and manufacture a brooch which uses 'my tribe' as inspiration. The briefs states that 'the theme should be communicated visually with the use of symbolism, icon or amulet which will act as a 'brand' for your tribe'.

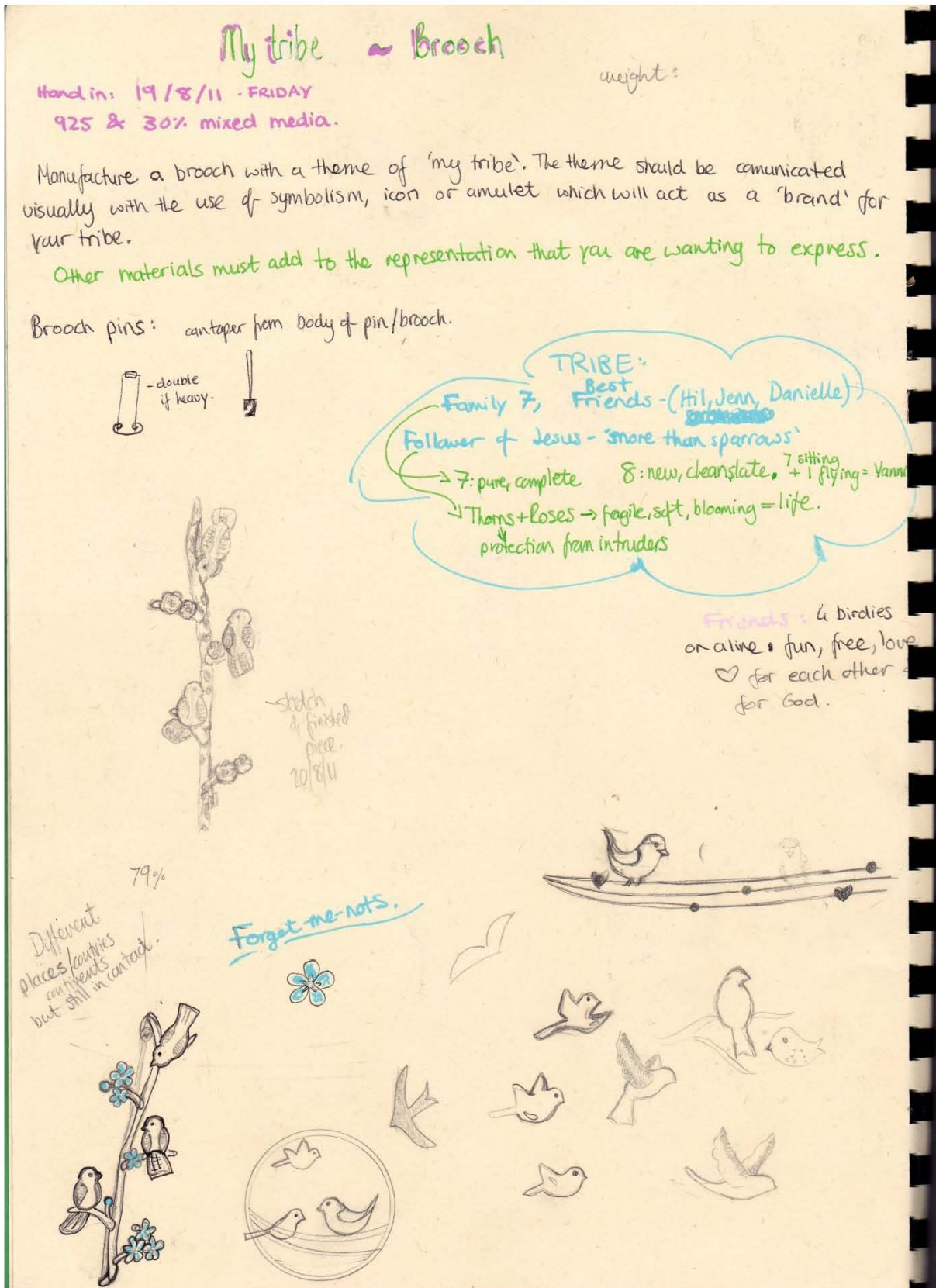


Figure 2. An example of a design brief and how the design is influenced by the prompt

Kiara, 2011. Ink and pencil on paper. Design book 2

According to the brief the brooch must be made of sterling silver ('925') and '30% mixed media'. The material requirements allow the design to include enamel, wood, acrylics, stone or any materials which relate to the students interpretation of the brief and should 'add to the representation that you are wanting to express'. While the 'hand in' date is '19/8/11- Friday' which defines the time constraint placed upon the student regarding the production of the artefact.

The prompt has been rewritten into the design book and then interpreted. The student has rewritten the points she believes to be the most important which include the hand in date, material and technical constraints and the conceptual underpinning of the project. The brief requires students to conceptualise 'my tribe' which is defined in the Oxford dictionary (2007) as 'a group of families living in one area as a community, a set of people'. The project encourages the student to question their identity relative to those that they interact with in a communal way.

In Kiara's design process both writing and visual imagery has been used to develop her interpretation of 'my tribe'. She defines her 'tribe' as consisting of 'family 7, best friends' and her religion 'Follower of Jesus'. She then seeks visual available designs which further fulfil her interpretation of the brief. The available designs are presented as birds which are drawn in silhouette in the bottom right hand corner of the page. Each image demonstrates either a different variety of bird or a varying movement. Adding to the available design is a drawing of a flower 'forget-me-nots'. The varied use of colour conveys meaning regarding the identity which the student has with what she puts down on paper. The colour highlights flowers present in the 'final' design.

Two written captions demonstrate the change in design from the single bird appearing on three horizontal lines to the three birds on a vertical line. '4 birdies on a line. Fun, free, love. [drawn heart] for each other for God' is written above the horizontal lines where as 'Different places/ countries continents but still in contact' is written above the vertical line. The prompt has encouraged the student to bring in her interests regarding her 'tribe' and in so doing implicitly develops the students understanding of the relationship between meaning making, identity and jewellery. The design changes from the bird on the right hand side of the page having equal weighting to any others which might appear on the line to a representation of three birds on the bottom left hand side all looking in different directions from different branches on the same tree. This drawing could signify tribe members who are all from the same group or family and connected by the same 'branch', yet all living different lives which is in alignment with the available design. The forget-me-nots are scattered on the branches conveying a message of connectedness.

The use of baby blue for the flowers and the defined pencil lines which make up the drawing in the bottom left hand corner convey the idea that this is the students final design. She has defined the lines, shape and form in a manner which portrays this image as confident and final.

3.4.2 Available designs

The design process begins with a prompt which directs the gathering of 'inspiration'. This 'inspiration' appears as existing representations of or in the world. These representations are used as resources within the design process and are termed available designs. Resources are defined here as artefacts which can be used to optimise the function of the intended prompt. In this context, a resource has no boundaries, as anything counts as a possible design resource. The resources within a pedagogical context are visual images, writing, sound or anything that inspires the student in relation to an academic brief.

By referring to the concept of available designs, this research implies that designing is done in relation to existing modes of meaning. The interest of the designer is made visible in their choice and relation towards their chosen available designs. The interaction with the available design is highlighted in the way in which a student will use the available designs which range on a scale from realism to abstraction. An image can be used for its 'real' understanding that it offers regarding subject matter such as the profile of an animal. Available designs can be used for their conceptual underpinning such as in an image of the rising sun which can be used to develop the concept of a new dawn breaking. This concept could rely on the abstracted influences of the available design rather than realism.

Students are exposed to what constitutes available designs as they do not generally enter the design environment having interrogated the available options outside of the classroom. There are also specific methods of developing the available designs into designs which students are taught. This influences what they inevitably see as possible available designs. Available designs exist in many forms and the student is taught how to recognise and gather 'information' from these resources. Research is seen as an active process where students search and record all that they deem a resource for the specific design. This includes writing down words, gathering visual images and drawing in their design book.

The process of teaching a student to gather available designs is done by designing a curriculum which begins with teaching students to make meaning on paper. This is observed in the way in which a design is developed within the design book. Each project is intended to develop a part of the student's design ability, with both the process and final materialised artefact being valued. The first project that first year students are given is a collage which has nothing to do with jewellery. Students are required to gather four pages of available designs. These include pages related to the self, love, hate and fear. Development of the communication of the interests of the individual is the first step in developing a designer. Students are taught that designing is meaning making using their interpretation of the world.

Students are encouraged to draw observations of various things such as images of existing jewellery, three dimensional objects such as sculptures, architecture or nature. Reproducing exactly what is represented in another form helps to develop drawing techniques. This includes the control of a drawing instrument, perspective, tonal value and material representation. Available designs can also be glued into the design book along with any other materials that are inspirational to the student. Concepts will be developed by drawing from the available designs.

Figure 3 demonstrates the use of available designs in the form of imagery which has been sourced from elsewhere, colour copied and glued into the design book. The student has then taken the proportions and silhouette of the deer and redrawn her own interpretations. Without the original images the student might not have understood the proportions of the deer accurately in order to bring this into her own design. The student has not used the colour of the print but rather the abstracted shape which gives her an understanding of how to represent a deer.

The available designs presented in figure 3 are a reaction to a brief that required the student to design a range of jewellery of her choice. The available designs which she chose to work with are influenced by jewellery produced in the 40's and 50's where jewellery represented nature in a stylised manner. This design depicts a European winter scene. The deer is standing in a pine forest

with a beetle attached to the frame. The student has written 'naturalistic intention and stylised effects' next to the design highlighting her conceptual idea. The design is still in process.



Figure 3. Example of available designs and their use

Kiara, 2011. Colour prints, ink and pencil on paper. Design book 2

The student has been able to create her own abstracted image of a deer by using someone's drawings. It does appear that the drawings come from the same source as they appear in similar colours, drawing techniques and the abstraction of the animals. Kiara could have used a photograph of a real deer yet this is the choice that worked for her design. She was looking for the profile of a deer and the available design offers exactly that.

In figure 3 the student moves the meaning-making process from one mode to another; that is, from the modes used in the original source to the design book and from printed images to hand drawn abstraction. Transduction occurs in the movement from available designs to designing. In figure 3 one can observe how the student took images of a deer and reconceptualised them into a designed jewellery artefact. The colour within the image has no influence as only the outline of the animal has

been used. The student has developed the available designs by drawing images which are clearly inspired by the deer yet not exact replicas of the original image.

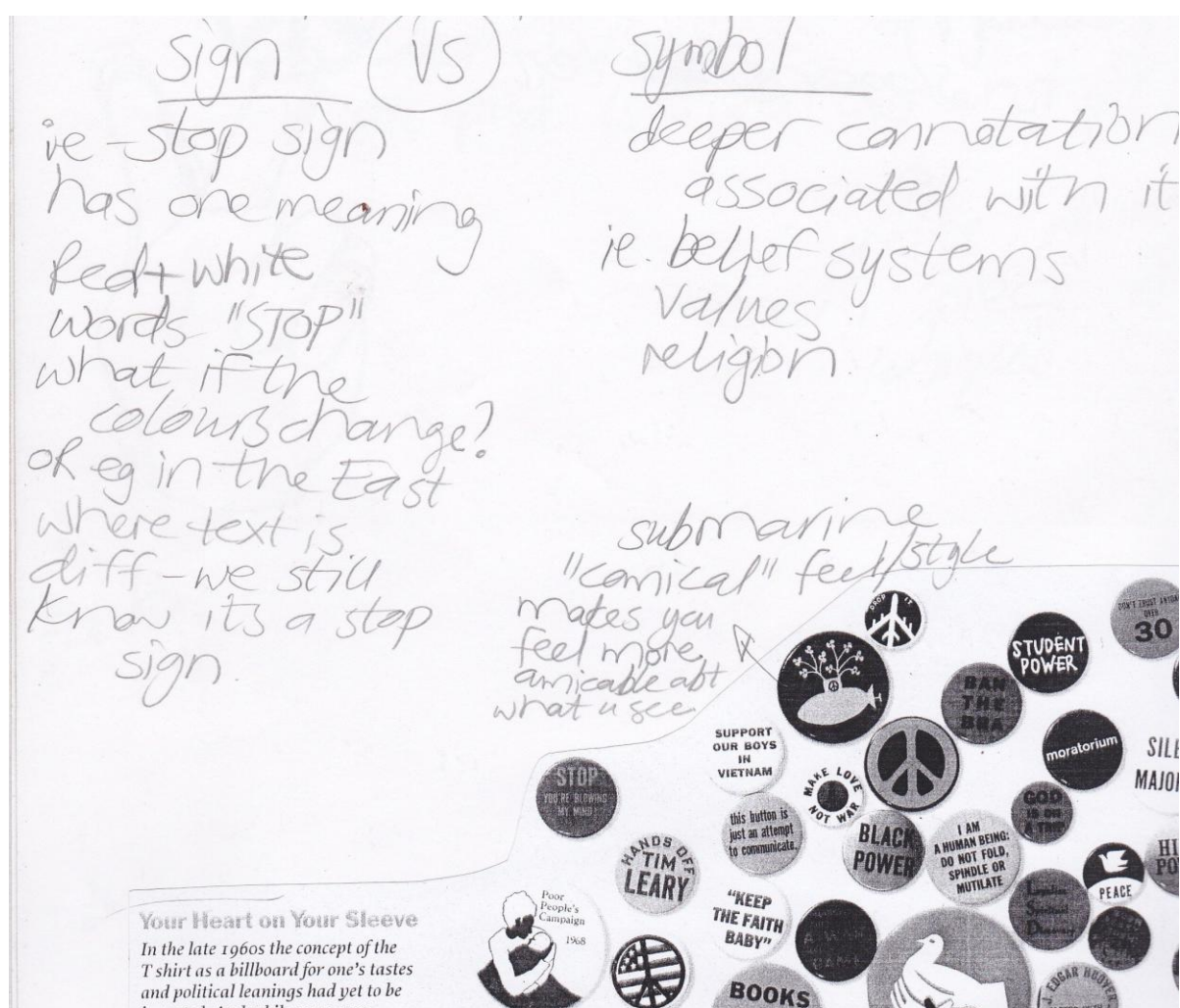


Figure 4. Text and imagery as a reaction to the prompt which becomes available designs

Tammy, 2011. Pencil and print on paper. Design book 2

Available designs are often presented as visual imagery yet they can include written words as is evident in figure 4. Here the student is defining 'sign vs symbol' both theoretically and visually in order to further her understanding of the prompt. The brief that Tammy is working with is the same one as Kiara used. Tammy chose to use influences from the 60's where jewellery was designed with political and activist underpinnings. Because of this, she had to understand the way in which meaning is made within this context. Apart from the 'sign vs symbol', Tammy found available designs in broaches worn in the late 60's. This influenced her regarding the types of materials that were used, production methods and the move away from conventional jewellery.

By the student including the badges, one is able to place the context of the student's theoretical pursuit. Tammy writes 'sign i.e. stop sign has one meaning' which she places alongside her definition of 'symbol deeper connotation associated with it i.e. belief systems values religion'. The writing acts

as an affordance and a constraint during the designing process as the student refers back to her definitions of 'sign' and 'symbol' and develops the design according to what meaning she wants to convey.

Available designs are diverse in their appearance and in their use. They are crucial in bridging the prompt and designing stages as they communicate the designer's reaction to the prompt and their interests. Once the available designs have been made available, designing begins.

3.4.3 Designing

Designing is never a repetition of available designs, but rather the utilisation of available designs into a new context. The transformation produces a change in meaning as the designer uses their interests to highlight what is important and relevant to the new design by processing their chosen resources. The process of designing incorporates genres of drawing which represent the design as a potential materialised artefact. Designing is therefore viewed as being the process of transduction of the available designs into a new representation. The design is viewed as a final design when it reaches a representation which is as close to the artefact, prior to manufacture, as possible.

Designing is a process of developing a negotiated sign which will potentially have conceptual materialisation. Drawings demonstrate images of the proposed artefact and usually include features such as proportion, scale, material specifications, surface finishes and site of display. It is in the design process where artefacts are conceptualised, designed, pulled apart and then developed further, until the process of critical analysis has assisted in developing a well conceived artefact.

Students develop the ability to extrapolate from the chosen available designs and transduct them into a concept. This concept goes through a cycle of designing where it is transformed into the final design. It is within this cycle of transformation that the design utilises a range of drawing genres. The genres that are present in the designing process include conceptual drawing, technical drawing and a combination of the two. The various genres are presented sequentially within the design process with conceptual drawings beginning the process. The extent or degree to which the design is developed, depends on the prompt and its requirements. When the design process is represented in the student's design book, then the tracking of the design process is made visible.

The configuration of the elements of the designs that are presented at this stage are presented in two dimensional form and within the parameters of one mode. In the first part of the designing process the student develops the conceptual underpinning of the design by drawing basic ideas which are made up of inspiration from available designs. This genre of drawing is called conceptual drawing as it is defined by its characteristic sketched drawings which are representations of implied artefacts and are generally incomplete in their designs. Conceptual drawings do not necessarily depict materiality, precise proportions or accurate three dimensionality. They are rather a re-representation of the influences of the available designs combined with the interests of the designer. Conceptual drawings differ from designer to designer. The differences are evident in drawing, three dimensional understanding, conceptual development and developed manufacturing and material knowledge.

The initial drawings are conceptual with the exploration of the potential design being transformed on paper. Influences from the prompts and available designs are interpreted into shape and form. Exploration is generally seen in the representation of images, shapes and forms without defining the

materiality or proportions of the artefact. Designing begins with clear influences from available designs yet as the design develops, these associations can become more abstracted.

Students are encouraged to record all working drawings within their design book. As the year continues they can reflect back on the development of their conceptual underpinning or the improvement of their drawing in relation to the presentation of their conceptual ideas. Having a clear record of the student's process from available designs to designing helps the lecturer to understand how the student extrapolates.

In figure 5 the student draws on available designs in order to design. The brief for this design process is a broad exploration extending over the entire third year. The result of the process is a body of work which is displayed by the students for their final examination. Each student chooses an area of interest and explores it both theoretically and practically. Cassidy's theme is 'Nature's Extravagance' in which she chose to explore the wonder of nature and express this in jewellery.

The image below shows a leaf of a 'Delicious monster' which is a common plant in Cape Town. Cassidy has specifically been influenced by an area of the leaf and she has drawn a defining line around it. This highlighted area has then been redrawn on the right hand side of the page. The move from the photograph to the drawing demonstrates gains and losses regarding meaning making. Cassidy has been influenced by the negative oval shapes presented by the leaf and drawn these in the drawing on the right hand side of the page. She has observed the tapered leaf shape and created her own version of this. The central vein has also influenced the drawing yet it is now a thin line running down the centre on the drawn leaf. The veins which feed off the central vein are not opposite each other in the photograph, yet Cassidy has now drawn them as if they begin from the same point moving out to the sides of the leaf.



Figure 5. The design process from available design to designing

Cassidy 2, 2011. Colour print, pencil on paper. Design book 3

There are two designs which have been developed in figure 5. The conceptual drawings are the sketchy lightly drawn images which surround the final more defined drawings. They demonstrate how the student has looked at different aspects of the available designs and begun developing them. The largest drawing on the bottom right is drawn with a stronger and darker line which allows the design to be more prominent on the page and therefore we presume that this is the final design that the student has chosen. Varying degrees of abstraction are evident in this design process. The design has not been drawn indicating its materiality, proportions or technical production yet the concept is clearly communicated.

When a final design is presented as a technical drawing then the understanding of the aspects which pertain to the construction and materialisation have been developed. These drawings are presented either as working technical drawings or developed into conventional technical drawings which will be used in the redesigning process. If there is a technical issue which affects the conceptual design, the student may rework the design until the technical drawing is clearly developed.

Technical drawings are defined by their linear nature. They are presented in a manner that best describes the dimensions and materialisation of the artefact prior to it being manufactured into a item of jewellery. This genre of drawing never represents the form of the artefact as a solid object, but rather represents the artefact as a set of lines which assist in the understanding of the exact proportions, thickness, depth and connecting objects within the design. Technical drawings are usually presented in a sequence of viewpoints, allowing the viewer to understand the artefact from various angles. These representations include either the front view, side view and top view or an isometric drawing which is a linear three dimensional representation of the artefact.

A working technical drawing is a mixture of conceptual drawing and technical drawing. Working technical drawings may show shape and form (not only linear) yet have the inclusion of the detailed construction and materialisation of the design. Working technical drawings are a common genre for communicating a design prior to manufacturing as the designer requires a technical understanding of the artefact prior to its materialisation. When a person other than the designer manufactures an artefact, the clearest mode of communication is the technical drawing. This genre intends to communicate every aspect of the design that a conceptual drawing might not.

In the process of producing a technical drawing, the student develops a comprehensive understanding of the materialised artefact prior to it being manufactured. Technical drawings include writing which presents information such as the thicknesses of the materials present within the structure, finger or stone sizes and the specific material choices. Technical drawing allows the student to develop a method of construction due to the nature of the genre. The student can discover manufacturing potential by doing technical drawings. The student can develop alternative ways of producing the artefact within this genre.

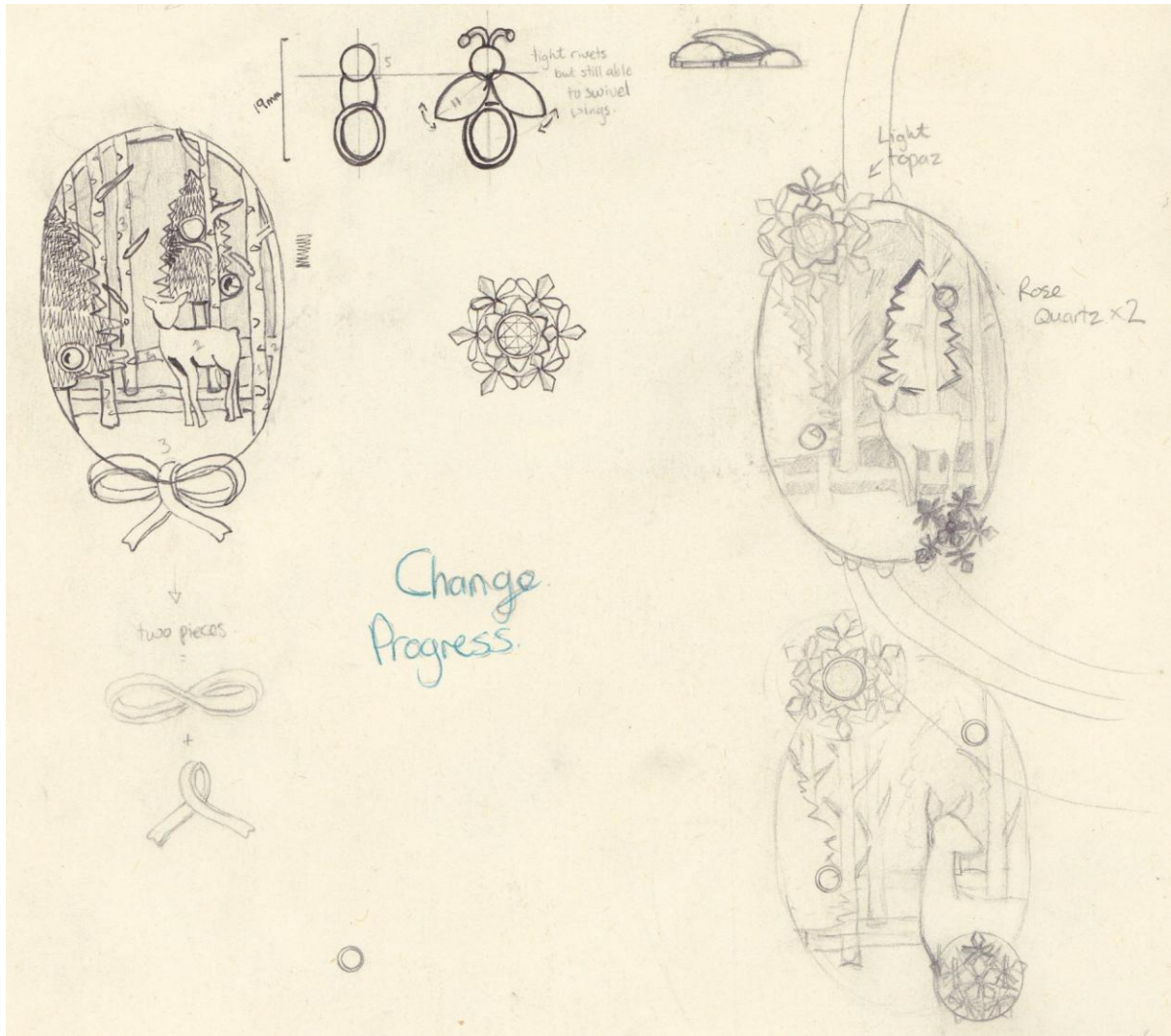


Figure 6. Example of working technical drawings

Kiara, 2011. Pencil on paper. Design book 2

Figure 6 is a further design development of figure 3. Here Kiara presents her conceptual design and technically considers how it will be made. All three drawings are slightly different and demonstrate the refining of the conceptual choices which happen at the technical drawing stage. The design choices are based on material and manufacturing options. Material considerations can be observed in top drawing on the left hand side which suggest the 'light topaz' and 'rose quartz x 2' options which refer to the use of stones. These stones appear in all the designs as either two or three round circles. The three designs have the same oval shape, placement of trees and representation of a deer. The designs differ in the profile of the deer and the choice of snowflakes or a bow being placed onto the pendant. The top left hand drawing is presented with the strands and half loops from which it will hang. This is the first indication that this artefact is intended to be a pendant. The drawing on the left hand side has the bow presented in 'two pieces' which implies that this is how it will be manufactured.

The genre of conceptual or technical drawing leads into the redesigning stage where the design is now materialised into a three dimensional artefact.

3.4.4 Redesigning

When the designs, represented as drawings produced in the designing process, are manufactured into a materialised three dimensional artefact, the design process undergoes a material change that forms the most distinctive semiotic movement from one mode to another. The change in meaning is defined by changes in materiality and form. There is no significant change made to the conceptual underpinning of the design at this stage. The representation of the jewellery artefact changes from a drawing in any of the various genres to a materialised artefact which now has a tactile existence. Because of this, it is important to develop the student's understanding of the changes of meaning and representation that materialisation introduces in this stage of the design process.

The redesigned artefact appears as a negotiated sign with its conceptual meaning portrayed in the intended materialised form. Meaning making draws off modal resources of shape, form, colour, texture and materialisation. The semiotic changes in materialisation are viewed and negotiated in these modal resources. Shape and form include aspects such as weight and size which make the artefact tactile and interactive not only visually but also through touch. The proportions, size, shape and form are created according to the parameters drawn out in the design process.

Due to the transduction from designing to redesigned, the artefact goes through design changes. These can be based on the process that it takes to produce the materialised artefact. As the artefact is redesigned, it is developed with a different understanding to what was represented in the designing stage. The process of manufacturing the designed artefact requires an understanding of the materials that are used as well as a developed knowledge of the techniques that are required to develop the materials into the artefact.

The redesigning process may or may not be fulfilled by the same person who produced the designed artefact. Not all jewellery designers manufacture their own designs, which mean that the accuracy and communication regarding the designed artefact is paramount. When another person redesigns the design other than the person who performed the designing process, the interest of this person enters the design process. If there is a technical problem which affects the conceptual design, the person redesigning would need to go back to the designer in order to accurately produce the artefact. It is common for there to be a divide between these two people with the result being unexpected redesigned artefacts. Designers can design with the redesigner's interests in mind which brings an interesting collaboration of designers into the design process.

Materials and production transform meaning at this stage as not all conceptual designs are able to be produced. The process of production is informed by technical drawings and their accuracy in regards to proportion, technical understanding and the understanding of the materials that will be used. The designer benefits from understanding the materials that are used within a design which is made possible with prior understanding of the materials best practice. Information regarding manufacture feeds back into the subject of design as students develop manufacture and design simultaneously.

The materialised three dimensional artefact is the result of the processing from the prompt, available design and the designing processes. The meaning that materials carry can be influenced by the prompt such as a solitaire ring which must be manufactured from platinum and a diamond. These materials require specific manufacturing techniques which constrain the design from the outset. Materialisation can also be defined within the conceptual site where the designer might

want to use a material such as a moonstone which is the birth stone for June. This material choice has constraints on the manufacturing techniques used and on the site of display. Students develop an understanding of materials and their affordances and constraints at the same time as they develop their conceptual understanding. This forms part of jewellery pedagogy as the curriculum is designed to bring these two aspects together.



Figure 7. Sterling silver, gold plating and cubic zirconium earrings

Cassidy, 2011. Digital image

It is possible to further develop a design within the redesign process as the manufacturing process is known to make explicit issues which were not visible within the design process. Many jewellers use the redesign process as a means for designing. While manufacturing the artefact, the design can be changed intentionally regarding technical and material aspects as is demonstrated in figure 7. This design was presented in figure 6 as an example of the design process. Both figure 6 and 7 are related yet one might not have expected for the final materialised artefact to appear exactly like this.

The design in figure 6 is a representation of a single earring while the redesign presents a pair which is not identical, yet the earrings are related regarding shape and form. The abstracted shapes do appear within the design process yet the choices of wire or plate are distinctive redesign choices. The change in appearance by using wire or plate is interesting as the detailed design is shaped similarly. There is also a change in the length of the central 'vein' which houses the pin which is used to hang the earring. In the design it appears as a separate shape rather than an extended line.

The redesigner can develop their understanding of a manufacturing technique or material by working with it. This understanding is developed when students are given projects with little or no design orientation, yet with a focus on technique and material experience. Some students prefer to

develop their designs in this stage, yet as they gather experience regarding manufacturing processes and materials they do tend to develop a design more in the design stage. The redesigning process feeds back into available design as technical and material understanding which can lead to future designing. The discovery of new elements within the design due to its materialisation happens at this stage. It can become a dynamic arena for the process and development of the designed artefact as the manufacturing happens in real time.

The methods used to produce an artefact speak about a student's ability to manufacture a three-dimensional artefact, choice of materials and the type of prompt that initiated the design process. This has a contextual relevance to the production of both the design and the manufacturing of the artefact. The production of the design shows its process in the form of the outcome of the final design which could vary from conceptual simplicity to complexity. Skills and knowledge of manufacturing processes are seen within the artefact by viewing the materials and the ways in which they have been worked. The techniques reveal not only the knowledge that the producer of the artefact possesses, but also the context in which it was made. This can include the work space, technology, cultural influences through the transfer of knowledge or personality traits such as an attention to detail (Kress and van Leeuwen, 2006:217).

The redesigning stage may or may not be a part of the design process. Whether the artefact is redesigned or not, the site of display is relevant for making meaning.

3.4.5 Site of Display

Once the redesigned artefact has reached completion, it is placed into a site of display. The site of display refers to the new context in which the artefact will be displayed. This change in context brings with it a change in meaning as the artefact is viewed socially. The designer has little control over the artefact and its site of display if the new site does not reside with the designer. The site of display can have various stages such as the display in a shop window which changes once sold. The designer can design based on the site of display such as a wedding ring, yet the wearer might change the intended site, changing the meaning making process.

Professionally the site of display includes jewellery made for the client. This is either designed and manufactured specifically for a client or displayed for viewing with the potential of selling to a client. The client is a prompt who defines the majority of the constraints and affordances regarding the design. One of these is the site of display as the client determines the function of the artefact.

Jewellery can be viewed on the body or off the body. When it is on the body it changes its meaning potential as the wearer is included in the making of meaning. The new environment in which the jewellery will be worn or displayed is not controlled by the designer and therefore a change in meaning is observed. Meaning changes as the wearer or new context becomes the new interest in the making of meaning. Jewellery has the potential to integrate physically into the body as is seen in 'body piercings'. This type of adornment is a good example of jewellery conveying the interests of the wearer.

Jewellery has the potential to make demands on how it is worn. The earrings presented in figure 7 are approximately 10cm in length making the wearing of them constrained. The person who wears these earrings would not be comfortable performing physical activities such as jogging as the earrings are not designed to move with the body. The earrings also define the neck area regarding

how or what hair or clothing is worn. The probable way to wear these earrings would be for a special occasion where the person will either have short hair or wear their hair so that it does not hang around the neck line. The artefact forms a relationship with the site of display creating meaning.

Pedagogically the site of display is used to define where the three dimensional artefact is worn or intended to be worn by utilising the prompt. The artefact is assessed against the criteria stipulated in the brief as this prompt exists as a constraint and affordance of the design parameters. If the student was to design a wedding ring which is intended to be worn daily and the ring that is created is not practical for everyday wear, then the assessment will be influenced negatively regarding the concept and its realisation. The site of display can be used to convey meaning regarding the artefact and students are taught this by relating their conceptual underpinning to where the artefact will be worn.

The relationship between design and the materialised artefact is realised semiotically in its social interactions. The site of display adds to this meaning making.

3.5 Final comments

This chapter has provided an overview of the data and an in-depth exploration of a framework to analyse the data. It has highlighted the environment of design as a theoretical concept. The environment contextualises the pedagogy relative to multimodal social semiotic practices by foregrounding the interests of the designer and the social interaction that forms part of the materialised jewellery artefact. It is also within this environment that learning occurs.

The design process has been defined through the functions of each design stage. The artefacts which are produced and the various genres that are used to convey meaning have been highlighted as being important in understanding the various possibilities of the design process. The framework presents where transformation and transduction occur within the design process.

The next chapter will look at the analysis of the design process, specifically highlighting the interests of the designer and learning scenarios as is explored within the design books of students. The design process is then analysed using a single student's design process.

Chapter 4: Analysing the design process

In order to contextualise one student's design process, I first analyse the nine design books of the jewellery students. The analysis aims to make explicit how the interests of designers are conveyed within their designs, the understanding of knowledge that is evident in the processing presented within the design stages, and the formal and informal learning that takes place for students within the subject of design and the curriculum at large.

4.1 Analysing the design book

The design books demonstrate a variety of processes. The analysis focuses on the interests, knowledge and learning portrayed within student's design processing. Common processes are observed in the way in which students approach the design stages and the transduction and transformation of meaning. The final artefact is not looked at here as this aspect of redesigning does not appear within the design book.

4.1.1 Making explicit the interests of the designer

The first type of processing to be analysed is of the use and methods observed in available designs. The majority of students use imagery to convey meaning. Various uses of imagery are evident within the design books. The images are of existing jewellery, nature in the form of animals, plants or the earth; or the student's own drawings conveying their interpretations of the prompt. Figure 8 is an excellent example of a student's use of existing jewellery as available designs. Each image has been presented as a colour copy which has been cut and pasted onto a lined page design book. The images are all of rings which convey a distinctive contemporary design style. Contemporary jewellery is defined by its materialisation, context and site of display which are all generally different to the norm. This genre of jewellery is usually understood to be ground breaking and therefore context dependant. The contemporary jewellery presented by Stacey is evident in examples such as the ring in the heel of a shoe and the pencil ring with one pencil still having its eraser attached making the ring impossible to wear.

In figure 8 Stacey has emphasised her use of each image by writing next to the image and tagging the specific part that is relevant to her design process. The highlighted areas look at technique, materials and conceptual ideas. There is a distinct pattern where writing and images play different roles in the collection of available designs. Most writing is either a direct response to the prompt or used to define the use of the available design. The writing refers to specific parts of the available designs that interest Stacey. Without the writing the viewer would not know what aspects are important to the designer. These highlighted aspects of the available designs are usually what prompt change regarding the transformation of meaning within a design as they are foregrounded interests of the designer.

Stacey's use of existing jewellery demonstrates her method of designing using jewellers' experiences and designs. By implication one can deduce that she has little experience both within the redesigning process and in her understanding of the materials and techniques that can be used to manufacture jewellery. This page is viewed as a first year level of designing as the type of available designs used emphasise the student's inexperience with manufacturing techniques and self expression. She displays confidence in designing only by leaning on those who have gone before her. Stacey is confident however in recognising what she views as a good idea, technique or the use of

materials. She demonstrates the ability to gather a variety of images which fit into the contemporary genre and align with her interests such as the sculptural rather than functional nature of the artefacts.

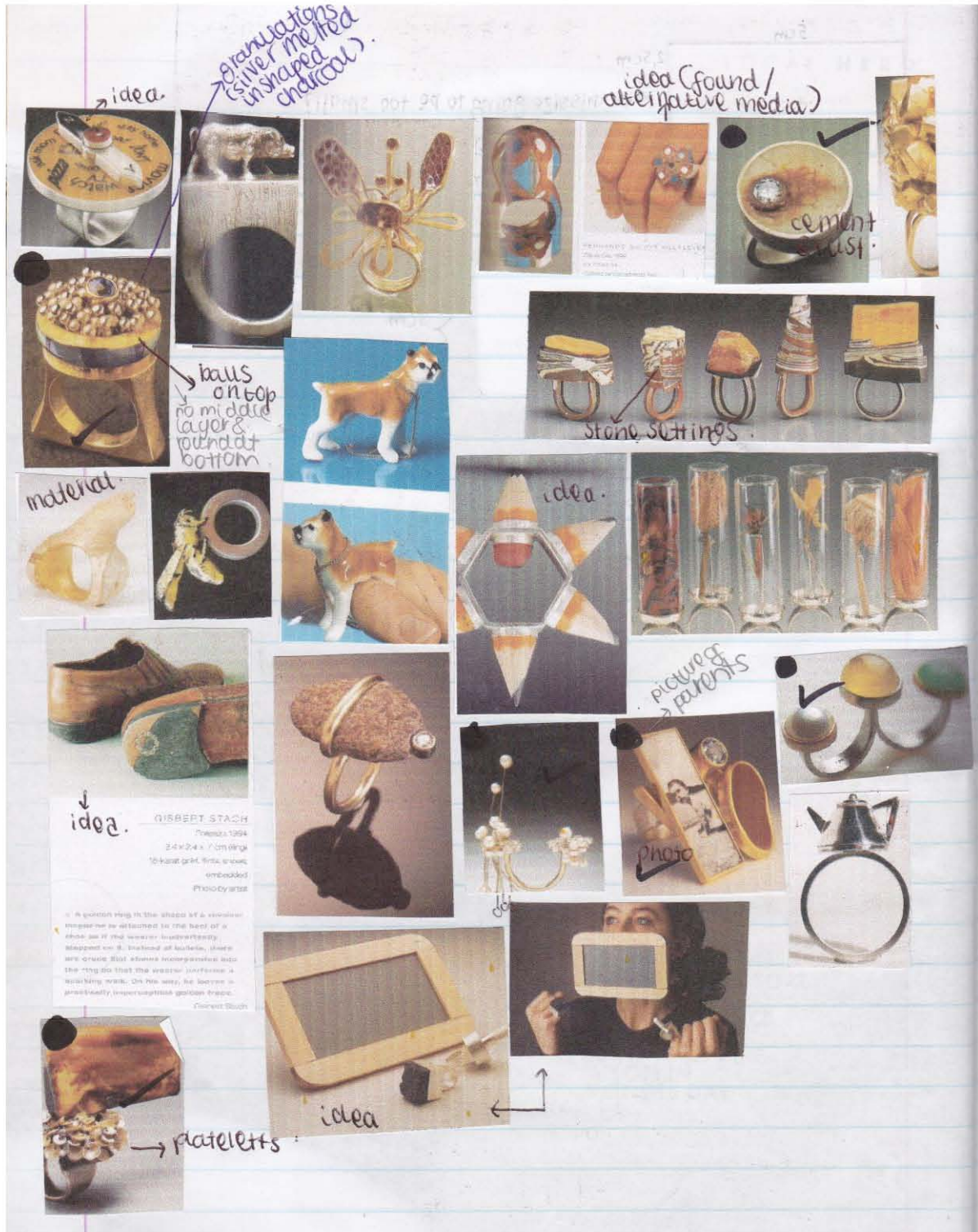


Figure 8. Available designs with writing indicating relevant aspects relating to the prompt

Stacey, 2011. Colour prints and ink on line paper. Design book 1

Figure 8 and 9 differ in their type of available designs and the way in which each student interacts with them.

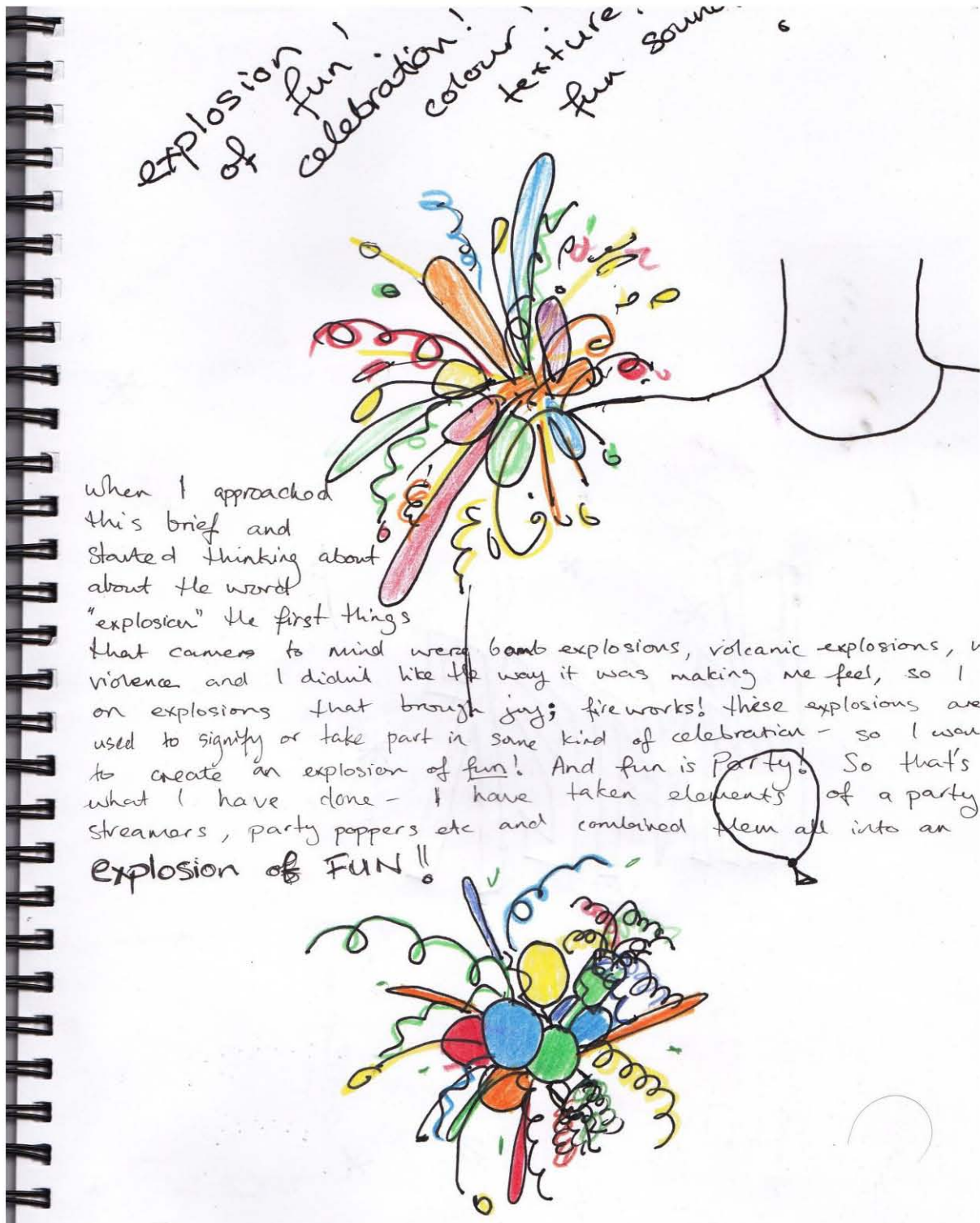


Figure 9. The reaction to the prompt presented as available design

Tembi, 2011. Ink, colour pencil, labels on paper. Design book 1

A written conversation exists within the available design stage presented by Tembi in figure 9. Her reaction to the prompt says 'when I approached this brief and started thinking about the word

“explosion” the first things that came to mind were bomb explosions, volcanic explosions, violence and I didn’t like the way it was making me feel’. The development of Tembi’s initial reaction to the prompt has put a constraint on where her design could go. Conceptually this is not where her interests lie therefore she goes on to write ‘so I on “[sic]” explosions that brought joy; fireworks! These explosions are used to signify or take part in some kind of celebration – so I want to create an explosion of fun!’ By writing down her important interests regarding the prompt, Tembi has defined the parameters which will create both constraints and affordances within her design process. The visual aspects which she has introduced onto the page are colourful drawings of balloons and streamers which have a connotation of celebrations. The conceptual strength that Tembi displays is evident in her relationship between writing and images which are driven by her interests. There is no use of existing jewellery in the available designs although this page of available designs does not yet demonstrate whether Tembi has an in-depth knowledge of manufacturing or a detailed understanding of three dimensionality.

The correlation between the constraints of the prompt and the conceptual artefacts are affirmed by the writing which surrounds many of the designs. All of the students use writing to explain aspects of the artefact which they are indicating as needing to be foregrounded. When analysing this I do question whether each student writes for an audience or whether the writing forms part of their personal design processing. It appears that the process of conceptualisation which is developed from the available designs is a personal experience as the writing highlights the student’s interests regarding concept, materialisation and techniques. This information will be used to realise the design.

4.1.2 Learning scenarios made explicit

Areas within the design process demonstrate the knowledge that the designer has regarding specific jewellery related processes such as manufacturing techniques. The following analysis makes explicit learning that occurs from one design process to another and the transformation of meaning within this design process.

Designing is either a short or a long process which can spread over a few or a number of pages. When the design process is short it commonly shows an omission of the presentation of the processing within the design process. The shorter design process generally lacks interpretation by the student which can be observed in slight changes in meaning from the available designs. The transduction from one mode to another is demonstrated within the example presented in figure 9. Anna begins her design process with a limited range of available designs. She has limited herself to one word ‘love’ and an image of an abstracted and symbolic heart. This lack of depth or diversity within the collection of available designs limits her potential to transduct anything other than the heart into the design. From here Anna has also not developed any conceptual options other than the heart as a pendant. She has presented the pendant in a variety of three options yet they are conceptually similar.

A longer design process does not guarantee a well developed design yet a good comparative can be seen in Anna’s trajectory for the year. The first half of the year demonstrated clean tight designs which appear to be well developed even though they are one page processes. Anna has presented ‘convincing’ designs which offer options as to which design could be redesigned. She does foreground her choice of ‘final design’ which is designed further by presenting technical drawings of

the 'front' and 'side' views. The bottom third of the page presents final designs which appear to demonstrate the student's understanding of the manufacturing process.

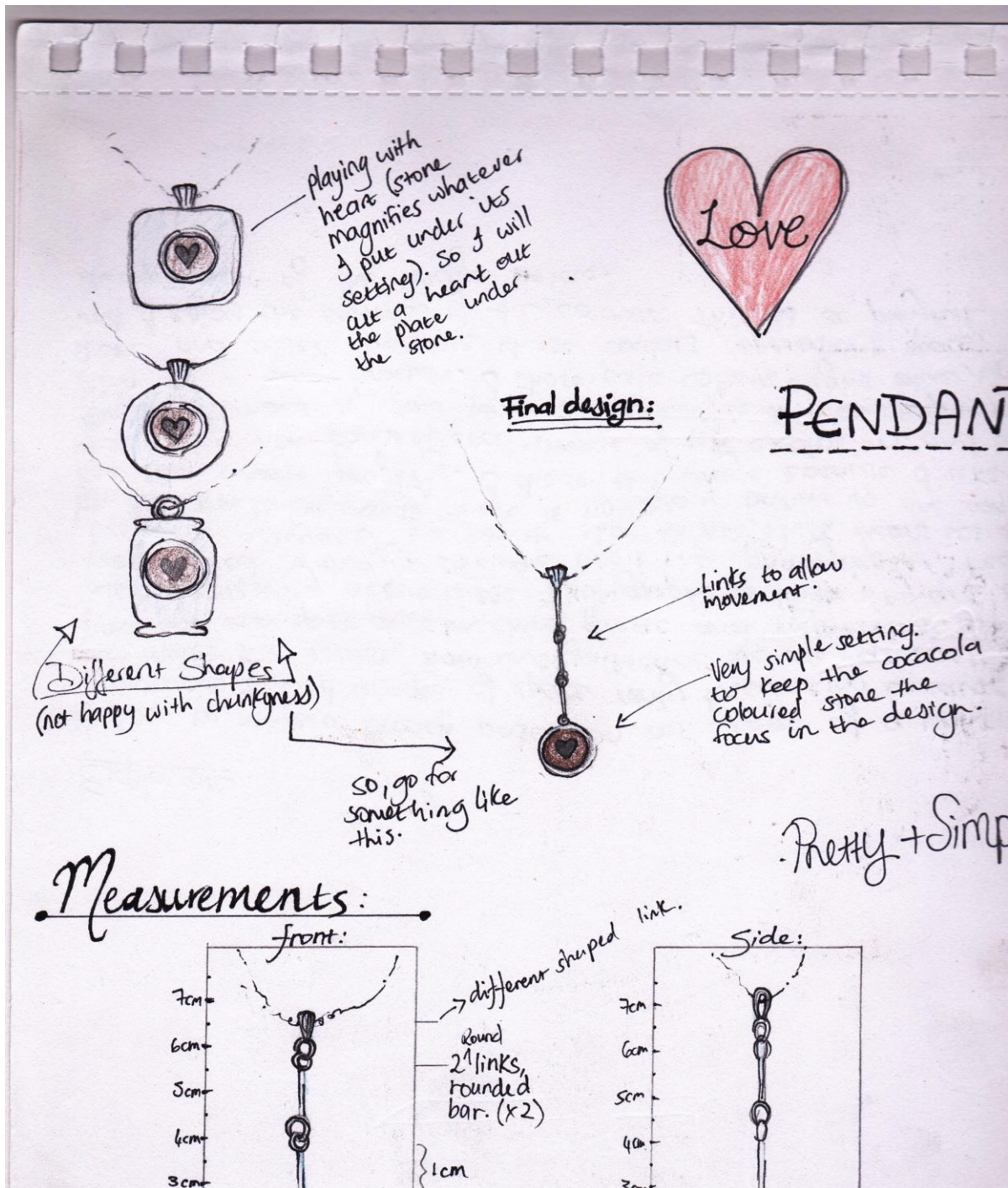


Figure 10. Well presented concise designs in the technical drawing genre

Anna, 2011. Ink and colour pencil on paper. Design book 1

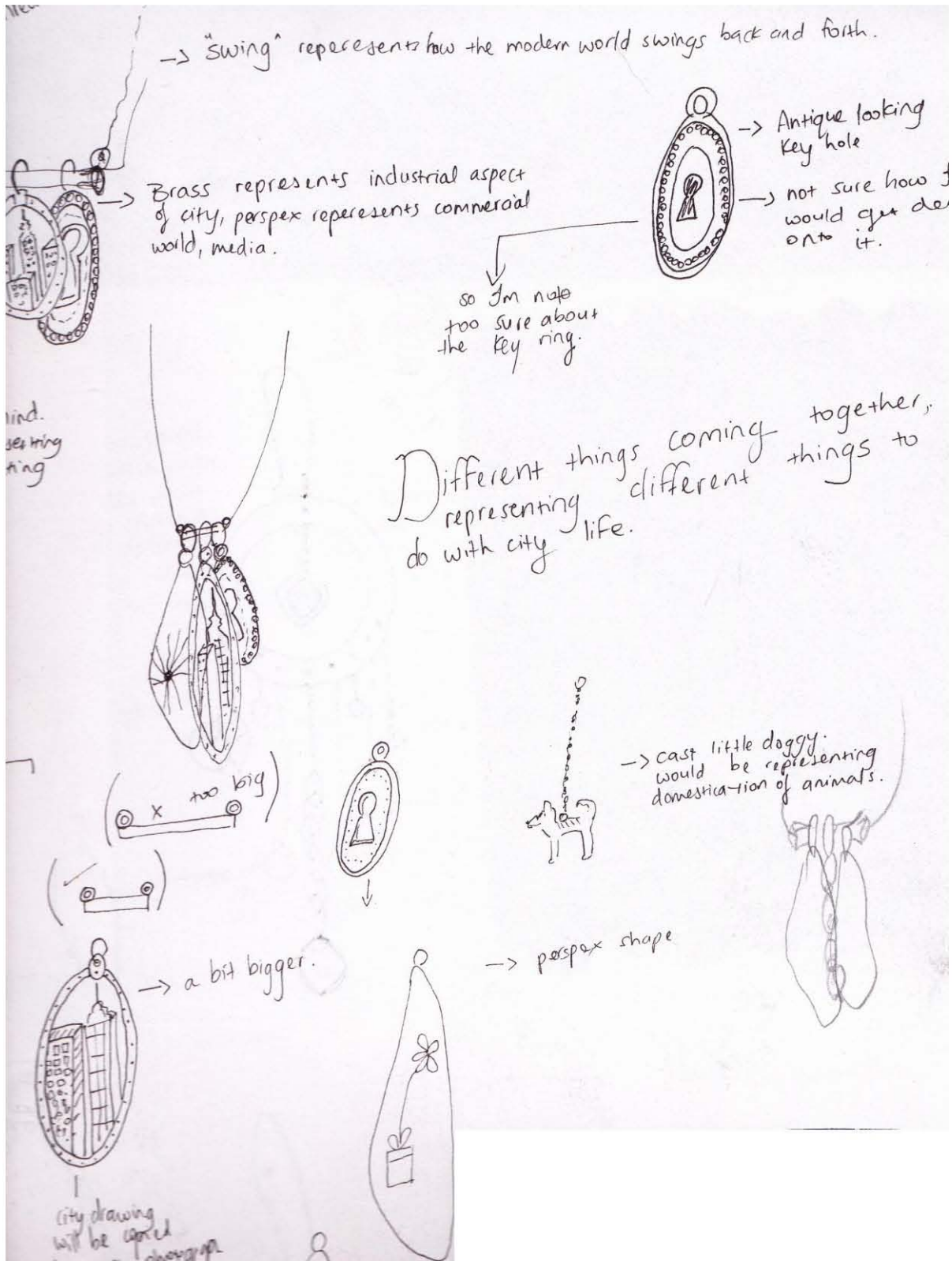


Figure 11. The conceptual and working technical drawings in process

Anna, 2011. Ink on paper. Design book 1

From the mid year project there is a distinctive change in Anna's design process as seen in figure 11. The brief given for the design presented in figure 11 prompted the students to design a pendant

which represents their interests regarding 'my favourite place in the world'. Anna focuses on 'city life' with a 'doggy ... representing domestication of animals', 'city drawing' and an 'antique looking key hole'. These images all 'swing' on a central bar 'representing how the modern world swings back and forth'.

The page presented is one of three pages which make up her design process. The designing stage is presented on this page and can be noted as process driven. Figure 11 does not convey the final design but rather explores the design conceptually. This is the first time for the year that Anna presents drawings which are not perfect and one can observe her grappling with the design process in a way that is developmental. The designs are communicating Anna's developed understanding of the relationship between designing and redesigning, as she presents variations of the artefacts. Anna explores how the artefacts will hang off a central wire. This wire is drawn in two options of length, one stating 'too big' while the other has a tick presuming that this is the preferred option.

Anna had struggled to redesign her midyear exam piece as it was not technically well thought through. Figure 11 demonstrates Anna's desire to understand the artefact prior to it being manufactured. There are two more pages which have not been presented here, yet they form part of the same process where Anna has worked on the design, pushing it to a well explored design. Anna's change in understanding that there is a divide between designing and redesigning is evidence of the distinct change in her design process. The distinct change in how Anna processes her design highlights learning and development. Her process of meaning making has changed distinctly from the mid year project, which was her first real redesign project, and onto the next design project.

The design process is assessed based on formal learning criteria of which the concept, realisation of the concept, technique and presentation are deemed the four major areas to be assessed. These criteria are important within the curriculum as they scaffold the learning that is necessary to develop a professional jeweller. It is evident that the depth of what is needed to be taught in order for a student to achieve the required design results and what a student is assessed on, are not the same. Students are taught how to design and are assessed on whether they achieved a successful final design. The assessment of process does not exist as the student is assessed on final points such as the realisation of the concept rather than the process that was taken to get there. The informal learning exists in the development of the students understanding of how to design which is taken into account within the curriculum. Students are not assessed on certain aspects such as the relationship between designing and redesign, until it is expected that the group has achieved this understanding. Before this time learning occurs, yet informally.

The students' interests are evident within each design book. The books all contain design processing, yet each book varies according to the students' communication skills and the interests that they invest in each project. Some students write a lot while others only draw, yet each student develops a design which has taken the available designs and transduced them into a potential three dimensional artefact. Representation varies according to the student's communication potentials while the design book demonstrates a trajectory which shows signs of learning as students change their design processing and methods of communicating.

4.2 A fine-grained analysis of one design process

An analysis of a single design process is intended to make explicit processes and genres within the designing of jewellery. The data is analysed for its communication of process, negotiated meaning-making and the translation of information either within one mode or across modes. The role of the designer within this process is foregrounded as the student, Cassidy, is acknowledged as the producer of meaning in the designed jewellery. She is also the producer of the final artefact which gives her control in the recontextualisation from design to redesign.

A constraint of the data is the quality of the reproduction of the pages of the research and drawings. Details are lost in the images that are presented here as they are produced in fine pencil which does not scan well. The drawings are originally produced on A4 size paper which is not the size that is represented here. Due to the size difference, representations of the process are not as clear as the original. Having said this, the data clearly demonstrates transduction from one mode to another and the transformation of the design. These processes occur when drawing on available designs, through the designing process and onto the redesigning.

No colour was used in the research or drawings, yet the writing suggests what materials and therefore colours would be used for the final artefact. The image of the final artefact portrays the details of the design, construction and finish of the metal, yet it is deceptive as the artefact is photographed using a macro lens which presents the jewellery bigger than its actual scale. The optimal analysis would be to hold the artefact as this would allow for a three dimensional to scale viewing.

The images shown are from pages in the design book of Cassidy, a third year jewellery student. The particular brief (prompt) for this project required the student to design a ring based on 'hidden secrets'. The student's design must 'must convey the concept of a hidden secret which should carry a theme and easily identifiable genre according to the scope of either jewellery time periods or cultural identification' (see Appendix 2 for the complete brief). The brief has no constraints regarding materials or manufacturing techniques, yet there is a time constraint for the handing in of a final materialised artefact.

Figure 12 includes drawings and written words which form part of the conceptual understanding of Cassidy's reaction to the brief. The written words relate specifically to the theme and her personal interests with the first word being 'secrets = something hidden, mysterious'. The strength of the writing in relation to the brief is seen in how the student interprets the theme of hidden secrets. The available designs she draws on include a list of her interpretation of secrets in 'nature, humans and life'. Writing allows the student to record her interests relative to the theme and then keep her design in alignment with the prompt. It also allows the student to verify how the design develops in relation to the theme. In order for her design to communicate 'mystery' Cassidy intends to create depth or movement by using 'compartments, hidden script, hidden objects/ aspects'. Cassidy initially communicates this interpretation with the bud like form which is repeated in a motion of three stages as it opens to reveal a smaller and central inner form.

Cassidy's available designs regarding writing about a concept related to the theme 'compartments, hidden script, hidden objects/ aspects' is tangible. This demonstrates Cassidy's thought process turning towards the physical aspects of a ring that will be manufactured. She is designing a

combination of conceptual and physical aspects which would all appear within the design of the ring. The concept of 'hidden' is solidified when considered next to 'compartments' which is a physical structure.

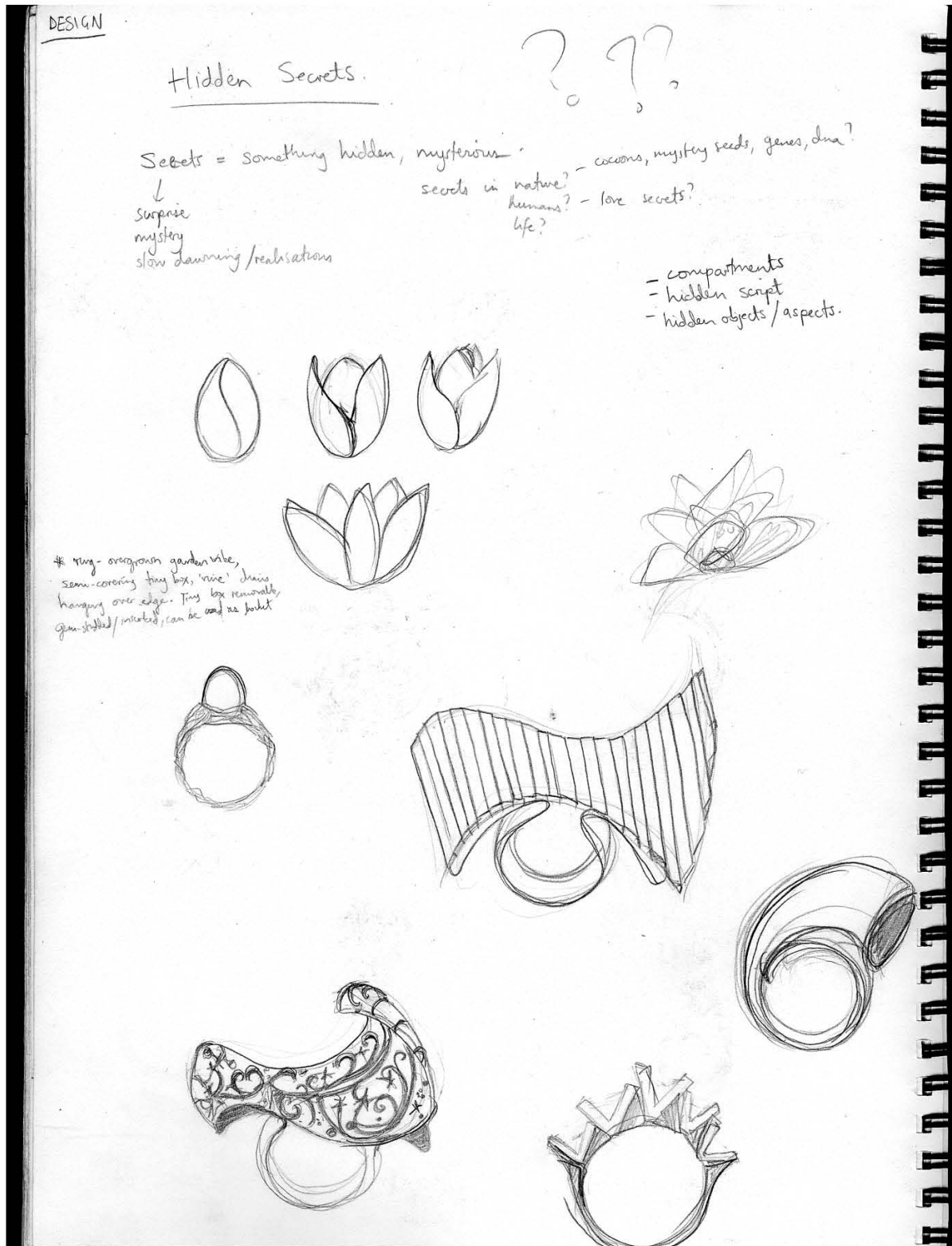


Figure 12. The prompt, available designs and designing

Cassidy, 2011. Pencil on paper, Design book 3

The writing and drawings are done in pencil and track Cassidy's grappling with her interpretation of the brief yet no writing is used specifically in relation to the conceptual drawings. The available designs that she is drawing from are conceptual ideas which one would perceive to have no specific physical attributes. They do however impact on the shapes and forms that are represented. After the bud like forms, the page is filled with five rings which have no visual depth in conveying 'mystery'. The designs present concepts which do not communicate beyond their single layer of shape and form. Movement is vaguely portrayed in the twists and bends of three of the rings.

The rest of the page includes various conceptual drawings. The student is drawing shapes and forms that could become the available design for the ring. The flower drawn at the top of the page is presented in stages of an opening bud whereas all the other drawings are of different rings. All the rings are drawn from a side view where we can visualise the height and width of the ring. It is as if Cassidy loses direction in the relationship between the design process and the prompt. Figure 13 continues this process yet there is a change in the conceptual designs that are presented.

Figure 13 is the next page of conceptual drawings. There is a variation in meaning from figure 12 in that the concept of movement has been introduced. Some of the designs have been given height with variations of spiral movements. The designs presented in the centre of the page in figure 13 rise from the top of the band, whereas the rings presented in figure 12 are flat on top and extended outwards. The conceptual drawings at the top of the page are shapes and forms that appear without the structure of the ring demonstrating that Cassidy is in a process of conceptual discovery.

There is one particular drawing just off centre of the page which is of a ring with 'wings' surrounding a round stone. This concept is the specific design which the student, together with a pedagogical prompt in the form of a conversation with the design lecturer, developed further. This concept was chosen as Cassidy demonstrated the strongest link between the theme of hidden secrets, her concept and its relationship to nature. She demonstrated the potential to visualise the possibilities of the concept and portrayed a desire to further the design processes in this particular direction.

Cassidy's process of transduction is demonstrated from writing to image. The writing is a reaction to the prompt while the conceptual drawings are a response to the available designs. This process of designing is experimental and demonstrates Cassidy's ability to diversify her interests. She also demonstrates her ability to explore a design three dimensionally on a two dimensional platform.

As the ring in figure 13 conceptually fitted the brief, and Cassidy liked the concept, she then had to gather authentic research material in order to accurately reproduce the shape of the butterfly. Figure 14 demonstrates the imagery that she went and gathered which function as available designs. The available designs refer to the concept of the design, namely the gathering of butterflies. Cassidy also required the correct understanding of the shape and form of the butterflies in order to transfer meaning accurately from the available designs.

In figure 14, as part of her research, Cassidy gathered four images which are of a similar nature in that they all include butterflies en masse. This research happened after the student had begun working with her reactions to the prompt. Cassidy came up with a concept and then went to gather information relating to the concept. The photographs presented in figure 14 are in the form of available designs and necessary to validate the concept in terms of what this occurrence in nature looks like. As the images demonstrate, a mass gathering of butterflies occurs where they overlap and pack tightly together. The available designs validate the movement found in the gathering, the mass of wings and the placement of the butterflies to each other. It was also necessary for Cassidy to draw on available designs in order for her to understand the shapes and forms that are presented by the outlines of the butterflies.

Two images are taken from a top view and two are side views of the butterflies. Each image depicts the butterflies from a slightly different distance away from the camera which changes the amount of either shape, form or movement that is seen in the image. The placement of the images in figure 14 is interesting as they move from the top right corner which is a long distance shot to the bottom detailed close up image.

There is a monotone of white and grey scale through to black presented in the images. The shadows that are made from the sunlight shining on the butterflies in the bottom left hand image create depth which increases the inspiration for a three dimensional object. The shape of the wings in terms of them being open or closed, as well as 'up' in relation to the body are main sources of inspiration for the visual research gathered here. The compacted nature of the gathering of the butterflies creates a togetherness of the 'same'.

Cassidy has mimicked shapes of the butterfly's wings in the blank spaces of this page. These drawings are the beginning of her transduction of the available designs into a potential three dimensional artefact. This is presented here as a change from the photograph with high modality to abstract drawings. The student draws the butterflies individually and massed together. One butterfly has been traced over in the bottom right image which is the actual shape that has been carried further in this process.

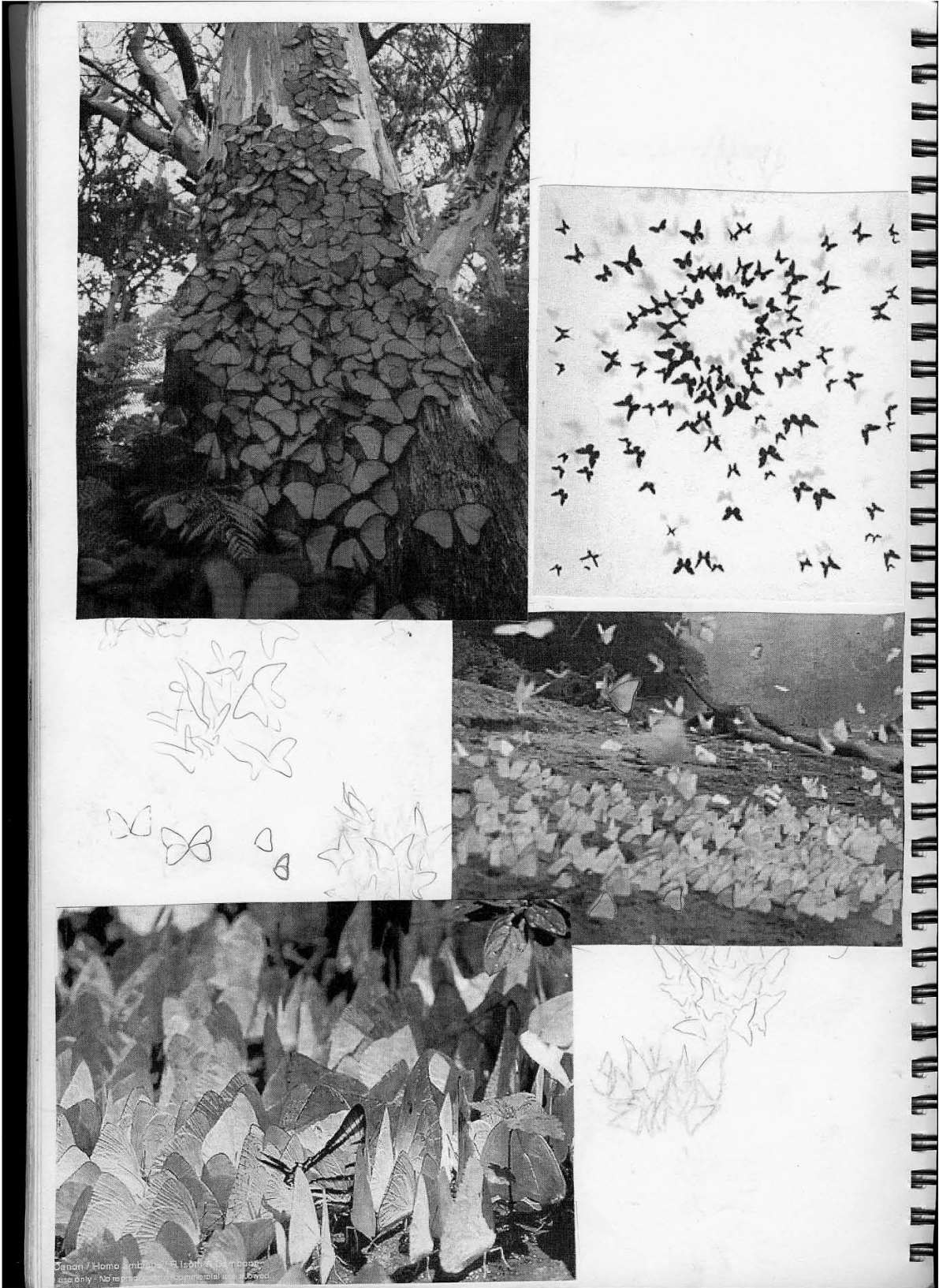


Figure 14. Available designs

Cassidy, 2011. Printed images, pencil on paper. Design book 3

From figure 14 to figure 15 of this design process, we can see the transduction of the available designs into the designing stage. Figure 15 presents the process of design development in the form of conceptual drawings occurring on one page. Cassidy has not drawn exactly what was presented in the available designs, but rather used elements of the photographs, allowing for conceptual development. The re-construction of available designs occurs with the result being a newly contextualised design. The elements from the available designs are drawn, designed and combined into a new shape and form.

The part of the design that is most distinguishably transformed from the available design is the outline of the butterfly. This image has been traced and redrawn with a mirror image creating both wings. The outline is transformed in the design process yet the 'thread' that connects the design back to the available designs is seen in the specific shape of the single wing. This, along with the large gathering of butterflies around a central area, allows one to reflect on her available designs and note how the resource of images influenced the conceptual design.

The design process is evident as Cassidy develops the design through half drawn 'working drawings'. These depict ideas which were either useful or dismissed once they were seen. The page of drawings speaks of a process of transformation within this one mode as she develops the design. Cassidy does this by redrawing parts of the design, over and over from a variety of angles with each drawing displaying a variation of size, form or proportion.

The strength of the student's conceptual skills is seen in the drawing in the top left hand corner which is of a hand wearing the ring. Cassidy has attempted to 'put' the ring on and see what it will look like. This demonstrates her consideration of the site of display as she negotiates the design and observes whether the ring appeals to her when it will be worn as a materialised artefact.

It is relevant to refine the design process as the butterflies form only part of the inspiration. The process of design by a jeweller who understands the constraints and affordances of jewellery is relevant as the butterflies are transduced into a materialised artefact prior to the ring being manufactured. The student applies her knowledge of manufacture and creates a ring of a particular shape, form and proportion which will be the base for the central theme. She has an understanding of manufacturing which leads her to question how the butterflies will be attached onto the band (shank). This is demonstrated in the way in which Cassidy draws various options regarding the wires that surround the central stone. These drawings show her conceptualising the possibilities of the various manufacturing processes. Due to her depth of understanding as a goldsmith she also knows that it is possible to add a specific setting style and stone into the design. Before settling on the final design she tries different options such as the oval setting in the bottom left hand corner and the various shapes and angles of the butterflies.

The three drawings at the bottom of the page which are of a similar ring from various angles shows how Cassidy has concluded the design. This is the clearest conceptual aspect on the page and it conveys the accumulation of all the preceding concepts into one design.



Figure 15. The development of a conceptual design from the available designs

Cassidy, 2011. Pencil on paper. Design book 3

Figure 16 shows a detailed example of the technical drawing genre. The transformation of information is evident as Cassidy is still using the mode of drawing in her design book with a re-ordering of information taking place.

The designs are presented as working technical drawings. The reading path, in vertical lines, shows the ring from different angles, yet each drawing focuses specifically on a single aspect of the design. The first column on the left represents the detailed wire work of the setting with the last of these three rings showing the wire which surrounds the setting. The second vertical line of rings represents various angles of the setting connected to the shank. The shank is also shown from a top view (the last of these three rings) which details the proportion of the width of the stone to the shank. The third vertical column focuses on the butterflies and how they will fit onto the wire work which surrounds the stone. The drawings assist with the finer understanding of how the artefact will be constructed, manufactured and what materials will be used.

Cassidy has an excellent understanding of the manufacturing process as the images show that she can conceptualise the artefact from many viewpoints grasping how it will be constructed. The ring is presented in proportion with a close to perfect scale to reality. By doing these drawings, she eliminates manufacturing faults in so far as one can prior to manufacture. The technical drawings show that she has an understanding of the final product prior to its redesigned materialisation.

The writing that forms part of figure 16 is faint yet legible. It speaks about the materialised artefact prior to its redesigning by defining various aspects pertaining to proportion, materials and finish. Part of the writing in the top central part of the page reads as 'Version 1: 18ct white gold 0.8mm wires compose framework around setting. These wires soldered into holes drilled on inner surface of shank, except outside wires'. Cassidy went with version two which is written at the bottom of the same page and is the preliminary design of the materialised artefact shown in Figure 18.

Figure 16 demonstrates Cassidy's connection between communicating design and technical specifications through drawing and writing. The drawing offers a means of visually communicating proportion in the tapered shank and the heights of the wire, placement of the wire around the shank and the setting, the placement of the wires for the setting and size of the ring. The writing is used to communicate the specific details regarding the metal – white or yellow gold, the finish – brushed or high shine, the kind of stone including the shape and size, and the technical construction which is not visible in the drawing. All of these elements are important in the redesign process as they lead into the manufacturing of the final materialised artefact.

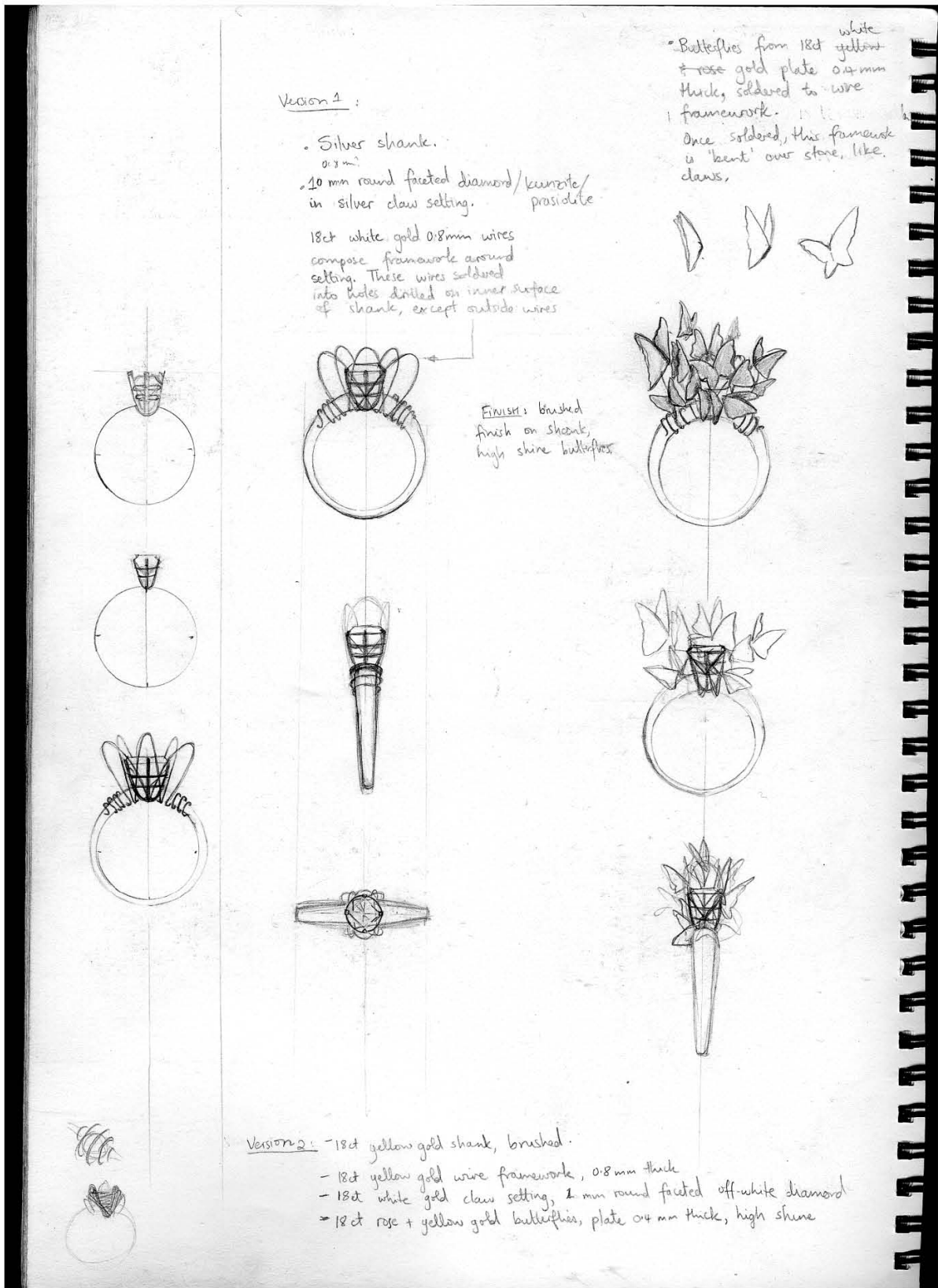


Figure 16. Final technical drawings

Cassidy, 2011. Pencil on paper. Design book 3

The final image is of the materialised artefact. The redesigned process cannot be presented in this research yet the result of the process is evident in figure 17. The photograph does not relay an accurate proportion nor does it communicate the site of display when worn on the body, yet this photograph allows for the evidence of the redesigned process to be observed.



Figure 17. 18ct yellow gold butterfly ring with citrine.

Cassidy, 2011. Digital image

The material choices are seen in the final materialised artefact, presented in figure 17, in the colour, shape and form of the metal. Looking closely one can observe the stone set in the middle of the 'butterflies'. Conceptually the stone is seen as the object or substance which has attracted the butterflies and also acts as the 'hidden secret'. Cassidy uses similar colour materials in the gold and the citrine which forces us to search for the stone emphasising the hidden nature of the design.

Conceptually the ring emphasises the fragility of the occurrence of this type of gathering of butterflies through the delicate use of the wire thickness and also the fragile nature of the soldering of the butterflies to the wires. The ring is not made for everyday wear but rather for a special occasion which mimics the uncommon nature of the gathering of butterflies in such a manner. The translation from the designing to redesigned process is well understood by the person who manufactured the artefact. The accurate technical drawings are an indication that the materialisation was well considered prior to the redesigned process.

There is a level of cohesion in the transformations in the conceptual and technical drawing processes and the transduction into the materialised artefact. This is possible as the steps within the designing and redesigning have been completed methodically. When the design has been developed to the level of detailed technical drawings which are presented here, there is good chance that the materialised artefact will be close to the product of the designed process. The visual aspects act as evidence of the design process as they originate directly from the available designs, developed within the design process, are distinctly visible in the technical drawings and completed in the redesigned process.

The level of cohesion of this particular design would be better understood if I analysed a second student who struggled with the process, as Cassidy makes the exercise seem easier than what it can be for other students. Students can create an artefact which has no relationship to the research, is poorly conceptualised or technically not thought through. This particular student has an excellent understanding of the design process and is outstanding at communicating on paper using drawings to develop the process. Each student has a different methodology that they employ to develop their concepts into a final artefact.

It is clear that Cassidy has a fine attention to detail, yet she has no problem with making 'mistakes' which is seen in the way in which she has tried out different design options, some successful and others not. She presents the drawings in a fine pencil with many lines demonstrating that her process has not been erased. It is preferable for a student to keep the evidence of process in their design books as this is a record of the conceptualisation process and allows for reflection in terms of developing a student's understanding of design.

Cassidy's design process demonstrates how and where transduction and transformation occurs within the jewellery design process. These design developments occur based on influences from the prompt and the interests of the designer. Each designer's process differs yet this research presents a framework which encompasses the changes within the design process.

Chapter 5: Implications for jewellery pedagogy

The implications of this research are specifically related to jewellery design pedagogy. In order to improve pedagogical practices, recognition of the environment of learning, assessment of design and the interests of students is necessary. This enables a deeper understanding of how to improve the pedagogy within this specific subject and the jewellery programme at large.

5.1 Environment of learning

The teaching of jewellery design is challenging and complex. The complexities lie in the diverse ways of teaching students to produce multimodal resources. The jewellery design curriculum requires students to research, draw, have technical and construction driven thought processes, as well as to be able to manufacture three dimensional artefacts. In tandem with these design skills, students have to develop a conceptual jewellery design identity and understand the process of making meaning through design. The challenge exists for lecturers to develop students that are strong in each stage of the design process in a manner that is best suited to each student's interests and design strengths. It is a personally driven experience of meaning-making which is not static, yet there are guidelines and specific steps which the students generally need to be taken through. This thesis has argued for an approach which is intended to optimise jewellery pedagogy using a multimodal and multiliteracies approach.

The research has attempted to make explicit learning that occurs in this formal education scenario. In order to recognise learning the artefacts produced by students have been analysed. It has also analysed the spaces between artefacts to gain an understanding of learning. Social semiotics emphasises that learning is shaped by the environment in which it occurs and the participants with whom the group interacts (Kress 2010: 178). The resources are also observed as shaping learning as these define how a student constructs and communicates meaning based on their interests. Meaning is made in and through the materialised resources produced within a social context. Meaning-making occurs as a result of learning and vice versa, they differ only regarding context and purpose.

There is a need to develop the student holistically and the subject of design has the potential to bring together most of what is taught within the jewellery programme. By recognising the learning that exists between modes and subjects, this research has emphasised the necessity for greater communication between lecturers regarding the students and learning.

5.2 Challenges of assessment

The analysis of the design process and the materialised artefact challenges what is considered a field of learning in academia. Here I present 'process' as a significant aspect to understanding learning, yet this research has not illuminated whether a grade should be allocated for this. The relationship between jewellery pedagogy and assessment has been foregrounded within this research. The challenge is in developing an assessment of such a subject and/ or process which acknowledges and legitimises the design process. In order to interrogate pedagogy one must analyse the multimodal methods present in teaching and learning, along with creating tools for assessment (Archer 2008, Davis and Reed 2003, Reed 2009).

Part of the assessment requirement could be for a student to demonstrate complexity in their understanding of design and manufacture. The learning happens differently for each student and at different stages within the three years. This aspect is not directly assessed but must be informally developed in order for the student to achieve the required results. By analysing the design books it has become apparent that much of what is produced by students is not assessed formally. The research has made explicit the design process and in so doing it has also opened up the question of assessment and whether it is at present valid. Further research will need to be done in order to create a rubric which offers a valid reflection on the learning that occurs in jewellery design.

Analysing the students' design books has demonstrated that both the student and lecturer can see the visible traces of learning that have occurred and observe aspects which could still be developed. The research has illuminated learning which is not necessary to formally assess yet lecturers can obtain insight by analysing the trajectory of resources produced by students.

5.3 Signs of interest

The analysis of the design book has had the greatest impact on my understanding of the pedagogy, curriculum and the interests of the individual as designer. The design book highlights poor understanding of the relationship between design and manufacture, for example. It is possible for the curriculum to develop students who cannot critically reflect on their design process. The implications are that the student is either always reliant on the teacher for this part of the process or there is poor cohesion between the chosen research and the final conceptual design results. By making the design process explicit, students can take ownership of their own meaning making and be taught to analyse and be critically reflective. This will take their designing beyond the institution and into their future as a jewellery designer. Ultimately, each student should have an explicit understanding of prompts, available designs, designing and redesigning processes in order for them to utilise each stage to its full potential. This understanding allows students to develop their own designs and be in control of their own meaning making. In order to achieve this, the design curriculum should teach students each part of the process, the integration of all the processes and the relationship between design and meaning making.

The resources that are evident within the design books and the way in which students have used the various modes for communicating meaning has affected the way in which the pedagogy is understood. When we learn to read and write, we are taught the alphabet. In order to design, students need to understand the resources which they will use to communicate. Following the lessons relating to the alphabet we are taught grammar. Perhaps there could be a 'grammar' for jewellery design, namely agreed upon conventions which guide the multiple modes of communicating jewellery designs. This research has begun to define each resource and its use within the design process. The research has specifically highlighted how the interests of the designer effect what and how the resources are used. The research has not developed a framework for the roles that jewellery plays in communicating to the world, within the world or as a materialised artefact. There is scope for future research developing a framework which explores the meta functions of jewellery in the way that Kress and van Leeuwen (2002) have theorised colour.

Developing the interests of each student is the pedagogical focus here, as diverse students have the potential to disappear into a mass of 'the same'. Students arrive with rich and diverse knowledge, social and cultural contexts yet are often recontextualised into the environment of the institution

(Bezemer and Kress 2008). The pedagogy can strive to illuminate each student's existing context and then add to this richness. The design books tend to show the interests of the individual and their preferred methods of learning and communication. The curriculum is currently weak in terms of strengthening the identity of first year students relative to jewellery design and this could be strengthened.

Students benefit from recognising the roles played by each site of the design process relating to available design, design and redesign. This is due to the relationship that each part of the process has with another and what defines each particular site. In doing so, students also draw from the competencies developed within other subjects such as drawing, as this becomes a new resource for communicating what they are conceptualising. When the student has a grasp of the 'grammar' of design they potentially have the means to make meaning which is in alignment with their interests. Considering that meaning-making originates from the interests of the individual, the curriculum has an obligation to explore the resources with which to communicate.

When we question what prompts change regarding the transformation and transduction of meaning in jewellery design pedagogy then one must look at teaching and learning scenarios for part of the answer. Meaning making changes due to new knowledge of modes, modal resources, genres or theory; changes in the interests of the designer; or the prompt itself. At times the transformation is the result of a formal pedagogical lecture or an interaction between lecturer and student yet at other times the interest of the student changes due to their own contexts. This research has brought together the notion of meaning making and learning in a way that can inform pedagogy. Jewellery pedagogy is contextualised in the environment of design yet the 'outward' signs produced as a result of the curriculum are evidence of the 'inner' process of learning.

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Appendix 1

Appendix 2