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A SENSE OF
FASHION

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A SENSE OF FASHION

A thesis presented in partial fulfilment of the requirements for the degree of

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ABSTRACT

As an expressive language, fashion design has an innate capacity to engage a full-gamut of sensorial responses. This research explores the contribution of synaesthesia to fashion design in an effort to highlight the positive aesthetic and intellectual impact of this integration. Such research advances my creative practice.

The method of realising garments which address synaesthetic principles is an extension of personal interest in synaesthesia, driven from both an experiential perspective and a desire to gain a greater understanding into theories in relation to challenging the senses in a contemporary fashion world. If fashion includes novelty as a crucial and desirable aspect, and can be defined as an ever evolving and self-rejuvenating art form, then the energy and frivolity of these components in association with multiple sensory stimuli and response will expose the consequence of the study through design-work.

Recognition of the importance of sensory cross-overs in fashion design will reveal the quintessence of how humans position themselves and respond to a specific environment. If realisation of the senses is with regard to surroundings, and fashion becomes the surrounding which elicits multiple involuntary responses from stimuli, a conscious recognition has begun.

Traditional theories on the organisation of sense modalities speculate that humans perceive their world with five senses, the most dominant generally being sight. The combined effect of these senses creates the environment in which we inhabit. The visual and tactile senses have long been the focus of the fashion product but, of all the senses, touch is most key to our species (Ackerman, 1990). Sound, taste and smell have been under-recognised as providers of ceaseless information about our environment. The investigation into the notion that fashion and other sensory systems are not separate entities assists with establishing the links between sensory integration and fashion design. The emergence of the synaesthetic paradigm has highlighted a unity between the senses rather than the traditional hierarchy of favouring the visual. The research on synaesthesia relative to fashion design occupies a parallel position to neurological theory and allows synaesthetic investigation to be a pivotal determining factor towards my outcome.

I have engaged in critical self-reflection of my design process and production as a means of elucidating stimuli associated with multi-sensory perception.

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Figure 1

INTRODUCTION

What Colour Is Dinner?

This project has developed via a review of literature and design of recent fashion, an analysis of synaesthetic research and an advancement of my design practice using reiterative and reflective processes.

Fashion has evolved as a sign system, as a form of mass communication. The idea that contemporary fashion exists between media, exposing a global fashion audience to a variety of sensory stimulation via cyberspace, intelligent fashion and advertising, provokes questions on the presentation and perception of fashion. Fashion no longer adopts a compartmentalised approach to its contemporary presentation, it has become a language understood as a method of shaping the world. Both society and the individual are placed between signs and objects in their surroundings allowing fashion to provide both projection and aesthetic simulation in a social context. A component of this language is music, which plays a fundamental role as a language that elicits, through sound and rhythm, the way in which humans perceive and experience the world. Patrizia Calefato discusses the relationship between fashion and music, audio and visual reception, as a reciprocal enlightenment:

What the language of the clothed body and the language of music have especially in common is a sensorial element: dress and music are the forms through which the body seems to 'feel' the surrounding world as amplified in its entirety (Calefato, 1998, p.491).

Sensory systems and fashion are becoming increasingly intimately connected through current communication mediums. The convergence of fashion and music is partly dependent on the accessibility of current technology, such as the internet and associated digital software. The viewer can adopt the totality of a fashion label by association of music and brand whilst able to purchase the entire fashion image of both music and clothing through the internet. Diesel, a distinctive fashion brand famed for its high-end casual collections, acknowledges this convergence of fashion and music by answering customer demand and availing both fashion and

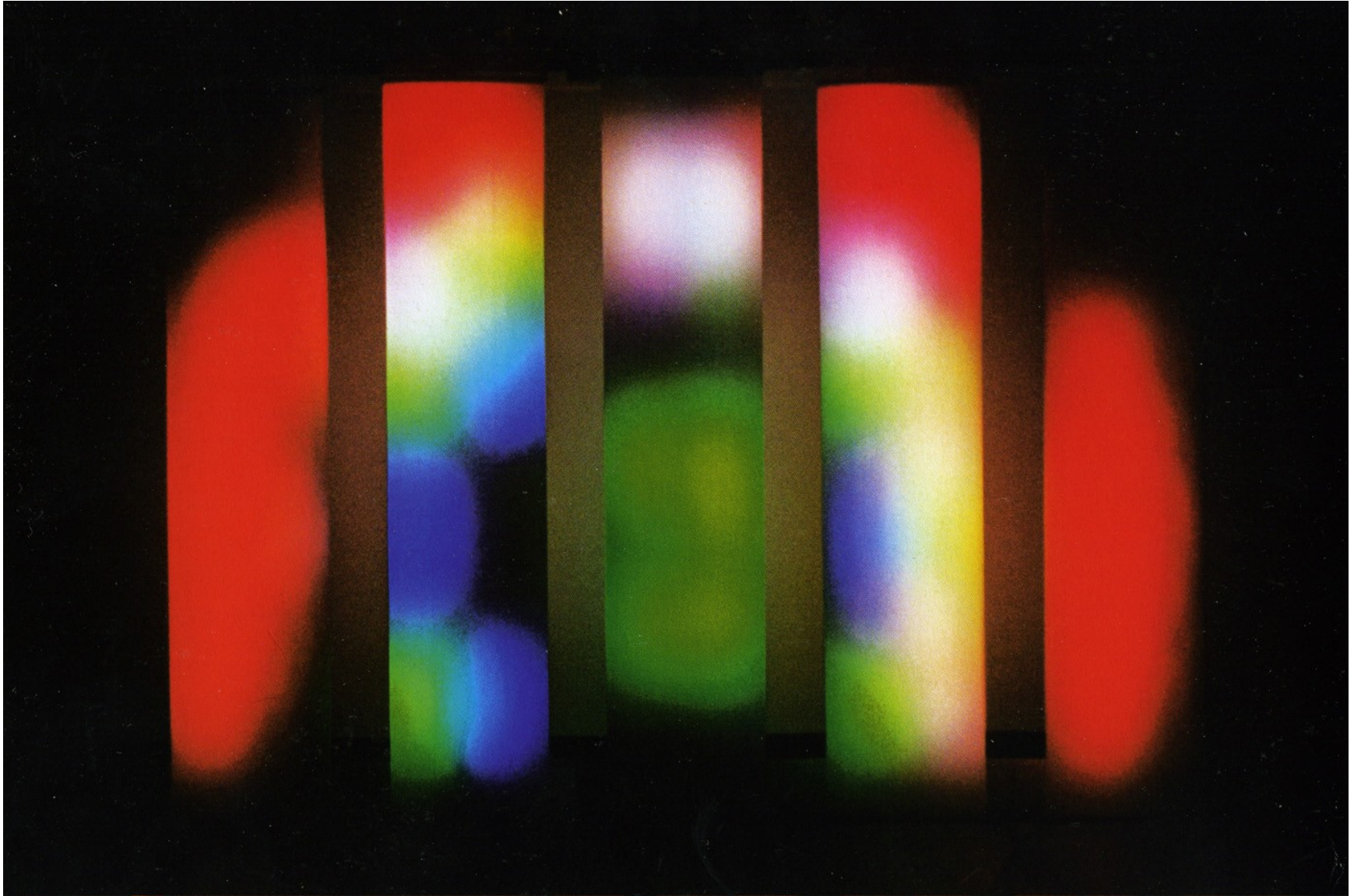


Figure 2

music on-line. The demographic of the Diesel customer represents young people who are both fashion and technology savvy, and favour individuality. References to technology and media acknowledge the fact that contemporary fashion can be accessed through this medium. They also indicate that fashion is not reliant upon it. In addition to actual clothing, the global fashion audience is exposed to sensory stimulation through interactive websites, live shows, advertising and film. This research project largely addresses propositions regarding synaesthesia and fashion other than those consumed by technology, although it is pertinent to refer to technology as a related aspect periodically.

The relationship between the world and the languages of fashion and music can be represented by *bricolage* which, in anthropological terms, is the art of linking objects and signs, but which are devoid of a reciprocal connection. Paraphrasing Greimas, this is defined as a network of correlations between different levels of signifying reality. Greimas goes on to propose how a world pervaded by sense perception might be: "Light becomes more than a metaphor because it is the means through which signs are pervaded by sensorial receptivity, which is above all synaesthesia, the senses' ability to interact, combine with, or even substitute one another" (As cited in Calefato, 1998, p.492).

The design work accompanying this written document, entitled *Sonata*, focuses on ideas of sensory response rather than an emphasis on actual interactive reaction. An insinuating rejoinder of analysed sensory stimuli has enabled design realisation to exist in a framework which has a real affinity with the body, and embraces beauty and desire in a context of *expanding* current mainstream fashion.

The definition of the term 'sonata' is according to the *Grove's Dictionary of Music and Musicians* a 'sounded piece' from the Italian *sonare* meaning 'to sound' and was used to distinguish music from *cantata*, 'sung piece'. The term 'sonata-form' refers to the form of a single movement rather than to the whole of a three or four movement sonata, symphony, or work of chamber music. Sonata-form has been used primarily as a way of organising musical ideas in a movement on the basis of key. *Sonata* has been inspired by sonata-form, in which a parallel structure of the musical

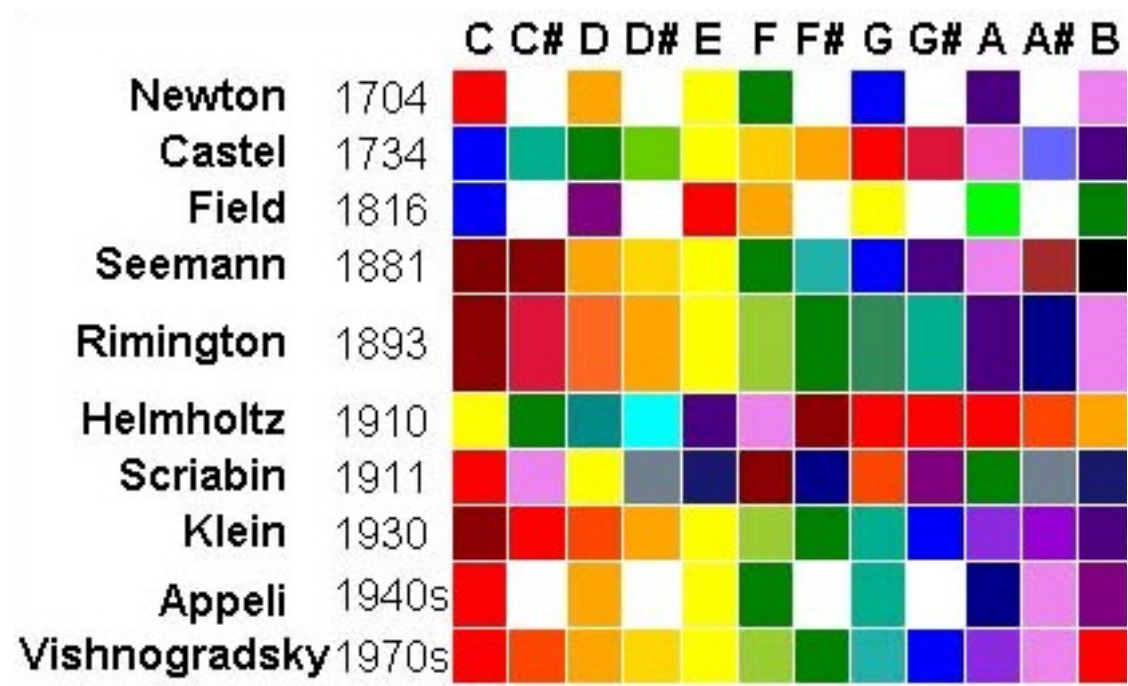


Figure 3

construction, 'exposition', 'development' and 'recapitulation' form the basis of the themes therein. The introduction of themes such as tonic and dominant keys in the development component of sonata-form have been echoed by the introduction of visual rhythm and fabric layering in *Sonata*. Musically, the exposition and recapitulation have manipulated and repeated those themes in various ways. *Sonata* uses vibrational colour, implied sound, actual sound, intervals, colour and pitch association along with emotion and musical pitch in the manipulation and repetition of the thematic material. The analysis of synaesthetic theories provides a method from which to lever my *research through design* practice. During the design development stage ideas are developed and made explicit through the language of both textiles and the garment. The wearable and functional aspects of the clothing have been integrated with the design process.

Theoretical investigation helped to articulate concepts and design ideas for *Sonata*. "Learning in designing is mostly conducted by doing" (Downton, 2003, p.121). Knowledge from previous personal research is not only manifested in the process of designing but is brought together with the design process enquiry, its integration and use. Representation of the designed work involves enquiry and ongoing evaluation as it "changes a designer's knowing-in-making" (Downton, 2003, p.121). Discourse with other musicians, composers, designers and synaesthetes served as an informal testing ground on the ideas and design realisation. Although synaesthetic response is not uniform between synaesthetes, or indeed responses from creative artists measured towards a final outcome, a qualitative response on the proposition was valuable and the discourse stimulated subjects into furthering their own creative synaesthetic enquiry. Design research is an embodied practice when the act of designing becomes an act of research.

The design composition *Sonata* forms the substantive part of the research. *Sonata* comprises six interchangeable separates forming a maximum of nine outfits, recognising multi-sensory responses, and fashion as a sensuous experience. They are named as follows, and referred to in the exegesis accordingly; *Diatonic Pages* (Tyvek top), *Tonal Silence* (Tyvek skirt), *Harmonics* (red/orange skirt), *B-Flat float* (orange/unbleached silk layered top), *Chromatic Dissonance* (striped top), *Polyphonic Cocktail*

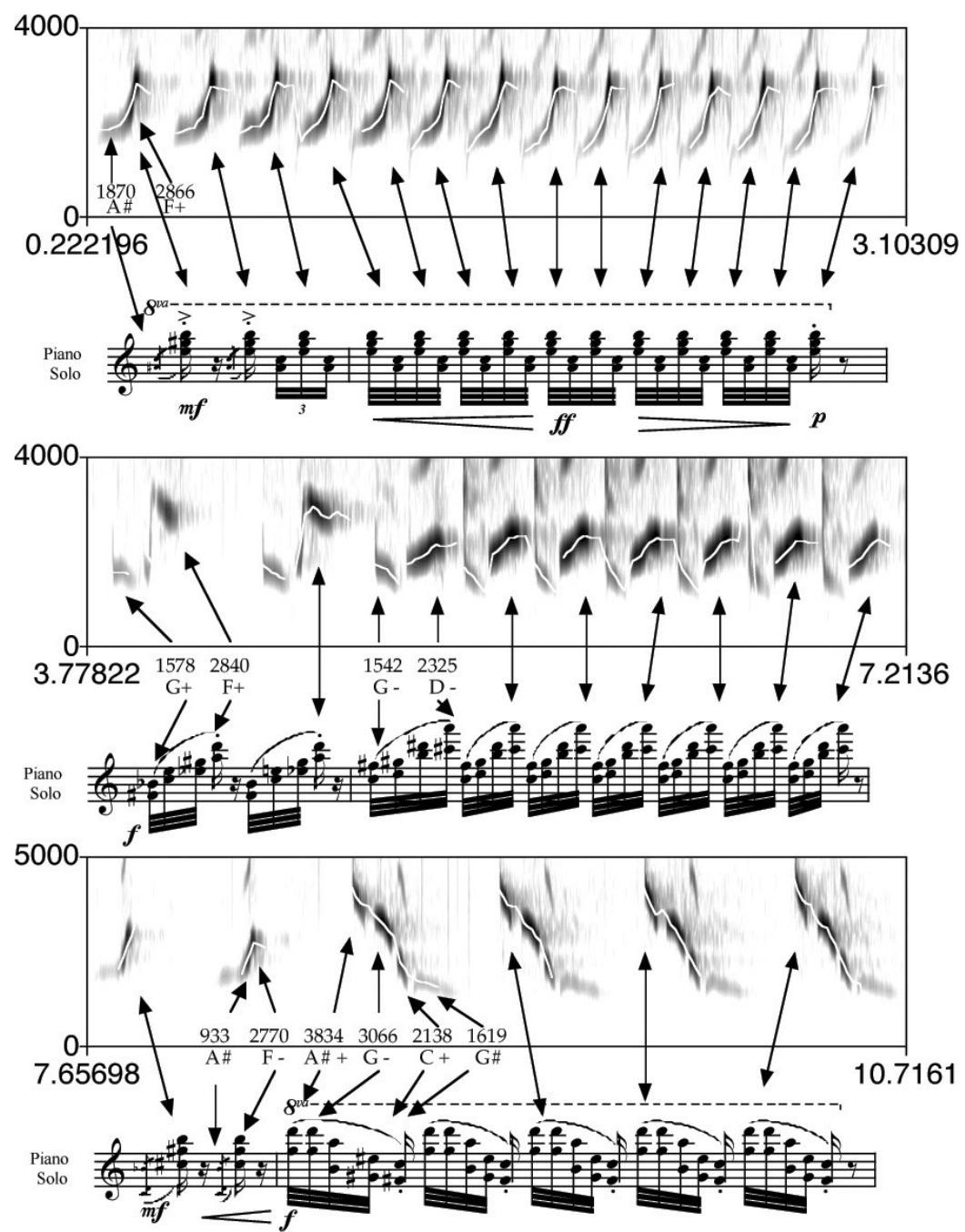


Figure 4

(striped and crunchy skirt). The exegesis is presented in book format and is composed of chapters which absorb the literature and visual reviews, discuss the design research, design process and design composition. An accompanying visual essay illustrates discussed propositions in the text. All titles are italicised, and any changes in font style, colour, size or further italicising indicate a preferred point or enforce a particular message. The *audience* referred to throughout this document applies to subjects other than the designer.



Figure 5

SYNAESTHESIA

Smelling Shapes and Tasting Sound

Derived from *anaesthesia*, (loss of feeling), the word synaesthesia is formed by combining 'syn' and 'aesthesia', syn meaning similarity, and aesthesia meaning to feel. Synaesthesia, or the integration of the senses is according to Rich, Bradshaw and Mattingley (2005) "where one stimuli in one sensory modality elicit anomalous experiences in another modality" (Rich, Bradshaw & Mattingley, 2004, p.1).

One of the earliest references to synaesthesia is found in an essay by John Locke entitled *Essay Concerning Human Understanding* which reports a blind mans description of the colour scarlet as being like the sound of a trumpet. An early medical reference to synaesthesia comes from 1710 when an English ophthalmologist, Thomas Woolhouse encountered a blind man who perceived sound-induced coloured visions. This was followed by the invention of the clavecina oculaire in 1790, an instrument that played sound and light simultaneously. Louis-Bertrand Castel, inspired by Sir Isaac Newton's theory of music-colour correspondences, designed the clavecina oculaire (harpsichord) which had "colored paper strips that appeared on top of the instrument when a key was pressed. The paper strips were lighted by candlelight" (Campen, 1999, p.10). The nineteenth century invention of the gas light created new technical potential for the colour organ. Alexander Rimington, a British inventor and professor in fine arts, developed the coloured organ further and was first to document the name *Colour-Organ* in 1893 with a patent application. Following on from Newton's idea that both music and colour are grounded in vibration, Rimington thought that physical analogies existed between sound and colour "due to vibrations which stimulate the optic and aural nerve respectively" (Peacock, 1988, p.402). Based on this, Rimington devised a colour spectrum related to the octave where notes in a higher octave produced the same colour tone in a lighter value.

Finding a mathematical system to explain the connection between tone and colour has been an ongoing topic of enquiry amongst scientists and artists. Newton's theory was "that the spectrum had seven discrete colors,

Die Intervalle der zwölftönigen Temperatur
bandrännel. geometrisch angeordnet.
 physisch

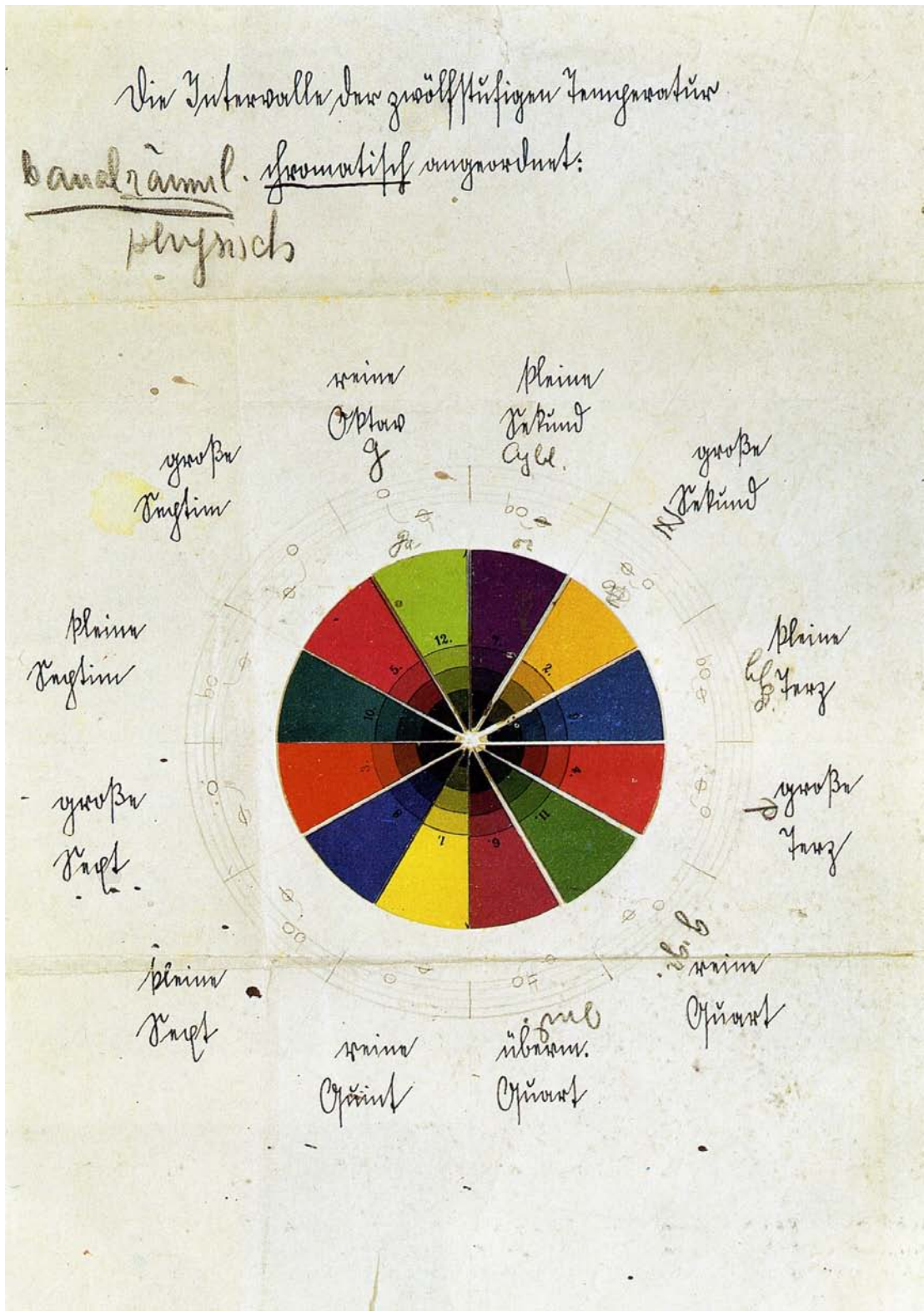


Figure 6

corresponding in some unknown but simple way to the seven notes of the diatonic scale" (Sacks, 2007, p.165).

In 1810 Goethe spoke of the correspondences between colour and other senses in his book *Theory of Color*. In the nineteenth century, synaesthesia attracted research by psychologists, natural philosophers and artists along with composers and artists closely associated with synaesthetic sensibilities in historical investigation. In music, Alexander Scriabin, a Russian composer and pianist, was particularly interested in the psychological effects of sensory stimulation with his audience. He scored a symphony *Prometheus, the Poem of Fire*, for a colour organ where keys on the organ were played whilst simultaneously, colour was projected into the auditorium (see Figure 2). Scriabin peppered his scores with notations such as "luminously and more and more flashing" (Lemley, 1999, p.84), and was one of the foremost composers to rigorously catalogue his colour-tone associations (see Figure 3). Scriabin's colour-pitch associations connected C-sharp with violet and "...E evoked pearly white and shimmer of moonlight" (Lemley, 1999, p.84). Scriabin later commenced an unfinished work entitled *Mysterium*, in which he planned to combine dance, décor, light, an orchestra, sculpture and scents which he intended to be released into the auditorium, a predetermined release according to the tonal value being played. Kandinsky, a contemporary of Scriabin, is noted for aspiring to produce synaesthetic painting and held a similar view to Scriabin that his experience of colour was one of sound and vibration.

Olivier Messiaen (1908-1992) was a composer and musician with bi-directional audio-visual synaesthesia, meaning that sounds trigger colours and colours trigger music. To Messiaen there was no such thing as a single note. His music demonstrates an awareness of overtones and harmonics found in natural sounds such as waterfalls, wind and birdsong (see Figures 4 & 5), particularly those found in *Oiseaux Exotiques* (1955). The published scores are full of exhaustive detail and colour notations with passages specifically arising out of the colour of a bird or a natural sound.

Other composers and artists have been writing colour-music compositions for centuries. Compositions include *Color Symphony* (1922) by Sir Arthur Bliss and Kandinsky and De Hartmann with *Der Gelbe Klang* (1912).

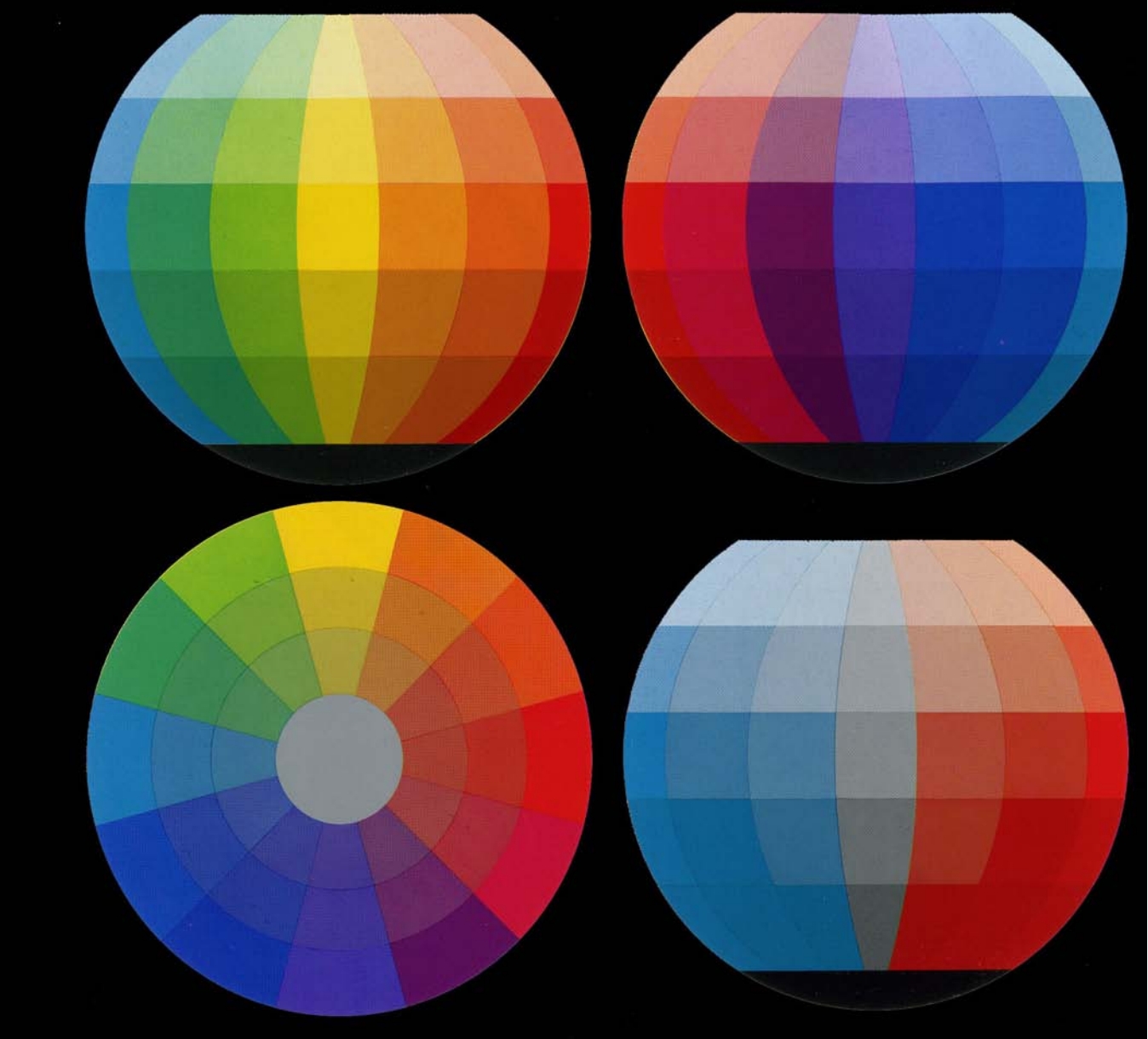


Figure 7

Kandinsky and de Hartmann, along with the revolutionary choreographer Alexander Sacharoff were a multifaceted triumvirate in Munich in 1910. Their all-night sessions of collaborative improvisation were the conceptual beginning of the one-act opera *Der Gelbe Klang*, by Kandinsky and Hartman. With de Hartmann at the piano, Kandinsky shouting out dramatic scenarios from Russian folklore, and Sacharoff interpreting both in dance, the exploration of the interrelatedness of creative media exemplified true synaesthetic collaboration.

Although coloured music is not without inherent interest, the idea that colour and music can be linked into each other relies on a fallacy that universal translation exists among sensory modes. Design education has historically enquired and challenged our perceptions of the world and the way in which we receive information and research continues to search for truth into the functioning of the brain.

The quest for understanding into the phenomenon of synaesthesia and sensory perception has been developing since the early eighteenth century. Prior to the Bauhaus school of design, the Gestalt school of psychology, established by German psychologist Max Wertheimer in 1912, and later joined by Kurt Koffka and Wolfgang Kohler, established the idea that the "whole is more than the sum of its parts" (Koffka, 1955, p.176), which outlined the fact that humans assemble sensory experiences by perceiving them in their entirety rather than as disjointed parts. They believed that human beings have natural abilities to organise perceptual information and experiences based on the need to make sense of their world.

The predominant area of synaesthesia research has been within a neuro-scientific context and has investigated trans-modal association via case studies with a wide demographic representation. Between 1919 and 1933, research associated with synaesthesia was discussed within the teaching ideologies at the Bauhaus School of Design in the context of creativity. The most researched forms of sensory cross-over appear to be audio-visual, both in practical experimentation and conceptualisation.

The Bauhaus did not have a specific doctrine on colour. Each lecturer had

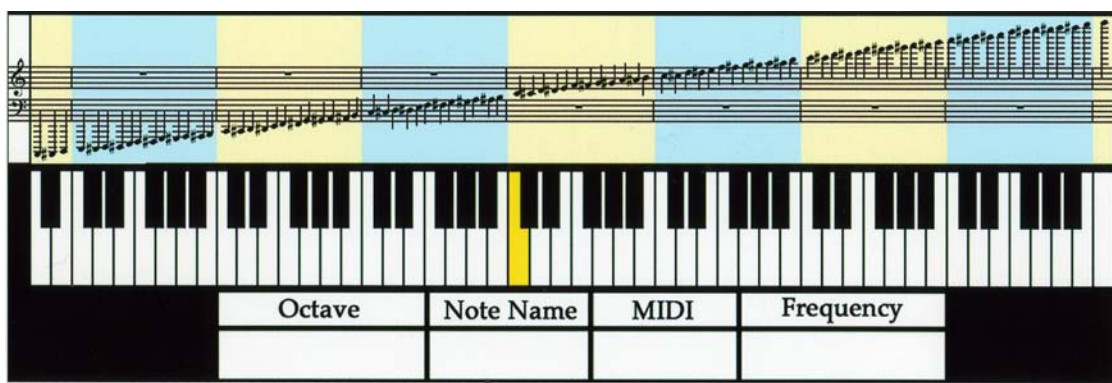


Figure 8

an individual emphasis. The Bauhaus painters Johannes Itten, Paul Klee and Wassily Kandinsky mainly drew their summations from nineteenth century historical theories of art and colour. Ostwald, another Bauhaus teacher, ignored the subjective effects of colour which formed the basis of the doctrine of contrast. He aimed to make colours measurable so that they could be ordered like tones in music, unlike Kandinsky who had a more formal conclusion to the association between colour and music: "...the artist's repeatedly cited synaesthetic ability, the ability to establish necessary connections between colors, forms, sounds or other sensory impressions-for example, to relate, as a matter of rule, a musical note to a particular color" (Fiedler & Feierabend, 2000, p.265). Kandinsky discovered his synaesthesia whilst attending a performance of Wagner's opera, *Lohengrin*:

The violins, the deep tones of the basses, and especially the wind instruments at that time embodied for me all the power of that pre-nocturnal hour. I saw all my colours in my mind; they stood before my eyes. Wild almost crazy lines were sketched in front of me (Gage, 2006, p.179).

At the Bauhaus school, Kandinsky based much of his teaching on a piece of his work *Über das Geistige in der Kunst (On the Spiritual in Art)* which from 1925 onward, he extended into a phenomenology of colour-form liaison. He formulated a pattern of contrasting pairs to theorise colour such as presence-absence, light-shadow, bright-dark, strength-weakness, warmth-coldness, nearness-distance, repel-attract, active-passive. At a later stage Kandinsky added the components of smell, taste, music and colour harmonies to his ideas on colour theory.

Aspects of Klee's teaching at the Bauhaus were reflections on the psychology of perception and translations of musical structures into visual artistic forms. Viennese composer Josef Matthias Hauer sketched a colour circle based on the division of the octave into twelve semitone steps (see Figure 6), in which he declared all notes to be of equal value, contrary to the laws of tonality. Later Itten echoed this with his colour spheres in 1921 (see Figure 7). The colour spheres represented the "elementary shape of universal symmetry" (Itten, 1921, p.114), a development of his earlier circular depictions of a twelve-hue colour circle, which Itten considered



Figure 9



Figure 10

inadequate for complete colour classification. Although the Bauhaus did not provide a conventional musical training, music was used in the educative process as a specific function in learning to understand the laws of form. "Numerous transpositions of musical scores give evidence of this search for the laws of form and color" (Fiedler & Feierabend, 2000, p148).

On recognising vision's and audio's compatibility with creativity, the relationships of two or three voices to one another were seen in relation to length and height by their location to one another. In Klee's paintings, the rhythmic and dynamic process is emphasised by means of a systematic horizontal arrangement. The staves used in sheet music, which are arranged both horizontally, corresponding to a temporal, that is a metrical musical articulation, and vertically, to indicate musical pitch as exemplified in the table of musical pitches (see Figure 8). This graphic presentation of music fuelled visual thinking and gave Klee the idea for his line pictures of the 1920s (Fiedler & Feierabend, 2000, p.150).

These examples from the Bauhaus demonstrate that there is some consequence to creative output relative to multiple sensory stimuli. Experiments were set up by some of the eminent teachers at the Bauhaus, namely Itten, Herbert Bayer and Kandinsky, with their students. The students were encouraged to think about design in a theoretically self-conscious way and were encouraged to be critical thinkers. The term 'translation' appears in Kandinsky's Bauhaus textbook *Point and Line to Plane* (1979). The book refers to the act of drawing correspondences between graphic, linear marks and a range of non-graphic experiences, such as colour, music, spiritual intuition and visual perception: "...every phenomenon of the external and of the inner world can be given a linear expression - a kind of translation" (Rebay, 1979, p.68).

Such theories from the Bauhaus assist a disadvantaged minority of non-synaesthetes. A neuroscientist from the University of Manchester, England, John Cronly-Dillon devised a computer system that translates visual images into musical tones. The purpose of this development is as an aid for blind people: "A horizontal line is a rapidly repeated single note, a vertical line is a chord, and oblique lines are represented by ascending or descending scales" (Cronly-Dillon, 2000, p.1). Cronly-Dillon creates levels



Figure 11

of complication where he can add voices for more intricate scenes, creating a musical melody that he compares to a baroque fugue. He aims to develop a basic language which, in the test runs, enable Cronly-Dillons' four blind subjects to decipher static pictures of lamp-posts, trees, cars and houses. He envisages a time when "the blind will navigate landscapes with the aid of a portable video camera linked to a tiny computer that converts sights into visually meaningful sounds" (Cronly-Dillon, 2000, p.1). While this system is significant to the blind population, these learning and perceptive tools offer an educative process for the general population based on synaesthetic principles.

Hermann von Helmholtz, in his parallel studies on optics and acoustics, described the stimulating effects of colour and music. Helmholtz was a forceful critic of the colour-music codes of others, on the basis that the span of the spectrum from red to violet was too small to be compared to a complete musical octave.

Frantisek Kupka painted *Piano Keyboard / Lake* in 1909, which was directly based on the Helmholtz colour-music code. A hand is shown playing an A-major chord at the bottom of the canvas while the colours are almost exclusively tonal varieties of the Helmholtz primaries. The waves in the painting can be interpreted as metaphor for the wave characteristics of sound and light (see Figure 9).

In his research on synaesthesia and creativity, Cytowic interviewed and examined David Hockney in relation to synaesthesia:

He has synesthetic associations among sound, color, and shape. It was not, of course, evident in the paintings that made him famous, as these are "silent" works. Costume and stage sets for the Ballet de Marseille and Glynbourne and Metropolitan Operas revealed a new element in Hockney's work due, in my opinion, to his synesthesia, given that he explicitly conceived his designs *to the music* (Cytowic, 2002, p.312).

During Cytowic's two day examination of Hockney in September 1981, Hockney discussed how he responded to the music when designing:

I find that visual equivalents for music reveal themselves. In Ravel, certain passages seem to me all blue and green, and certain



Figure 12



Figure 13

shapes begin to suggest themselves almost naturally. It's the music that attracts me to doing the set designs rather than the plot (Cytowic, 2002, p.312).

Cytowic discusses that for Hockney, colour and sound create space (Cytowic, 1993). Hockney's gradual hearing loss triggered differences with his sense of visual space thus producing a shift in his art from painting to large collages of smaller photographs assembled in a Cubist style. His photo-collages explored the development of deep space out of component parts of pictures containing shallow space (see Figure 10).

There are many interpretations of how synaesthesia occurs in human beings. During his Reith Lecture series in 2003, *The Emerging Mind*, Vilayanur S. Ramachandran states, "Maybe in some people there is some accidental cross-wiring" (Ramachandran, 2003, p.6). Francis Galton pointed out in the 19th century "that some people who are perfectly normal in other respects have one peculiar symptom, they get their senses mixed up and that is every time they hear a particular tone they see a particular colour" (Ramachandran, 2003, p.5). Simon Baron-Cohen, Ramachandran and Galton all recognised the theme of this phenomenon running in families. There are emerging theories to suggest that synaesthesia is more prevalent in creative people (Ramachandran & Hubbard, 2001). The cross-wiring hypothesis could explain this in the following ways:

It has often been suggested that concepts are represented in brain maps in the same way that percepts (like colours or faces) are. One such example is the concept of number, a fairly abstract concept, yet we know that specific brain regions (the fusiform and the angular) are involved. Perhaps many other concepts are also represented in non-topographic maps in the brain. If so, we can think of metaphors as involving cross-activation of conceptual maps in a manner analogous to cross-activation of perceptual maps in synaesthesia. If this is correct then perhaps this serves as an explanation of a higher incidence of synaesthesia in creative people (Ramachandran & Hubbard, 2001, p.17).

This observation may shed some light on fashion design and meaning embedded in the origins of language, which, according to Ramachandran



Figure 14

and Hubbard, derive from synaesthesia. They have specific examples where the origins of proto-language, exemplify the possibility of natural constraints on the ways in which sounds are mapped onto objects. The *Kiki Bouba* image (see Figure 11) is used as a test to demonstrate that people may not attach sounds to shapes arbitrarily:

Due to the sharp inflection of the visual shape, subjects tend to map the name *Kiki* onto the figure on the left, while the rounded contours of the figure on the right make it more like the rounded auditory inflection of *Bouba* (Ramachandran & Hubbard, 2001, p.19).

“The sharp changes in visual direction of the lines in *Kiki* mimic sharp phonemic inflections of the sound as well as the sharp inflection of the tongue on the palate whilst saying *Kiki*” (Ramachandran & Hubbard, 2001, p.19). The *Kiki Bouba* effect was discovered by German-American psychologist Wolfgang Kohler in 1929 and further explored by Werner in 1934. According to Ramachandran and Hubbard, ninety-five per cent of people pick the left image as *Kiki* and the right blob as *Bouba*, even though they have not previously been exposed to the images.

The translation from the two dimensional form of *Kiki* and *Bouba* into three dimensional form is to be found in the work of contemporary fashion designers Yohji Yamamoto and Junya Watanabe. Adding to the idea that proto-language can be attributed to specific objects, Yamamoto experimented with wooden separates teamed with black wool producing an outfit containing cubist characteristics and reference to *kiki* (see Figure 12). The outfit identifies links between design and synaesthesia through the use of tactile information regarding sound, temperature and smell associated with the wood. One might question why the wooden outfit is clothing as it bears little affinity with the body despite the accessibility of the garment silhouette being a skirt and bodice. I read this as Yamamoto using fashion both as his art-form and as a form of synaesthetic expression. An association with the term *Bouba* can be recognised in Watanabe’s soft tactile spherical silhouette from red and yellow polyester fabrics (see Figure 13). The smooth and curved silhouette offers sounds of rustling and a feeling of weightlessness with a visible bounce. .

On a more fundamental level, the origins of language have been exercised



Figure 15

many times in fashion advertising where a particular emotion can be crafted through intelligent or witty choices using words, font, scale and colour to form a message. The global fashion consumer is also offered sensory awakening with powerful and provocative graphic imagery via the use of colour, words and composition on clothing. In the words of Toth and D'Amato (2003), "...creative designers have less than one second to establish a relationship between a person and a brand" (p.12). It is precisely this where synaesthesia may be employed consciously or unconsciously to achieve and strengthen a desired result. In the work of Katherine Hammet, the boundaries of visual language are pushed in her *Protest T-Shirt* range whereas the visual language of Diesel advertisements substantiate the idea of specific imagery used to lure the viewer into a given fashion environment (see Figures 14 & 15).

There will always be an element of synaesthetic reaction in people, synaesthetic or non-synaesthetic, creative or not and whether a person can stimulate the use of the relevant hemisphere of the brain to engage in synaesthetic enquiry is a much researched question. In addition to the *kiki boubu* theory, there are some references that indicate cross-modal correspondences underlying synaesthesia may be universal (Cytowic, 2002, p.277).

Sensory similarities between synaesthetes and non-synaesthetes exist as they concur about audio-visual dimensions. For example, low-pitched, soft sounds are dark in colour, as sounds get higher in pitch or louder, the colours become brighter. Dark coloured forms that are large and round are associated with low sounds, whereas smaller but brighter coloured forms with sharper contours have a link with higher pitched sounds. According to Day (1996), these connections exemplify synaesthetic perceptions being characterised by the likelihood that human thought is largely metaphoric: "Hearing is the sense most frequently expanded by both sensory synaesthesia and synaesthetic metaphors" (Cytowic, 2002, p.278). Day also concluded that language development has probably been influenced by synaesthetic visual hearing, which antedates language (Cytowic, 2002, p.278).

Richard Cytowic points out in his book *Synesthesia: A Union of the Senses*



Figures 16 & 17

that there are diagnostic criteria that define a synaesthete, all of which emphasise the fact that there is a dominant level of emotional interplay to the work of a synaesthete in a creative context. Whilst Cytowic draws no attention to links between synaesthesia and fashion design specifically, he researches creativity and synaesthesia, and subsequently indicates the intersensory association as being relatively inconspicuous.

In his paper, *Touching Tastes, Seeing Smells-and Shaking Up Brain Science*, Cytowic (2002) opens with a client case study. A subject named Michael, delays seating himself for dinner because "There aren't enough points on the chicken" (2002, p.8). Seemingly Michael sought a prickly sensation when he ate chicken and his exclamation was indicating that the chicken was not sufficiently cooked. Cytowic labels Michael as a *coupling synaesthete*, meaning a specific pairing of responses in uni-directional synaesthesia. A sweet taste caused Michael to "feel a cool, polished, curved surface in his hands, but handling a billiard ball would not elicit any flavour in him" (2002, p.8).

Michaels' synaesthesia is centred around gustatory and tactile response. More specific to design, is a representation of gustatory, visual and auditory synaesthesiae in *Her Bodies*, an exhibition by the artists Cindy Sherman and Vanessa Beecroft (2004). A glass table with approximately thirty place settings demonstrates a defined colour palette through the use of food, clothing and hair colour. Emphasis in the groupings of colour is such that the intensity increases and decreases, in the visual representation of the food and the other colour sources. The first six models, in three pairings facing one another, are semi naked but do not occupy a visual priority. The viewers' eye travels to the colour which seemingly becomes more concentrated towards the far end of the table. The food is suggestive of auditory response through its texture: crisp lettuce and apples, plump tomatoes and ripe red cherry tomatoes. The staged environment projects performative live eating, illustrating a synaesthetic liaison between colour, sound and taste. Little emotion is displayed in the faces of the subjects but one is led to assume that the dining experience is one of pleasure exemplified by the ripe healthy visuals of the food, the fullness of the colours, orderliness, cleanliness and general visual harmony (see Figures 16 & 17).



Figure 18



Figure 19

To further gustatory delight, and indeed disgust, the Surrealist artist Meret Oppenheim's *Le Dejeuner en Fourrure* which literally translates to *Luncheon in Fur* (see Figure 19), is a fur cup and saucer which was generated following a conversation with Picasso about how everything could be covered with fur. As with many Surrealists, the primary activity of combining at least two unrelated objects into an artwork transpires into a visually pleasing piece with connotations of discontentment. The visually pleasing and sensual pleasure that is to be derived from the touching of fur, combined with how fur would "repel the tongue" if the spoon and cup were raised to the lips, forces the viewer into imagining how the cross over in sensation might feel (Heyrman, 2005, p.21).

The angst experienced at the thought of tasting fur, can be achieved in ways other than gustatory displeasure. The agony of the front twist in Rei Kawakubo's 1994 dress creates a "monstrous lump" (Fukai, Suoh, Iwagami, Koga, & Nie, 2006, p.651). Kawakubo exhibited the new idea of a dress that appeared pre-worn, shrunk and enhanced with extra fabric bundled up and stitched together (see Figure 18). The result is "a dress with an air of unsettling tension" (Fukai et al, 2006, p.651). There are many factors which I consider sensory provocation with limited satisfaction as an outcome. Visually heavy and rough, the texture of the fabric adds to the clumsy, tortured and uneasy disposition of the garment. The tactility and suggested smell of musty blankets would add to the displeasure of the garment. I observe that this garment elicits many levels of synaesthetic response. There is a beauty in its simplicity, but buried beneath the surface are complexities with synaesthetic potential. To generate a response of repulsion and disgust has been successfully tried many times with the use of slogans, and provocative advertising, but rarely in the form of irritating the senses with acrid visions and tasteless smells as this design work demonstrates.



Figure 20



Figure 21

LINKS BETWEEN SYNAESTHESIA AND FASHION

Tuneful Shoes and Discordant Hats

Fashion engages with visual consumption and thus places emphasis on visibility, viewing and seeing. The visual exchanges of life occur in an environment of hyper-visibility. Perhaps the most extreme example is SHOWstudio, an online broadcasting company. "SHOWstudio is based on the belief that showing the entire creative process—from conception to completion—is beneficial for the artist, the audience and the art itself" (Martin, 2007).

SHOWstudio has consistently unveiled new territory with its experimental interactive projects, involving its global community of dedicated viewers to respond and contribute to its projects. Led by Nick Knight, a leading photographer, SHOWstudio undertakes unique collaborations with the world's most influential photographers, artists, designers, writers and cultural figures. The design process is documented in live performance, film and a blog, all shown in real time on the SHOWstudio website. The progress of each collaboration is documented as it occurs, including pre-production meetings, stylists' selections and live photography shoots, communicated immediately via the blog, and discussed and evaluated on the available on-line forum.

With its commitment to pioneering online fashion media, SHOWstudio is the first fashion media to offer this immediate connection between the often guarded insider world of high-end fashion and its international audience. The online camera availability allows viewers to access live fashion twenty-four hours a day. "It is SHOWstudio's intention that this two-way communication of fashion process is every bit as engaging as the final result" (Martin, 2007).

During 2006, SHOWstudio commenced a series of projects exploring synaesthesia, entitled *The Sound of Clothes*, which aimed to explore a range of audio possibilities in response to fashion. Leading artists and musicians collaborated to investigate sounds emanating from specific images, to interpret and document sounds garments could make, and to



Figure 22

offer viewers the chance to interact and create their own sounds from contemporary fashion imagery and product.

Digital artist Daniel Brown accepted an invitation to respond to a selection of the “delicate, layered and translucent” garments (Martin, 2007) from the Nicolas Ghesquiere’s spring / summer 2006 collection for Balenciaga. Based on interactives, Brown proposed a series of collaborations developed from photographs of the garments. Using the idea of “pictures for the blind” as a stimulus (Martin, 2007), a collaboration with sound designer and synaesthete Nick Ryan aimed to interpret the garments through sound. To successfully exhibit the delicacy and transparency of Ghesquiere’s garments, they were shown on illuminated mannequins (see Figure 20). Ryan and Brown responded to the garments through analysis of texture and shape, attributing unique sounds to both during which time a graphical score was generated (see Figure 21): “...the ‘annotated’ image, with colour boundaries and numbers corresponds to an ongoing text list of descriptions of each sonic area” (Martin, 2007).

During the interactive planning stage, the colours were random as photographs were masked in preparation for the score. The plan to later change colours to correspond with sounds, produced a synaesthetic link between colour and sound resulting in a synaesthetic score. Ryan and Brown referenced the garments in photographic form after the initial photography shoot which enabled them to suggest that their score could become a method for further synaesthetic response:

We’re also thinking of adding some indication of ‘flow’ on this ‘score image’ in the form of arrows. This would help us determine a temporal guide to how a user might ‘play’ the photograph as we build the interactivity. This will in turn inform how the interactivity works and how the sound and music play out (Ryan, 2006).

The interactive nature of SHOWstudio projects has relied on digital technology enabling access to response forums. *Blow, Clap, Talk and Hum* (2006), a project initiated during *The Sound of Clothes* series of experiments, featured an extensive selection of accessories including shoes, bags, rings, hairpieces, necklaces and masks, from the autumn/winter 2006/2007 designer collections (see Figure 22). The



Figure 23

SHOWstudio project, designed by Ross Phillips and Marie O'Connor, was a series of inter-actives that relied upon specific noises created by the viewer. The playful inter-actives created a duality between still and moving image using techniques that brought still-life images of accessories to life through interaction with a subject:

Each one of the four different inter-actives, encourages the viewer to make specific sounds –'blow', 'clap', 'talk' or 'hum'- into a microphone. These noises then activate a selection of accessories, themed 'stories' that take their form in a dress-up model, an animated crumpled paper sequence, a voice-activated selection of varyingly sized jewellery pieces and an animated shoe sequence, complete with 'footstep' audio (Martin, 2007).

A combination of *subject and audience* and *subject and designers* have been the focus of the synaesthetic collaborations within SHOWstudio, a luxury afforded by the medium itself and the nature of the high profile artists collaborating on the projects, themselves an attraction to a wide creative audience. The idea of subject response which does not follow authentic synaesthetic testing, has been driven purely on the premise that synaesthesia can be introduced as a concept to an otherwise uninformed group.

Philosopher and phenomenologist Maurice Merleau-Ponty rearticulated the relationship between subject and object, self and world, among various other dualisms. Interestingly, Merleau-Ponty points out that temperature could condition a response which could challenge either the visual, or the sensation of touch, to provide the response to the temperature stimulus:

The form of objects is not their geometrical shape: it stands in a certain relation to their specific nature, and appeals to all of our other senses as well as sight. The form of a fold in linen or cotton shows us the resilience or dryness of the fiber, the coldness or warmth of the material (Langer, 1989, p.267).

Investigation using dualisms in fashion design have explored a form of resistance to globalisation or disaffection with political processes, offering a form of informational exchange. For a mock journey to the altar, Yuka Oyama designed a wedding gown from multiple white plastic sandbags

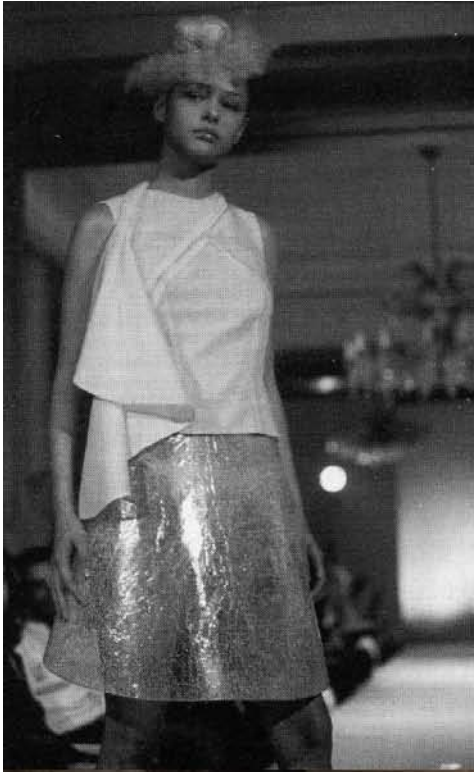


Figure 24



Figure 25



Figure 26

suspended from industrial strength hooks via a padded metal belt and headpiece. The dress weighed over one hundred and seventy pounds. The journey to the altar necessitated each sandbag being moved individually by hand and the lengthy journey to the altar took nearly three hours, during which time, fifteen other couples were married. The weight apparent in the dragging of the dress along the tedious journey to the altar, the sound of the dragging, the smell of the street as the materials gathered and absorbed the street heavily influenced the piece. It was infused with a parallel sense of angst and unrest. As part of my analysis, I surmise that the use of white injects the antithesis of purity and serenity, particularly as the dress would become less white along its journey (see Figure 23).

A glass skirt by Kei Kagami (see Figure 24) exposes the inner layers of the garment presenting an exposed yet protected view of the body. The cold temperature, heavy weight, hardness of glass and the sound produced if it shattered upon the ground, suggests a hostile fashion environment. Both wearer and audience experience a heightened level of sensory awareness through the unique tactility and weight. In addition to the *event* of the garment, a transformation can occur at any time to create a juncture between fashion and synaesthesia. Off the body, this solid and heavy garment haunts the closet with its impossibility of compacting, creating an installation. As mythologist Joseph Campbell (1986) highlights in his discourse on reason, that what we seek is not the meaning of life but the "experience of being alive" (p.118), and through the design, wearing or viewing of this garment, an analogy to the fullest experience of living can be applied.

Feather Dress by Alexander McQueen, from his spring / summer Voss 2001 collection (see Figure 25) displays an innate fluidity and weightlessness, responding to the environment with movement of the fibres. Koda (2001) says "...the McQueen design suggests a chimerical pastiche: it is definitely avian, faintly reptilian, and possibly mammalian" (p.91). The dress partially obscures the face, with the feathers directly contacting the mouth, nose and eyes, but unlike Oppenheims's *Luncheon in Fur*, there is not a choice in subjecting one's mouth and nose to this sensation. The idea of nasal irritation, sneezing, ingesting of feathers, guttural discomfort and asphyxia, surround the top



Figure 27

half of this dramatic silhouette, whilst making reference to tactile sensual pleasure from the shoulders down. The variety of synaesthetic reaction in this piece is broad, excluding perhaps only the sense of sound.

Perhaps inspired by Pop Art, artists Bridget Riley and Victor Vasarely of the 1960's, the young Japanese design team of Masahiro Nakagawa and Rica (1995) experimented with Op textiles to produce a pant-suit from textile lengths using a white mesh print on black nylon (see Figure 26). The obvious optical illusion that is incorporated into the print belies the eye with body distortion with the mono-breast and attention to the genitalia. The trickery is short lived, as study of the silhouette would soon reveal the truth. There is a visual tangling in addition to visual rhythm incorporated into the textile of this piece. The variation of meter due the scratchiness of the lines challenges the visual comfort level of the piece. The simplicity of the silhouette combined with the accessibility of the garment shapes allow the textile to travel around the sensory spectrum and tease the audience at will.

One could argue at this point whether there are in fact only five senses and not more. On review of design work by Oyama and Kagami, it appears that a combination of two or more senses contribute to a more complex experience. The combination of senses points to the idea of an additive experience, where none of the senses have lost the identity of their singular form, but instead, strengthened during the liaison (Cytowic, 1993, p.92).

Recent research by Durie (2005) suggests that depending on how we divide our sensory systems, we could have many more senses. If we classify the senses by the nature of the stimulus and then sub-divide those further we could have multiple senses:

All these groups of sensation require quite different sensory systems...we could as easily subdivide these further, and define a *sense* as a system consisting of a specialised cell type responding to a specific signal and reporting to a particular part of the brain (Durie, 2005, p.34).

Durie posits that senses alone do not shape our world, but combined with feelings and perceptions, organised brains can process raw sensory data. If perception goes beyond sensation and involves memory, early



Figure 28

experiences and a higher-level processing, then designers could be consciously activating this knowledge whilst addressing design briefs:

What you hear, for example, is not just a simple sum of the sounds collected by each ear, but a bigger picture. Various processes come into play, some of which allow the brain to tell the direction of the noise. Even more complex processes enable us to screen out one sound when attending to another...The implication is that we were always "listening" to ambient sound but not always "hearing" it, except when it suddenly becomes meaningful. Our perception goes far beyond the bare sensation (Durie, 2005, p.35).

While clothing has become part of the environment in cyberspace visual fashion presentation, sound and other areas of the sensorium gained similar priority. Issey Miyake's website reveals an interactive show for autumn/winter, 2006/2007, activated by the viewer's mouse to a series of industrial sounds accompanied by an eerie if not harsh atmosphere. The clothing viewed through sections of de-misted glass reveal armour-like leather suitable for an urban landscape devoid of sunlight. The slow pace of the show and the demeanour of unfriendly models strip the wearer of any primary role in this powerful fashion show. When pausing to study the garments, the site remains dormant, just breathing and murmuring like the sleeping mythical creature it is. The designs, devoid of joy but not exquisite cut, feature organic shapes, cut and strapped leather, fur, parallel lacing and heavy weight glossy fabrics to suggest a cold exterior, but luxurious interior. The garments are silent in the urban sound-scape, but the overall atmosphere suggests garments which would splinter or crack and be unyielding to the touch. The heavyweight layering implies winter, and the smooth but obdurate surface of the fabrics suggest a staunch and inflexible response to the movement of the wearer. However, with the name Issey Miyake comes an inherent understanding of beauty and innovation without ostentation. Tactile perceptions reveal excellence and superiority.

If cyberspace and technology enhance the visual domination of fashion whilst allowing a supplement of sensorial response, then exploration in relation to synaesthesia has a value. A question arises as to the representation of garments in a cyberspace environment being relative to the *actual* garments which hang on the rails in a store. If cyberspace



Figure 29

fashion can present an attitude where the performative aspect proposes a variation in style, then the question of reality arises in relation to a viewer response. My evaluation is that cyberspace has become a new *styling* mechanism for designers to categorise their work in a medium unavailable in real-life. A coexistence of real-life and virtual-reality in a fashion context, exposes people to a greater opportunity for synaesthetic reaction and hence an augmentation of sensorial recognition.

Pia Myrvold is a pioneer in the experimentation of cyberspace fashion. Myrvold offers more than her couture inspired range via her website www.cybercouture.com. The ideas behind the collections are circulated using sounds, images, text and film, to provide a new dimension to her design. Inter-actives enable the wearer to design the fabric from Myrvolds Nordic inspired digital print ideas:

The wearer's direct involvement in the garment's construction turns the interactive platform into a hands-on creative process inverting the initial principle of authorship as the designer no longer assumes full responsibility for the finished product. Part of this process dislocates the immediacy that characterises contemporary fashion giving the means of gradually customising their wardrobe according to specific tastes (<http://www.cybercouture.com>).

Whilst not specifically looking at synaesthesia and fashion as a combination, Myrvold's philosophy of incorporating emotional responses and wearer involvement provide the opportunity for her collections to expose the wearer to synaesthetic experiences more readily than fashion would otherwise traditionally facilitate.

Cyberspace enables fashion designer Simon Thorogood to use a virtual runway with virtual models to present his clothing to a global audience in any venue imaginable, whilst providing the viewer with scope to interact with the show. The digital runway uses a series of pressure pads linked up to switches which, when walked upon, activate a key on the keyboard to trigger the software, which simultaneously projects the models onto a gallery wall. The images on the simulated runway not only reveal garments, but the research behind the collection, thus revealing the design process to a global audience whilst employing synaesthetic sensitivities through combinations of sensory stimulation (see Figure 27).



Figure 30



Figure 31



Figure 32

Thorogood has been directly involved with sound and fashion collaborations, specifically his fashion show *Whitenoise* in 1998 (see Figure 28), held in Brick Lane, London. The work addresses issues concerning generative systems and chance procedure in musical composition fused with an aesthetic of primitive computer graphics. The digital art group *Spore*, was commissioned by Simon Thorogood to create a complimentary artwork to his collection for this show:

40 Mac SE30 computers were placed on either side of mannequins hung from the ceiling. These displayed large text made up of small text, the large text forming words across the 20 computers, slowing scrolling left. A lighting sequence shone subtly changing colours on the mannequins, and at the private view Barbed provided a soundtrack (http://www.juliefreeman.co.uk/mt_archives/cat_spore.html).

The design work of Jean Charles de Castelbajac reflects a more literal interpretation of concepts, and is devoid of any reliance upon technology for its enjoyment or delivery. Castelbajac has been reported in the world's fashion press with enthusiasm even though his collections do not always present very wearable propositions. He incorporates metaphor, imagination and innovation, leading one to wonder if indeed Castelbajac is a synaesthete himself. His mix of ideas and high performativity incorporate multi-sensory stimulation on many levels. In his 1992 winter collection (see Figure 29), Castelbajac featured layering, with coats, jackets and knitwear using a combination of thick woollen fabrics teamed with softer knits to produce a visual of pasta:

Castelbajac did not miss a beat – from the Playboy bunny ears to Micky Mouse ears. Sylvester, the cat was also seen, together with 'Gone With The Wind' written on a fan....But, don't forget the clothes! Everything was wearable, geared towards a very young audience...So, we come once again to the importance of music in a catwalk presentation, on how it sets the tone and adds to the drama (Davis, 2007).

His implied use of taste in the visual translation and evaluation of the garments represents a gustatory and visual cross-modal association. Maybe Castelbajac's reference to pasta was consciously non provocative



Figure 33

in relation to the senses. As a food pasta is not a gustatory challenge with regard to flavour. However, through the addition of vegetables and sauce to pasta, one introduces colour, texture and taste. A parallel introduction of accessories and outer layering to these pieces may have been Castelbajac's intention for the consumer. With a wide variety of ideas and magnificence of execution, a collection of gastronomical victuals appears to be an outcome of choice, but the blandness in food type deny the opportunity of describing this work using adjectives generally attributed to food.

In his series *Shoes to Eat*, Tokio Kumagi used hyper-real images of beef and ice-cream sundaes (see Figures 30 & 31), two distinctly provocative choices. The shoes were made using Japanese plastic food sample production methods. With the mingling of the gustatory and visual senses, there is more potential for the response of repulsion due to the close association of food belonging to the mouth and inner body once past the lips. The notion of food positioned on the exterior of the body may cross cultural boundaries, as well as cause an aversion due to taste and distaste. The design choices of sundaes, and the less attractive idea of uncooked meat, with which to replicate and use as a surface on footwear invite a broad range of synaesthetic response. According to Cytowic taste has no fatigue, "...the taste sense does not wear itself out like smell does. After sniffing flowers a few times, for instance, you can no longer smell them. Taste does not fatigue with repetition" (Cytowic, 1993, p.67). Based on this theory, a person with a strong representation of visual-gustatory synaesthesia might find the shoes either repulsive or delicious.

The footwear product sector emerges as entirely secondary with the work of Kumagi, unlike *Barefoot in the Grass* where the viable option of shoes is foremost. The imagined sensation of walking in Beth and Herbert Levines' *Barefoot in the Grass* sandals from 1968 (see Figure 32) conjures up a variety of synaesthetic responses. The rubbery visual impression one receives implies that the shoes do not look as though they would be silent when worn for walking nor would they smell like grass. The perception of sound that would emanate from the insole during walking could reflect the source materials. The image of comfort and tactility maybe a conscious design choice to titillate the sensory receptors on the soles of the feet.



Figure 34

Barefoot in the Grass is neither inconspicuous nor subtle, posing the question of what would be worn with the shoes to best enhance such a visual treat, the majority of which would be hidden. Once worn, the ocular transition would offer edges and tendrils of *grass* only. The visual delight of the unworn footwear submits the viewer to a fuller sensory experience.

Historical involvement of the body in multi-sensory function has been overlooked until recently in the context of fashion. Comfort of the body is more fully considered in the context of fashion, including accessories, applied scents, beauty regimes and life-styles. True multi sensory awareness is highlighted by Joanne Eicher's introductory chapter in *National Geographic Fashion*:

Dressing the body involves a wide variety of activities that include using all five senses as we prepare for, participate in, and end each day. We bathe, apply scent and cosmetics, comb or fix our hair, put on garments or jewelry, and hear the sounds of shoe cleats, bangle bracelets, rustling taffeta, or the swish of corduroy. In addition we taste lip pomade or lipstick, appreciate the colours of our own and others' garments, and feel the texture of many items that we wear (Newman, Eicher & Mendes, 2001, p17).

A further example of contemporary fashion embracing the wider sensory systems is evident in *intelligent fashion* where Quinn (2002) exposes the revolutionary interface between contemporary fashion and technology as the exploration and introduction of the senses beyond the visual. It exposes the fashion designers and consumers to multi-sensory stimulation and therefore, synaesthetic potential.

These visionary ideas and garments have wireless electronic devices integrated fully into the fabrics and garments enabling the wearer to surf the web, monitor vital signs and administer medication or scent through or on the surface the skin. Voice recognition software and body movement trigger sensors to activate these systems which are simultaneously programmed to respond to other networks in the urban environment. Jenny Tillotson designed the *Smart Second Skin* dress (see Figure 33), a prototype garment that delivers aromas to different areas of the body. It was developed alongside a belief by the artist that the sense of smell



Figure 35

receives the least attention in our culture. The dress is cabled with veins, mimicking the human body, made of medical tubing and fastened at the ends with surgical clamps which both secure and release coloured scents. Of her creation, Tillotson says: "The dress paves the way to an expanded life, making the most of what our senses have to offer" (Smith & Topham, 2005, p.157). She adds:

...it increases creativity, expressions and visions, sparks little reminders, expands color, texture, sounds and taste, pushing the boundaries of the senses we didn't know we had...it transforms negative mood states into good 'scentsations,' releasing scents to help sleep, boost confidence, relax, energize, arouse, increase self-esteem, expand the imagination, and open your sense of wonder (Smith & Topham, 2005, p.157).

Concise functionalism and non-use of ornamentation define Yeohlee Teng's approach to fashion as being quite the antithesis of many fashion designers. Critics of Teng's work state "that her purist pathway divests fashion of fantasy, an element at the epicentre of many designers' work" (Quinn, 2002, p.17). Without the escapism provided by fantasy evident on many levels in fashion design, there is a suggestion of sensory blandness with the austere and limited palette. Both Teng and Hussein Chalayan revolutionise form and function with their fashion design, often taking their inspiration from the urban environment and the relationship the body has with it. Chalayan explores principles that are visual and intellectual, tracing the essence of urban structures and interiors through tangibles such as clothing and furniture with abstractions such as beauty and feeling. Chalayan's work is imbued with references to visual rhythm through his use of repetitive line sequences and unorthodox materials and textures. His wooden skirt, part of the *After-words* collection, was composed of concentric wooden rings which expanded like an accordion into a skirt (see Figure 34). His experimentation with other materials such as fibre-glass has also been used with skill, allowing an integration of innovative ideas into wearable fashion propositions through combining the unique materials with fabrics.



Figure 36

DESIGN PROCESS – SONATA

Wilting Whites and Juicy Modal Keys

During the initial stages of the design process I researched areas of *actual* sensory response, with little reference to *implied* stimulation. Designing whereby I was creating a sound or smell within a garment became a short lived adventure with an abrupt ending and too little room for ongoing analysis. Meeting expectations of sound were less open to individual interpretation and therefore further stimulation. Similarly, other early experiments engaged with the idea of more literal sound, taste and smell processes within garments, but my evaluation of these was such that more subtle suggestion had to be employed to release freedom of interpretation into wearable fashion propositions. After critiquing the work of other fashion designers who reference synaesthesia in their work, I now build upon the idea of implicit sensory response. Employing my personal design philosophy as a research tool, I explored and responded to the scale of life aiming to integrate the natural connections between history, creative energy and the *rhythm of being*.

Based on the premise that in our multiple minds, the cognitive mind is responsible for reasoning, and the emotional mind is attracted to and builds upon experiences (Cytowic, 1993, p.222), interpretation is entirely possible if synaesthetic design outcomes are not declared prematurely. An aesthetic based on synaesthesia may only be partially meaningful to a general audience, whilst leaving them in a state of sympathetic appreciation but not fully comprehending the inspiration. Cytowic (2002) points out that this matter can be an advantage as the viewer can be transported to a transitory place in self-awareness regardless of understanding creative work.

During the design process, I critiqued, through a hyper-sensed condition, historical and contemporary aspects of synaesthesia and fashion design, to produce a collection of garments named *Sonata* which addresses the relationship between the two. In addition to the translation of the musical term sonata meaning *sounded piece*, I have used sonata as a method of organising my design ideas and to introduce and manipulate specific themes such as visual rhythm, intervals, vibrational colour, emotion and

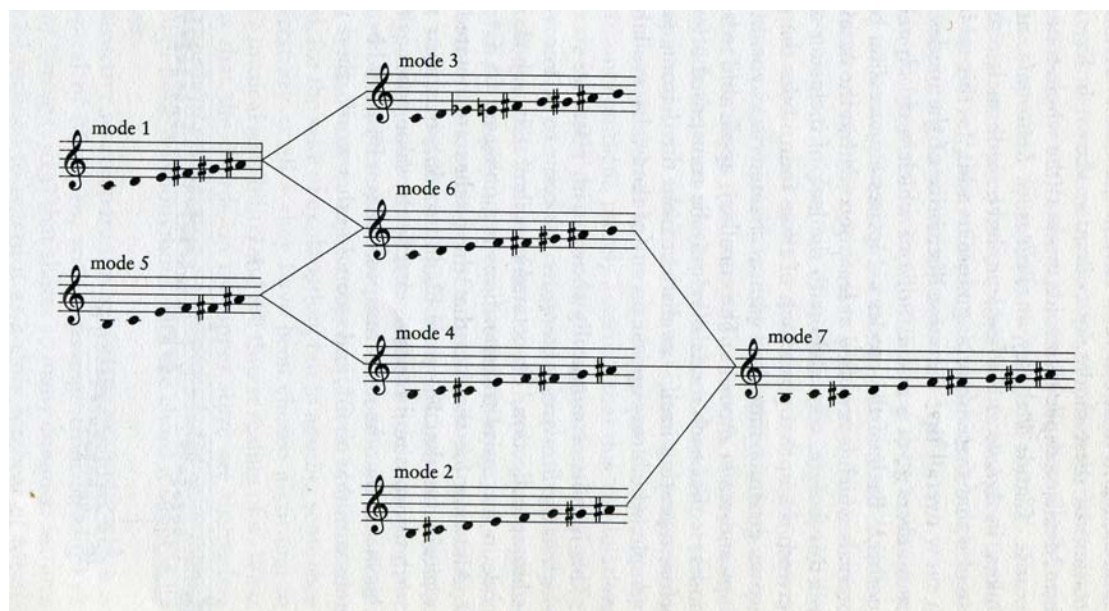


Figure 37

musical pitch, emotion and colour, aroma, implied and actual sound, along with colour tone association. The six separates of *Sonata* can be paired in numerous ways to achieve a variety of statements on synaesthetic influence on fashion design.

As a result of sensory stimulation, humans, as conscious animals, experience emotion. Our brains process the world around us through our senses and the scientifically proven areas of specific function within the left and right hemispheres of the brain. The right hemisphere of the brain not only deals with creativity and artistic consciousness, but is able to discriminate pitch, melody and rhythm, thus enabling auditory influence to irritate, relax or invigorate. Whereas the left hemisphere might analyse the auditory stimulation, the right will ultimately attract or repel the auditory influence. Scientific testing has been seeking to discover where the synaesthetic link is located in the brain. Results reveal that synaesthesia relies only on the left hemisphere, and depends on the limbic system (the emotional core of the human nervous system) for its expression (Cytowic, 1993, p.127-157). Cytowic's (1993) neuro-scientific experiments revealed that the brain cortex, responsible for representing reality, closes down when synaesthetic response is active (p.200).

The idea of our world resonating in harmony is appealing from a musical perspective, as it can influence moods and behaviour. Much of the body's biochemistry relies on rhythmic pulses and repetition for function, the heart being the most obvious. The idea that synaesthesia is more likely to be elicited by items belonging to conventional sequences (Rich et al, 2004, p.22), led me to build upon the idea that rhythm generally, whether it is created by sequences of numbers, blocks of alternating colour, stripes, rhythmic music, or simply noticing the rhythm of centrally painted lines on the road whilst driving a car, can invoke an involuntary response in an unstimulated sensory region. Experimentation with blocks of colour, fabric layering and stripes led me to discover how accessible to a non-synaesthetic and synaesthetic audience my proposition was.

Musician colleagues immediately began to improvise with sensory responses in colour and tone as well as purely responding to the rhythm. A variation in pairings of garments from *Sonata* produced a variety of new



Figure 38

responses. The pairing of *B-Flat Float* with *Harmonics* does not negate the synaesthetic meaning imbued within each, but the two garments also work together to form new associations. The softness of the silk fabric and silhouette in *B-Flat Float* cools down the energy contained within *Harmonics* releasing a variation in the rhythm and sound. Similarly, a general audience can experience responses from viewing the pairings in their illustrated combinations (see Figure 35).

CHROMATIC DISSONANCE (see Figure 36)

Fabrics stacked in layers were an integral method of developing ideas of rhythm and vibration through the visual of line repetition and vibrational colour in *Chromatic Dissonance* from *Sonata*. Listening to the colours and textures in the seventh piano sonata (third movement) by the Russian composer Sergei Prokofiev (1891-1953) played by Martha Agerich engenders a feeling of structured chaos, to which I responded with fabric combinations in both colour and texture. A stream of movement and fluidity interspersed with surges from musical dynamics refined my design details otherwise ordered by the predictability of the edges in the fabric stack.

Amassing fabrics into stacks and revealing the edges became a method to analyse rhythmic structure and tonal pitch through the visual assemblage of textures, weights and colours. *Chromatic Dissonance* was partly created from the underlying theories of tonal pitch and the association with colour. Whilst there have been numerous theories on colour-tone association, the work of Messiaen has largely influenced *Sonata* (but not exclusively) where the harmonic chart uses the twelve colours of the visible spectrum to the twelve semi-tones in a musical octave using modal and polymodal form and named *modes of limited transposition* (see Figure 37). In her discussion of musical language in *Olivier Messiaen*, Clara Huston Bell presents the format of *modes of limited transposition*:

Of chief importance is the wide variety of harmonic color provided by the modes; however, they form the basis of melody as well. Each mode divides the octave into two, three, or four equal intervals. Each interval then subdivides into an identical relationship of tones and semitones (Huston Bell, 1984, p.24).



Figure 39

Whilst Messiaen did not assign specific colours to tones, he allocated colours to modes. Mode numbers one, three, four and five have provided a level of fascination suitable to the overall musical language applied to *Sonata*. They are as follows: "Mode 1 reddish-violet. Mode 3 orange in a halo of milky white, speckled with a little red like an opal. Mode 4 dark purple. Mode 5 gray-pink-green dotted with gold" (Huston Bell, 1984, p.30).

The harmonics and their placement in *Chromatic Dissonance* create a visual bouncing, the desired effect for the fabric stack, which travels from the front hem of the garment, over the shoulder and down to the back hem. The coloured fabrics are bias cut to increase fluidity and reduce any possibility of fraying. After much wearing the garment may transition to another realm of presentation if fraying becomes apparent. The marriage of coloured layering, black and white stripes, a print with considerable visual movement, and spots, enhance rhythm and create a visual dance for the eyes.

While the visual dimension is important in musical association with *Chromatic Dissonance*, aromas implicit in the garment also exist. The sound of summer brings with it images and aromas associated with the season such as freshly mown grass, scent from an herbaceous border, birds and cicadas. The wearer may be the sole discoverer of the interior of a garment which may be intended to offer a synaesthetic opportunity. Emphasis in this instance marks a location in the composition which most strongly attracts the attention of the viewer or wearer and can be considered as both primary and secondary. The interior of *Chromatic Dissonance* is saturated with floral innuendo (see Figure 38). The notion of summer, exhilaration, floral aromas and the heat of the sun, are all components of the garment interior and are only truly experienced by the wearer. A clue, and somewhat an audience tease, to what lies beyond the exterior of the garment is the vibrational colour contained in the striped fabrics of the hip bustles (see Figure 39), and evidence of deliberate coloured linings rather than use of orthodox facing placement. Viewed from the exterior of the garment, with little knowledge as to the interior of



Figure 40

the garment, the visible colour suggests accidental notes in a tonal form otherwise determined by the exterior colour scheme.

A method of designing in a striped environment to rhythmic music was adopted for part of the design research process. Similarly striped sound was listened to in a room of rhythmic colour. As with the implied sound resulting from the visual of parallel lines, an arrangement of layers that mathematically offer a diatonic or chromatic scale pattern has been implemented in *Diatonic Pages* and *Tonal Silence*, where visual definition travels as timed movement through space. The eye follows a regular arrangement of edges with an expectation of predictability and order until the rhythmic aspect of the edges changes direction momentarily for waist suppression in *Chromatic Dissonance* (see Figure 40). In addition, the elements of visual rhythm do not exist independently from colour in *Chromatic Dissonance* and thus a small interruption in the predictability of order can be viewed as a key change, an accidental or a discord, none of which are planted to disrupt the viewer or wearer enjoyment.

POLYPHONIC COCKTAIL (see Figure 41)

The crisp coated cotton fabric of *polyphonic cocktail* is constant in its audibility, creating audible and visual revelation. Regardless of wear, the white fabric remains constantly crisp and therefore holds the silhouette. A wide choice of colour in such a fabric was possible, but the success of the fabric was in its stark whiteness, which expresses a luminosity that emanates a higher pitch. The unique sound inherent in this fabric is an accumulating experience when placed in the context of a whole garment. Initially, the delicacy of the white fabric suggested purity and simplicity, but the strength of the resonating tone demanded a synchronicity in design. Combined with a dissimilar cloth, the union of the two fabrics became a narrative on dimension and volume whilst multiplying the experience of and altering the persona of the initial fabric. On the analogous topic of musical thematic development, Huston Bell (1984) says, "As the forms become larger the structure continues to be an accumulation of smaller units" (1984, p.23). The placement of diagonal and vertical stripes in combination was used as a reference to tempo. If worn with *Chromatic Dissonance* the tempo accelerates. However, paired with *Diatonic Pages*,



Figure 41

the tempo is more peaceful.

The silhouette of *Polyphonic Cocktail* reflects a pronounced but moderate structure through the use of the coated cotton fabric and the draped side-front striped panel. A relatively neat silhouette was the aim to offset the wider silhouettes of the other skirts in *Sonata*. With the inter-changeability of separates, a variation in silhouette served my aim to connect the senses and fashion design in its highest form, thus encouraging a maximum of synaesthetic response. The *crisp* and *crunchy* sound of the coated cotton emerges as the wearer walks or touches the fabric. The fragility of the fabric despite its well defined audibility, shown in combination with the stripes offers sensory response pathways to be triggered by sound, tactility and vision. The slimmer silhouette over the hip area of this skirt allows the defined silhouettes of the three tops to be more pronounced. Worn with *Chromatic Dissonance* the hip bustles are highly visible, offering texture, colour and visual weight, effectively launching the viewer into synaesthetic enquiry. If linked with *Diatonic Pages*, the coexistence of silhouettes realise the magnitude of scale with the top and the quieter appearance of *Polyphonic Cocktail* is promoted. Wearing *B-Flat Float* and *Polyphonic Cocktail* as an ensemble offers plenteous opportunity for visual, auditory and general rhythmic cross-modal association. The repetition of layering, colour alternation, stripes, fabric sound, colour and silhouette lead one to form sensory summations in a multitude of ways. To inject specific responses from a synaesthetic viewpoint may lead to contrivance in response in a non-synaesthetic audience. As a designer, my contribution to the potential of synaesthesia being linked with fashion is to enrich the interest level in the phenomenon and its potential for a more multi-level existence. As with all of the garments which include linings, *Polyphonic Cocktail* presents an interior reserved for wearer enjoyment.

TONAL SILENCE (see Figure 42)

Tyvek fabric was selected for this design for its heavy tissue-like properties enabling easy manipulation on the body. The method of analysing intervals and scales to create layering patterns was utilised in the arrangement of cloth in a mathematical context for multi-layered garments. Realising a garment in a flat state prior to being draped on the body built a sense of



Figure 42

anticipation as to the effect in a three dimensional context. Not only was the arrangement itself instrumental but the handling of the materials themselves assisted the development.

The form of Itten's colour harmony *tetrads* directed the starting point of *Tonal Silence* (see Figure 43). *Tonal Silence* is arranged in a chromatic scale sequence using every tone and semi-tone in any given scale. Using the chromatic scale format, involved arranging fabric layers one on top of the other in diminishing sizes. Dividing the space between one corner of the assembled layers and the determined end point into equi-distant measurements determined the silhouette (see Figure 44). Experiments were made in white fusing fabric which mimicked the soft state of the Tyvek fabric to ascertain volume and form, after which a range of starting shapes was used to trial results (see Figure 45). Also used in the trials was Tyvek paper selected for its audio potential. However, the rigidity of the textile did not make it a workable proposition. Coloured layering was experimented with in the initial prototypes (see Figures 46), only to find that the colour became a dominant force over the intervals, which guided the development as seen in *Sonata*.

The Tyvek fabric progressively changed from of a roll of crisp flat unused cloth with a high crisp sound during initial handling to a supple fabric which became progressively warmer and more supple during cutting and making. In its more supple state a duller tone was heard during the construction process and eventually wearing. As the Tyvek fabric warmed up with handling into an irreversible state of softness, it could be pressed with a low temperature iron to remove some creasing, but never to regain the crisp nature of its uncut state. Surprises such as this added to the characteristic of the design at the experimental stage and later for both the wearer and the audience. Although neither audience nor wearer necessarily experiences the crisp flat fabric on the roll, the fabric softening is a continual process. The quality of drape improved with fabric handling and struck a very real affinity with the body. The weightlessness of the ensuing garments is initially disconcerting to the wearer, but with movement, the sound of gentle rustling is a reminder of the reality of the garment.

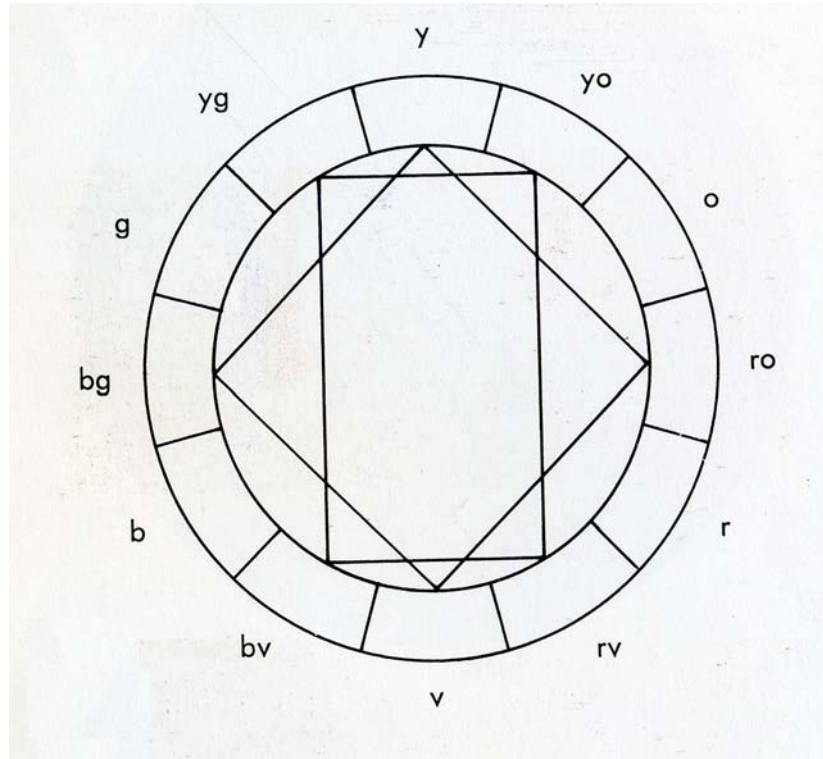


Figure 43



Figure 44

DIATONIC PAGES (see Figure 47)

Diatonic Pages is a Tyvek garment full of scales but with no intentional colour association to tonal value. The length of the three distinct layers mathematically indicated a choice of diatonic key. The longest layer is represented by the depth of an A major scale, positioned on the lower octaves of the piano keyboard. The middle layer forming the most fullness over the bust signifies C-major, and F-major played above middle-C corresponds to the higher pitched shoulder layer encircling the front bodice. The specific scales were selected to produce a harmonious visual sound. The three diatonic scales remain consistent with intervals of tone, tone, semi-tone, tone, tone, tone, semi-tone. The arrangement of the layers was commenced in a pile of descending units. Each layer was turned a tone or semi-tone by measurement; a semi-tone being half that of a tone to achieve the scale, between specific points indicating shortest and longest areas of the garment. The three layers are mounted onto a foundation bodice of striped cotton poplin.

The gentle sound emanating from the soft pages acknowledges the diminutive sound and weight of this textile type. When paired with *Tonal Silence* a flurry of layers exists in all forms, with a conscious peek at a striped bodice supporting the Tyvek top. The sound of the combined garments is subtle, and emphasises the possibility of being styled in this format or with any of the other separates.

HARMONICS (see Figure 48)

The smooth flat orange and lusted red fabrics of *Harmonics* give strength and form, but place less priority on the actual sound of the fabric. The structure of the garment relies on the sections moving against one another to create a subtle *whooshing* sound. In their uncut state both of these fabrics have hyper-sound but the design focussed more on visual vibration and rhythm through the use of large diagonal bands of alternating hues. The varying visual temperatures between the red and orange fabrics are an ocular summation of the surface appearance. The red fabric being lusted and cold suggests a higher pitch whereas the orange fabric with its warmer downy surface suggests a duller lower sound. The visual information of these temperature variations assists the alternating layers to



Figure 45

further differentiate one from the other, thus enhancing the idea of rhythm. A Spanish influence from music by the nineteenth century composers Saint-Saens and Lalo, and more contemporary Flamenco music has been absorbed into *Harmonics*. Elements such as staccato and foot stamping added to the energy in the colours and design. A gradual crescendo of silhouette and strong fabrics was tempered by the use of softer fabric for the visible interior of the back skirt.

The eye adjusts to the very direct visual rhythm and the accentuated boned silhouette concentrated at the front and sides of the garment. To disrupt the eye and the expectation it may have of producing recurring visual cycles, a sweeter red and white striped cotton panel has been added into the back of the skirt. The striped cotton fabric is embellished with striped braids and striped buttons to jerk the eye a little more when visually drinking the optical effect of the parallel stripes. The small scale of the red and white striped panel allows the embellishment to provide accidentals rather than an overpowering statement (see Figure 49).

Two different scales of stripe have been used to create a visual layering which can be interpreted as *levels within* or a *layering* in any of the senses stimulated. The scale of the design details in *Harmonics* strongly suggests tones rather than chords, which to me, would be sound equivalents of conventional instruments expressing the lower octave registers such as a cello or saxophone. The tonal value associated with the colours of *Harmonics* is based on Messiaen's mode three from *modes of limited transposition* where the orange, milky white and red tones exist beside a range of accidentals within a scale enabling four transpositions. I consider patterns of tones and semi-tones associated with the colours to commence and end with the note C and the intervals being as vital as the single tones. As a synaesthete, my responses to the structure, colours, visual rhythm, fabric temperature, tactility and accidentals therein are contained in any environment. I can see and hear this response to *Harmonics* to varying degrees whilst static on a mannequin or in an embodied form.

B-FLAT FLOAT (see Figure 50)

The use of five layers of silk organza in *B-Flat Float* was to acknowledge

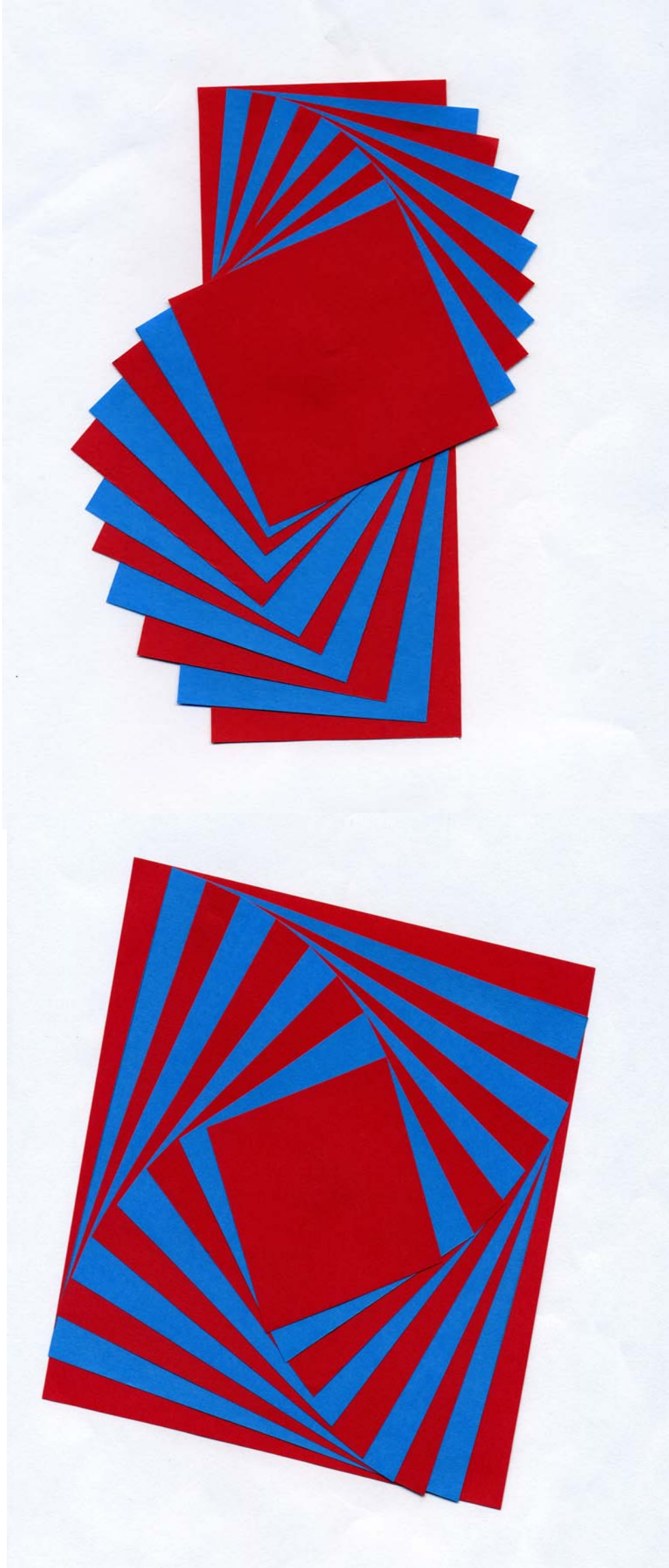


Figure 46

the shapes of chords containing five notes and to enjoy the *rotund* nature of the cloth. The term *rotund* is used to emphasise two aspects of the fabric. Firstly, the impossibility of the silk creasing into crisp folds and resulting in round shapes whilst possessing an inherent spring and secondly, referencing associated roundness of flavours and colours in the word orange and associated imagery. Layering a sumptuous orange and unbleached silk organza together created a reference to a softer form of visual rhythm and colour pitch association. B-flat, a note within mode three of Messiaen's *modes of limited transposition*, refers to the *orange* and *milky whiteness* contained within this mode. The orange silk was dyed using acid dyes until the desired colour was achieved, while the unbleached characteristic represents a *milky*, rather than *harsh* white. The more subtle suggestion of synaesthetic response in this piece is intentional and directed more towards the tactility and colours of the cloth.

The warm handle and disbelief of creasing encourages one to handle *B-Flat Float* repeatedly. The increased subtlety of the softer fabric permits a larger silhouette, allowing the collection of separates greater versatility for a range of figure types. Whilst the waist-nipping styles of *Chromatic Dissonance* and *Diatonic Pages* specify the wearer, *B-Flat Float* does not. Synaesthetic response in this piece may be enjoyed by association with sounds induced by the sequential aspect of layering, particularly when teamed with *Harmonics* when the sequence becomes vertical in addition to horizontal. Added to the aspect of sequential patterning is richness in the hotter colours from the spectrum. The energy contained within the colour variations of orange is exemplified by composer Michael Torke in his piece *Ecstatic Orange* (1985). In the key of C this piece of music opens with the epigram: "squeeze the orange and throw away the skin" (Mattis, 2005, p.226). It is composed for a large orchestra, and is "noisy yet controlled" (p.226). The piece of music is divided into sections, each section is named according to a shade of orange: "Burnt Orange, Russet, Carroty, Sunkist!, Orange Pekoe in Flames, Absinthe and Apricot, Orange Lava, Unripe Pumpkin, and Copper" (p.227). Torke explains, "Many colors of paint splash around the orchestral forces, but the hue is always some shade of orange" (p.227). Mattis says the music is filled with "forward propulsion" (p.227). The terminology used to describe the hues of orange are specific to the hotter colours from the spectrum if the tonality is kept



Figure 47

consistent and is between red and yellow primaries in pigments. With analysis of language and onomatopoeia the application of the *fat round and flavoursome* words to the colour orange seem entirely appropriate and comprehensible to synaesthetes and non-synaesthetes alike and would be unsuccessful if used with a sharper colder colour such as blue. Evocative descriptive words can assist synaesthetic understanding of an idea when coupled with such imagery.



Figure 48

CONCLUSION

G# Dessert Served With Raucous Syrup

The body of design work discussed and outlined in this document exemplifies an association between the “charming strangeness of synaesthesia” (Cytowic, 1993, p.36) and the curious nature of fashion.

The *design through research* process allowed for evaluation of design strategies in relation to propositions as they developed which allowed for immediate changes to be made. This process strengthened the rationale on an ongoing basis. On occasion unforeseen outcomes became evident through evaluation of design work. Links into an association between synaesthesia and fashion design were in part speculative and subjective, based on a formulation of synaesthetic response through review. The multiplicity of the design process enabled a refinement of the exploration and hence the practice of designing revealed the issues of the proposition more clearly, allowing for their practical exploration.

Central to this research is the notion of producing work in a synaesthetic context, using the work as a medium for the communication of these ideas and capturing them for a moment before they lever themselves into yet another realm of synaesthetic interpretation. Synaesthetic response will never be static, an experiential approach will always infuse a thought, a memory, or recall and will be embodied in the response.

Research reveals that responses to the visual aspect of completed garments by composers and artists are driven by fashion that has already been produced. Collaborative, interactive and solo projects documenting multi sensory responses, fusing technology and fashion communication, integrating media and crossing disciplines within art and design have generated interest in synesthesia, but little research has been located with the aim of designing the garment with a conscious synaesthetic approach. The nature of originality using this approach can enrich the minds and approaches of a general audience. This research has advanced my own practice as a fashion designer as it has demonstrated a final outcome which is unique due to the employed process.



Figure 49

The review of work by other fashion designers in relation to findings in synaesthetic investigation has highlighted that one quality of synaesthesia is about recall (using semantics), and synaesthetic sensation inspired by direct experience is sensory awareness on a higher level than metaphor.

The benefits of working with *research through design* as a process enabled the continued exploration of multi-sensory potential with fabric and silhouette for the body. The use of implied forms of sensory response rather than actual literal responses, allow accessibility to a broad general audience. One could wonder whether synaesthetic experiments in a silent world would produce such strong association with rhythm or vibration, as seen in experiments with music and sound. If human beings had no ears would colour create such emotional connection? When incoming sound is absent, a person can still recall a piece of music and produce a replica of the piece he cannot hear, but it is playing in the brain from memory patterns and training. Similarly a method of design is such that actual response from stimuli can augment the process of design when used as a research tool.

The design work evolved amid an intensity of play with words, sounds, colours, and engagement with sensory thought. The frenetic pace of idea generation, documentation and the ensuing exploration with textiles and silhouette was an exhilarating process, itself responsible for further stimulation. The method of designing in a striped environment listening to rhythmic music and listening to striped music in a rhythmic environment was beneficial to process. It eroded any possibility of literal translation of an idea. Similarly designing in a stark white environment with the rhythm of twelve unsynchronised ticking clocks, acknowledges sensory existence. Sometimes, the effect was unfavourable and was addressed accordingly. This is to note that not all stimuli yield positive aesthetic response.

If synaesthesia is an expansive array of non-verbal thinking where association is often by recall of a sensory trigger, then the semantic vacuity enables synaesthetic percepts to be vividly remembered (Cytowic, 2002, p. 69). On this basis, links between fashion and synaesthesia can establish non-verbal, more esoteric messages, decipherable to some and indistinguishable to others.



Figure 50

Although it is not an imperative to combine artistic and scientific perspectives in this study, the collaborative process between science and fashion enables an experience of more than just the visual regarding sensory experience with fashion and innovative technology. If the global fashion audience is becoming increasingly used to a challenging of sensory perceptions as technology progresses, then one could question whether this will create a greater sensory expectation within contemporary fashion design. Technology offers the possibility of enhancing visual domination while allowing a supplement of sensorial response. Exploration of technology has a value, but in *Sonata* the bodily sense is a higher privilege than the technological.

If fashion provides the human race with a medium of creative expression, both as designers and consumers, then there should be liberty for the possibility of living out our imagination. By acknowledging this on a level of expression which combines subjective and objective existence, we can enlist the rhythm we desire to hear, or absorb our very favourite dessert into our attire. If garments can be created using synaesthesia then an educative result is in progress. Research has exposed fashion's untapped potential to embrace the non-visual senses through a medium of visual stimulation. While synaesthesia cannot be contrived, based on the origins of language, it can be understood.

The new knowledge evidencing links between fashion design and synaesthesia are distinctive yet immeasurable. The value of this new knowledge and what it offers are the consequence of this project, and will fuel methods and processes for future practice.

I conclude my discussion with the joy that *Sonata* could foster a rhythm associated with a sound, and that G# will always be **cerise**.

APPENDIX 1

Design Process initial trials were made in paper and fabric to test the volume, emotional connection and success of the proposition. An interplay of sensory response with the following themes shaped the development of *Sonata*; implied sound, actual sound, intervals, colour-pitch association, emotion and musical pitch, fabric layering, vibrational colour and visual rhythm.

Extensive fabric research happened in conjunction with the design process.

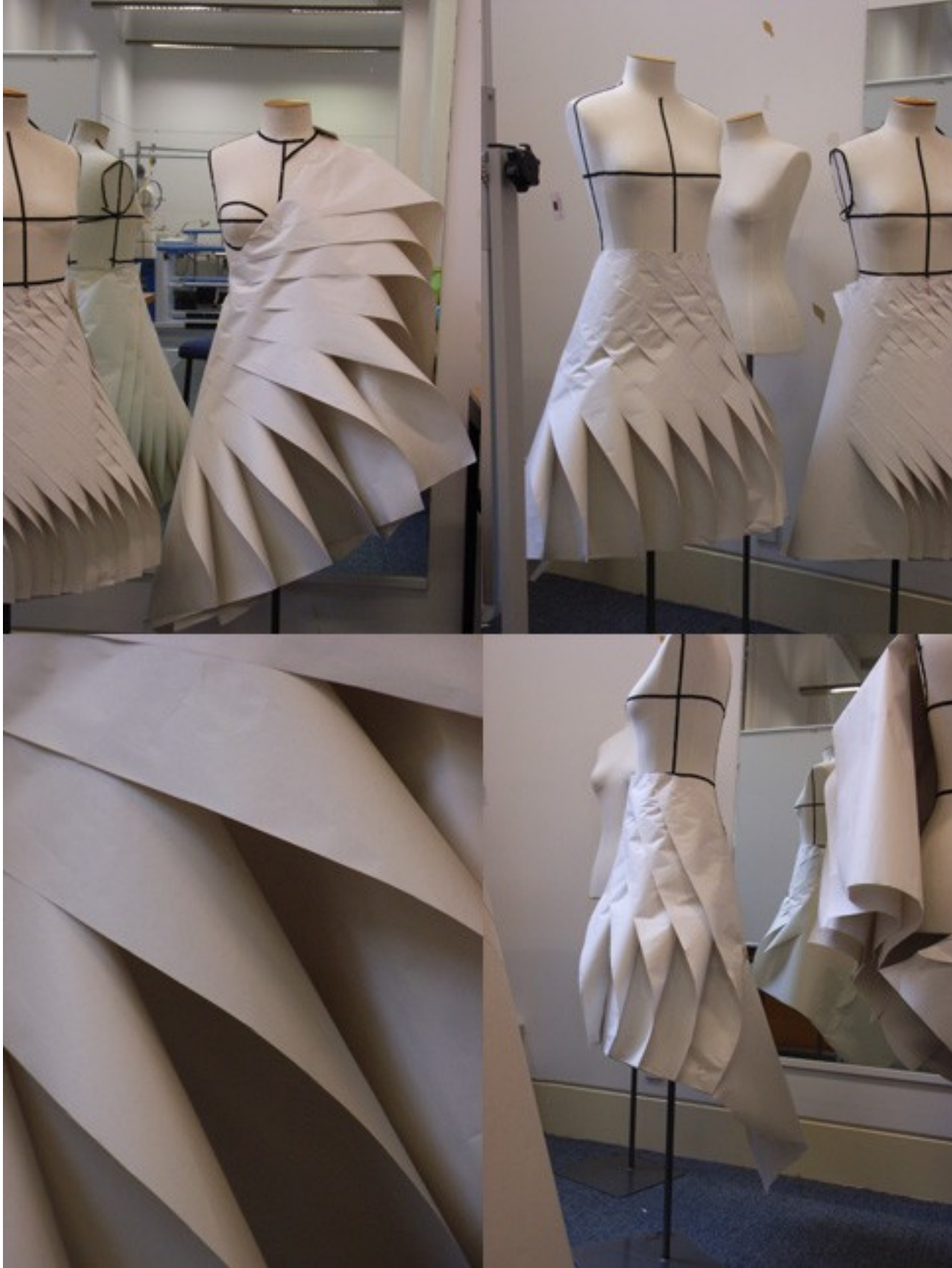


Figure 51



Figure 52



Figure 53



Figure 54



Figure 55

APPENDIX 2

Photography shoot of *Sonata*.

Model: Chloe Hamer.

Nova Model Agency, Auckland.

Mannequin photographs of *Sonata*.



Figure 56



Figure 57



Figure 58



Figure 59



Figure 60



Figure 61



Figure 62



Figure 63

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