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Volumes I (Thesis) & II (Appendices) of:

**EXPLORING EUDAIMONIA
THROUGH FASHION:**

Can clothes be designed to carry an embodied narrative for wellbeing?

LESLEY ANN CAMPBELL

A thesis submitted in partial fulfilment of the requirements of the University of Northumbria at Newcastle for the degree of Doctor of Philosophy

Research undertaken in the Faculty of Art, Design & Social Science
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Thesis - Volume I of:

**EXPLORING EUDAIMONIA
THROUGH FASHION:**

Can clothes be designed to carry an
embodied narrative for wellbeing?

LESLEY ANN CAMPBELL

Abstract

Clothing is enjoyable, communicative, powerful, available, affordable, addictive, and problematic in its overconsumption. The fashion system, driven by growth, is contributing to a rapidly deteriorating eco-system through the cumulative effects of exploitation and pollution. Material abundance negatively impacts holistic wellbeing; grounded in a reductionist viewpoint that we are somehow separate from, or above nature, created the conditions for the environmental disconnection that we experience today. What is needed to redress this imbalance and disconnection is an “alternative way of thinking of alternatives” (Santos, 2016, p. 20).

This work aims through alternative thinking, and the power of clothing, to improve personal and planetary wellbeing, living in unity with nature. It proposes and explores an alternative paradigm for creating regenerative clothing through eight principles that form a design framework. The framework provides practical tools to embody clothing with a multi-layered interwoven narrative to elicit sensory somatic interaction with something greater than oneself. Theoretical and practical strategies to inform the framework are explored through relevant literature and presented as four interconnected bubbles of Biophilia, Natural Capital, Eudaimonia, and Somaesthetics.

Thinking through making reifies the design framework in three phases of practice to produce five pieces of Alternative Regenerative Clothing (ARC). ARC evolves holistically through three-dimensional realisation and a process of reverse patterning whereby flat patterns of naturally occurring geometric forms are taken as a fixed point of origin. This approach informed by the design framework, challenges the *block*, the fundamental method of Western pattern cutting. The non-body contouring forms produced by this method enable sensory voids between the body and garment to be explored and experienced. ARC is outside fashion; it questions and transcends stereotypical perceptions of clothing's form and purpose.

A wearer interaction study explored the experiences of seven participants after somatic engagement with ARC. A methodological framework was designed using Interpretative Phenomenological Analysis and a range of qualitative methods including photo-elicitation, wellness journaling, prompts, probes, and interviews to explore ARC's impact on wearer wellbeing. A holistic viewpoint on wellbeing is explored, one that is grounded in deep meaning and respect

integrating emotional, mental, spiritual, and physical dimensions. Analysis of the wearer's interactive lived experience of ARC focused on unpicking transformative and wellbeing narratives to address the research question of: Can clothes be designed to carry an embodied narrative for wellbeing?

The significance of the study is that it challenges the existing fashion system to propose a tangible and alternative approach to clothing design aimed to facilitate a change in our emotions, which in turn changes our critical thinking, that then has a positive impact on our view of societies way of being. When accessed this transformative perspective can create a landscape to connect the mind, body, and environment through the ARC - whose provenance embodies personal and planetary wellbeing.

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Preface

As a fashion practitioner interested in using clothing as a vehicle to explore lateral and alternative ways of thinking to promote creative sustainable design, my thoughts and ideas evolve through practice. Practice-led research has the potential to release creative ideas and evoke change. Making is *“the most powerful way that we solve problems, express ideas and shape our world...with the potential to open up dramatic new directions”* (Charney, 2011, p. 7). For as long as I can remember the attraction of making, especially playing with fabric held an innate draw, ultimately leading to a career in fashion-design and academia.

My passion lies in shape-making, thinking in three dimensions, visualising clothes as flat shapes as if reverse engineering them in my mind. Working with undergraduate fashion design students I realised that not everyone interested in fashion design thinks in three dimensions. With this in mind I started to explore and develop “thinking through making” strategies to help students integrate their design and pattern cutting skills 3-dimensionally. A collection of “Alien Body” studio mannequins (figure 1) grew out of this exploration, their aim was to challenge stereotypical thinking and shape-making within a fashion design context. Students could use the abstract forms to contour and create an initial block for design development and clothing creation. The abstract forms enabled voids to appear between the mannequin and garment when replaced with a conventional human form (figure 2).



Figure 1 Alien Body Mannequin & side profile silhouettes (2014)



Figure 2 Body/garment voids created by BA fashion design students using Alien Body mannequins

Selecting sustainable materials is a necessary component within the design process. *Sustainable Marriage* was a conceptual interdisciplinary project between art, design & science students that I initiated and led to explore issues surrounding our throwaway culture and excess. Marriage was used as a vehicle to examine the way we think about clothing; biodegradable materials, dissolvable polymers, and hidden messages created the ultimate symbolic wedding dress. The dresses depict the evolutionary journey of marriage through 6 decomposable iterations embodied with meaning (figure 3).



Figure 3 Sustainable Marriage – a symbolic representation

Working with alternative materials and concepts within my own practice is a fundamental principle for creating innovative and sustainable outcomes. Waste stainless steel mesh used in industrial filtration systems was salvaged to construct an alternative wedding gown for a private client, inspired by and representative of her commitment to sustainable architectural and industrial design. The gown was exhibited (after the wedding) in the *Designed to Shine* exhibition in 2013, a celebration of 100 years of stainless steel (figure 4).

I began to think deeply and conceptually about fashion's value and purpose in a rapidly changing world, questioning my role within that landscape. Could an alternative approach communicated through regenerative 3D design be used as a conduit to explore personal and planetary wellbeing? My previous and relevant

practice-based research (in addition to the examples mentioned) exploring clothing communication through symbolism and embodied meaning was revisited to help crystallise thoughts. An interwoven concept started to evolve of *feel-good* fashion; regenerative clothing embodied with an interwoven narrative for wellbeing. It energised me enough to leave my position as a fashion academic to concentrate on a full-time, practice-based PhD research project.



Figure 4 Stainless Steel Mesh Wedding Gown/Designed to Shine Exhibition (2013)

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This study would not have been possible without the academic resources, and three-year financial studentship from Northumbria University that helped fund my research, and for that opportunity I am truly grateful.

Sincere thanks go to my dear friend Dr David Morning for his reassurance, proof reading, advice, and for providing a sympathetic ear. A special thanks also goes to Clair, Jill, and Erica, fellow students who navigated the PhD journey with me, our supportive online chats throughout the COVID-19 pandemic and the writing up process were invaluable .

I also owe a tremendous debt of gratitude to the seven participants who gave me two-weeks of their life by agreeing to wear the clothing at the centre of this study, and to record their experiences, and to be interviewed.

And finally, extraordinary, and deepest thanks go to my daughter Rachel whose unwavering interest, belief, and multi-level support, invested in me, and my PhD journey, has made all the difference. It would not have been possible without you, and I am eternally grateful for everything.

Declaration

I declare that the work contained in this thesis has not been submitted for any other award and that it is all my own work. I also confirm that this work fully acknowledges and identifies opinions, ideas, and contributions from other sources. A full list of references is appended.

Ethical clearance for the research presented in this thesis has been approved and granted by the Faculty of Arts, Design & Social Sciences.

I declare that the Work Count of this Thesis is 55,000

Name: Lesley Ann Campbell

Signature:

Date: 04 February 2022

Chapter 1 - Introduction

1.1 Research approach

“The goal of life is living in agreement with nature”²

Philosopher and landscape architect Fernando Caruncho suggests that the greatest contribution a designer can make is to link the human and the natural in such a way as to recall our fundamental place within the biosphere (Cooper et al, 2000), the aspiration of this thesis.

Living in harmony with the natural world is referred to as ‘*Shinto*’ within Japanese culture and suggests that “when nature is shown the respect it deserves, people thrive better” Magno (2018, para. 2). This practice-based research project represents an abstract personal response to the climate emergency we now face, a consequence of anthropocentric³ human activities that disrespects nature. It questions what could humanity do to encourage a sense of wellbeing and connection, in a disconnected world?

This thesis proposes, through the power of clothing, alternative ways of thinking, to explore living in unity with nature to improve wellbeing for all living things and questions:

Can clothes be designed that help us develop a sense of connection to our environment, nature, and self, and in doing so effect wellbeing?

1.2 Alternative Regenerative Clothing (ARC)

In the context of this research clothing is acknowledged as a powerful means of communicative body covering operating on many levels and is framed by an acronym - ARC.

² Zeno of Citium, Greek Philosopher (c. 334-262 BCE) <https://einzelganger.co/living-in-accordance-with-nature/>

³ Philosophical viewpoint arguing that human beings are the most significant entities on the planet, and justifies the exploitation of nature for the sake of human welfare

The ARC is referred to throughout the thesis as an overarching concept that seeks to explore the research question. Alternative Regenerative Clothing (ARC) is a component of the concept (figure 5). The purpose of using an acronym is to assign a physical identity to the notion, calling it into a separate existence. The abbreviation gains momentum as the concept is communicated through the thesis narrative, meaning evolves building a metaphorical arc of connection with something greater than itself. With this unique identity, the acronym, and concept become one.

1.3 Research Aim & Objectives

The aim of this work is to develop a practical design framework that focuses on improving personal and planetary wellbeing using clothing as a vehicle for connection with self and nature. The framework aims to provide tools to embody clothing with a multi-layered interwoven narrative to elicit sensorial responses in the wearer, and in doing so aims to awaken an innate connection and respect for the natural world.

The aim is reified through four main objectives:

- To create a design framework, informed by transformative social initiatives, natural phenomena, and belief systems, that embodies a non-destructive, regenerative relationship with the environment and self.
- To utilise the framework as a practical tool to design and make clothing for improved wearer and planetary wellbeing.
- To design and implement a wearer interaction study to explore and identify wellbeing experiences through emotional, mental, physical, and spiritual sensations.
- To interpret and analyse the wellbeing experiences of wearers after interacting with the embodied clothing.

1.4 Navigating the thesis

To help navigate the narrative cross-referencing, footnotes, and visuals are used:

- Alignments, further information, and cross-referencing is expressed within the text as bolded bracketed numbers, for example, “respecting all living things **(2.2.1)**” – more information in Chapter 2, section 2.1.

- Footnotes are used at the bottom of the page, where relevant, to provide clarification and additional comment.
- Photographs, illustrations, tables, and charts are used throughout the thesis to provide visual commentary and listed in order of appearance; they can be referenced on page viii – **Figures**.
- APA 7th edition referencing is used throughout.

The thesis and concept of ARC is dissected and visually represented in figure 5 below:

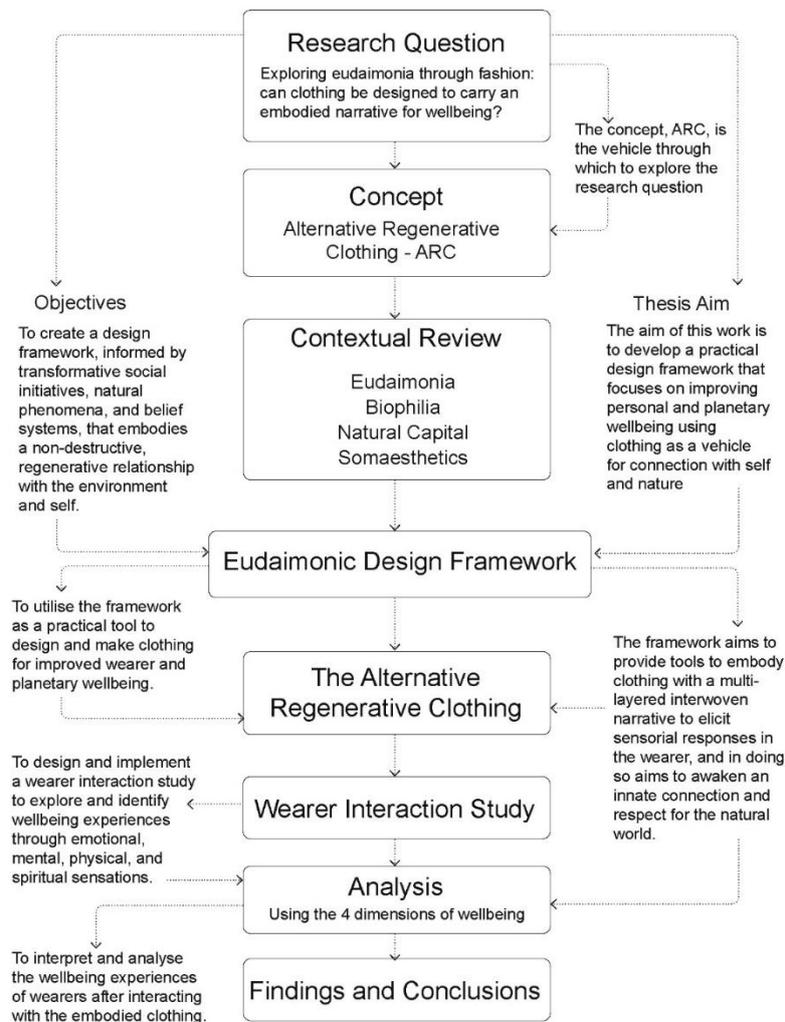


Figure 5 A flow chart of the ARC concept

A brief overview of each of the seven chapters follows:

Practical strategies to inform the concept of ARC are explored through four bubbles of: Biophilia, Natural Capital, Eudaimonia, and Somaesthetics, the bubbles are defined and explored in the Contextual Review (Chapter 2). Tangible and abstract concepts relating to our connection to nature are explored including existential issues, wellbeing paradigms, and embodiment to inform a narrative of interconnected relationships between mind, body, and environment. Chapter 2 concludes by framing key insights from the four bubbles to create an eight-principle design framework - tools to create Alternative Regenerative Clothing – innovative expressions in dress to embody wellbeing (2.6)

Chapter 3 defines the research methodologies, epistemological perspective, and the philosophical viewpoint adopted to underpin and inform research design.

The theoretical landscape of the Contextual Review is reified in a practical dimension in Chapter 4 – Actioning the ARC. A creative-production process of *Reflexive Action* is developed from an Action Research Methodology. Three structured phases of reflective design development are undertaken to create embodied clothing informed by the eight-principle design framework. Additional photographs of design development are included in Vol II, Appendix A.

Chapter 5 describes and justifies the research design of a Wearer Interaction Study, seven individuals participated in the study. Multiple qualitative data gathering methods were used to gain an insight of wearer wellbeing experiences over a fourteen-day period.

Analysis and insights from the study are discussed in Chapter 6. All documents relating to the Interpretative Phenomenological Analytical process used including interview transcripts, photographs, mood diaries, and supplementary material is included in Vol II, Appendix B.

The practice-based research journey concludes (Chapter 7) with reflections, insights, and recommendations.

Chapter 2 - Contextual Review

2.1 Introduction

The relationship between fashion and nature is complex; sustainable fashion initiatives promote ethical, circular, slow, and eco-fashion to redress the impact of the industry on climate change, and this is well documented (Gwilt, 2020; Niinimäki et al 2020; Bravo, 2020; Fletcher & Tham, 2019; Davies, 2015). Whilst embracing the principles of these movements wholeheartedly, the focus of the contextual review is to explore and discuss alternative concepts that could reframe and regenerate the relationship with ourselves, and the environment using clothing as a catalyst. Multi-layered and diverse ideas are investigated based on environmentalist David Orr's (1993) concept of *Metanoia*⁴, whereby a change in our emotions, changes our critical thinking that then has a positive impact on our view of societies way of being. Concepts that could facilitate *Metanoia* are explored and key insights used to develop a clothing design framework that embodies wellbeing.

The context is framed by investigating literature to inform universal wellbeing. Four interrelated bubbles⁵ build a narrative which fundamentally aims to explore "alternative ways of thinking of alternatives" (Santos, 2016, p. 20).

2.2 Biophilia

2.2.1 Introduction

The etymology of *biophilia* is derived from *bio* - life, and *philia* - friendly feeling toward. It defines a human tendency to interact or be closely associated with other forms of life in nature and a desire or inclination to connect with nature (Merriam-Webster, n.d.). Biophilia is about engaging our mind and senses in ways we evolved to live, linking us to the natural world we are part of (Orr, 1993). It is essentially about improving wellbeing through interaction with nature (Coulthard, 2020), and critical to physical and mental health (Wilson 1986, Kellert & Wilson 1993, Kellert 1997 & 2012). Erich Fromm devised the term *biophilia* in 1964, he argued that "society must develop a non-destructive relationship with

⁴ A transformative change of heart; of one's whole being, especially a spiritual conversion.

⁵ Biophilia, Natural Capital, Eudaimonia, and Somaesthetics

the environment by fostering and perfecting the human potentiality of biophilia” (Gunderson, 2014, p. 182). Kellert & Calabrese (2015) concur, suggesting that biophilia and biophilic design are about assigning values and ethical obligation for the protection and maintenance of the natural world.

The reviewed literature investigates, identifies, and aligns practical and philosophical design opportunities to embody the design framework with biophilic integrity to address the research question: *Can clothing be designed to carry an embodied narrative for wellbeing?*

Biophilia is the largest and most diverse section of the contextual review. Its relationship to wellbeing through our innate connection to the natural world is explored via multidisciplinary sources ranging from ecotherapy to Platonic Solids. Initially these broad themes may appear to have a tenuous link to clothing, however, as the narrative develops relationships between nature, natural phenomenon, and wearer wellbeing are aligned. The review starts by exploring the background and origins of biophilia and its relationship to human health and wellbeing. Section **2.2.3** investigates how biophilia is perceived, interpreted, and applied in the built environment; an area that recognises and implements biophilic design strategies aimed specifically at improving wellbeing. The forth section **2.2.4**, *A Pattern Language*, explores natural pattern, ratio, and phenomenon, their hidden meanings, and interconnections between nature, science, ancient wisdom, and design. The narrative develops to contextualise the sections through a fashion lens in section **2.2.5**. Finally, **2.2.6** synthesises key insights from this bubble to form a design framework.

2.2.2 Human Connection to Nature

Prior to the industrial revolution⁶ most people lived a rural agrarian lifestyle immersed in nature (Browning et al, 2014), as there was no other choice to be made; scientific and technological advancements now enable alternative lifestyles (Orr, 1993). Being amongst nature is not commonplace in modern society; 84% of the UK population now inhabit urban areas, predicted to rise to 92% by 2030 (United Nations Population Division, 2019). 90% of our time is now spent indoors, less active, contributing to a variety of health complaints (Cregan-Reid, 2019). As society appears to be becoming more informed and anxious about personal wellbeing and their individual carbon footprint, people

⁶ Transitioning to new manufacturing processes in Britain, between 1760-1840

are turning to nature for answers to design and health problems (Gelsthorpe, 2017).

The Experience of Landscape, a seminal work by Jay Appleton (1975), investigated what constituted a preferred human environment. It explored landscape aesthetics and proposed evolutionary environmental predispositions. The Savanna Hypothesis posits that we should be genetically inclined to prefer particular types of scenery because we evolved as a species from the African Savannas - namely wide-open spaces, distant views, and the shade of trees, providing prospect and refuge (Orians & Heerwagen, 1992). In contrast to wide-open savanna type spaces, *Shinrin-yoku* or taking in forest air, describes the act of connecting with wooded environments. Terpenes⁷ emitted from conifers particularly Cedar, Cypress, Pine, Scots Pine, Spruce and Fir are proven to improve wellbeing (Ohira & Matusi, 2013). Walking in a forest for 2 hours a day, whilst inhaling terpenes may contribute to reducing blood pressure, balancing the immune system, and significantly decreasing depression, fatigue, and anxiety (Peterfalvi et al, 2021; Timko Olson et al, 2020; Li et al, 2016; Park et al, 2010).

It may be regarded as intuitively obvious that human-beings enjoy physically connecting with natural environments and other life forms, however, as noted we are spending increasingly less time connected to nature (Cregan-Reid, 2019). Increased dependence on mobile devices and social media has also contributed to an attenuation of biophilic connectivity (Stevenson, 2018; Rogers, 2019). *Forest* aims to address this issue and is marketed as a green initiative designed to monitor mobile phone usage by encouraging users to grow their own forest (forestapp, n.d.). Credits are earned by reducing screen time, then used to buy and plant physical trees, 1,000,000+ trees have been planted to date. Similarly, *Naturespace* app aids relaxation, insomnia, and chronic pain. 3D holographic sound provides sensory stimulation through vividly detailed recordings of tranquil natural environments (Naturespace.org; Coulthard, 2020). These initiatives are designed to draw individuals closer to nature whilst not necessarily being amongst nature and could therefore impart a biophilic connection supporting positive wellbeing. Similarly, the concept of ARC seeks to embody strategies that communicate nature, through clothing, even when the wearer is indoors.

⁷ Therapeutic compounds

Nature-based therapy is a growing area of psychology that embraces biophilia through ecology (Summers & Vivian, 2018). Ecotherapy encourages interaction with nature to improve wellbeing and frequently takes place in groups led by a counsellor. Activities include community gardening, forest bathing, hiking, star gazing, animal therapy, and outdoor meditation, it aims to improve wellbeing by nurturing biophilic connections (White, 2020).

As noted, empirical evidence suggests that biophilia is beneficial to human health and wellbeing, and that engagement with nature, is proven to be helpful in lowering stress, depression, anxiety (Xue et al, 2019; Pearson & Craig, 2014; Alcock et al, 2014; Keniger et al, 2013; Mayer et al, 2009, Ulrich, 1984), reducing blood pressure and balancing the immune system, contributing to improvements in emotional, mental, physical, and spiritual wellbeing. These four dimensions of wellbeing form a research framework for this study⁸. Although interconnected they are viewed distinct from each other for the purposes of the research design (5.3), and analysis (6). Figure 6 summarises the positive impact of biophilia on wellbeing through published research and is framed in the four dimensions of emotional, mental, physical, and spiritual wellbeing:

Wellbeing dimension	Impact from reviewed literature on wellbeing
Emotional - How I feel	Calming, improves mood and self-esteem (Pretty et al, 2005 & 2007) Restorative effects (Van den Berg et al, 2007) Reducing stress levels (Hartig et al, 2003; Van den Berg et al, 2003; Nilsson et al, 2011; Allen 1997; Frumkin, 2001)
Mental - How I think	Improves attention performance (Fuller et al, 2007; Han, 2009 & 2010) Reduces mental tiredness (Moore et al, 2006); Improving mental health (Soderlund & Newman, 2017)
Physical - How I appear	Increases longevity (De Vries et al 2003; Villeneuve et al 2012; Takano 2002) Encourages growth of healthy lifestyle habits (Coombs et al, 2010) Shortened recovery time from illness (Ulrich, 1984; Cooper, 2005)
Spiritual - How I behave	Fulfilment and happiness (Gullone 2000; Matsouka & Kaplan 2008) Improves companionship, sense of belonging and identity (Pinder et al 2009; White et al 2013, Maas 2006)

Figure 6 The positive effects of biophilia through published research

2.2.3 Biophilic Design: the built environment

⁸ Echoing the four spheres of Biophilia, Eudaimonia, Natural Capital and Somaesthetics, in that they are interwoven but viewed distinct from each other for the purposes of building the ARC's narrative

Architecture and fashion have parallels in that they both “exist for the wellbeing of users and that the basic principle of design is to explore emotional fragments in visual language...both buildings and clothing are thus attractive 3D objects with functionality and aesthetics” (Hadid in Yoo et al, 2020, p. 2). Both disciplines follow a similar process of practical translation of a concept into a 3D structure from a 2D pattern language (Hodge et al, 2006). Biophilic design is an established concept within the built environment and is reviewed within this section for its transferability to wearable structures.

Tangible relationships between nature, space and place can be readily identified and applied within the built environment because of its static landscape, and as such it leads the way in recognising and framing biophilic design. Designer Thomas Heatherwick suggests that “the concept of biophilia is a brilliant way to frame a set of issues...critical to the design of the environments around us” (in Browning & Ryan, 2020, p. vii). Kellert et al (2008) point out that although biophilic design maybe interpreted as an innovative concept, integration with the natural environment was the approach taken to devise settlements and buildings for much of human history. Biophilic design is now widely accepted and embedded within the realms of architecture, planning, and interiors, it aspires to practically apply the ideas of biophilia to nurture wellbeing.

As noted, biophilic design developed from the acceptance that humans evolved in a sensorially rich natural environment (2.2.2), not always recognised, and reflected in modern design practice (Kellert et al, 2008). Embedding biophilic design concepts requires consistently acknowledging and following fundamental principles that communicate nature in ways that reshape and celebrate its integrity for the wellbeing of the end users (Kellert & Calabrese, 2015). Browning & Ryan (2020, p. 19) have developed a framework of 15 patterns of biophilic design⁹ (figure 7), derived from ideas in earlier works in biophilic design for the built environment (Kellert et al 2008; Alexander et al, 1977). The frameworks aim to provide a practical language of *tools* to answer physical design problems through “a deliberate refashioning of nature to satisfy human needs, but in ways that celebrate the integrity and utility of the natural world” (Kellert et al, 2008, p. 14).

Nature in the space

Natural analogues

Nature of the space

⁹ Expanded from previous typologies by Kellert & Calabrese, 2015, p12 & Browning et al 2014, p12

1. Visual connection with nature	8. Biomorphic forms and patterns	11. Prospect
2. Non-visual connection with nature	9. Material connection with nature	12. Refuge
3. Non-rhythmic sensory stimuli	10. Complexity and order	13. Mystery
4. Thermal and airflow variability		14. Risk/Peril
5. Presence of water		15. Awe
6. Dynamic and diffuse light		
7. Connection with natural systems		

Figure 7 Browning & Ryan's 15 Patterns of Biophilic Design

An objective of this research (1.2) is to create a practical design framework that embodies wellbeing through clothing (2.5), fundamental principles of that framework are biophilic strategies, their aim being to connect wearers to nature. Therefore, nuances of biophilic design typologies from the built environment, similar to those attributes in figure 7, are considered for their transfereability to the mobile, fluid medium of clothing. Khramkova (2020) suggests nuances of biophilia is a way to further develop biophilic design by adding existential issues that focus on regaining contact with oneself, perhaps reaffirming Fromm's original and intended meaning of biophilia (2.2.1).

Coulthard (2020, p. 12) suggests that "the key to biophilic design is to embrace nature and natural elements in its purest state". Kellert (2005) agrees, adding that biophilic design must embed honest, long-term sustainability and low environmental impact. Supporting these viewpoints by embedding unexpected views of natural environments, vegetation that brings the outside in, abundant use of sustainable natural materials, are fundamental biophilic design principles applied at Maggie's Oldham¹⁰ (figure 8). The use of wood has been considered at every opportunity. Designers dRMM Architecture, suggest that "in wood there is hope, humanity, scale and warmth" (Maggie's Oldham/dRMM, 2017). "All of Maggie's Centres¹¹ put biophilic design at the heart of their purpose-built cancer care centres" (Workagile, n.d.). Corroborating dRMM's design approach researchers (Coulthard, 2020; Sharan et al, 2008) found that people respond differently and preferentially to materials that are close to their organic origin than synthetic equivalents and that human interaction in rooms with lots of wooden surfaces has a stress-reducing effect. The provenance of natural, sustainable, and regenerative materials in their purest form underpins the ARC philosophy.

¹⁰ Designed by dRMM Architecture in 2017, further information from <https://drmm.co.uk/>

¹¹ Maggie's is a charity that provide practical, emotional, and social support to cancer patients and their families. There are 30 centres, 27 in the UK and 3 internationally



Figure 8 Maggie's Centre, Oldham

Natural materials and inspiration from nature underpinned the ornamental and decorative arts movements¹² (1860-1910). From this era Gaudi's Sagrada Familia¹³ (figure 9), adopts vast abstract *structural trees* to support its vaulted roof. *Branches* allow light to pass through giving a spiritual forest like visitor experience (Hundt, 2016). Gaudi's work "sought to replicate the perfection he saw in nature" often using the phrase "originality is returning to the origin (nature)" (Yarnall & Baptista, 2010).



Figure 9 Gaudi's *Structural Trees* inside the Sagrada Familia

Gaudi was influenced by William Morris and the Arts & Crafts movement who "sought to counteract the impact of industrialisation by reconnecting people with nature and handcraft" (Browning & Ryan, 2020, p. 47). The fundamental principles of biophilic design, in essence drove Morris' ethos of balancing ecology and conservation with responsible design and business (Parry, 1996). Lloyd

¹² Art Nouveau and Arts & Crafts.

¹³ A Roman Catholic Basilica - building started in Barcelona, Spain, in 1882 and is ongoing

Wright, also inspired by Morris and his ideals used biophilic design principles¹⁴ in *Fallingwater*¹⁵ (figure 10). “In many ways, it could be argued that research is just corroborating the rediscovery of the intuitively obvious” (Browning et al, 2014, p. 52). However, as population increases, and more people live in cities, reconnecting with nature for holistic wellbeing through biophilic design, becomes ever more relevant.



Figure 10 – Frank Lloyd-Wright's *Fallingwater* (built 1936) encompasses biophilic design principles

Defining what represents *nature* within a specific design context can vary greatly from literal to abstract (Browning et al, 2014). The Eden project¹⁶, embraces biophilic principles in its design and philosophy. Pentagons and hexagons - polygons that occur naturally in nature (2.2.4) form large geodesic biomes housing thousands of plants (figure 11). A large granite sculpture – *Seed*¹⁷, situated in the core biome of the project (figure 12) spirals in the Phi¹⁸ ratio (2.2.4) signifying the fundamental geometric rules of plant growth (Smit, 2001). Eden is “underpinned by the understanding that we need to live with the grain of nature and that everything is interconnected. What we do to the Earth we do to ourselves”¹⁹. Its mission is to “create a movement that builds relationships between people and the natural world to demonstrate the power of working together for the benefit of all living things” (edenproject.com). New *Edens* are now being developed around the world promoting ecological regeneration and strengthening local livelihoods. An authentic reified example of Fromm’s biophilia, of engaging our mind and senses in ways we evolved to live, linking us to the natural world we are part of for the wellbeing of all living things.

¹⁴ Although not identified terminology at the time

¹⁵ Built in 1936 in Pennsylvania, USA

¹⁶ Opened in 2001 as an educational charity and social enterprise in Cornwall, England

¹⁷ Sculpture by Peter Randall-Page

¹⁸ A ratio of 1.61803, often called the most beautiful number in the universe

¹⁹ A theory central to the ARC’s philosophy

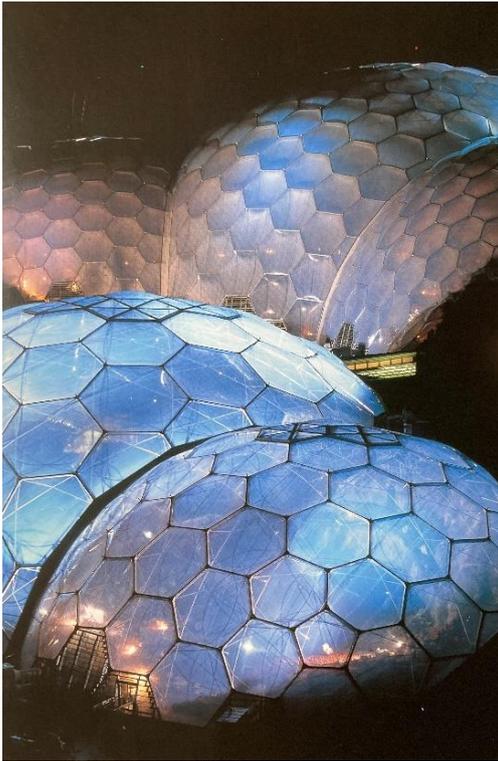


Figure 11 Geodesic biomes of the Eden Project

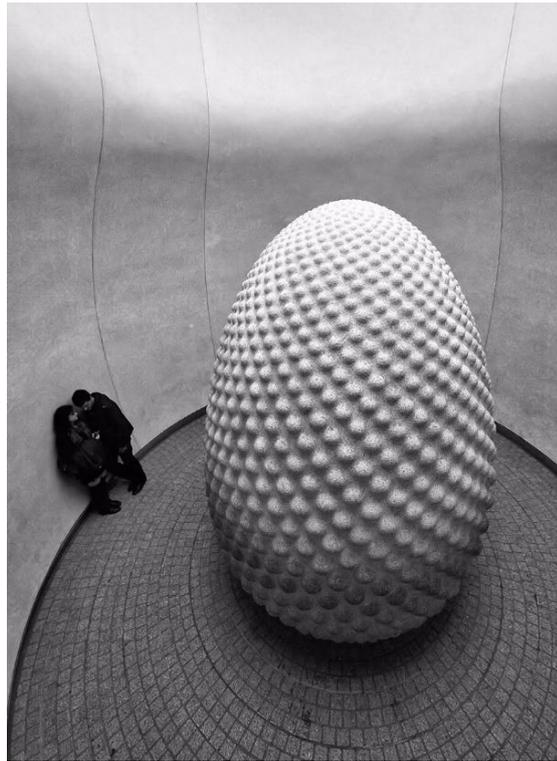


Figure 12 Seed – a granite sculpture in the Phi ratio

In contrast to Eden, nature is communicated indirectly, and abstractly, by the large kinetic sculptures “*Breaking Wave*” and “*Diffusion Choir*”²⁰ (figures 13 & 14). They metaphorically, and respectively, represent *chaos to order* and *working harmoniously together*. Both elicit a sensory focal point as they move within spacious atrium voids. Diffusion Choir is inspired by a flock of birds – Browning & Ryan (2020, p. 69) suggest that “the psychological effect it has in the atrium is significant, exceptionally biophilic”. This sensory, allegorical interpretation of nature has an essence of the qualities the ARC seeks to embody through fluid wearable structures.



Figure 13 Breaking Wave



Figure 14 Diffusion Choir

²⁰ Best viewed on video to appreciate their complexity and movement (<https://vimeo.com/102339558>) & (<https://vimeo.com/187037469>)

2.2.4 A Pattern Language

The diverse and static pattern language of biophilic design frameworks formulated within the realm of the built environment (2.2.3), refers to pattern as a means for understanding and recognising design opportunities, and strategies for their application (Browning & Ryan, 2020; Kellert & Calabrese, 2015). The ARC develops this understanding tangentially by also interpreting *pattern*, as a universal connective and interwoven network of organic shape, form, and structure embodied with deep meaning, and symbolic significance.

“To understand is to perceive patterns. To make intelligible is to reveal the basic pattern” Sir Isaiah Berlin, in Dalcher, 2016

Everything has a structure; everything has a pattern. Patterns can initiate beautiful, almost transcendental experiences (Elerick, 2018) (1.3). Patterns within nature take many forms, including fractals, spirals, geometric solids, waves, symmetry - some visible, others invisible (Adam, 2003). Rowland-Smith (in Murray & Winteringham, 2015, p. 15) suggests pattern within nature is “a structuring force that appears to tie together, either consciously or unconsciously, nearly all of the phenomena we encounter”. Design duo Murray & Winteringham use pattern within their work to promote *a new way of seeing* and suggest that paying attention to natural patterns that surround us “changes the very way we connect with our wider environment” (Murray & Winteringham, p. 33). Elerick (2018) suggests that a designer can look at patterns and use them as tools to create something that could improve the life of others. The ARC is aligned with these viewpoints in that it aims to use pattern, through clothing, to awaken an innate connection and respect for the natural world (1.2).

A particular set of three-dimensional patterns known collectively as the Platonic Solids, together with the Phi ratio, the growth pattern of nature, are a focus of investigation and form the basis for garment structural design development. Their occurrence in nature, and adoption by humans in the physical and metaphysical realms throughout our evolution, permeate many perceived boundaries, this being the rationale for their adoption as the fundamental core of the ARC (1.2).

The five Platonic solids, namely the hexahedron, icosahedron, tetrahedron, octahedron, and dodecahedron are unique, being symmetrical from all angles,

the angles within each shape are equal, as is the length of each edge, no other solids have these characteristics²¹ (figure 15). Equilateral triangles, squares, and pentagons form the solids, each fit within a sphere having all points touching the outer edge (figure 16). They have many other intriguing mathematical relationships (1.3)²² and are duals²³ of each other, therefore solids with the same number of edges are paired, the tetrahedron being a self-dual (figure 17) i.e., dodecahedron/icosahedron, octahedron/hexahedron, tetrahedron/tetrahedron (Wagner & Wagner, 1995). The tetrahedron dual forms an eight-pointed star, the Merkaba²⁴ (2.4.4) a significant symbol of connection and unity within spiritual realms (Shekhar, 2021).

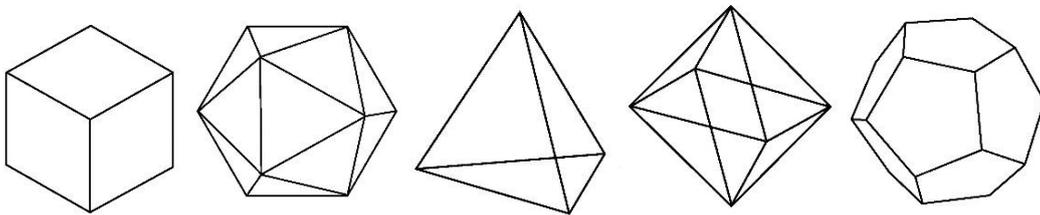


Figure 15 Hexahedron, Icosahedron, Tetrahedron, Octahedron, Dodecahedron



Figure 16 The Platonic Solids fit within a sphere having all points touching the outer edge

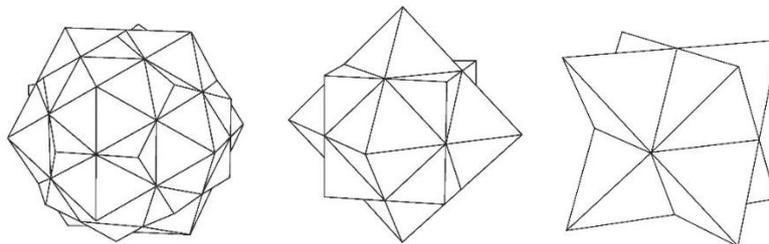


Figure 17 Platonic Duals: Dodecahedron/Icosahedron, Octahedron/Hexahedron, Tetrahedron/Tetrahedron (the Merkaba)

²¹ The first written account detailing the Platonic Solid's complex mathematical attributes can be found in Euclid's Elements, book XIII, c. 300 BCE

²² Largely outside the scope of this thesis

²³ Midpoint of each face of one solid connects with the midpoint of each edge of its partner solid when merged

²⁴ Translated as a metaphorical *chariot to ride in*. A symbol of connection with light, spirit, and body, and represented as such in the Bible, Judaism, Hinduism, and Buddhism

They take their name from the Greek philosopher Plato (424-348 BCE), who wrote about the naturally occurring phenomena in his dialogue *Timaeus* (c. 360 BCE), a metaphorical interpretation of the formation of the universe (Zeyl & Sattler 2017). Within the dialogue, each of the five solids are assigned a classical element of creation - fire, water, air, earth, and aether²⁵- *life energy* (Hagens, 2006). The elements were thought to be attributed to the solids by intuitive and sensory exploration of their form²⁶. The tetrahedron was associated to fire perhaps because of its sharp, flame like points, it also has the smallest volume for its surface area and is therefore the most mobile and so forth (Fiolet, 2020; Buckmire, 2015; Coxeter, 1973).

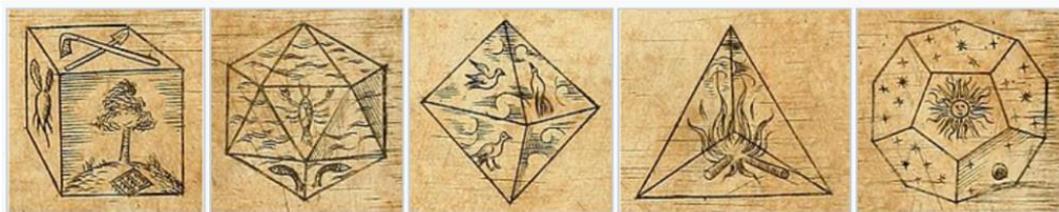


Figure 18 The Platonic solids and their attributed elements as depicted in Kepler's *Mysterium Cosmographicum*

Kepler (1571-1630) “also searched for connections between the solids and the natural world” (DeHovitz, 2016, p. 5) and documented this relationship in *Mysterium Cosmographicum*²⁷ (figure 18). He used Plato’s attributed elements and theories of universal harmony to construct a model of the solar system “represented by six spheres separated by the five Platonic solids” (ThatsMaths, 2016). Galle (2018) suggests his theories were “empirically inaccurate but an aesthetically beautiful example of three-dimensional thinking and a key steppingstone towards our modern understanding of the cosmos”²⁸. In the past eminent mathematicians and scientists²⁹ embraced the phenomena of Phi and the Platonic solids, viewing them as interwoven natural concepts. Stakhov & Aranson suggest that modern research and discoveries are renewing these ideas and that “Phi and the Platonic Solids have been instrumental in the revival of this ancient idea of universal harmony in the natural sciences ³⁰” (2017, pp. 54-56). Contemporary cosmologists agree, suggesting that space could indeed be finite, and shaped like a dodecahedron. They posit that a universe with a dodecahedral

²⁵ Thought to mean the vehicle for transmitting light and other electromagnetic waves through the universe

²⁶ A sensory exploration of the solids was conducted with Wearer Interaction Participants questioning the transferability of Plato’s element associations (see 5.5)

²⁷ *Mysterium Cosmographicum* (Secrets of the Cosmos), published in 1596

²⁸ A deeper explanation of Kepler’s theory can be viewed at <http://thatsmaths.com/2016/10/13/keplers-magnificent-mysterium-cosmographicum/>

²⁹ Including Pacioli, Da Vinci, Kepler, Einstein, Binet, Lucas, Zeising, Klein, Newton, Moon

³⁰ Crystallography, chemistry, astronomy, earth sciences, quantum physics, botany, biology, geology, medicine, genetics.

form can justify measurements of radiation remaining after the big bang and that spaces with more mundane shapes cannot (Luminet et al, 2003, p. 593).

Phi³¹, also referred to as the golden ratio, golden section, golden proportion, golden mean, divine proportion³², and sacred cut is believed to be a fundamental and perfect number (Hemenway, 2005). The interconnectedness of the Platonic solids and Phi in the natural world through number, harmonics, geometry, cosmology, and growth patterns is well documented (Hemenway 2005; Ghyka, 1946; Olsen, 2006; Sutton, 1998). As is their use by ancient civilisations (figures 19 & 20), evidenced in Neolithic people (c.9000-1800 BCE) in the alignment of calendars, stone circles, and artefacts³³ their use unknown (Roberts, 2012; Critchlow, 2007; Emmer, 1982; Marshall 1983; Hart 1998). The Romans also cast icosahedral and dodecahedral decorated artefacts in bronze and gold, again of unknown purpose (Hill, 1994). The Latin etymology of *ratio* is *reason*; Rowland-Smith suggests, “reason is not about logic per se, but mental harmony, order and pattern” and that when this breaks down, we have irrationality and disruption. “In this sense, pattern is the very principle of reason” (in Murray & Winteringham, 2015, p. 15). Olsen agrees suggesting that it is “humanity’s duty to reconnect and resonate with this deep code of nature” (2006, p. 50).



Figure 19 Neolithic artefacts resembling Platonic Solid formations – stone, approx. 7cm diameter, c.2000 BCE

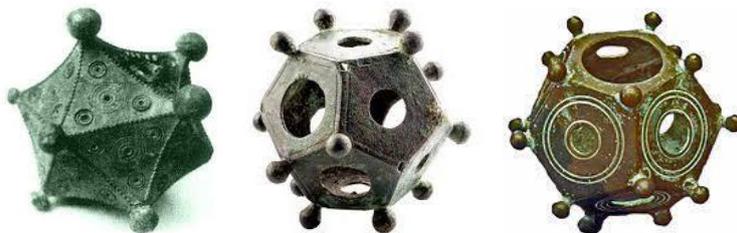


Figure 20 A Roman icosahedron and two dodecahedra – bronze, ranging from 4-11cm diameter c.300CE

³¹ Phidias (480-420 BCE) used the eponymous *Phi* ratio of 1:618 in the design and alignment of the Parthenon in Athens amongst many other structures (Olsen, 2006, p2).

³² The Divine Proportion published in 1509 by Luca Pacioli & Leonardo Da Vinci elaborated on these relationships

³³ Several hundred stone balls have been uncovered like those in figure 23, mostly around 7cm diameter

Naturally occurring Platonic solid shaped phenomena can be evidenced in the forms of Radiolaria³⁴, bubbles, molecules, viruses³⁵, and crystals (figure 22). Minerals grow in geometric crystal forms. Pyrite³⁶ develops naturally in varied Platonic solid shaped forms (figure 21) depending on habitat conditions (Cordua, n.d.); the “Periodic Table of the Elements being an entire system of thought organised around these five geometric shapes” (Hagens, 2006, p. 32).



Figure. 21 Left to right: Naturally occurring pyrite crystals - dodecahedron, octahedron & hexahedron

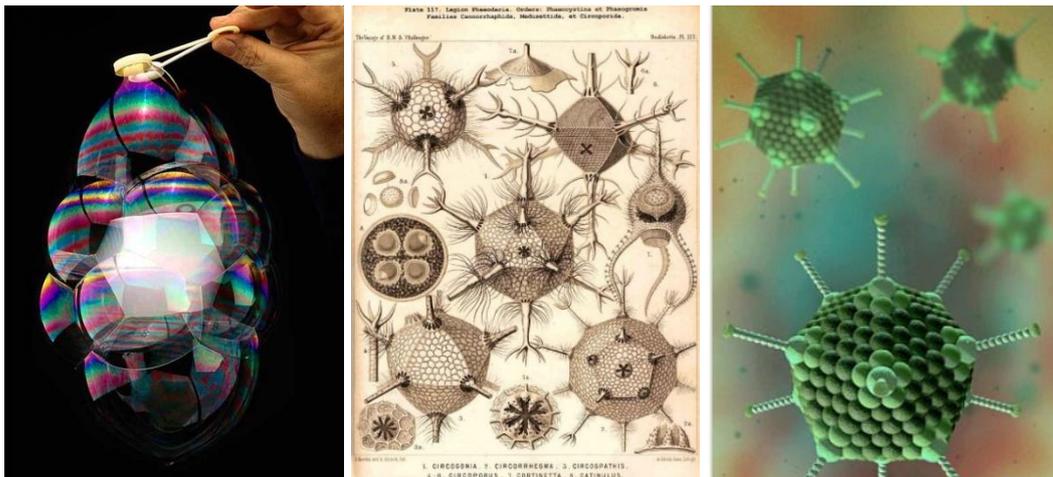


Figure 22 Twelve bubbles form a dodecahedron at their centre; Illustration of Radiolaria; Adenovirus

As noted, the Phi ratio (1.618), the *golden* proportion, occurs in proliferation, throughout the natural world. Its spirals biophilic growth patterns are evidenced in human embryos, animals, plants, shells, weather formations and much more natural phenomena (Hemenway, 2005). The average proportions of an adult human (figure 23) can be aligned to this ratio.

The Platonic Solids and Phi cross many perceived boundaries³⁷, having numerous associations in mathematics, science, nature, art, design, architecture,

³⁴ Single-celled Ocean organisms that feed on organic waste

³⁵ Usually taking an icosahedral or icosahedral dual form

³⁶ Combined iron/sulphur atoms

³⁷ As reviewed in this section

symbolism, spirituality (2.4.4) and so forth, all interwoven by “a structuring force that appears to tie together, either consciously or unconsciously, nearly all of the phenomena we encounter” (Rowland-Smith in Murray & Winteringham, 2015, p. 15). The ARC embraces this multi-layered narrative embodying a link between physical and spiritual realms (2.4.4).

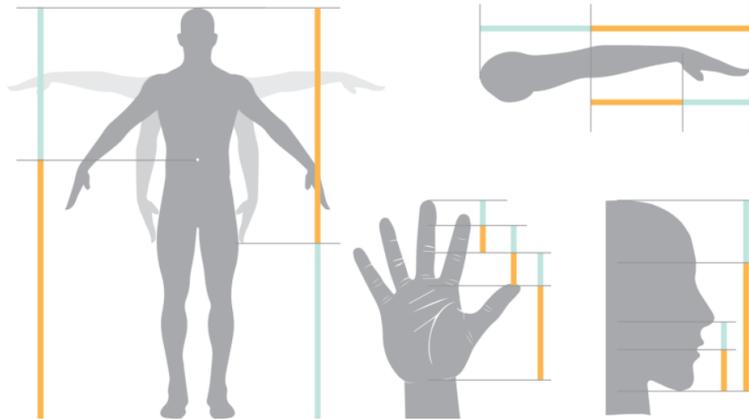


Figure 23 Phi ratio in the human body

2.2.5 A Biophilic Clothing Context

Biophilia when related to clothing is a less tangible concept as in the built environment (2.2.3), because of its fluid, mobile, and ephemeral nature, and literature specifically relating to biophilic clothing is sparse. What constitutes a narrative of biophilic fashion is arbitrary, and a documented design framework (figure 7) of such has evaded this investigation, driving the research aim (1.2).

Nature interpreted through clothing, as a source of inspiration, is commonplace. Historical garments often depicted natural history from previously unrecorded lands and were worn by wealthy and educated classes as status symbols (Ehrman, 2018). Carter (1996, p. 158) suggests the refashioned feathers adorning the hat in figure 24, shows the human need to control and exploit nature (2.3.1/2/3/4). Contemporary parallels of Carter’s argument can be evidenced through the wearing of animal prints thought to empower the wearer by the suggestion of ultimate control³⁸ (Forbes-Bell, 2018). Alexander McQueen (1969-2010) continually referenced historical fashion and nature as a source of inspiration, and empowerment, stating “everything I do is connected to nature in

³⁸ Evolutionary psychology dictates that human survival relies on the successful management of threatening circumstances, perhaps attack by wild animals. Thus, animal prints can signify empowerment, recognition, and control (Forbes-Bell, 2018).

one way or another” (Armstrong in Ehrman, 2018, p. 157). He used natural materials in their purest form stating “it needs to connect with the earth...things that are processed and reprocessed lose their substance” (Bolton, 2011, p. 215). Feathers, crystals, horns, shells, (figure 24), flowers, taxidermy, butterflies, animal prints, leaves and hair/fur and so forth featured in animalistic fantasies (Fennetaux 2018). As noted (2.2.3), referencing nature as a source of design inspiration, and selecting natural materials for garment creation does not imply a biophilic connection; many other interwoven factors need considering to embed integrity, respect, deep meaning, and planetary responsibility, essential for wearer wellbeing, the wearer being part of nature (2.3.1).

Gates (1999) suggests that some of our best innovations are copied from living things. Biomimicry in fashion, also referred to as biomimetics, emulates nature. Natural phenomenon is re-engineered to create technologically advanced fabrics³⁹. For example, sustainable leather alternatives are now available fabricated from apple skin⁴⁰, pineapple leaves⁴¹ and mycelium protein⁴². Nikwax Analogy⁴³ emulates seal fur repelling water, wind, and sweat away from the body (Hess, 2017). Motif (Motif.org, n.d.) suggests that biomimetics has the potential to produce fabrics that will be “self-repairing, self-cleaning, preserve energy, superhydrophobic, and more...producing clothing that could interact with our bodies, even reacting to our emotions or the social environment”. The ARC aims to cultivate these aspirations, not through technology, but through direct communication with nature; using the inherent regenerative characteristics of natural and sustainable fabrics in their purest form (Coulthard, 2020; Bolton, 2011; Sharan et al, 2008).

Biophilia, as a terminology, was adopted as a major catwalk trend of S/S 2020. Luxury brands including Dior, Louis Vuitton, Lacoste, and Comme des Garçon displayed nature inspired creations in various guises (Givhan, 2019) including floral embroidery, foliage accessories, and raffia dresses (figure 25). Dior’s catwalk set (figure 25, image on right) used more than 100 trees to show its *biophilic collection*. These *biophilic* interpretations undeniably have connections to the natural world but the embodiment of Fromm’s intended meaning (2.2.1) that “society must develop a non-destructive relationship with

³⁹ Outside the scope of this thesis

⁴⁰ Frumat - <https://tracxn.com/d/companies/frumat-bolzano.it>

⁴¹ Pinatex - <https://www.ananas-anam.com/>

⁴² Mylo - <https://www.mylo-unleather.com/>

⁴³ Nikwax - <https://www.nikwax.com/en-gb/materials/analogy/> and <https://www.paramo-clothing.com/en-gb/explore-range/?attributes=FCBDB5D3-90B7-4766-871F-389AF483A8BE>

the environment by fostering and perfecting the human potentiality of biophilia” (Gunderson, 2014, p. 182) is debatable. The ARC is situated outside the concepts of season, trend, and *fashion*. The paradox of *trend* that encourages clothing consumption, is an anomaly contravening the authenticity of biophilia.



Figure 24 Left to right: Wool/silk hat decorated with swan feathers and a stuffed starling, French 1885; McQueen: It’s a Jungle Out There A/W 1997, leather/impala horns; La Dame Bleue S/S 2008, feathers/silk



Figure 25 Left to right – Louis Vuitton, Comme des Garçon Noir Kei Ninomiya, Christian Dior

As noted, harnessing, and translating the integrity of biophilia through clothing is problematic, in that body coverings are fluid, mobile entities unlike the static landscape of the built environment (2.2.3). Natural materials, colours, textures, embellishments, trim, prints and so forth can be readily incorporated (figures 25) in garments, however, attributing and embodying the silhouette of clothes with authentic biophilic principles for improved personal and planetary wellbeing is a less tangible concept. The Platonic Solids and Phi ratio were identified (2.2.4) as structural biophilic design opportunities for addressing this problem

as they link between physical and spiritual realms. The three-dimensionality of the solids and the proportional ratio of Phi thus provide a natural analogue, a tool for garment design development. The following three examples are reviewed for their application of this phenomena through wearable, albeit rigid structures:

- 1 Konstantin Kofta creates sculptural leather accessories “at the intersection of art and applied science”. Inspired by elements of the natural world he believes that the *perfect is hidden*, his philosophy being to a gain different perspective whilst maintaining practicality. The Platonic Solids collection of 2014, based on the periodic table of elements explores “the foundation of everything in the physical world” (koftastudio.com) (figure 26).
- 2 Amila Hrustic created a collection of rigid wearable art from recycled paper representing each of the five solids⁴⁴, surface mounted in their entirety on the body (figure 27). She describes her work as “building blocks of the universe” conceived to explore “geometrically arranged structured space in relation to the human body and the environment” (Warmann, 2010).
- 3 Snezfeld’s work (figure 28) has similarities with Hrustic in that she handcrafts Platonic solids to create statement pieces for stage and gallery. She has a consumer-critical view of fashion, and uses recycled materials, drawing inspiration from the 1960’s Italian art movement, Arte Povera, characterised by its use of commonplace and found materials that evoked a pre-industrial age, such as earth, rocks, clothing, paper, rope and so on (Borrelli-Pearson, 2016).

Kofta, Hrustic, and Snezfeld, embrace a biophilic design approach in that they craft individual pieces from natural materials, using naturally occurring 3D shapes for flat-patterning and endeavour to embody deep meaning, philosophically connecting the wearer and the natural environment. However, they do not describe their work as biophilic nor identify it directly with wellbeing.

⁴⁴ Plato’s Collection (2010) <http://amilahrustic.com/portfolio/platos-collection/>

Wearable fluid geometric forms are often attributed to Japanese fashion designers. A small group of whom showed their work to western audiences for the first time in Paris in 1981, led by Miyake, Kawakubo, and Yamamoto. Their philosophical approach manifested in architectural and voluminous silhouettes that sat outside conventional western pattern-cutting conventions and opened a new pathway for clothing (Mendes, 1999, p. 17). Kawakubo sought to confront western tradition stating, “I want to suggest to people different aesthetics and values...I want to question their being” (Frankel, 2001, p. 158). Quinn, commenting on the philosophical stance taken by Japanese fashion designers suggested that “these are clothes made to be worn by the mind as well as the body” (2002, p. 141). The ARC identifies with this philosophical stance, in that clothes are worn by the mind-body-environment – suggesting an alternative aesthetic and value viewpoint (2.3.3).



Figure 26 Tetrahedron, Hexahedron & Octahedron fashioned as leather backpacks by Konstantin Kofta



Figure 27 Amila Hrustic, hexahedron dress

Figure 28 Octahedrons, icosahedrons & inverted tetrahedrons are combined in a piece by Bea Snezfeld

Miyake combined geometry and fashion in his 2010 transformational collection “132 5”. The title refers to the way flat fabric “(1D) takes on a three-dimensional shape (3D) and is then folded into a flat surface (2D), and the way that wearing it transforms it into a presence that transcends time and dimensions (5D)” (issey Miyake.com/1325/standard). The 3D origami type garments are generated by computer software and fabricated in recycled polyester. Miyake’s vision is to design clothes that bring joy and happiness to the wearer although does not elaborate on how this might happen. Whilst the garments are not platonic solids in their 3D silhouette, the *flattened* 2D forms explore Phi, squares, triangles, pentagons, and other geometric shapes found in nature (figure 29).



Figure 29 Issey Miyake’s “132 5” collection comprises of 2D pentagons that open to form a top and skirt, and a spiralsed flat ‘ammonite’ becomes a dress

Fellow Japanese designer, *not interested in mainstream* (Frankel, 2003) is Junya Watanabe. His A/W 2016 collection explored Platonic forms, albeit not in their complete 3D arrangement (figure 30). His approach parallels Miyake in that his work is unconventional, working with mathematical precision using geometric shapes and synthetic and bonded fabrics to retain structure and volume. His clothes are often referred to as *anarchic, challenging, intellectual* and *Japanese* by western journalists (Fury 2016). Driven by an innate need to create something new through clothes, stating “I was drawn to the fact that designers before Miyake, like Dior and big names, would create clothes that were form-fitting...Issey (Miyake) totally changed the idea, completely different, and that impact was profound on me. Of making me want to create something, the idea of clothing much different from previous designers” (Ibid).



Figure 30 Junya Watanabe A/W 2016 - industrial neoprene forms geometric 'Platonic' garments

Anrealage⁴⁵ aims to “explore clothing in relation to form” (Fukai et al, p. 244). Its Globe/Pyramid/Cube collection (2009) questions stereotypical body shape (figure 31), removal of the geometric form gives way to voluminous free fitting garments, a similar concept explored through *Alien Body* three-dimensional shapeshifting (figures 1 & 2) (Campbell, 2014). Anrealage’s *Home*, S/S 2021, builds on their Globe/Pyramid/Cube collection, using Platonic and Archimedean solids as transformational homes/clothes (figure 32). Erection of a lightweight frame and base transform the clothes into tents, the headpieces are reinvented as lampshades. Lightweight fabric, and the volume of the structures, when worn as clothing, encourages sensory interaction with the elements through their movement. The philosophy behind the collection is protection and shelter, shielding from threats (Verner, 2020; Anrealage, n.d.). It has a resonance of industrial designer Lucy Orta’s 1992 work ‘Refuge’, whereby a garment transforms to provide shelter. Orta’s work focuses on “issues of identity, personal space and the environment” (Bolton, 2002, p. 132). Anrealage’s S/S 2021 collection has many parallels with the references discussed in this section and is ultimately a metaphor for the ephemeral nature of our environment. The collection is an authentic literal translation of 3D Platonic solid forms as fluid wearable clothing and the only example found whilst reviewing context (figure 32).

The fluid wearable geometric forms cited are interestingly all attributed to Japanese designers, their use of natural geometric analogues within fashion silhouettes questions perceived convention. They transcend time and dimension; explore clothing in relation to form rather than body shape; sit outside typical

⁴⁵ Japanese brand formed in 2003 by Kunihiro Morinaga who describes its philosophy as “a bit mysterious”

western design and pattern-cutting approaches and are conceived with deep meaning. All attributes that the ARC supports and aims to embody within clothing.



Figure 31 Anrealage S/S 2009 Globe/Pyramid/Cube collection



Figure 32 Anrealage's *Home* collection S/S 2021 – octahedron, dodecahedron, and icosahedron *homes* transform into garments

2.2.6 Key Insights

Biophilia is one of four interrelated bubbles that contribute to a narrative of holistic wellbeing, and therefore the following observations are components of a larger landscape:

- 1 Biophilic design can support wellbeing. It requires acknowledging and following fundamental principles that communicate nature in ways that embed honest, long-term sustainability and low environmental impact, respecting all living things (2.2.1).

2 Interaction with nature can be communicated through design by direct experience, indirect experience, and through experience of space and place. Biophilic design interpretations can be communicated literally or abstractly. Frameworks reflecting attributes of these experiences and styles are adopted and applied within several areas of the built environment (2.2.3).

3 Sustainable natural materials in their purest form, close to their organic origin are preferential (2.2.3) when embedding biophilic design attributes and have a stress reducing effect.

4 The Platonic Solids and Phi ratio are biophilic phenomenon offering design opportunities that have the potential to inform 3D garment structure and proportion. They also have embedded connotations that link physical and spiritual dimensions (2.2.4).

5 The fashion system has not widely adopted the term *biophilic design* to frame issues of planetary and personal wellbeing, nor has it outlined any fundamental principles that define the lexicon (2.2.5).

Bill Browning & Catie Ryan, biophilic designers working in the built environment, succinctly summarise:

“Biophilic design brings a new level of intention to design – a lens through which the scope of design expands beyond function and beauty. Knowing that biophilic design can measurably support positive psychological and physiological conditions presents a new frontier of responsibility and purpose” (2020, p. 233).

2.3 Natural Capital

2.3.1 Introduction

The Natural Capital *bubble* explores how our relationship with nature can be reshaped by suggesting strategies for an ecology of transformation (Hathaway & Boff, 2009) that could be channelled through clothing to celebrate and cultivate the environment for the benefit, and wellbeing, of all living things. Natural Capital discusses society’s paradoxical relationship between nurturing healthy, balanced eco-systems, essential for human wellbeing (Orlov et al, 2020) and our disconnection from this reality. Simplified and practical concepts are presented

in this section that aim to challenge ideology and offer a transitional regenerative perspective to our understanding, behaviour, and value systems. Key insights from this bubble (2.3.6) contribute towards ARC's wellbeing design framework.

The term *Natural Capital* has, over the last decade, been adopted by sections of government and business to frame environmental issues. It can be defined as Earth's deposit of natural reserves including soil, air, water, geology, climate, and all living entities (Natural Capital Forum, n.d.). E. F. Schumacher first used the term at a conference in 1976; he spoke about economic systems powered by humanities belief in infinite planetary resources resulting in a devastated ecosystem (Schumacher, 1976). The cumulative effect of the exploitation and pollution of Natural Capital by various stakeholders can now be witnessed in a rapidly deteriorating eco-system impacting human wellbeing (Fabbiano et al, 2021).

Alexander von Humboldt (1769-1859), the founder of "ecosystem sciences" suggested three types of human intervention that affect planetary balance: ruthless irrigation, deforestation, and industrial emissions (Wulf, 2015). Svante Arrhenius (1859-1927) developed Humboldt's theory further speculating on an Anthropocentric⁴⁶ era whereby over thousands of years ecosystems would become destabilised (Orlov et al, 2020). These futurist theories are now a proven reality, in hundreds, rather than thousands of years⁴⁷ (Berstein, 2021). Some researchers suggest that humanity has "a decade to avert catastrophic climate change" (Fletcher & Tham, 2019, p. 6), and that the essential changes in knowledge and behaviour needs to be dramatic (G7, 2021; Dasgupta, 2021; Ditty, 2020; Ripple et al, 2019; Earls, 2011; Diamond, 2011; IPPR, 2005).

2.3.2 Ego v Eco

The Dasgupta Review⁴⁸, commissioned by the UK Government in 2019, on the economics of biodiversity, suggests that we must develop our economic growth based on the understanding that we are embedded within nature, rather than apart from or above it (figure 33) and that "we need to change how we think, act and measure success" (Dasgupta, 2021, p. 3). The Design Research Society concur stating "what is currently asked from humanity is more than damage

⁴⁶ Philosophical viewpoint arguing that human beings are the most significant entities on the planet, and justifies the exploitation of nature for the sake of human welfare

⁴⁷ 2020 was the hottest year on record

⁴⁸ An independent review produced by economist Professor Sir Partha Dasgupta from the University of Cambridge

reduction, but a profound societal transformation, reconceiving cultural and economic models and changing our ways of being, thinking, learning, making, relating, and so on” (DRS, 2021, para. 4). These are just two of many examples that could have been provided.

A reductionist viewpoint of being separate from, or above nature, was held by Descartes (1596-1650). Feltz suggests he has “no regard for the environment, which he views in a utilitarian way, and considers an infinite resource that humans can draw upon without any qualms” (2019, para. 3). It could be argued the bible advocates a similar message in Genesis 1:26-28 when describing humans as having: “dominion over the fish of the sea and over the birds of the air and over every living thing that moves upon the earth” (Santos, 2020; Gunderson, 2014; Jakimow, 2013). Some researchers suggest that this way of thinking⁴⁹ is still prevalent and entrenched in contemporary society⁵⁰. “People do not see themselves as part of nature, nature is something to be controlled and exploited and that this separation created the conditions for the environmental devastation that we experience today” (Pivot, 2021, p. 4).

Exceptions to this viewpoint are found in “indigenous peoples in whose territories more than 80% of remaining biodiversity is found...it is time to understand that humans are a species amongst others (figure 33), and it is only through peaceful coexistence we are able to preserve wellbeing” (Evengard, 2021, p. 345).

Escobar (2017) argues for an inclusive *pluriversal* world, where many types of *worlds* coexist to nurture and respect life on Earth. His “pluriverse framework embraces the idea that substantial societal innovations, valuable practices, and alternative futures are emerging” (Kothari, in Pivot, 2021, p. 3), however, the West (the global north) does not yet widely acknowledge them as valid (Santos, 2016). Nevertheless, a new era of transitional design practice is evolving whose aim is to reimagine, regenerate and “liberate *Mother Earth*” (Escobar, 2017, p. 203). This mission is at the foundation of this research.

2.3.3 Assigning Value

Diamond (2011) discusses *assigning value* in his discourse of societal collapse and suggests theories why some ancient civilisations including the Maya, and Easter Islanders rapidly declined. He cites resource consumption, waste

⁴⁹ A necessary precondition for the expansion of capitalism and colonialism of many Western powers over the last 400 years

⁵⁰ Referring predominantly to a Judeo-Christian value system

production, maximum population, wealth, and power, as factors creating catastrophic ecosystem imbalances and aligns his theory with modern societies. To *survive* he suggests reassessing core values and making difficult decisions about “which of the values that formerly served a society well can continue to be maintained under new changed circumstances...and which of these treasured values must instead be jettisoned and replaced with different approaches?” (pp. 522-524). Orr describes the transformation needed to *survive* as “Metanoia⁵¹...it’s a change in our loyalties, affections, and basic character that subsequently changes our intellectual priorities and paradigms...and in time alters the character of our entire civilisation” (1993, p. 430).

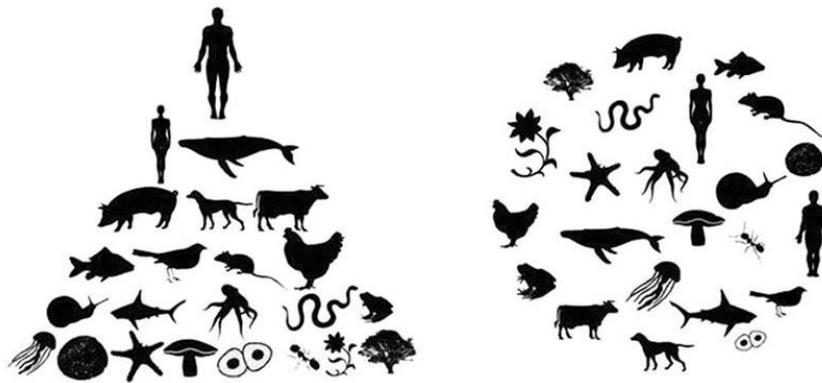


Figure 33 Humankind is part of the ecosystem, not apart from or above it

Modern societies are driven by Western economic systems based on free markets that encourage consumption (Dasgupta, 2021; Pettinger, 2019) driven broadly by “patriarchal capitalist modernity” (Escobar, 2017, p. 3). Research suggests that some fashion consumers focus on the “experience of buying new clothes and the emotions they feel from the self-gratification of continually having new clothes” (Hole & Hole, 2019, p. 912), rather than assigning value to the material object. Clothing has never been as affordable, available, and profitable, the insatiable demand for clothes is increasing; added to this the expanding global population is compounding the exploitation of natural capital (Ellen MacArthur Foundation, 2017). Button discusses the illusion of fashion materialism and the difficult detachment from this because of the engrained “rampant consumerism” within society which promotes excess as “the good life” (2018, p. 231). Jackson (in Button, p. 233) concurs suggesting that the concept of prosperity should be reframed as a sense of belonging, “the feeling of wellbeing that comes from being part of a flourishing community” and equates

⁵¹ A transformative change of heart; of one's whole being, especially a spiritual conversion.

this to societies in “Norway and Denmark, which have some of the highest happiness levels in the world” (2.4.3).

Changing human behaviour necessary for holistic wellbeing is multifaceted; Earls suggests that humans are “a herd animal and that we do what we do because of those around us...the greatest influence on individuals is other people” (2011, pp. 9 & 363). For example, gathering momentum in mass behavioural change has been evident in the recent rise of plant-based diets in the UK (Dunlap et al, 2000). Veganism has increased 340% from 160,000 in 2014 to 600,000 in 2019 with 20% in the 16-24 age group (The Vegan Society, 2020). “Here diet is used as a control mechanism when confronted with overwhelming environmental challenges; animal ethics, wellbeing and ecological impact were key factors in instigating this behavioural change” (Downie-Melrose, 2020, p. 23). Global veganism has a higher proportion of women to men who are perceived “to be more compassionate than men which is potentially a factor explaining why women make up 75% of animal rights group members” (Gorvett, in Downie-Melrose, 2020, p. 33). It could be argued that fashion and animal activism share similarities in that they are both predominantly women oriented; frustrated with political inertia - their collective aim being to assign value to nature in all its forms. Both groups campaign for greater transparency and awareness in the supply chain, environmental impacts of production systems, and the ending of human/animal exploitation (Fashion Revolution, n.d.).

2.3.4 Small is Beautiful

E. F. Schumacher’s (1911-1977) *Small is Beautiful* (published 1974) is an economic discourse based on ecological principles and has parallels with the recently published Dasgupta Review (2021), both argue that *Natural Capital* should be costed into economic calculations rather than viewed as a *free* resource open to abuse. Schumacher’s philosophy grew out of studying *village-based* economies, whereby he coined the term *Buddhist Economics*. The principle aims of economic activity being small-scale initiatives to meet human requirements, not to create excess profit, and that work should be locally organised to meet the needs of the immediate community (D. Schumacher, 2011)⁵². Manzini (2011) suggests a new way of the future to be *Small, Local, Open and Connected*, forty years after, *Small is Beautiful* was proposing a similar ethos. In a comparable tone Steel’s (2021) *Sitopia*⁵³, explores social innovation

⁵² He believed in simplification, reduction, and moral restraint, echoing Aristotle’s *eudaimonia* (2.4.3)

⁵³ Greek etymology of *sitos* (food) and *topos* (place)

through small-scale urban design. Local, visible, healthy, and sustainable food sources are integral planning criteria of space and place. She outlines the central and interconnected role food plays in our lives and how by transforming our relationship with food, by assigning value, and making visible and ethical connections with source we could transform mindsets and *save the world*. Furthermore, Manzini suggests that new relationships “between farmers and citizens, and between food and agriculture are emblematic of a larger wave of social innovation” (2011, p. 101). For example, the rise in city farms, neighbourhood gardens, and local social enterprises growing organic produce support these viewpoints.

More relevant to this specific research, *Fibershed*⁵⁴ is a *village-based* circular economic model seeking all-inclusive wellbeing solutions, aligned with Escobar, Schumacher, Dasgupta, Manzini, Steel, et al. The movement’s emphasis is on holistic clothing practices, promoting local initiatives and community networking; several *Fibershed*’s are now in operation throughout the world (Burgess & White, 2019). Natural fibres⁵⁵ are nurtured, processed, and fabricated within a 150-mile locality providing supportive connections between farmers, mills, artisans, and wearers. Rebecca Burgess, the instigator of the *Fibershed* movement, states her motivation behind the initiative is our ignorance of clothing’s provenance:

“There is a major disconnect between what we wear and our knowledge of its impact on land, air, water, labour, and human health. Even those who value access to safe, local, nutritious food have largely overlooked the production of fibre, dyes, and the chemistry that forms the backbone of modern textile production” (Burgess & White, 2019, p. 284).

This non-profit organisation’s aim is to provide a *soil-to-skin* transparency and provenance, reconnecting wearers with the source of their clothing.

2.3.5 Feel Good Fibre

The sensorial effect of fabric next to the skin impacts wellbeing (Kyriacou et al, 2021) and can be related to the inherent fibre properties and characteristic of the finished fabric. For example, its breathability, tactile comfort, aesthetic preference and so on (Kayseri et al, 2012). Keach & Rosenborg (2020) suggest that fibre generation for clothing creation is the largest area of environmental

⁵⁴ Develops regional fibre and clothing production systems that build soil nutrients and protect eco-systems. <https://fibershed.org/>

⁵⁵ Used to create yarn to produce textiles

degradation within the supply chain. “One of the most effective ways people can individually have a positive impact on the planet is to choose fabrics that are sustainable” (Young, 2021, para. 8). Steele (2020) states that the provenance of raw materials for clothing production should be interrogated, and that consumers should educate themselves more about fibres (**2.2.5**) which can take many forms:

- “Natural – processed from plants or animals including cotton, linen, hemp, ramie, silk, wool
- Artificial – regenerated natural plant cellulose such as viscose, acetate, lyocell, bamboo, seacell
- Synthetic – chemical compounds usually derived from petroleum, for instance polyester, acrylic, elastane, nylon
- Bio-Synthetic- synthesised from natural polymers such as yeast cells, mycelium protein, apple skin, pineapple leaves, coffee grounds”⁵⁶

Burgess & White (2019, p. 6) suggest that 70% of what humans wear today is fabricated from synthetic fibres that shed non-biodegradable micro-plastics into water systems through laundering, which are then re-ingested. Garment disposal can also be problematic if synthetic materials are used as they are unable to fully biodegrade, becoming pollutants either through landfill or incineration. They advise four steps to perpetuate personal and planetary wellbeing⁵⁷:

- 1 “Wear natural fibres
- 2 Avoid plastic clothing
- 3 Choose quality garments over quantity
- 4 Keep clothing in use for as long as possible”

Natural fibres align with the concept of biophilia (**2.2.3**), whereby Coulthard (2020) suggested humans appear to respond more favourably to materials that are close to their organic origin. However, natural fibres are not necessarily good for the environment. For example, animal derived materials such as wool and leather produce methane as a by-product, responsible for approximately 14.5% of the world’s greenhouse gas emissions⁵⁸ (FAO, n.d.); the cultivation of cotton is environmentally demanding needing large amounts of water⁵⁹ and toxic chemicals that pollute soil, water, and air (Young, 2021, para. 19). Extinction

⁵⁶ <http://sff.arts.ac.uk/Fibre%20Categorisation/fibrecategories.html>

⁵⁷ <http://fibershed.org/wp-content/uploads/2019/04/Fibershed-Clothing-Guide-second-edition.pdf>

⁵⁸ Toxic chemicals are used in the tanning and wool preservation processes. In addition to the ethics of animal agriculture and animals as products.

⁵⁹ Approximately 20,000 gallons of water is required to make a single pair of cotton denim jeans

Rebellion suggest *hemp* to be the best alternative to cotton as it uses a lot less water and thrives without needing pesticides (Wells, 2019).

Fibre production from green-leafed plants can play an important role in balancing carbon level. Phytoremediation is a process whereby plant and soil microbes decrease the toxicity of pollutants in the air, soil, and water (Ankita, 2020). Some plants are more effective phytoremediators than others. Industrial hemp (a non-psychoactive genus of *cannabis sativa*) is a phytoremediator and hyperaccumulator, a plant able to grow in soil with high concentrations of metals and pollutants (Rascio & Navari-Izzo, 2011; Henckel, 1937). Hemp absorbs and neutralises contaminants without any apparent harm to the plant, improving soil structure and nutrient levels,⁶⁰ for example, wheat rotated with hemp has a 20% higher yield (Gorchs et al, 2017). Hemp is a hardy, low-maintenance, and fast-growing plant (5 metres in 3-4 months) which requires no additional water or pesticide (Husian et al, 2019). Its deep-root system (usually a mirror of above soil height) prevents erosion and accesses minerals and water deep below the topsoil. It sequesters more carbon dioxide from the atmosphere than is discharged by harvesting, processing, and transportation⁶¹. *Cannabis sativa* has many different strains to suit climate conditions and end use. In addition to its carbon negative and regenerative properties every part of the plant can be used, its multiple-purpose applications include:

- Seed: a complete amino acid (protein source), used for human and animal food, protein powder, oil extracted from the seed – cooking, beauty products, biofuel.
- Flower: leaf, and stem extract – CBD oil, numerous health, wellbeing, and medicinal benefits.
- Bast: long, strong fibres from the outer part of the stem, used to produce textiles.
- Shiv (or hurd): the woody core of the stem, used in construction (hempcrete), automotive industry (body panels), insulation, animal bedding, paper, bioplastics.

⁶⁰ <https://britishhempalliance.co.uk/about-hemp/>

⁶¹ <https://britishhempco.com/pages/hemp-carbon-capture>

Industrial hemp strains can be cultivated between the equator and 60 degrees latitude⁶² (Henkel, 1937, p. 1). This wide production scope could empower and connect small local communities by providing regional manufacturing and associated industry aligned to the models discussed (2.3.4). O’Dea (2020, p. 2) discusses a local circular hemp facility in an architectural discourse, questioning: “How can we continue to mend and develop our cities in a sustainable way, with a core agenda of simultaneously trying to reduce the environmental impact of the fashion industry?”. She identifies hemp as a possible regenerative locally grown resource that can benefit architecture, fashion, environment, and community.

Hemp fibres have been spun into fabric for at least 10,000 years. 80% of UK garments were made from hemp until 1920’s⁶³. Fabric made from industrial hemp fibre is bio-degradable and carbon negative. Preconceptions of the fabric being coarse and hessian like are erroneous and are dependent on yarn spinning (Robinson, 1996). Henkel (1937, p. 13) suggests “hemp furnishes a thread of extreme fineness almost equalling silk, much finer than cotton”. The long individual fibres have a high tensile strength, second only to spider silk, enabling multi-weight processing from heavy canvas and rope to a lightweight gossamer knit. The fast growth cycle of hemp enables a high yield, giving twice the amount of fibre as cotton per acre and six times that of flax (linen)⁶⁴. Fibres are durable and smooth, becoming softer with continued use and laundering. Hemp has a hemicellulose molecular structure translated through its fibre characteristics as strong, lightweight, anti-bacterial, anti-UV, breathable and thermodynamic⁶⁵.

2.3.6 Key Insights

This review investigated and critiqued our relationship with nature’s resources. Like biophilia (2.2), this bubble covers a substantial amount of ground and in doing so inevitably has to heavily compress arguments. Its overall mission is to outline the landscape that informs ARC which provides the structure for my practice-based research. Therefore, key insights that could contribute to its design framework are:

- 1 Transforming thinking on the way we view our position in the ecosystem is essential for personal and planetary wellbeing (2.3.2).

⁶² For example: Helsinki, Finland; Anchorage, Alaska; Bergen, Norway.

⁶³ <https://www.clothingmanufacturersuk.com/hemp>

⁶⁴ <https://www.clothingmanufacturersuk.com/hemp>

⁶⁵ <https://unytehemp.com/hemp-products/>

2 Rampant consumerism is rife within Western society, compounding the exploitation of natural capital. We need to transform how we measure success. Assigning value to clothing is vital, and key to changing attitudes (**2.3.3**).

3 The *small and local* concepts have multi-level interpretations. A fundamental principle being to reduce the draw on natural capital through simplification and restraint by a small-scale circular economy within a local environment. This also has added benefits of community networking, visible and transparent sources of production promoting better knowledge and understanding of provenance (**2.3.4**).

4 Organic plant-based fibres are significant carbon sequesters. Industrial hemp in-particular is a multi-use plant, producing food and fibre. It also helps to regenerate the soil and air through its phytoremediation properties (**2.3.5**).

David Orr's work has been reviewed within this section and in Biophilia (**2.1**). Written nearly 30 years ago his *Metanoia* vision for societal transformation is echoed in current literature (Santos, 2020; Escobar, 2017; Manzini, 2011); his *survival* advice concisely summarises this bubble's ethos:

“It's a change in our loyalties, affections, and basic character that subsequently changes our intellectual priorities and paradigms...and in time alters the character of our entire civilisation” (Orr, 1993, p. 430).

2.4 Eudaimonia

2.4.1 Introduction

The third bubble that contributes to constructing the ARC builds on previous sections that explored the innate human need to connect to nature (Biophilia **2.2**) and the contradictory landscape propagated by our current consumer driven society, that is destructive to nature (Natural Capital **2.3**). *Eudaimonia* explores literature on wellbeing by investigating a cross section of meanings and approaches to human flourishing including psychological and embodied practices to weave an integrated clothing narrative for wellbeing aligning previously discussed themes.

2.4.2 Defining wellbeing

The World Health Organisation (WHO) describes health as “a state of complete physical, mental and social wellbeing and not merely the absence of disease or infirmity” (WHO, 1948 in Kuhn & Rieger, 2017). Health and wellbeing are often used as interchangeable terms; the Department of Health (2014) define the link between wellbeing and health as “a two-way relationship...health influences wellbeing and wellbeing itself influences health”. There is no agreement around a single definition of wellbeing (CDC, 2018), multiple frameworks exist. Diener et al (2009) explain wellbeing as *assessments of life-satisfaction*, which can be positive or negative, varying from depression to happiness. Others (Andrews, 1976; Ryff & Keyes, 1995; Veenhoven, 2008) believe the term *wellbeing* frames health as a *positive* aspiration. Some suggest (Huber, 2011; Crinson & Martino, 2017) wellbeing should be viewed as an individual responsibility and propose altering the emphasis to focus on the ability to self-manage and adapt to changing circumstances, criticising WHO’s definition as unachievable in its wording – “*complete*” being aspirational and alienating. The ability to adapt in the face of changing circumstances was discussed in 2.3.2 & 2.3.3 regarding transformational thinking and behavioural change.

Ryff and Keyes (1995) have converged multiple psychological frameworks⁶⁶ to propose six factors that are intended as guiding theories to individual wellbeing or *positive functioning*:

1. Self-Acceptance
2. Personal Growth
3. Purpose in Life
4. Positive Relations with Others
5. Environmental Mastery
6. Autonomy

Furthermore, they state that wellbeing is a “multitask agenda, requiring ongoing syntheses of diverse sources of evidence”, concluding “that there is more to being well than feeling happy and satisfied with life” (ibid, p. 725).

A framework created by the New Economics Foundation (NEF) has parallels with Ryff & Keyes’s (1995) *positive functioning* theories; NEF’s *Five Ways to*

⁶⁶ Including: Jung, 1933; Buhler, 1935; Erikson, 1959; Allport 1961; Maslow, 1968; Neugarten 1973; Ryff 1989

Wellbeing are outlined as an illness prevention action plan. In 2008 the UK Government commissioned NEF to develop a set of achievable actions aimed at improving individual health and wellbeing (Aked & Thompson, 2011). The Five Ways to Wellbeing form the acronym CLANG (Roberts et al, 2011):

1. **C**onnect – with people
2. **L**earn – try something new
3. **A**ctive – move more
4. **N**otice – be mindful
5. **G**ive – link to the wider community

These five public health messages are intended as tools to move towards a wellness-based paradigm and are promoted by the NHS and associated health organisations (Aked & Thompson, 2011). Kimiecik suggests that despite attempts to focus on health promoting strategies there has been little impact on long-term behavioural change (2016, p. 350). Robinson argues that focusing on wellbeing “without addressing deeper human experience...will achieve limited long-term success” (Robinson, 2004, in Kimiecik, 2016, p. 351).

Sunderland & Adams (2019) suggest indigenous peoples hold a holistic viewpoint on wellbeing, one that is grounded in deep meaning and respect integrating emotional, mental, physical, spiritual, cultural, and environmental dimensions⁶⁷. McKendrick et al (2017) agree, stating that Aboriginal peoples define wellbeing as both an independent and collective existential reality, engendering feelings of strength, pride, happiness, and health, manifested through physical, spiritual, emotional, and social aspects. Aboriginal wellbeing practices usually start with *Dadirri*, a connective and rebalancing practice that involves a period of stillness outdoors, listening deeply to nature (Korff, 2021). As noted (2.3.2), the interconnected perspective of inseparable planetary and human wellbeing adopted by indigenous peoples has resulted in 80% of biodiversity being retained within their habitation areas.

Terminology used to describe holistic wellbeing varies across time and place. Salutogenesis, a term coined by Anton Antonovsky in 1979, describes adopting a cohesive and self-orientated position to support and increase wellbeing

⁶⁷ Emotional, mental, physical, and spiritual are wellbeing dimensions that form a research design framework for this study, see 2.2.2

(Physiopedia, n.d.). The concept stemmed from Antonovsky's believe that the Western model of wellbeing was "driven by a biomedical model grounded in physical and pathogenic⁶⁸ terms...viewing the body as a machine...divorced from emotions and spirit" (Kimiecik, 2016, p. 349). This biomedical model developed from a Cartesian dualist⁶⁹ viewpoint that "there is nothing included in the concept of the body that belongs to the mind; and nothing in that of mind that belongs to the body" (Capra, 1982, p. 59). Salutogenesis focuses on creating a positive and holistic mindset towards collective wellbeing rather than separate actions, empowering people towards the origin of health, self-management, and prevention rather than waiting for illness and treating disease (Lindstrom, 2020; Huber, 2011; Crinson & Martino, 2017). Salutogenic wellbeing is a holistic viewpoint whereby emotional, social, spiritual, and physical dimensions are inseparable. The individual trusts that through the resources available to them they can maximise wellbeing, engendering feelings of confidence and calmness, rather than chaos and anxiety. Antonovsky stated that "pathogenesis is too deeply entrenched in our thinking" and that a shift in wellbeing perception is essential (Antonovsky, 1979, p. 171). He envisaged that by lateral approaches and different disciplines working together a change in mindset towards holistic wellbeing could be developed⁷⁰. Some researchers believe salutogenesis has parallels with Aristotle's eudaimonia (Ryff, 1989; Kimiecik, 2016; Smith, 2021).

2.4.3 Eudaimonic wellbeing

As noted, (2.4.2), no definitive description of wellbeing exists and "even within eudaimonistic circles there are differing perspectives" (Kimiecik, 2016, p. 352). Derived from ancient Greek, the etymology of *eudaimonia* is derived from *eu* - good or well, and *daimon* - spirit or soul. According to Kraut (2018), it can also mean *happiness, welfare, flourishing* and *wellbeing*; Sugarman (2007, p. 179) suggests it as a "flourishing state of the soul". Lent (2021, p. 390) also suggests it as a "state of flourishing" and "the source of sustained wellbeing". Garidi (2018) feels that eudaimonia is untranslatable, and is a state of being, comparing this state of existence to *Yin and Yang*⁷¹ in oriental philosophy. Kimiecik interprets eudaimonia as a particular experience that is lived and felt and suited

⁶⁸ Pathogenesis focuses on diagnosing and treating illness. Salutogenesis focuses on concepts that promotes wellness

⁶⁹ See glossary for more on Rene Decartes and his Cartesian Dualism

⁷⁰ This viewpoint has parallels with Small is Beautiful (2.3.4) whereby different disciplines work together for the benefit of personal and planetary wellbeing.

⁷¹ Complementary, interconnected, and interdependent forces essential for wellbeing

to be “framed within existential phenomenology” (2016, p. 352). As noted, eudaimonia is open to many interpretative models of *human flourishing* including:

- Maslow’s Hierarchy of Needs (McLeod, 2020), acknowledged for its eudaimonic parallels within psychological literature (Heintzelman, 2018).
- Ikigai in Japanese philosophy can be interpreted as finding balance and meaning in life (Garcia & Miralles, 2017).
- Hygge and Lagom, Scandinavian theories share similarities with Ikigai and have been described as eudaimonic wellbeing (EWB), aspiring to nurture feelings of wellness and contentment (Kumano, 2018).

The concept of eudaimonia is attributed to Aristotle (384-322 BCE), who believed that the collective greatest good could be achieved through virtuous concepts of moral thought and behaviour, and that this existential approach manifested as *eudaimonia* (Moore, 2020). Aristotle wrote specifically about eudaimonia in his *Nicomachean Ethics* (written 350 BCE), a philosophical inquiry into the landscape of human flourishing. At the centre of the work is one of his most famous ideas, the doctrine of the mean, the point of *virtue* between excess and deficiency (Adamson, 2012). It has parallels with Schumacher’s *Small is Beautiful* discourse that suggests finding balance between overindulgence and restraint (2.3.4) is fundamental to wellbeing. Aristotle thought that happiness and wellbeing come from how we align our lives to eudaimonic principles, therefore not in search of material affluence, power, or admiration but in pursuit of intrinsic harmony (Moore, 2020), nurturing a *central inner force* (Williams & Niemiec, 2012 in Kimiecik, 2016, p. 363). He believed that virtue was necessary for happiness, although insufficient by itself, requiring suitable *social constructs* to help a virtuous person experience fulfilment and required an element of action (Aristotle vs Plato, 2021).

Social Constructs, or Constructivism refers to the process by which cognitive structures that shape our knowledge of the world evolve through the interaction of environment and subject (Social Constructionism, n.d.). Entrepreneur Jay Kannaiyan discusses his own experience of EWB through a constructivist lens, supported by the development of a healthy curry dish. He made and shared the curry on several occasions, in different scenarios around the world, it broke down barriers and manifested a relaxed atmosphere amongst the diners, it provided a means of deep connection with others, and provided Kannaiyan with a metaphorical recipe for human flourishing (Kannaiyan, 2017). A narrative for EWB could be constructed through the ARC in a similar way to Kannaiyan’s

curry, thus the clothing constructs embodied wellbeing through its provenance and metaphysical associations (2.2.6, 2.3.5 & 2.4.4) opening a means of connection and communication between the wearer, the garment, and the natural world.

EWB incorporates an intangible dimension of being that can be equated to different and more fluid, integrated patterns of thinking and behaviour linking mind, body, and spirit (Escobar, 2017; Day & Rich, 2009). This approach can be evidenced in indigenous cultures, the traditional Chinese concept of Tao⁷², Sukha⁷³ in Buddhism (Lent, 2021) and many other traditions.

ARC aims to embody a holistic wellbeing perspective. The following section therefore investigates metaphysical beliefs to wellbeing to contribute to defining an overall *wellbeing* perspective within the context of this research (2.6).

2.4.4 Embodied wellbeing

Within Eastern expression the words *Xin* in Chinese, and *Kokoro* in Japanese, describe a connection of mind, body and spirit and are used within eastern academic environments to describe this combined state (Livni, 2017). Literally translated as *heart*, the words also incorporate cognitive “experience including emotions, thought, intuition, and desires” described as a state of thinking through the heart (Lent, 2021, p. 75). Beshara (2013) suggests that to achieve a state of integrated wellbeing, the heart must be balanced, “reminiscent of the Buddhist concept of the Middle Way⁷⁴” (p. 29). As noted, a literal translation of an expression, and a way of thinking from another culture or tradition towards health and wellbeing can be problematic to convey, understand and validate within conventional Western thought (Day & Rich, 2009; Yuen et al. 2012), the following narrative explores this different pattern of thinking.

The notion of balancing *energy* is the key concept to achieving an integrated state of *wellbeing* within Eastern philosophy, in contrast to a set of separate logical and concrete actions and theories (Ratini, 2021). Li and Zhao (2012, p. 79) suggest *balancing energy* requires a “deep understanding of the laws and patterns of nature” and that “humans must follow the laws of the universe to

⁷² *Tao* – way or path, can be interpreted as the source, how the forces of nature are manifested in the universe (Lent, 2021, p399)

⁷³ *Sukha* – a deep sense of lasting wellbeing that underlies and infuses all emotional states (Lent, 2021, p211)

⁷⁴ Balance between attachment and aversion

achieve harmony and total health”. Embodied practices do not focus on science or medicine but on restoring the flow of *energy* to the whole body (Ratini, 2021). *Weak energy* does not only impact health, but every aspect of human flourishing (Hankey & McCrum, 2006). The study and definition of *energy* can be referred to within different Eastern cultures and integrated practices as Qi, Chi, Ki, Aka, Prana, Lung, Vital Force, Vitalism/Holism (Gulmen, 2004; Chu, 2004). No direct translation for *energy* exists in English; Chu (2004, p. 773) suggests it is the “universal life force that exists in all living things”. Balancing and improving *energy* flow can be aided through integrated and self-initiated practices such as Yoga, Qi Gong, and Tai Chi which aim to regulate and unify mind, breath, and body (Hankey & McCrum, 2006). Energy flows through invisible pathways known as *meridians* (Li & Zhao, 2012); therapies such as Reiki, Shiatsu, Acupuncture and Reflexology, aim to restore equilibrium within the mind, body, and spirit by unblocking trapped energy (Shinnick, 2006) and restoring flow.

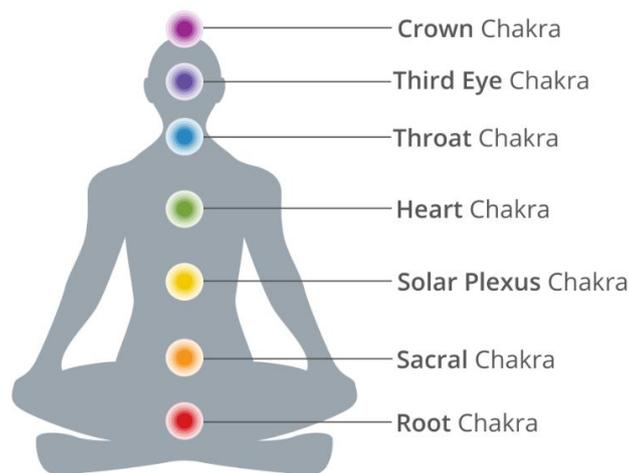


Figure 34 Chakra positions and colour associations

Chakras, first mentioned in the Hindu Vedas⁷⁵ and are understood to be invisible wheels, vortexes or spinning disks of *energy* (Meadow, 1993; Gulmen, 2004) situated on a central vertical line within the body (figure 34). They are theoretically aligned with major nerve locations on the spine, connecting mind and body (Stelter, 2016). Meadow (1993) suggests “chakra psychology asserts that each person’s spiritual energy tends to concentrate around one of these energy centres” and that they are not material entities (p. 69). Motoyama defines the chakras as “intermediaries between the physical body and consciousness” (2016, p. 282). Furthermore, he found that they “seem to correspond to certain important points of acupuncture” in traditional Chinese medicine (p. 27 & p. 282).

⁷⁵ Religious texts originating in ancient India c.1500-1200 BCE

Gulmen supports Motoyama suggesting that “each main chakra⁷⁶ has specific characteristics and associations that are linked to physical, mental, emotional and spiritual health” (2004, p. 653). Each chakra has many attached associations including sensory organs, colour, sense, element, frequency, action tendencies, and 3D geometric forms (Gimbel, 1994; Meadow, 1993; Day & Rich, 2009) (figure 57, 2.6).

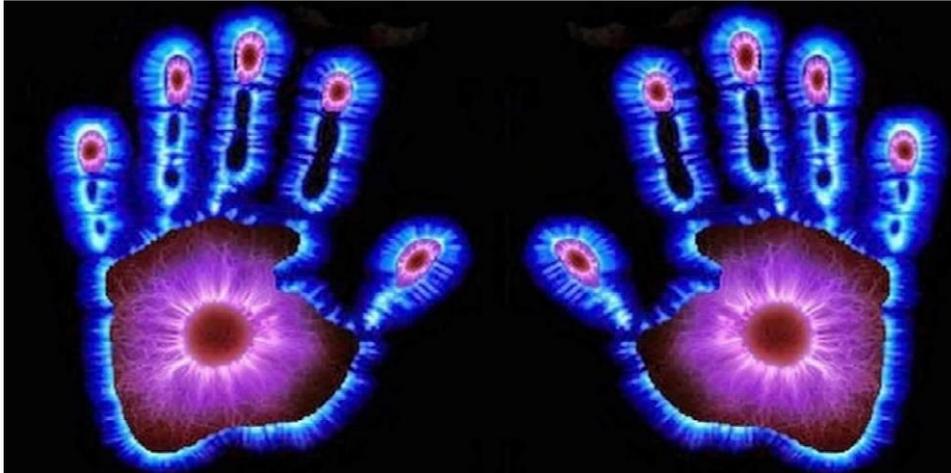


Figure 35 Hands captured by Kirlian Photography

Neuroscientist Michael Persinger (1945-2018) suggests “that our physical beings are totally entangled with morphing electro-magnetic fields (Hagens, 2014, p. 68). Developing this theory, biophysicists (Deshpande et al) have created a computerised measuring system to detect human bioenergy inspired by the concept of *energy meridians* and *chakras* (2013, p. 982). Based on electro-photonic imaging, developed from Kirlian⁷⁷ photography (figure 35), it asserts to assess the *energetic* state of a person’s wellbeing by the alignment of their chakras which could indicate the potential for future health problems if not corrected (pp. 982-4). Day and Rich (2009) suggest that when all chakras are open, aligned, and functioning, *energy* flows from the base of the spine to the tip of the head manifested in feelings of vitality and balance, also be referred to as awakening the Kundalini⁷⁸ energy (Sumathy & Parmer, 2016).

⁷⁶ The number varies across traditions - Buddhist texts relate to four or five chakras, while Hindu sources refer to six or seven

⁷⁷ A photographic technique used to capture electrical coronal discharges, discovered in 1939 by Semyon Kirlian

⁷⁸ *Kundalini* pulls dormant energy at the base of the spine up to the crown, creating an upward flow of energy, and is often visualised as a snake; associated within Hinduism as a divine feminine power

The Platonic Solids, discussed earlier (2.2.4) in relation to their occurrence within nature, and adoption by ancient civilisations, can also be representative of chakra positions in 3D form (Wauters, 2017) (figure 36). As noted (2.2.4), their unique geometric characteristics enable all five solids to nest within a sphere having all points touching the outer edge (figure 16, 2.2.4), the sphere is represented in this context as the highest or Crown Chakra (figures 34 & 36). The heart chakra, represented by the star tetrahedron, a combination of two interlocking tetrahedra, is also referred to as the Merkaba (Orgone, 2019) (figure 17, 2.2.4). The Merkaba, sphere, and five platonic solids are embedded within sacred geometry⁷⁹ which espouses the idea that everything is connected (Regan, 2021).

Colours associated with full spectrum natural light are thought to be beneficial to wellbeing and are also aligned with *energy* and *chakras*. Chinese peoples were attributing wellbeing modalities to light and form 4000 years ago, integrating these concepts with nature and cosmology (Rossbach & Yun, 1994). The ancient Egyptians incorporated colour therapy within their cultural beliefs to promote health and wellbeing, shining sunlight through coloured crystal formations that related to Platonic forms with the intention of restoring balance and harmony (Ragai, 1986; Gimbel, 1994).



Figure 36 Platonic Solid chakra associations

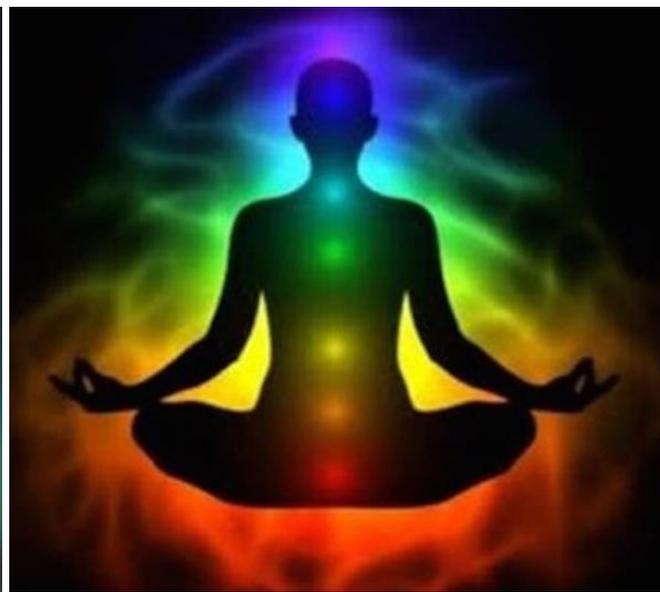


Figure 37 An auric field of light and colour

Newton's theory that colours already exist in sunlight published in 1672, identified seven colours (orange, yellow, green, blue, indigo, violet, and red) when

⁷⁹ Term used to encompass religious, philosophical, and spiritual beliefs relating to geometry

refracted through a prism (Fara, 2015) (figure 38). He “sought to analyse colours mathematically” (Fara, 2015, p. 9), whereas Goethe’s colour theory (1810) originated from an experiential perspective of how natural phenomena are perceived (Gimbel, 1994; Birren, 1978). Philosopher and scientist Rudolph Steiner (1861-1925) held a holistic viewpoint about human flourishing and believed colour could influence wellbeing⁸⁰ advocating “the use of colour in the treatment of various health conditions” (Day & Rich, 2009, p. 17). He expanded

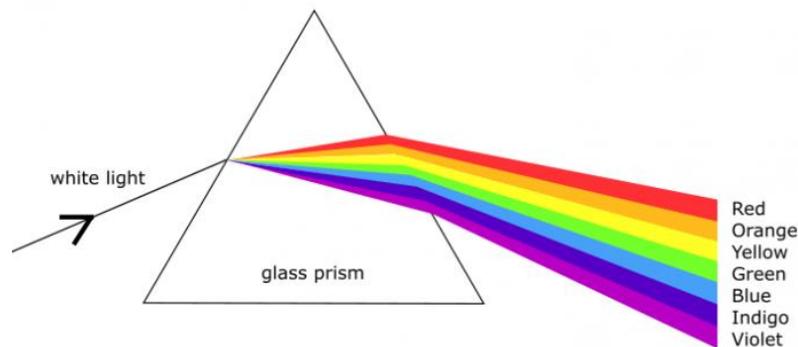


Figure 38 Sunlight or white light refracted through a prism

Goethe’s theory exploring the psychological effect of colour on mood and emotion (Popova, 2012; Robinson, 2015). Steiner also suggested colour to have a hidden nature, and “began to describe the auric⁸¹ colours as they are seen with spiritual perception” (Steiner, 2001, p. 2) (figure 37). The *aura* is thought to have bands or colours of *energy* that are manifestations of, or emitted from, the chakras and that these correspond with refracted sunlight (Eden, 1998 in Gulmen, 2004; Cammarata, 2007). Wassily Kandinsky (1866-1944) is believed to have been influenced by Steiner’s spiritual colour theories (Ringbom, 1966). In the 1920’s he taught at the Bauhaus and explored correspondence between colour, shape, and form, associating the eponymous iconic forms of the triangle, square, and circle to specific colours (figure 39) aligned with an intuitive visual language or *feeling* of that particular form⁸² (Lupton & Abbott-Miller, 1993). Theo Gimbel (1920-2004), also influenced by Steiner, integrated ancient wisdom, belief systems, and colour spectrum science to improve wellbeing through holistic practices including colour meditation, colour visualisation, and colour breathing all aimed at stimulating the body’s sensory systems into alignment (Gimbel, 1994). These sensory and intuitive associations of colour with form could be

⁸⁰ Publishing “Materials for a history of colour theory” in 1897. Steiner also founded the Waldorf education system in 1919 advocating creativity, free expression and independent thought, spending time amongst nature being a key philosophy.

⁸¹ Relating to the light and colour surrounding a person

⁸² A sensory survey of Platonic solids conducted during this research evoked a colour response in some participants – Vol. II, Appendix B, Sensory Exploration of Wooden Platonic Solids, p. 41

subconsciously aligned with frequency; red light is refracted the least, having a longer wavelength (lower frequency), and violet the most, having a shorter wavelength (higher frequency) (Quora, n.d.). This could be interpreted through *chakra* and *auric* colour associations - red being the densest, most grounded energy and violet being the lightest, most ethereal energy (figures 34, 36 & 37). Andrews suggests that “working with chakras can be a useful approach to cultivating energy through the use of colour” (Andrews 1992, in Cammarata, 2007, p. 93). Colour associations aligned with integrated energy wellbeing is an attribute that could be embodied within the ARC’s design framework.



Figure 39 Bauhaus iconography

Building on integrated colour therapies, Day & Rich (2009) propose aligning scientific and spiritual concepts of shape, colour, and form by developing a theoretical model for the design of a healing spa. Treatment rooms are designed as 3D Platonic shaped pods aligned with their corresponding chakra colour projected by lighting and colour-therapy treatments.

2.4.5 Key insights

Wellbeing has many interpretations. The Eudaimonia bubble sought to explore opportunities for embodying a narrative for wellbeing within clothing through psychological and embodied modalities. Key insights from the reviewed literature will be woven into the design framework (2.6), physically and metaphorically, and are summarised as:

- 1 Eudaimonia is a particular experience that is lived and felt, a pursuit of intrinsic harmony.
- 2 Profound human experience needs addressing for long-term wellbeing grounded in deep meaning and respect, integrating emotional, mental, physical, spiritual, and environmental dimensions.

3 Balancing *energy* is a key concept to achieving wellbeing whereby mind, body, and spirit are linked together through a system of chakras and meridians⁸³.

4 Chakras are reified through shape, form, colour, and other associations aligned with the natural world, belief systems, and wellbeing practices.

Li & Zhao suggest that if more individuals within Western culture were open to the concept of *energy* balancing for wellbeing “then mind and body, as well as life, and its environment, will be viewed as a unified entity and the world would become a better place to live” (2012, p. 92). According to Hankey & McCrum integrated energy focused theories of wellbeing show “the way forward, and if they do not hold all the answers, they indicate the area to research” (2006, p. 842). Ryff & Keyes stated earlier (2.4.2) that wellbeing is a “multitask agenda, requiring ongoing syntheses of diverse sources of evidence”, concluding “that there is more to being well than feeling happy and satisfied with life”. The ARC aims to develop and reify these viewpoints through restorative, wearable therapies.

2.5 Somaesthetics

2.5.1 Introduction

The fourth and final bubble of the contextual review focuses on the body as a sensorial and perceptive site. Hook (2018) suggests that the way our perception and knowing works is entangled deeply, inseparably, with our surroundings. Our immediate surroundings in this context being our clothing. Coined by Shusterman in 1996, the term *somaesthetics* translates from the Greek *soma* (body) and *aesthetics* (sensory perception). He argues that the *soma* can monitor itself both consciously and unconsciously and thus adopts the term *soma* instead of body to mean “the living, sentient, dynamic, perceptive and purposive body” (Shusterman, 2015, time 06:50). Jung & Stahl support Shusterman, and furthermore suggest that somaesthetic practice and body covering overlap in that both focus on body consciousness through movement, reflection, and imagination, reinforcing “the mind and body association in making sense of

⁸³ Within Eastern Therapies, Practices, Philosophies and Traditions

aesthetic experiences” (2018, p. 2559). Somaesthetic wellbeing elicited through clothing embodied with an ecologically regenerative and sensory narrative motivates this study.

Hook (2018) argues that *soma design* offers a slower, more thoughtful approach to creative practice for the wellbeing of end users, facilitating a thoughtful process that considers fundamental body awareness and human values. Furthermore, she suggests that “somatics acknowledges that there is no separation between mind and body and connects the self with all of these processes⁸⁴, as well as empathic engagements with others” (p. xviii). Starck thinks that “the closer we get to the body, the more honest the design must be...the skin and the body do not lie” (2021, *Clothes & Accessories*, para. 1). Embracing the essence of these comments within the ARC’s design framework could provide a sensorial and perhaps empathic communication between mind, body, and environment, providing a foundation for metanoia (2.1; 2.3.3; 2.3.6).

The “experience of being and living in garments is often underexplored by designers” according to McQuillan & Rissanen (2020)...“it being a one-sided dialogue where the garment is primarily valued as a unit of sale...the fashion system requires an expanded, holistic understanding of how we clothe the body and through it the mind, and how design may contribute to this understanding” (pp. 149-150), “suspending habitual patterns of perception” (Rojas et al, 2016) (2.3.3). As noted (1.1; 1.2; 1.3; 2.1), creating a transitional, alternative, regenerative design landscape motivates this study.

According to Jung & Stahl (2018, p. 2563) “fashion design as an integrative form of creative experiment, offers authentic perspectives to explore a design space for soma-wearables”. Furthermore, Hurst suggests that the creative practitioner can play an important role in the quest for embodied knowing by using “timeless tools for creating dialogue with psyche, as well as the individuation process as change agent toward a life-sustaining future” (2017, p. 60). The concept of *clothing the mind* by designing somaesthetic wearables as a communicator for holistic wellbeing is the fundamental aim of this research (1.3). Soma design opportunities are therefore considered in the following three experiential sections.

⁸⁴ Processes related to somaesthetics such as body awareness and sensory perceptive awareness

2.5.2 Embodiment

The definition of the term *embodiment*⁸⁵ is taken to mean an integrated stance of a mind/body connection, the body influences the mind, and the mind influences the body, the two being inseparable⁸⁶. The concept of embodiment is often associated with early 20th Century philosophers Heidegger, Merleau-Ponty, and Dewey (McNerney, 2011)⁸⁷. Merleau-Ponty viewed the body as a means to experience the world, suggesting that “rather than being an object in the world, the body forms our point of view on the world...our communication with it” (Merleau-Ponty in Negrin, 2019, p. 117). Dourish defines embodiment as “the property of our engagement with the world that allows us to make it meaningful” and “embodied interaction is the creation, manipulation and sharing of meaning through engaged interaction with artefacts” (2001, p. 126). As noted (**2.2.5; 2.5.1**), clothing can impact our mind-body experience, and our communication with the world, this understanding and embodied interaction informs the research question.

Steele (in Mair, 2018, p. 4) defines fashion theory as “the cultural construction of the embodied identity”. Robinson suggests that there are many acknowledged theoretical contributions to frameworks on embodiment in fashion although a lack of “their potential application” (2019, p. 444). This research aims to address Robinson’s observations. It recognises that the body exists in relation to the space that it immediately inhabits, conditioned by sensory experiences elicited by that space.

2.5.3 Enclothed Cognition

Fletcher & Tham suggest that “particular language we use shapes our thoughts and actions...communication makes these thoughts and actions visible, thinkable, doable and talk-aboutable” (2019, p. 52). Furthermore, think that ubiquitous and arbitrary language is often adopted in the fashion linguistic landscape, positioning wearers as passive victims (Tham, 2010). The linguistic term *enclothed cognition* (clothing effect), was introduced by Adam & Galinsky (2012) to communicate the influence that clothes have on the wearer’s psychological processes. They suggest that enclothed cognition involves the co-

⁸⁵ Also referred to as Non-Dualism and Embodied Cognition

⁸⁶ This integrated, inseparable stance underpins the research concept whereby everything is a consequence of everything else (**2.1, 2.2.2, 2.3.2**)

⁸⁷ These theorists are discussed further in the next Chapter, Research Methodology.

occurrence of two independent factors – symbolic meaning of the garment and the physical experience of wearing it. When a wearer understands the symbolic meaning attached to a garment, it can alter their behaviour, as it is the clothes that carry the symbolic meaning. Therefore, wearing a piece of clothing and embodying its symbolic meaning could trigger associated psychological processes, thus “impacting the processing style that changes how objects, people and events are construed” (Slepian et al, 2015, p. 661). For example, formal clothing, animal prints, luxury status branding, provocative dress, slogans/messages on clothing, casual wear, uniform et al can have an enclothed cognitive effect on wearer behaviour (Jung & Stahl, 2018; Forbes-Bell, 2018; Sarda-Joshi, 2016; Gowans-Eglinton, 2017; Slepian et al, 2015; Johnson et al, 2014;) **(2.2.5; 2.5.2)**. The adoption of the acronym ARC aims to create and communicate a particular language and landscape through clothing. One of embodied cognition and meaning elicited through sensorial somatic wearer experiences rather than by implied symbolic meaning or the perception of others.

2.5.4 Sensorial Experiences

Rinzler (1984, p. 1) argues that “human beings disconnection from and devaluing of the sensory experiences of their physical selves ultimately causes them to lack compassion for and be abusive to themselves and to the organism Earth” **(2.2.1, 2.3.1, 2.3.2)**. Furthermore Majid & Levinson add that the gradual and increased focus on communication through language has contributed to a “disregard of the senses” (2017, p. 5). Reconnecting and assigning value to our sensorial experiences to improve personal, and consequentially planetary wellbeing, is fundamental to the aspirations of this research.

The sensorial experiences elicited through clothing can impact how we feel and has the power to alter bodily sensory perception (Jeon, 2013). Mair (2018, p. 5) suggests “for interpretation of sensory input to take place, we draw on memory, creativity and communication”. The psychological analysis of how this mind activity is manifested via clothing is a vast and growing area of investigation affecting behaviour, consumption, identity, body image, self-esteem, and self-perception (Entwistle, 2015) **(2.3.3)**. According to Frugel (in Welters & Lillethun, 2011, p. 169) clothes serve “three main psychological purposes: decoration, modesty, and protection”. Some researchers suggest that clothes communicate through a code of syntax and semiotics (Todorovic et al, 2017; Lurie, 1992; Eco, 1977) and can be studied through signs that communicate with our sensorial

systems. Bodily sensory perception (somaesthetics) elicited by our clothes can take many forms, conveying messages beyond their function to decorate, protect and cover the body (Todorovic et al, 2017). Harnessing the communicative power of clothing in the context of this research extends beyond decoration, modesty, and functionality, to a sensory perceptive existential space greater than oneself.

Communicating and separating what constitutes a particular sense is complex, together with personal variations in somaesthetic preferences. Goody suggests that “all experience of the outside world is mediated by the senses”, - but that they are conceived and emphasized differently in various cultures” (2002, p. 17). The five basic senses of sight, taste, touch, hearing, and smell are broadly acknowledged in contemporary Western culture as the way we experience sensation and gain information. Relationships differ, in some ancient cultures⁸⁸, the five senses are linked with the five elements of the universe (2.2.4), and collectively the senses are thought to be “controlled by the heart, their natural ruler” (Goody, 2002, p. 19) (2.4.4). Aristotle wrote of *central senses* in addition to the *five particular senses* and grouped these together as integrated *inner senses* (Kenny, n.d.). This spiritual integrated sensorial belief system resonates with points raised in other areas of the Contextual Review (2.3.3 & 2.4.4). Bodily sensorial perception, likened to Aristotle’s *inner senses*, can be experienced through many other sensations such as: movement, body position, body space, balance, tension/restriction, pressure, temperature, itch, comfort/pain, breath/stretch (Bradford, 2017; Hiskey, 2019) and provide design opportunities for soma wearables.

2.5.5 The Existence of Ma

“A space for reflection is one of the core qualities of somaesthetic appreciation, enabling one to listen to bodily sensation” (Jung & Stahl, 2018, p. 2561). The existence of *ma* provides the wearer with that sensory space. *Ma*⁸⁹ in Japanese philosophy relates to *freedom* in all aspects of life; defined as a deliberate pause, an interval, a negative space filled with nothing but energy, feeling and respect. According to Kisaki it is “the pure, and indeed essential, void between all things” (2011, para. 2). “Ma is the fundamental time and space life needs to grow. If we have no time, if our space is restricted, we cannot grow. How we spend our time

⁸⁸ Greek, Chinese and Japanese culture, first documented in the third century BCE

⁸⁹ There is no direct translation in English

and shape the space we live in directly impacts our progress” (Matsumoto, 2020, para. 1). When these principles are applied through design, they could enhance the way we think and how we engage with our surroundings. The concept of space around and space between conveys a sense of simplicity, tranquillity, stillness, and wellbeing embodied by the ARC.



Figure 40 (Left to right) A geisha tying the obi c1890; Rei Kawakubo/Comme des Garçons A/W 1983 - black wool jersey dress, flat form, and three-dimensional form

Embedded within Japanese culture the concept of *Ma* is evident in the design of clothing. In Western fashion the shape of a garment is usually fixed, its outline looking similar on or off the body. The Japanese approach to clothing design allows for a “more fluid and organic relationship between the fabric and the body in which the garment is constantly changing its form in response to the movements of the body” (Negrin, 2019, p. 126). Their primary concern being new possibilities of embodiment “not concerned with containing the body but with extending it, via new networks and new communications” (Evans, 2003, p. 269). Negrin (2019) suggests that the Western conception of fashion is primarily a visual art form in contrast to the Japanese perception of “dynamic, three-dimensional sculptures which are constantly being re-formed by the body that inhabits them” (p. 126).

Fukai et al (2010) suggest the use of geometry within Japanese design facilitates *ma*, rendering garments abstract, non-contouring, versatile, ageless, and timeless (2.2.5). The traditional Japanese kimono is constructed of flat rectangular pieces of fabric, the body giving it form, rather than the garment imposing form, the obi⁹⁰ defines bodily contours around the torso in its restriction (figure 40). The purposive voids are created to facilitate *ma*, allowing for the

⁹⁰ A belt of varying width and length worn with traditional Japanese clothing.

sensorial effects of K^{91} (2.4.4) to circulate between the body and garment. Kawakubo explores her Japanese cultural heritage using an essence of the kimono (figure 40) in a geometric tube dress that has multiple wearer interpretations. Sudijic suggests that its freedom of form could affect how the wearer feels, in that it is “not a finite solution, but allows for an input from the wearer, who plays a part in shaping the final form” (1990, p. 82). The geometric orientation and concept of *ma* inherent within much of Japanese clothing render it difficult to discern the garments appearance before interaction with the body, “the voluminous shape it will take when worn, or even to establish which holes to put the head or arms through” (Fukai et al, 2010, p. 64). Evidenced in Hishinuma’s voluminous geometric Kite and Air “non-clothes”, designed to allow the wearer to experience multi-sensory stimulation as the clothes interact with the “divine essence of wind”⁹² (Hishinuma, 1986, p. 142) (figure 41).



Figure 41 Yoshiki Hishinuma’s multi-sensory Kite & Air Clothes

2.5.6 Key Insights

Somaesthetics, the sensory perceptive body, and the last bubble in the Contextual Review sought to align Biophilia, Natural Capital, and Eudaimonia with the body. Key observations from this section that contribute to building the ARC’s design framework are:

- 1 *Clothing the mind* by holistic soma design could suspend unhelpful habitual patterns of perception (2.5.1).
- 2 Embodiment is an integrated communicative position between mind, body, and environment (2.5.2).

⁹¹ Vital energy/Life force

⁹² Aligns with Biophilic attributes (2.2.3)

- 3 Reconnecting and assigning value to our body as a sensorial site can enhance wellbeing experiences (2.5.3).
- 4 Sensorial perceptive experiences can be elicited through clothing in many ways including movement, body position, body space, balance, tension/restriction, temperature, comfort, breath/stretch (2.5.3)
- 5 Empty space between the garment and body, the concept of *ma* in Japanese culture, is a reflective sensorial site, a void of energy, feeling and respect, facilitating possibilities for embodiment (2.5.4)
- 6 The use of geometry within Japanese design facilitates *ma* rendering garments abstract, non-contouring, versatile, ageless, and timeless (2.5.4).

As noted by McQuillan & Rissanen (2020) the “experience of being and living in garments is often underexplored by designers”. This research aims to contribute to the underexplored area of clothing the mind and in doing so positively impact our connection with self and nature (1.3).

2.6 Conclusion

The Contextual Review explores a substantial amount of ground through four distinct sections, and in doing so inevitably has to heavily compress several arguments. Its overall mission is to outline a landscape that could provide multifaceted and tangible principles for an alternative, transformative, and regenerative design strategy and in doing so inform bigger systems change that impacts wellbeing (1.1; 1.2; 2.2.3). ARC’s design framework aims to explore layers of meaning beyond the material object, acting as a catalyst for change both consciously and unconsciously.

To communicate the ARC ideology in a tangible way through practice Key Insights (2.2.6; 2.3.6; 2.4.5; 2.5.5) from each of the contextual review’s four bubbles were used to develop design principles. Excerpts from the key insights were unpicked, listed, printed out, separated into individual lines of text, and

moved around to seek connections⁹³ (Smith et al, 2009). Those having similar understandings were consolidated into groups (figure 42). Each group was then attributed an overarching word or phrase to create concise, specific, and non-hierarchical principles (figure 43) that “mutually reinforce and complement one another, resulting in an overall integrated ecological whole” (Kellert & Calabrese, 2015, p. 9). The resulting design framework consisted of eight principles and was attributed the name Eudaimonic Design Framework. The realisation, through practice, of each principle aims to positively impact both planetary and personal wellbeing.

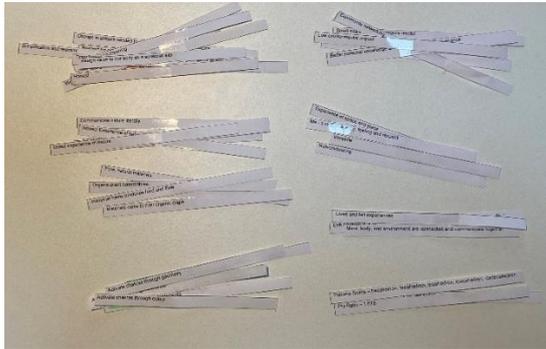


Figure 42 Excerpts from the key insights were unpicked and grouped together

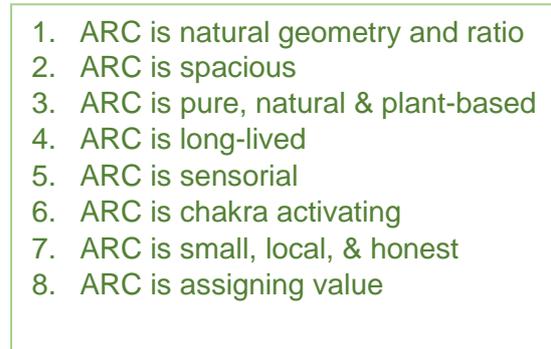


Figure 43 The eight-principle eudaimonic design framework

An expansion of each Eudaimonic design principle follows:

1. Natural geometry and ratio

Geometry and ratio are the building blocks of nature and therefore a key attribute for communicating biophilia. For example, the Platonic Solids and the Phi ratio are naturally occurring phenomenon offering various clothing design opportunities including application through structure, scale, proportion, and decoration. Shapes with straight edges tessellate well when in their flat form and therefore reduce fabric wastage.

The Platonic Solids and Phi ratio also have embedded connotations that link physical, psychological, and spiritual dimensions including philosophical geometry, arts and architecture, ancient wisdom, Eastern wellbeing practices and religious iconography.

⁹³ Vol II, Appendix A, Formation of Eudaimonic Design Framework (ARC), p. 5

2. Spacious

Ma in Japanese philosophy relates to *freedom* in all aspects of life; defined as a deliberate pause, an interval, a negative space filled with nothing but energy, feeling and respect. When this principle is applied through clothing design, it could enhance the way we think and how we engage with our surroundings. Within clothing the concept of space around and space between could convey a sense of simplicity, tranquillity, stillness, and wellbeing. *Ma* also allows body coverings to be non-contouring, versatile and comfortable.

3. Pure, natural, & plant-based

Regenerative natural materials in their purest form, close to their organic origin are preferential when embedding design attributes for wellbeing and have a proven stress reducing effect.

Some organic plant-based fibres are significant carbon sequesters. Industrial hemp in-particular is a multi-use plant, producing food and fibre. It also helps to regenerate the soil and air through its phytoremediation properties and is able to grow in varied climatic conditions. Any fabric waste is biodegradable, compostable, and regenerative. Plant fibres launder well and are devoid of microfibres that pollute water systems.

4. Long-lived

Fostering a *less is more* culture by reducing clothing consumption, is directly aligned to personal and planetary wellbeing through the conservation of natural resources. “The landscape of less develops the thinking and practice of living with fewer fashion goods and materials” (Fletcher & Tham, 2019, p. 35). Simplification and restraint from consumption as a way of living gives rise to positive changes such as more time, more money, more freedom, more energy, less stress, and less distraction.

Designing for longevity could be communicated through spacious geometric garments positioned outside fashion trend and season, rendering pieces timeless, ageless, and versatile, thus adapting to changes in styling, preference, and body shape over time. Individuals who are style driven, rather than trend-orientated in their clothing preferences, display greater

levels of wellbeing and less materialistic values (Gwozdz et al., 2017). High quality natural materials, and mindful, slower production processes facilitate durable, long-lasting garments, inevitably necessitating a higher price tag, and a higher-value wearer experience.

5. Sensorial

Sensorial perceptive experiences elicited through particular clothing communicates with the mind, body, and environment. For example, movement, body position, body space, balance, restriction, temperature, comfort, and stretch can all be affected through clothing attributes. Haptic sensations can be generated by garment weight, density, drape, breathability, softness, in addition to the perceptions elicited through vision, olfactory, and auditory engagement.

6. Chakra activating

Chakras are the invisible discs of energy within the body, intermediaries between the physical body and consciousness. When all chakras are open, aligned, and functioning, *energy* flows from the base of the spine to the tip of the head manifested in feelings of vitality and balance. They can be represented in clothing through shape, form, and colour. Their envisioned shape and form align with geometric structures including the Platonic Solids, Sphere, and Merkaba. Chakra colour associations are aligned with sunlight or white light refracted through a prism - orange, yellow, green, blue, indigo, violet, and red.

7. Small, local, & honest

A fundamental principle of de-centering concepts is to reduce the draw on natural capital through simplification, in a small-scale circular economy within a local environment. This also has added benefits of community networking, and visible and transparent sources of clothing production promoting better knowledge and understanding of provenance. The feeling of being part of a local community impacts wellbeing in that people are happier, more trusting, and better connected to their surroundings providing a sense of identity and protection.

The model assumes the premise that we are part of our local ecosystem, not apart from or above it, success is measured not by exploitation, misinformation, and excessive profit, but by honest and peaceful coexistence with nature and in this instance our immediate environment. Localism requires adapting to the attributes and skills of each specific region to safeguard its long-term success and celebrate its distinctiveness (Fletcher, 2018).

8. Assigning value

Reframing behaviour and reimagining lifestyle to assign value to all living things to nurture holistic wellbeing can take many forms - a powerful way to foster change is to appeal to people's values. Unlearning habits, patterns of relating, and ways of viewing the world can be informed through knowledge and understanding (Macy & Johnstone, 2012). Empowering and communicating embodied agency could be shared in various ways through clothing by: information attached to garments (permanent and removable), online platforms, community engagement, and direct forms of experience.

The Eudaimonic Design Framework is explored, reified, and documented in Chapter 4 - Actioning the ARC. The sensory and perceptive experiences of embodied interaction with the resulting clothing are discussed in Chapter 5 - Wearer Interaction Study.

Chapter 3 - Methodology

3.1 Introduction

“Methodology shapes and is shaped by research objectives, questions, and study design” (Carter & Little 2007, p. 1). Some methodologies are more prescriptive than others, and provide an overarching strategy for formulating, articulating, analysing, and evaluating methods (ibid). Patel situates methodology alongside interrelated components of a research paradigm in figure 44, explaining this as a framework of common beliefs and agreements to address and understand areas of interest or concern. However, “there are many disagreements amongst philosophers” as to what this might look like (Patel, 2015, para. 1) and “terminology is often inconsistent” (Crotty in Gray, 2017, p. 19). Notwithstanding these anomalies the main aim when developing a research approach is to adopt strategies that align and support the essence of the investigation.

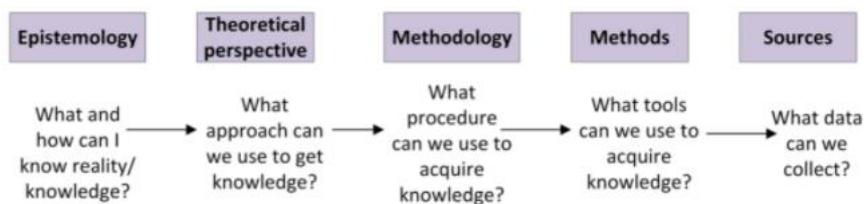


Figure 44 Patel's components of a research paradigm, adapted from Hay (2002) & Crotty (1998)

Establishing an approach to ensure clarity and alignment at the outset is fundamental to the credibility and validity of the research. According to Noble & Heale (2019) credibility refers to trustworthiness and how plausible a study is, and validity is involved with the degree to which a study accurately reflects the concept. Terminology used within research paradigms such as rigor, credibility, reliability, validity, transferability, and trustworthiness are viewed differently by qualitative and quantitative research (Tanveer et al, 2008). It is not intended that my research question - “can clothes be designed to carry an embodied narrative for wellbeing?” can be categorically proved or disproved or that it is “Tested” through the activities undertaken. My project embraces a subjective perspective and is therefore situated within a qualitative research paradigm. By the use and collection of a variety of empirical materials qualitative research aims to explore and “understand a situation that would otherwise be enigmatic or confusing” (Eisner, 1991 in Tanveer et al, 2008, p. 39). An inductive approach to reasoning is adopted that aims to identify and discover patterns, meaning, and relationships

to build a theory, without intending to validate or falsify ideas (Gray, 2017; Denzin & Lincoln, 1994). The organic, flexible, and open-ended nature of a qualitative and inductive approach supports this investigation and underpins research methodology.

3.2 Epistemological Perspective

The etymology of the word epistemology is derived from the Greek episteme (knowledge) and logos (reason), and is sometimes referred to as the nature, origin, and theory of knowledge (Stroll & Martinich, 2021).

Epistemology influences form, voice, and method, it has in-built values modifying methodology and justifies the knowledge produced (Carter & Little, 2007). It questions what and how can we know reality/knowledge (Patel, 2015). Adopting an epistemological position within qualitative research depends on a variety of factors such as personal, professional, political, and contextual influences. Merriam recognises four main epistemological perspectives and frames them as – “positivist/postpositivist, interpretive/constructivist, critical, and postmodern/post-structural” (Merriam, 2009, in Haulty 2016, para. 2). The positivist/postpositivist approach aims to observe and measure reality; an interpretive/constructivist attitude explores multiple realities, descriptions, and experiences; a critical slant is intended to empower and identify emancipatory information; a postmodern/post-structural approach deconstructs former truths and rationales (Merriam, 2009, in Hautly, 2016). The aim and objectives (1.3; 2.4.3) of this research aligns with an epistemological perspective situated in the interpretive/constructivist paradigm focusing on in-depth reflective experiences of creating and interacting with the ARC.

3.3 Philosophical Viewpoint

Ways of seeing the world and making meaning fundamentally differ. Adopting a philosophical or theoretical position in relation to how one views the world is important when designing a research framework. Developing a philosophical perspective is a reflexive process, encompassing beliefs, assumptions, and research design (Saunders et al, 2015).

My research question encompasses several different areas of thought, reified through practice. Developing a credible and strong framework to represent this in a meaningful way was complex. Denzin & Lincoln suggest that working with

competing and overlapping perspectives and paradigms to address a specific question can enrich research (1994), “*pluralism*” can define this diversity (Knudsen, 2003). The idea of pluralism opens an inclusive landscape in which many philosophical perspectives can coexist (Saunders et al, 2015).

A practical, reflexive, and reframing approach somewhat aligned to a basic pragmatist perspective is evident within my own creative practice. Saunders et al (2015) suggests that “pragmatists recognise that there are many different ways of interpreting the world and undertaking research...reality matters to pragmatists as practical effects of ideas, and knowledge is valued for enabling actions to be carried out successfully” (p.143/4). Although being instinctively situated within a personal pragmatic paradigm, specifying, and documenting a particular philosophical position regarding my own creative practice initially appeared counterintuitive, as I work implicitly and experientially through 3D reflective practice⁹⁴(3.4).

Shusterman (2011) describes himself as a pragmatist philosopher in his somaesthetic discourse of body consciousness. He describes his philosophical position as “essentially concerned with human flourishing by focusing on improving the use of one’s embodied self and one’s somatic experience” through theory and practical orientation (p. 323). Furthermore (Shusterman, 2016), he suggests that the overall concept of creating somaesthetics as a field of inquiry was to align different studies and disciplines of the body into a more coherent interdisciplinary framework to heighten “our awareness and harmony with the environments to which our actions contribute and from which they derive their energies” (Shusterman, 2016, 03.26 min). He acknowledges the descriptive embodied phenomenology of Merleau-Ponty as a major influence in informing his somaesthetic perspective (Shusterman, 2016) (2.5.1; 2.5.2; 3.6; 3.7).

Shusterman’s sentiments align with my research question, the concept of metanoia (2.1; 2.3.6), and my personal beliefs. A pluralistic pragmatic and phenomenological philosophical perspective is therefore adopted to underpin and inform research design.

3.4 Creative-Production

Von Busch (2008) suggests taking a creative approach in adopting research

⁹⁴ The following section outlines a process to access and document this form of *knowing* (3.4).

methodology within artistic inquiry, as it can be problematic trying to apply specific frameworks to abstract concepts suggesting that:

“In artistic research there are no given criteria with which to secure the quality of the research, and general proclamations of basic values are of little help. Here it is necessary to continuously relate to different traditions of ways of thinking. Each thesis must find its own way to manifest these relationships so that in the long run a kind of best practice will be revealed” (2008, p. 28).

Scrivener thinks that within practice-based research “theory and practice become inextricably linked and are mutually dependant” (2000, p. 1). Vincs agrees, suggesting that practice and writing are inseparable, having “to function with one another on the same epistemological level”, rather than adopting a hierarchical structure (Vincs, 2016, in Barrett & Bolt ,2016, p. 105). The paradoxical dilemma I experienced in positioning this study within a methodological framework is paralleled by Scrivener reflecting on his experience of supervising PhD research within art & design. He suggests practice-based PhD’s differ to a greater extent than in “disciplines, such as psychology, where research programmes tend to draw on the same research knowledge base” (2004, p. 2). He further explores differences between design-research, characterised by problem-solving, and what he terms *creative-production*, i.e., concepts that cannot be straightjacketed by problem-solving approaches (Scrivener, 2000), and has developed an 8-point creative-production project framework based on shared commonality (p. 2):

Norms of creative-production research projects	
1	Artefacts are produced
2	Artefacts are of high quality and original in a cultural, social, political, or/and aesthetic context
3	Artefacts are a response to issues, concerns, and interests
4	Artefacts manifest these issues, concerns, and interests
5	These issues, concerns and interests reflect cultural, social, political, or/and aesthetic preoccupations
6	Artefacts generate apprehension
7	Artefacts are central to the process of apprehension
8	The creative-production process is self-conscious, reasoned, and reflective

Figure 45 Scrivener’s theoretical eight-point creative-production project framework

This research project has an element of inbetweenness, in that it explores alternative theoretical approaches to holistic wellbeing through a process of creative-production (regenerative clothing). Using Scrivener’s ‘Norms of

Creative-production' as a template⁹⁵, theories and attributes from this study are inserted (figure 46). The purpose of outlining the study in this way is to unpick the research question aiming to identify a clear and appropriate methodological framework that aligns and encompasses all aspects of the work:

Norms of creative-production research projects	
Exploring Eudaimonia Through Fashion: Can clothes be designed to carry an embodied narrative for wellbeing?	
1	Artefacts are produced Clothing is produced using flat patterns (netts) of Platonic Solids and Phi ratio proportioning, working from set templates of those particular shapes rather than creating a garment design and generating a flat pattern from that design
2	Artefacts are of high quality and original in a cultural, social, political, or/and aesthetic context Clothing is made using high quality natural plant-based materials and mindful processes. They embody metaphysical properties of Platonic Solids and Phi ratio to explore mind-body-environment connections
3	Artefacts are a response to issues, concerns, and interests Clothing is a response to issues of disconnection from and exploitation of the natural world that impacts personal and planetary wellbeing
4	Artefacts manifest these issues, concerns, and interests Clothing manifests these issues and concerns of disconnection by using natural and spiritual geometries, organic plant-based materials, and small, local, and honest production processes to explore a correspondence of holistic wellbeing
5	These issues, concerns and interests reflect cultural, social, political, or/and aesthetic preoccupations Issues of disconnection and exploitation of the natural world reflect destructive practices of a reductionist viewpoint, a capitalist economic model and a Judaeo-Christian societal value system
6	Artefacts generate apprehension Clothing embodies an alternative, regenerative concept, aspiring to create a portal of reconnection with the natural world. Clothing aims to generate a metanoic ⁹⁶ landscape for wellbeing through sensory interaction
7	Artefacts are central to the process of apprehension Clothing, as objects of sensory experience are central to the process of understanding and transformation
8	The creative-production process is self-conscious, reasoned, and reflective The thinking through making creative-production process is a dynamic reflective cycle aiming to produce embodied soma-wearables for sensory interaction

Figure 46 A breakdown of my research concept using Scrivener's creative-production framework

⁹⁵ Scrivener's norms are displayed in red text in figure 46

⁹⁶ Metanoia – a transformative change of heart; of one's whole being, especially a spiritual conversion

The *norms of creative-production* process emphasised that the research methodology needed to reflect two distinct areas:

- The creative-production process
- The embodied experiences of wearing the clothing

Scrivener & Chapman (2004) suggests mapping out the domains of knowledge relevant to the development of practice and then to specify methodological strategies to acquire and organise this knowledge (figure 47) and cite Schon's (1983) reflection-in and on-action theory as informing their perspective:

Structure for the Form of a Creative-production Project	
1	Pre-project reflection on practice, including identification of current issues, concerns, and interests
2	Identification of resource domains relevant to one's practice and formulation of acquisition strategies
3	Application and refinement of acquisition strategies throughout the programme of work.
4	Cycles of production of work, reflection on productive phase in terms of action and practice, possible revision of issues, concerns, and interests; possible search for resources relevant to modified issues, concerns and interests
5	Post project reflection on action and practice (i.e., on the project as a whole)
6	Reflection on reflection on action and practice (i.e., critical reflection on one's reflecting)

Figure 47 Mapping out the domains of a creative-production project

The iterative, reflective, and action-based cycle of ARC's creative-production could be positioned within an interpretative, qualitative paradigm of Action Research⁹⁷, which describes a cyclical, insightful process aimed at solving specific problems and aligns with elements of Schon, Scrivener & Chapman's approach. A hybridised model, adapted from a traditional Action Research methodology of plan, act, observe, and reflect is applied to this study to reflect the profound and multi-layered creative-production process of generating the embodied clothing, and I have coined this *Reflexive Action* (see Chapter 4).

Willig describes personal reflexivity as:

“Reflecting upon the ways in which our own values, experiences, interests, beliefs, political commitments, wider aims in life and social identities have shaped the research. It also involves thinking about how the research may have affected and possibly changed us, as people and as researchers (2007 p.10).

⁹⁷ Devised by social psychologist Kurt Lewin in 1946

Reflexive Action differs from Action Research within the context of this research in that:

Reflexive Action is:	Action Research is:
Reframing/Creative-Production	Problem-Solving
Independent	Collaborative/Co-creative
Time-constrained	Ongoing
Innovative	Transformative
Cyclical	Cyclical
Reflexive	Reflexive
Action orientated	Action orientated

Figure 48 The differences between Reflexive Action and Action Research

3.5 Reflexive Action

The eight design principles of ARC's ideology (2.6), formulated from the Contextual Review's key insights identify fundamental attributes to embed within a creative-production process of reflexive action. Building new understandings to inform our actions in unfamiliar and confusing situations by looking to our experiences, and connecting with our feelings is outlined by Schon:

“The practitioner...reflects on the phenomenon before him, and on the prior understandings which have been implicit in his behaviour. He carries out an experiment which serves to generate both a new understanding of the phenomenon and a change in the situation”. (Schön 1983, p68)

Figure 46 outlined the creative-production process that starts with given shapes for garment creation (see Chapter 4) rather than working conventionally from a garment design sketch. This unconventional and unfamiliar approach may initially seem confusing and overwhelming in its approach; therefore, the three phases of the Reflexive Action framework are designed to address such anomalies⁹⁸. Within the context of this particular research, I work independently⁹⁹ ¹⁰⁰undertaking reiterative introspective cycles of plan, action, observe and reflect in the three following phases:

⁹⁸ The ARC and Reflexive Action frameworks are intended to be utilised by others in the future (7.4; 7.5).

⁹⁹ The Reflexive Action framework is intended to be a projective model and could therefore support co-creation going forward

¹⁰⁰ A 1-day practitioner workshop was held at Northumbria University to explore the concept of working from given shapes (see Chapter 4)

Phase 1 – Engage (duration, 5 days):

Building on the notion of repertoire, a collection of images, ideas and examples are assembled prior to commencement of Phase 1 to engage with the new situation and provide visual stimulation to encourage flow. When looking at new situations, past experience, our repertoire, helps to build theories and responses to the new situation (Schon 1983).

Platonic solids constructed from organic calico¹⁰¹ (prepared prior to commencement of Phase 1) in varying proportions of Phi (**2.2.4**) are explored in an open, intuitive, and interactive process. ½-Scale female mannequins are made with heads and arms and are used to suggest bodily form; using scaled down mannequins for initial experimentation affords less toiling¹⁰² fabric; their small size also makes them transportable and space saving. As noted, starting with a given outer shape is contradictory to the usual process of clothing evolution and has the potential to generate rich data from the Reflexive Action cycle. Phase 1 aims to arbitrarily explore the research space, not to generate outcomes.

Dynamic and intense sessions of studio practice are intended to empower the creative process.

Reflecting -on and -in practice is recorded through photographs and notes during and after the day...“the pace and duration of episodes of reflection-in-action vary with the pace and duration of the situation of practice” (Schon, 1983, p.62). “The act of reflecting-on-action grants us time to explore why we acted as we did. This process assists in developing ideas about the assumptions of our practice” (Smith, 2001, p9), and helps to access taken for granted tacit knowledge, or implicit ways of knowing (Nonaka, 1991; Polanyi 1969)

Reflection and analysis from Engage (phase 1) informs Explore (phase 2).

¹⁰¹ Or similar plant-based organic fabric or waste material

¹⁰² A prototype garment or part of a garment made from scrap fabric, similar in characteristic to the final fabric

Phase 2 – Explore (duration 5 weeks):

Explore initiates the creative interactive process of 3D garment development on ½ scale mannequins for each of the 5 Platonic Solids exploring scale, ratio, balance, and proportion. Notes and imagery from Phase 1 are used for reference throughout the process.

Reflecting -on and -in practice is recorded through photographs and notes during and after each activity session over the 5-week period.

Phase 3 –Embody (duration 5 months):

In response to reflection and analysis from Engage (phase 1) and Explore (phase 2), the final phase moves into full-scale garment development and resolution for each of the five solids. Full-scale mannequins and female models are used within a studio context to explore bodily movement and somatic interaction with the geometric forms.

Fabric/trim research, sourcing and experimentation is ongoing within phases 2 & 3.

Reflecting -on and -in practice is recorded through photographs and spontaneous journaling during and after each activity period.

Upon completion of the three reflexive iterative phases, post project reflection on the creative process as a whole, and on action and practice is undertaken. Reflection on reflection on action and practice, i.e. critical reflection on one's reflecting is then completed. Outputs of the creative-production process are discussed in the following chapter - Actioning ARC.

The clothing, produced using the Eudaimonic Design Framework (2.6), predicates a sensory somatic response and therefore an exploration of experiences of wearing the clothing is needed (3.3). The feelings, thoughts, and descriptions of people wearing and interacting with the clothes needed capturing to explore the credibility of the research question: *Can clothes be designed to carry an embodied narrative for wellbeing?* An interpretative methodology was sought to explore this phenomenon.

3.6 Phenomenology

“Phenomenology is not only a philosophy and a human science research methodology, but it is also...a way of being, becoming, living, and moving through the world” (Vagle, 2018, p. xii)

Phenomenology as a methodology is concerned with the phenomena that appear in our consciousness as we engage with the world around us. It aims to return to things themselves, as they appear to us as perceivers, and to set aside, or bracket, preconceived assumptions. Phenomenology therefore is interested in the world as it is experienced by people within particular contexts, and at particular times, rather than in abstract statements about the nature of the world in general (Willig, 2007).

Philosopher Edmund Husserl (1859-1938) is credited with popularising Phenomenology. He took a descriptive epistemological stance of believing that explanation must be replaced by description. Husserl differentiated between what he termed *natural attitude* and *intentional or phenomenological attitude* to access that description. *Natural attitude* relates to our assumed every-day, automatic, obvious, naïve, and unexamined immersion in the world, rarely questioning the existence or perception of things, people, ideas etc (Vagle, 2018; Overgaard, 2004). Whilst *intentional or phenomenological attitude* describes a consciousness directed towards a perception of a thing or an experience. Husserl believed that by suspending our *natural attitude* by “questioning what we typically take for granted” (Vagle, 2018, p. 13) we could reveal reality and make it accessible for philosophical inquiry. “Each type of intentional experience, be it a perception, an imagining, a desiring, a remembering etc, is directed at its object in a distinctive way. A task central to phenomenology is to analyse these differences in detail, and to map out the way they are systematically interrelated” (Zahavi, 2019, p. 17).

Heidegger, Merleau-Ponty, and Sartre developed Husserl’s concept of intentionality, the meaningful connectedness with the world, moving towards a more embodied form of meaning (Vagle, 2018) (2.5.2) “rather than a descriptive focus” (Smith et al, 2009, p. 21). Merleau-Ponty’s conception of intentionality views embodiment in terms of bodies being “our access to the world and one another” (Idhe 2003 in Vagle 2018, p. 130), the body therefore playing a crucial role in perception. Experiencing phenomenon through the body is central to the ARC’s narrative and somaesthetic apprehension (2.5).

3.7 Interpretative Phenomenological Analysis (IPA)

Conceptualised in the mid-1990's, IPA is a qualitative phenomenological approach that involves in-depth examination of an individual's lived experience. It explores personal perception of an experience through a process of interpretative activity offering rich and detailed accounts (Smith & Osborn, 2007). The aim of IPA as a methodology is to describe, understand and interpret participants' experiences to determine the meaning of those phenomena (Zahavi, 2019).

IPA is suitable for small-scale case studies of up to 15 contributors, it invites participants to offer deep and thorough idiographic accounts of their embodied experiences through thoughts and feelings and supports the interpretative/constructivist epistemological perspective of this research. IPA was deemed as an appropriate methodology to explore and analyse the phenomena of interacting and wearing the Alternative Regenerative Clothing (3.3) (figure 49).

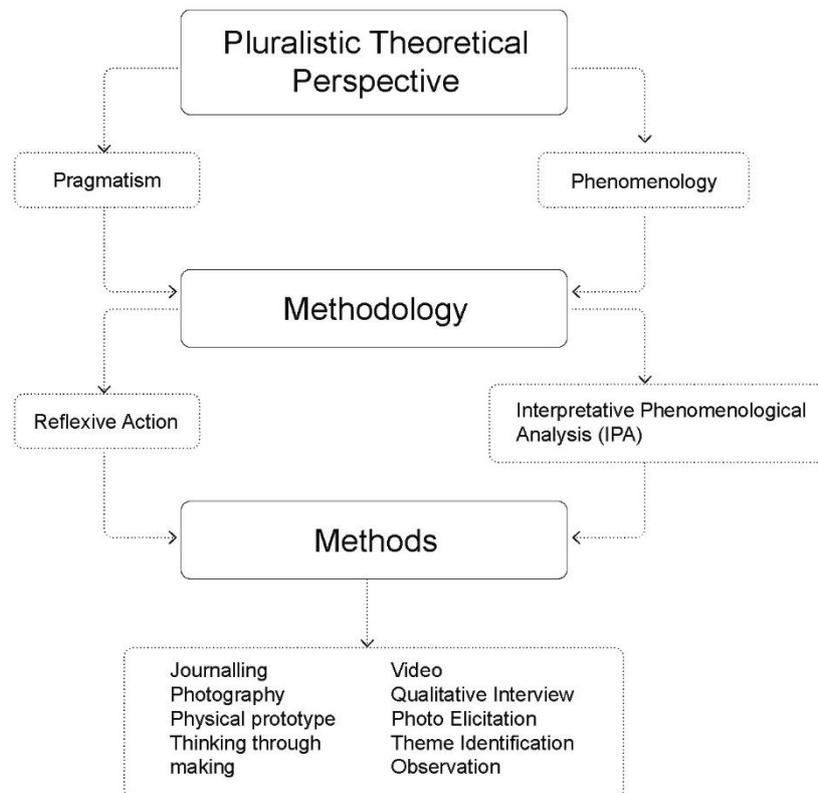


Figure 49 Theoretical framework

3.8 Summary

A pluralistic philosophical perspective determined by the concept and framework of somaesthetic theory is adopted to conduct this research project. The subjective and interpretative nature of phenomenology and the practical, action-orientated focus of pragmatism therefore underpin the research question. Methodologies aligned to these philosophical positions, namely Reflexive Action (**3.4; 3.5**) and Interpretative Phenomenological Analysis (**3.7**) are embraced to construct the research framework. Various methods aligned with Reflexive Action and IPA are employed to acquire data and knowledge and are justified and discussed in Chapter 4 – Actioning the ARC, and Chapter 5 – Wearer Interaction Study (figure 49):

Chapter 4 – Actioning the ARC

4.1 Introduction

The evolutionary landscape of the ARC stems from my perception that clothing is universally apperceived by the body, and by enveloping the body, and interacting with the multi-faceted properties of those coverings, states of consciousness can be affected, defined by Shusterman as Somaesthetics and discussed in *Thinking Through the Body* (2012). McQuillan & Rissanen (2020, p. 149) concur, suggesting that clothing “behaves like a vehicle, facilitator, and communicator” of interactions between the mind, body, designer, maker, and wearer. My research aligns with these viewpoints, its aim being to:

“Develop a practical design framework that focuses on improving personal and planetary wellbeing using clothing as a vehicle for connection with self and nature. The framework aims to provide tools to embody clothing with a multi-layered interwoven narrative to elicit sensorial responses in the wearer, and in doing so aims to awaken an innate connection and respect for the natural world” (1.3). This chapter reifies the framework.

As noted (2.6), the Contextual Review explored a substantial amount of ground, and thus inevitably had to heavily compress several arguments. Its overall aim was to outline a position that could provide multifaceted and tangible principles for an alternative, transformative, and regenerative design strategy and in doing so inform bigger systems change that impacts wellbeing on both a personal and planetary level (1.1; 1.2; 2.2.3). Like the attitude shift towards veganism (2.3.3) in that “diet is used as a control mechanism when confronted with overwhelming environmental challenges” (Downie-Melrose, 2020, p. 23) - in this context clothing is the control mechanism and facilitator. The Review concluded (2.6) by proposing eight integrated wellbeing principles, a Eudaimonic Design Framework, tools to create Alternative Regenerative Clothing, innovative expressions in dress. Its aim being to embody layers of meaning beyond the material object, acting as a catalyst for change both consciously and unconsciously.

Actioning the ARC, evolved through three phases of Reflexive Action (3.5): Phase 1 – Engage (five days), Phase 2 – Explore (five weeks), Phase 3 – Embody (five months), in that “research is initiated in practice, where questions,

problems, challenges are identified and formed...and that the research strategy is carried out through practice” (Gray, 1996, p. 3). The length of each reflexive action phase increases in duration as the creative-production process progresses, each phase deepens in complexity. Five was assigned as a symbolic number aligned with nature, cultural, spiritual, and superstitious beliefs including amongst many other examples:¹⁰³

- An earthworm has five hearts, most starfish have five arms, many flowers have five petals.
- Humans have five main senses - taste, smell, touch, vision, hearing.
- Nearly all mammals, which have fingers or toes, have five of them on each hand or foot.
- Five is a significant number in Hinduism, Christianity, Islam, Sikhism - Five Pillars of Islam; Five is a symbol of the physical body, the planet Earth and the elements - Earth, Ether, Air, Fire and Water in Hinduism; There are five biblical books of God's Law (Genesis, Exodus, Leviticus, Numbers and Deuteronomy) commonly referred to as the Pentateuch; There are five evils and five virtues in Sikhism.
- The pentagram has been used by many cultures and religions as a magical and sacred symbol. For some Christians, it represents the five wounds of Christ, or the star of Bethlehem, when it symbolises guidance.
- Five was believed to be favoured by Coco Chanel. She said of her iconic fragrance: “I always launch my collections on the 5th day of the 5th month, so the number five seems to bring me luck – therefore, I will name it No 5” (Kingsley, 2021, para. 36).

4.2 Building a Repertoire

Before commencement of the three Reflexive Action design phases a repertoire of “familiar examples and themes” needed collating “to describe reality and conduct experiments” (Schon, 1983, pp. 166 & 270). Being mindful that a repertoire is a fluid resource and may change as practice and reflection evolve.

¹⁰³ <https://kidadl.com/articles/amazing-facts-about-the-number-5>



Figure 50 Yeohlee Teng

Tomoko Nakamichi

Issey Miyake



Figure 51 Yoshiki Hishinuma's knitted tops constructed with equilateral triangles

Using geometry as a means of flat patterning and silhouette evolution in fashion is not a new concept (2.2.5; 2.5.5). Therefore, geometric patterning approaches and outcomes from several conceptual fashion practitioner's work was reviewed, and imagery collected for the repertoire. These included: Vionnet, Balenciaga, Miyake, Hishinuma, Nakamichi, Teng, Doshi, Morinaga, Shahno, Toledo et al, and cultural clothing including the Sari and Kimono (figures 26-32, 50 & 51). The examples shown in figures 50 & 51 evolved between 1986-2020 but are difficult to situate on a particular fashion timeline. These loose, fluid, geometric, *Ma*¹⁰⁴(2.5.5) manifesting silhouettes inhabit timeless qualities and transcend specific purpose - principles embraced by the Eudaimonic Design Framework.

¹⁰⁴ Ma – the Japanese concept of a space/void for reflection, enabling one to listen to bodily sensation.

A thinking through making process can be a powerful practice that can release creative ideas and act as an instigator of change, described by Charney as:

“...the most powerful way that we solve problems, express ideas and shape our world. There is a big difference between established, traditional forms of making and those that are innovative. Innovative making is less rehearsed and may be less reliable. But it is more exploratory, with the potential to open up dramatic new directions” (Charney, 2011, p. 7).

A 3-dimensional thinking through making process allows an abstract silhouette to unfold in the dynamic “movement of the imagination”, a concept that can be difficult to visualise in 2D form (Ingold, 2012 in Penfold, 2017, para. 2-3). All creative-production in the context of this research is undertaken in 3D. ½ Scale mannequins are useful to facilitate this process in the initial development phase. Their small size is economical in terms of paper, fabric, space to work, manageability, lightness etc. I feel the lack of arms, hands, and head of some commercial models detrimental to realistic outcomes (figure 52), they also objectify the body and as such work against the aspirations of the research. I therefore decided to create bespoke forms to aid the 3D thinking through making process. I made five x ½ scale mannequins with a head, and removable arms, including hands (figure 53). I evolved the forms by:

- contouring a full-scale (female, size 12) studio mannequin with calico¹⁰⁵
- removing the calico by sectioning the 3D covering until the individual fabric pieces lay flat, thus creating re-joining opportunities or seamlines.
- digitising the flat fabric-pattern into an Assyst CAD system.
- printing a 0.5 scaled paper pattern.
- the head and removable arm/hand patterns were made by contouring a live person with calico and following the same process outlined above.
- cotton canvas and cotton jersey (for the removable arm carrier) were used to construct the ½ scale forms using a 5mm seam allowance and small stitch length to avoid stuffing leakage.
- the forms were tightly stuffed with sawdust and wadding to allow pin penetration.
- I used adjustable height ex-retail millinery display stands and attached sturdy elastic straps underneath the mini mannequins to allow easy removal from their bases.

¹⁰⁵ A closely woven unbleached cotton fabric commonly used as a creative base for prototype garments



Figure 52 Bubucaca's 1/2 scale mannequin

Figure 53 Bespoke 1/2 scale forms – building a resource repertoire



Figure 54 Left to right - Vionnet, 1923 & Nakamichi, 2011 working on 1/2 scale mannequins

Various characteristics and attributes of the five Platonic solids¹⁰⁶, discussed in the Contextual Review, were amalgamated into a table for reference (figure 57). The Phi ratio of 1.618 was also identified as a key communicator within the design framework (2.2.4; 2.6). Platonic forms were constructed¹⁰⁷ in calico increasing in size by Phi (figure 55) to develop “a feeling for the constraints and potentials of certain configurations” (Schon, 1986, p. 104). The 3D soft fabric forms explore size, proportion, ratio, the extent of *Ma* (2.5.5), relationships

¹⁰⁶ Identified as the building blocks of nature, and as ARC's fixed 3D garment structure (2.2.4; 2.2.5; 2.6),

¹⁰⁷ Five in each shape, starting with a hand-sized form, each rendition progressing by a ratio of 1.618

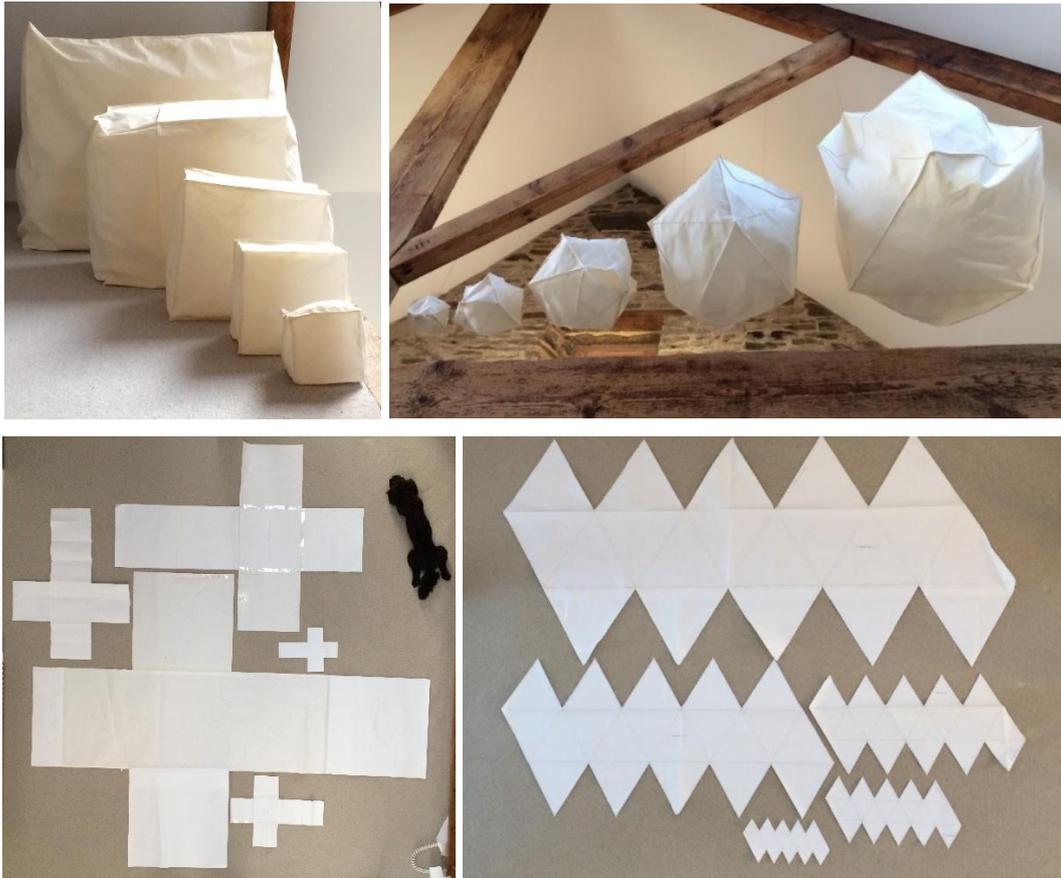


Figure 55 3D calico hexahedra/icosahedra progressing in the Phi ratio and their corresponding nets below

between their 3D form and corresponding flat pattern, relationships between each other, and how these configurations might relate to garments. I arbitrarily set out by making a clenched hand-size calico Platonic solid, and increased the volume of each by five renditions by Phi (1.618). Their size grew rapidly with each iteration, the flat patterns of the largest iterations measuring between 2.50m-3.00m in length, much longer than I had expected. Nevertheless, their progressive size relationship felt comfortable, connected, and aesthetically balanced (figure 55).



Figure 56 Haptic exploration of wooden Platonic solids & repertoire resources for creative stimuli

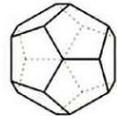
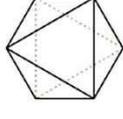
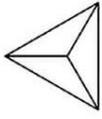
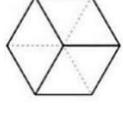
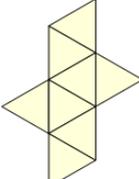
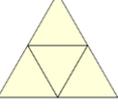
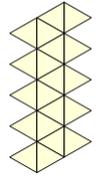
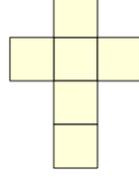
Name	Dodecahedron	Octahedron	Tetrahedron	Icosahedron	Hexahedron
3D Solid					
					
Flat Pattern					
Sides/Faces	12	8	4	20	6
Points/Vertices	20	6	4	12	8
Edges	30	12	6	30	12
Angle	108	60	60	60	90
Element	Aether/Spirit/Energy	Air	Fire	Water	Earth
Sense	Touch	Sound	Sight	Taste	Smell
Key Spiritual Function	Ascension Holds a very high but gentle energy, helps cultivate a higher vibration in meditation. Helps to connect to higher self or energy source.	Integration Cultivates acceptance, forgiveness, love and compassion for self and others. It's mirroring shape connects to a higher vibration of reflection, compassion, and healing.	Manifestation Balance between the physical and spiritual. Supports personal power and acceptance. Creates change	Transformation Teaches us to 'go with the flow'. Enhances the creative thought process. Unblocks and removes emotional stressors that block creative energies.	Grounding Reconnects energy to earth and nature. Refocusing. Removes tension and eases physical stresses. Good for work.
Chakra Colour	Purple	Blue	Yellow	Orange	Red
Chakra Location	Ajna Chakra Third Eye Nervous system. Awareness, intuition, visualisation. I SEE	Vishuddha Chakra Throat Respiratory system, thyroid. Clear communication and thoughts. I SPEAK	Manipura Chakra Solar Plexus Digestive system, pancreas, stomach, liver. Willpower, self-esteem, confidence, beliefs, details, constructive. I DO	Svadhsthana Chakra Sacral Spleen, Urinary tract Adrenals. Emotion, pleasure, sensuality, intimacy, and connection. I FEEL	Root Chakra Sexuality, fertility, and reproduction. Actions and physical energy. I AM

Figure 57 Characteristics of the five Platonic Solids

Palm-sized wooden¹⁰⁸ Platonic forms were also (figure 56) resourced for the repertoire as another possible springboard for creative stimuli. Haptic exploration of the wooden forms aimed to develop a sensory awareness and connection to the shapes, and to stimulate creative flow whilst visualising and processing other forms of resourced and constructed material¹⁰⁹. Csikszentmikalayi defines flow as

¹⁰⁸ Wood being a natural material imparting hope, humanity, scale, and warmth (2.2.3)

¹⁰⁹ This concept is explored more in Chapter 5 & 6

when “concentration becomes so intense that there is no attention left over to think about anything irrelevant. Self-consciousness disappears, and the sense of time becomes distorted” (2002, p. 71). Furthermore, he suggests that “flow will result either from a structured activity, or from an individual’s ability to make flow occur, or both” (ibid p. 71). The design of the three semi-structured phases of the Reflexive Action methodology (3.5) aim to stimulate flow and immersion in the creative-production process. Ingold succinctly summarises the creative landscape that my repertoire aims to facilitate:

“Creativity emerges from within, artefacts being a materialisation of a thought and that learning transpires from within complex and reciprocal relations between makers, materials and other non-human things...artefacts are generated on one hand in the flows and transformations of materials and on the other hand in the movement of the imagination and the sensory awareness of the maker” (Ingold, 2012 in Penfold, 2017, para. 2-3)

4.3 Engage – design phase one

Perry suggests that imposing particular restrictions within the artistic process is more likely to encourage creativity and cites artist Piet Mondrian who restricted himself to right angles and primary colours in his De Stijl paintings (2017, para. 3). Restrictions are imposed within *Engage*, phase one of the Reflexive Action methodological framework (3.5) – i.e., five days of arbitrary exploration using the repertoire (4.2) as a creative springboard and working within the limitations of the Eudaimonic Design Framework (2.6; figure 43).

As noted (2.6; 4.2), the Platonic solids are embraced as a fixed 3D garment structure; working with these constraints and from a finite flat-pattern was a new and restrictive concept for me to embrace. The initial calico 3D experiments on the ½ scale mannequins proved challenging and disappointing in that I found it difficult to harness the integrity of the solid whilst creating aesthetic and wearable outcomes, mainly because of the solids excess volume. Schon suggests that “knowing-in-practice may limit the scope and depth of reflection” (Schon, 1983, p. 275). Through reflexive action I realised that I was using tacit knowledge to approach *Engage* and this was inhibiting an authentic communication with the 3D Platonic solids. Outcomes were compressed and body contouring; although geometric they did not embrace and celebrate *Ma* (figures 58 & 59). I had unconsciously reverted to using the flat-pattern shape of the solid to avoid excess volume (figure 58). After two frustrating and disappointing days of studio practice and contrived outcomes I realised that I needed to approach the concept from a

completely different angle, not from a “knowing-in-practice” perspective. The fixed flat-pattern approach was an innovative and unknown concept, one that I had not experienced before, and I therefore needed to develop a new way of seeing. Initial outcomes felt disconnected from my theoretical research. They were also infinite. Lidwell et al suggest that “failure is not to be feared but embraced” as a step in the journey to finding a solution, and advocate seeking “ways to accelerate iteration to speed learning and progress” (2015, p. 77). I needed to set some achievable parameters for creative development within set timeframes (4.1).

“Symmetry is the most basic and enduring aspect of beauty...it conveys balance, harmony and stability” (Lidwell et al, 2015, p. 134) - a message that I wanted to communicate. I questioned the validity of an asymmetrical silhouette as the five Platonic polygons are all symmetrical and balanced. I felt it important to express the integrity of the solid through the garment configuration (figures 58 & 59) and therefore adopted a symmetrical alignment as a parameter in further iterations.

I also felt that by using the flat-pattern of the solid as a 3D garment (figure 58) bypassed the integrity of the solid form and should therefore also be abandoned.

Constructing a 3D structure and then flattening the solid also negated the point of using a 3D form, it also inhibited *Ma* - demonstrated in figure 59, accordingly all edges of a tetrahedron are joined to form a 3D tetrahedral pyramid, flattened, and then draped around the body to produce angular lines. I also opted to leave this approach.



Figure 58 Initial experiments with the hexahedron



Figure 59 Initial experiments with the tetrahedron

Reflexive action forged new creative directions making days three, four, and five of *Engage* more satisfying in that the outcomes became more voluminous, balanced, and symmetrical and felt more connected to the theory narrative (figure 60). The balanced somatic movement of the body encased by the symmetrical solid aligned with the ARC's design framework in that it allowed for equal distribution of space between the body and the garment (*Ma*), this in turn allowed for more sensorial interaction, Eudaimonic design principles: No. 2 - Spacious and No. 5 Sensorial (2.6).

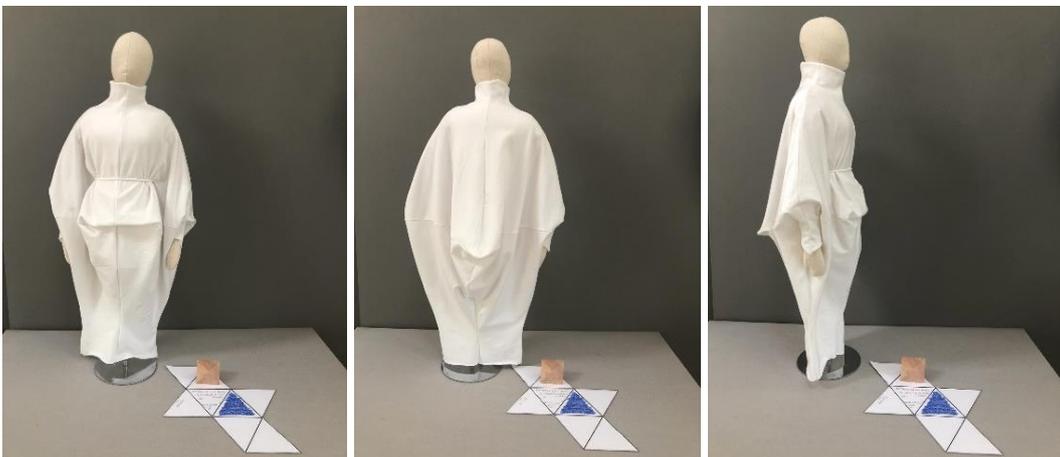


Figure 60 Initial experiments with the octahedron

I began to explore scale, proportion, and ratio (figure 61), and limiting openings for body access. I found that limiting openings authenticated the solid's form - the larger the opening the greater the distortion of Platonic form. Although the solid was distorted because of the fluidity of the fabric medium, the integrity of the shape was evident when body movement occurred, and sensory perception of the void could be experienced – described by Shusterman as Somaesthetics (2.5.1).



Figure 61 Initial experiments with the icosahedron

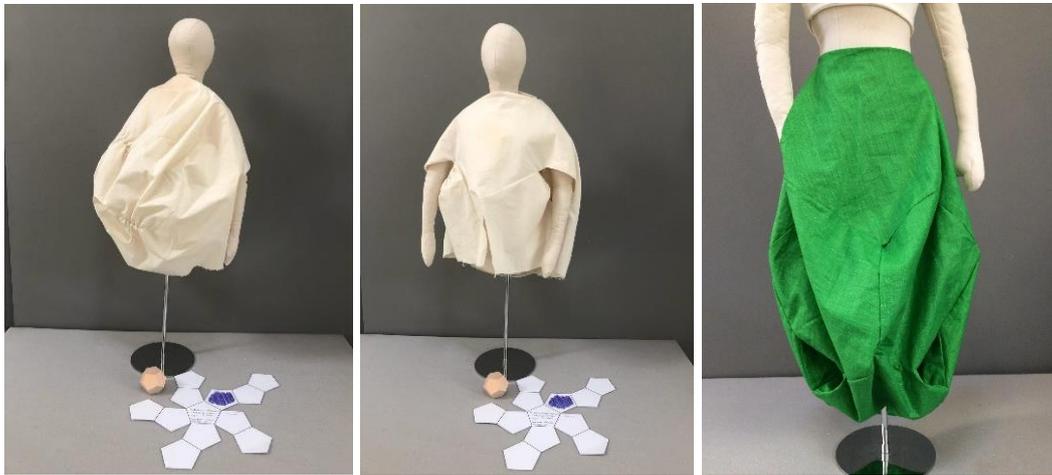


Figure 62 Initial experiments with the dodecahedron

I wondered how other fashion practitioners might approach the challenges of being creatively restricted by shape, volume and a fixed flat-pattern. I therefore invited a small group of experienced pattern-cutters to explore the concept in a 3-hour practical workshop held at Northumbria University in March 2020 (figure 63). The workshop began with a short digital presentation of the research idea. Participants were then provided with a mini mannequin, calico, sewing/cutting equipment, and flat-patterns of the five solids in varying ratios of Phi. They were invited to design and make a ½ scale prototype garment, or part of a garment, whilst retaining the integrity of the shape using a Platonic solid of their choice. Although short in duration my reflection on the workshop experience revealed that others were encountering similar challenges that I had initially encountered when confronted with the unfamiliar approach of starting with a fixed flat-pattern, namely:

- Using the flat pattern shape to drape on the mannequin without constructing the 3D solid
- Flattening the solid and then draping on the mannequin
- Making body access openings too large and the integrity of the solid was lost



Figure 63 A practical workshop exploring the concept of the ARC with experienced pattern-cutters

After reflecting -on and -in practice during the five dynamic days of creative production and group workshop, I decided to impose further creative restrictions to authenticate and communicate the attributes and associations of the solids, and to ease the cognitive load of the unfamiliar design process. Going forward I therefore adopted a heuristic style strategy to problem solving, one that employs a practical process for reaching an immediate goal. This can be described as an approach that is neither the most advantageous nor logical, but nevertheless one that can speed up the process of finding a satisfactory design resolution. Heuristics can be mental shortcuts that ease the cognitive load of decision making, simplifying complex, difficult, and unfamiliar questions (Cherry, 2021). Heuristics to take forward to design phase two are:

- Symmetrical silhouettes
- Celebrate volume
- Minimise body access openings

4.4 Explore – design phase two

Moving between ½ scale, full scale, and human mannequins *Explore* builds on *Engage* over a five-week timeframe to further develop creative direction.

Reflecting on *Engage* and a heuristic approach I began this period by constructing an organisational chart (figure 64) - not intended as a fixed structure, its aim to focus and clarify my thoughts. It was informed by considering:

- the dynamic initial practical phase one - *Engage*
- the contextual review's key insights
- the characteristics of the five Platonic solids (figure 57)
- haptic exploration of the wooden Platonic solids (4.2)
- thinking through making – an innate sense for garment type/fabric/detailing/construction techniques for each solid after the felt experiences of phase one

I considered representing multiple different solids within one garment, however, I decided against this approach as it could be confusing regarding conflicting chakra associations (figure 57; **2.4.4**) and thus difficult to interpret wearer experiences from an analytical perspective. Therefore, in addition to the three restrictions imposed in phase one (p. 81) I decided to impose one solid within one garment as another design heuristic, limiting the total number of garments to five. Consequently, one garment to represent each of the five Platonic solids:

- Symmetrical silhouettes
- Celebrate volume
- Minimise body access openings
- Each garment represents one Platonic solid – therefore five garments in total

The organisational chart (figure 64 – garment type) considered designing different pieces to cover different body areas, loosely aligned to recognised chakra locations within the body (**2.4.4**)¹¹⁰. Thus, providing the potential to explore if any observable relationships were felt by wearers interacting with the clothing (Chapters 5 & 6). This approach could also enable a collective wearing of different solids if desired, for example - a shirt (tetrahedron), dungarees (hexahedron) and a head/neck piece (octahedron) could be worn together (figure 57 - chakra location & figure 64 - garment type).

Using one large solid to form a garment proved challenging as excess volume needed harnessing for functionality. I experimented with pleating, ruching and folding to reduce volume, however, this distorted the solids form too much and silhouettes started to look overworked and lacked the authenticity of Platonic form (figures 65 & 66). Upon reflection I decided to radically simplify silhouettes, avoiding volume restriction techniques that distorted form aiming to harness the solid's integrity in its purest form through the Phi ratio and varying scale (figure 67, middle and right).

I questioned if several solids of the same kind could be used within one garment progressing by Phi, for example four sizes of dodecahedron explored this idea in figure 67, left image. They were joined together by catching adjacent edges and loosely contouring the body, similar to the work of Amila Hrustic and Bea Snezfeld (**2.2.5** - figures 27 & 28), albeit in fabric rather than paper. After reflection I also discounted this direction because:

¹¹⁰ Chakra activating is a principle of the ARC's design framework (**2.6**)

- the integrity of the solid was lost in translation
- the solids were superficial rather than part of the body, thus restricting spaciousness, somatic appreciation, and sensory interaction - *Ma* (2.5.5)
- the surface-mounted solids deflate easily
- they are difficult to press after laundering

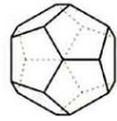
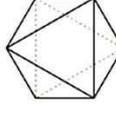
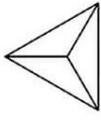
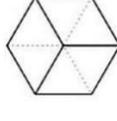
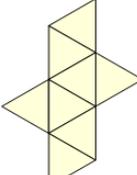
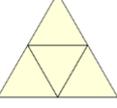
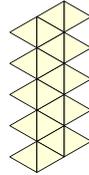
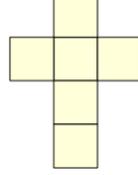
Name	Dodecahedron	Octahedron	Tetrahedron	Icosahedron	Hexahedron
3D Solid					
Flat Pattern					
Fabric -differing weights of hemp	Lightweight/ethereal	Jersey	Mid/lightweight woven	Mid-weight woven	Dense/solid/heavy
Colour	Natural	Natural	Natural	Natural	Natural
Shape silhouette	Soft Pretty Luxurious Ethereal	Forgiving Soft Encompassing Mirrored	Sharp Crisp Angular Minimal Utilitarian Sculptural	Playful Rippled Chich Attractive Fluid/Flowing	Strong Solid Definite Reliable Bold
Garment type	Skirt Statement piece	Head to toe covering Jumpsuit Head/Neck piece	Hoodie Longer top Shirt	Pinafore Long dress	Trousers Dungarees
Sensation -evoke in wearer	Gentle Decorative Delicate Special	Reflective Peaceful Healing Elevated Clear Communicative	Balanced Confident Calm	Pleasant Sensual Creative Transformative Liberal	Grounded Practical Connected Energetic
Techniques -to control fullness	Soft gathers Pin tucks Darting Layering	Lacing Ties	Pleating Folding Inverting	Stylised Large scale Smocking Ruching	Pleating Folding
Detailing	Quilting Multi layers/sizes	Pockets Ribbing/Cuffs	Pockets Belt	Pockets Straps	Multi Pockets Utilitarian

Figure 64 A design direction organisational chart



Figure 65 Pleating, ruching and folding experimentation with the tetrahedron and hexahedron to reduce volume



Figure 66 Dungaree experimentation using hexahedra; the exposed surface-mounted pocket being in a proportional Phi ratio with its larger outer form. Straps and ties are used as fastenings.

A more successful and authentic rendition of multiple Phi progressive solids was toiled using hexahedra to form a sleeve; the arm is positioned through the centre of three hexahedral solids (figure 67, middle). The solids retain their integrity and move with the body, the ratio of the sleeve and the arm moving as one, integrated in somatic harmony. When self-worn, although in toile¹¹¹ form, the sensation of various arm movements within the sleeve was a somatic experience that I had not encountered before, connected to the garment but also one of being completely free and unrestricted. The hexahedron's chakra associations and location suggested it to be a grounded, solid shape perhaps more aligned with a base garment such as a trouser (figure 57 - chakra location & figure 64 - garment type) however, the experiences I felt from arm interaction with this triple formation of Phi progressive hexahedra was fascinating. The grounding associations could be interpreted through sitting, perhaps working at a desk or similar task that needed focus. I therefore decided to retain and develop this idea in *Embody* - design phase three. This is a good example of how initial presumptions can be superseded by practice – research through design.

As toiling progressed it became evident that cutting shapes out individually and then seaming the individual shapes back together to form the original nett pattern of the solid (figures 55, 57, & 64) gave an opportunity for:

¹¹¹ Making prototype and experimental garments usually from calico

- body access openings in any location within the solid through seamlines
- individual shape emphasis of squares, equilateral triangles, & pentagons, created by seamlines
- economies of fabric – limiting waste material, a crucial wellbeing consideration



Figure 67 Toiling with Phi progressive dodecahedra hexahedra (left & middle). A hexahedron as a bag (right)

As noted, the solids are made up of straight-edged shapes - squares, equilateral triangles, and pentagons. Squares and equilateral triangles readily tessellate, and therefore have the potential for zero fabric waste (figure 68). Pentagons do not tessellate leaving a triangular area of waste fabric (figure 68, right). I therefore decided to keep the dodecahedral garment small to limit excess waste fabric. All fabrics are sourced from plant-based sustainable fibres (No. 3 - Eudaimonic Design Framework, **2.3.5**), and are therefore compostable, having the potential when rotted to replenish the soil, nevertheless limiting fabric wastage in the first instance is a crucial consideration for planetary wellbeing.

The five weeks of *Explore* passed quickly. During this dynamic reflexive phase I began to feel an innate understanding for, and connection to the solids, and Phi. The complexity of their simplicity was self-evident. I began to realise that I had been overthinking the clothing's communication, I didn't need to restrict volume and distort form, but celebrate their purity. Echoing the ethos and words of German designer Dieter Rams, I felt that "the only plausible way forward is the less-but-better way: back to purity, back to simplicity" (Frearson, 2017, para. 4).

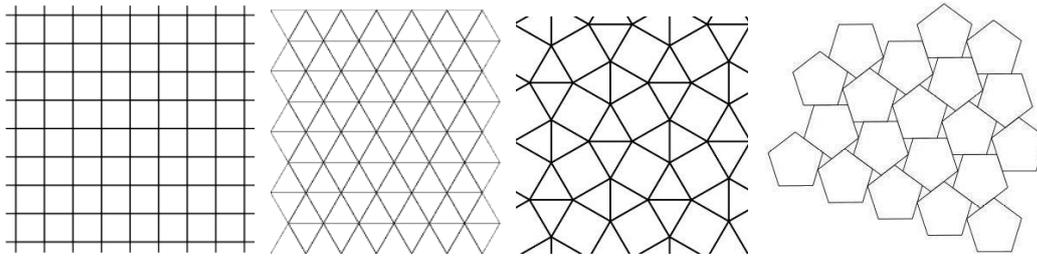


Figure 68 Tessellating and non-tessellating shapes that constitute the Platonic solids arranged to limit fabric wastage

Key heuristics from *Explore's* iterative cycles of reflexive action to take forward to the final phase of creative production are:

- Symmetrical silhouettes
- Celebrate the volume, purity, and simplicity of the solids
- Minimise body access openings to retain the integrity of the solid
- Each garment represents one Platonic solid – therefore five garments in total
- Zero waste fabric can be achieved by cutting individual tessellating squares and equilateral triangles
- Reduce fabric waste by cutting individual and small pentagons as these shapes do not tessellate
- Develop the Phi progressive hexahedral sleeve concept through to a final garment

4.5 Embody – design phase three

During this final five-month creative-production phase silhouette experimentation and development progressed through iterative reflexive cycles informed by key insights from *Explore*. As my confidence, understanding, and connection to the shapes, and the restrictive reverse patterning¹¹² process grew so did the clothing's simplicity and purity. Berlow suggests that one must be able to see the complexity around a given issue for simple patterns and answers to begin to emerge (Berlow, in Mayfield, 2010). I felt as though a clearer direction was evolving, I concentrated on:

- Communication through form rather than surface decoration or embellishment
- Conveying balance, ratio, and proportion
- Full-scale toiling on people to analyse somatic interaction
- Developing each of the five pieces for a different area of the body

¹¹² Starting the design process with a fixed flat pattern, working in opposition to traditional models of fashion design whereby a flat pattern evolves as a result of a sketch



Figure 69 Simple, clean silhouettes, authentic to the Platonic solids

The looseness of the non-contouring geometric pieces allows for easy body-access and movement, and therefore does not require opening/closing components such as plastic zippers¹¹³, commonly associated with body-contouring pieces. Before the invention of the zipper, or clasp locker in 1893 (Cunningham, 2020) Western clothing used ties, laces, hooks, or buttons to close body access points. Eastern cultural clothing such as the sari rely completely on draping and looping fabric to form a closure devise. For example, one uncut eight-metre length of cloth can be draped in over 100 different ways. Cultural clothing such as kimonos and sari lengths have no third-party fastenings. Passed down generations, deeply connected to memory and identity – beyond fashion, they are versatile, valued, and sustainable (Google Arts & Culture, n. d.), principles of the Eudaimonic Design Framework, namely: long-lived (No. 4), sensorial (No. 5), and assigning value (No. 8). Reflecting on these examples and wanting to embody a sense of provenance and timelessness within the clothing I decided to avoid zippers and minimise third-party fastenings in the final pieces.

Alongside creative production, and being mindful to embrace more Eudaimonic design principles, fabric/colour stories needed attributing to each garment to move through to final iterations and production. Sustainable natural materials in their purest form, close to their organic origin were identified as key biophilic communicators (2.2.6). They support wellbeing by embodying:

- Stress reducing qualities (2.2.3)
- Are breathable and natural next to the skin
- Do not shed harmful micro fibre particles when washing
- Have a high strength to weight ratio
- Are biodegradable

¹¹³ Do not biodegrade therefore are not embraced within ARC's sustainable design framework

Plant-based fibres were selected for the design framework (No. 3, Pure, Natural & Plant-based) because in addition to the previous five bullet points some have the potential to be significant carbon sequesters and soil regenerators. Industrial hemp in particular was identified as a multi-use plant possessing important regenerative properties (**2.3.5; 2.6**). One of its many uses is fibre for textiles. Whilst industrial hemp fibre is cultivated in the UK the harvest is mostly used to make upholstery fabric, mattresses, and insulation batts & boards (East Yorkshire Hemp, 2021). Sourcing locally grown, spun, and woven hemp in the UK was not possible¹¹⁴ as most of the world's hemp fibre for finer fabric is grown and processed in China¹¹⁵ supported by small pockets in other parts of Asia, Eastern Europe, Belgium, and Northern France (Moreno, 2020). This proved problematic as I was unable to source any commercially produced plant-based fabrics that originated within a 150-mile (**2.3.4; 2.3.5**) locality of design, manufacture, and wearing of the clothing, an aspiration of a sustainable, small, local, and circular economic model (**2.3.4; 2.3.5**).

Historically Irish mills are renowned for their high-quality processing of linen fibres and in 2020 introduced hemp weaving¹¹⁶. Hemp is having a resurgence in popularity¹¹⁷ having similar properties to Flax (linen), both being bast fibres, and require similar environmental conditions for plant growth and fibre processing. However, no Flax or Hemp is currently grown in Ireland notwithstanding the ideal growing conditions and bast fibre processing expertise. Spun flax and hemp yarn is imported from farms in Northern France and Belgium whence it is woven into fabric in Irish mills, it can then be termed "Irish Linen". Northern Europe for growing hemp fibre and producing spun yarn, and Irish mills for fabric weaving, were therefore the closest source of plant-based fabric available to me. Five hemp-based fabrics were selected having varied yet complimentary textures and properties.

A neutral and versatile colour palette for fabric was informed by the natural, undyed tones of the hemp fabric which formed the core hue. After much reflection I complimented the undyed natural fabric with the solidity of black - technically the absence of light, and the ethereality of white - white light comprises of all hues on the visible light spectrum (figure 72) (**2.4.4**). Black and

¹¹⁴ A criterion of small & local Fibershed (**2.3.4**) whereby a circular production model of *farm to garment* existing within a 150-mile radius, a principle of ARC's design framework.

¹¹⁵ China accounts for about half the world's hemp fibre supply (Moreno, 2020, para. 6).

¹¹⁶ John England Irish Linen, Banbridge, Northern Ireland

¹¹⁷ Hemp timeline – a resurgence in popularity - <https://wordpress.textileworld.com/wp-content/uploads/2020/12/Hemptimeline.jpg>

white fabric is achieved respectively by dyeing and bleaching, non-organic processes; the justification for this selection is:

- Symbolism – the yin and yang relationship of balance and harmony. In Eastern thought one cannot exist without the other, everything is connected by two complimentary forces one being black and the opposite force being white; that make up all aspects and phenomena of life (Britannica, 2021).
- In Praise of Shadows¹¹⁸ - an essay on Japanese aesthetics that discusses appreciation, mindfulness, and wellbeing through a narrative of light, shade, and space.
- Black has complex and multi-stranded associations such as – ambiguity, self-discipline, power, rebellion, aggression, fear, formality, mystery, authority, evil, strength, minimalism, and is beyond fashion (Bourn, 2010). Dior suggested that “you can wear black at any time, you can wear it at any age, you may wear it on almost any occasion”. He used black prolifically throughout his career to convey elegance and sophistication (Christian Dior, 1954, in Mendes, 1999, p. 7).
- White has connotations of – purity, innocence, light, goodness, heaven, safety, brilliance, illumination, understanding, cleanliness, faith, beginnings, spirituality, possibility, humility, sincerity, protection, softness, perfection, peace, minimalism, and is beyond fashion (Bourn, 2010).

The neutral and generic three-colour palate of black, white, and natural, would enable wearers to team the clothing with existing items in their wardrobes (figure 72).

Five of the seven colours identified in sunlight (**2.4.4**) when refracted through a prism (red, yellow, orange, purple, blue) are associated with the Platonic solids (figure 57 – Chakra colour); red (hexahedron), yellow (tetrahedron), orange (icosahedron), purple (dodecahedron) and blue (octahedron). I therefore thought it important to represent the colours in their corresponding Platonic shaped garment to embody a chakra essence (**2.4.4**). I elected to use 10mm coloured cotton tape discreetly placed within the clothing; red, orange, and blue are hidden inside the garments, yellow and purple are external, and visible. In addition to their naturistic (refracted sunlight) and chakra associations the tapes function as hanging/threading loops, ties, or garment length adjusters (figure 71).

Full-scale toiling continued with fabric and colour stories now allocated. Creative production was guided by the design framework and observations from iterative cycles of reflexive action including:

- Body access openings in any location within the solid through seamlines
- Individual shape emphasis of squares, equilateral triangles, & pentagons, created by seamlines
- Symmetrical silhouettes

¹¹⁸ Book by Junichiro Tanizaki, published in 1933

- Celebrate volume, purity, and simplicity of the solids
- Minimise body access openings to retain the integrity of the solid
- Each garment represents one Platonic solid – therefore five garments in total
- Zero waste fabric can be achieved by cutting individual tessellating squares and equilateral triangles
- Reduce fabric waste by cutting individual and small dodecahedrons as these shapes do not tessellate
- Develop the Phi progressive hexahedral sleeve concept through to a final garment
- Communicate through form rather than surface decoration or embellishment
- Convey ratio, balance, and proportion
- Full-scale toiling on people to analyse somatic interaction
- Develop each of the five pieces for a different area of the body
- Minimise third-party fastenings and synthetic interfacings

The five months allocated for phase three were passing quickly and I needed to commit to final pieces, mindful of the heuristic strategy of finding a satisfactory design resolution that is neither perfect, the most advantageous, nor logical (4.3).

I committed to the following final pieces:

1. The octahedron explored the throat chakra association through a simple balaclava type head/neck/shoulder covering (figure 74).
2. The 3-sided tetrahedral pyramid suggested a space for manifestation (figure 57, Key Spiritual Function); after reflection on many frustrating, contrived, and unsuccessful iterations with this solid (images in Appendix A) I retained its purest form as a symbolic and versatile wearable and meditative space (figure 75).
3. I developed the icosahedron into a playful, fluid, and sensory pinafore aligned with the design direction organisational chart (figure 64). Deep icosahedral Phi pocket bags worked inverted or as external panniers (figure 76). Topstitched couching with hemp yarn and black cotton tape helped to outline the icosahedron's form and double as straps/edge encasement to the thick fabric.
4. I added another two Phi progressive hexahedra to sleeve prototypes (figure 67, middle; 4.4) to develop a soft jacket then added ribbing for cuffs and collar bringing a closeness, grounding the body, balancing, and restricting the sensory voids created by the cubes. These additions intuitively felt justified embodying a yin and yang relationship of space and constriction. The piece complemented the icosahedron pinafore (figure 77).

5. A strong connection between the flat-pattern and its 3D clothing manifestation was experienced in the development of the dodecahedral piece. When constructing the design direction organisational chart (figure 64), I envisaged this piece as a fluid ethereal, decorative, and imposing statement piece, informed by its chakra and symbolic associations¹¹⁹. However, by observing and connecting with the shape of the flat pattern I was engrossed by its flower type formations (figure 70, left). It urged me to move my hands and fingers as if they were a flower bud opening and closing. The five sides of the dodecahedrons individual pentagons aligned with five fingers, and the sense of touch associated with the solid (figure 57 - sense). These felt experiences urged me to encase my hand within the small dodecahedral 3D form. The somatic sensation was like that of the hexahedral sleeve (figure 67, middle), in that the void or *Ma*, between body and fabric, created a negative space filled with nothing but energy and freedom (2.5.5). I developed the small dodecahedra into a fingerless glove by experimenting with the placement of finger/hand openings to locate volume on the top portion of the hand for maximum sensory stimuli; this also resulted in a minimal void on the palm side of the hand for user functionality (figure 70, right). Ribbing constricted the volume at finger and wrist points in a similar way to the aforementioned hexahedral soft jacket (No. 4, p. 90). Interaction invited expansive upward hand and arm movements, I wondered what others might experience from wearer interaction (Chapter 6). The organic, ethereal feelings generated by the dodecahedron's flat pattern somehow felt like they had transcended into the essence of the glove. The evolution of this piece was the most satisfying and enjoyable. When developing the glove creative flow and connection occurred spontaneously and "the sense of time became distorted" (Csikszentmihalyi, 2002, p. 71).

Final garment resolutions taken through to the Wearer Interaction Study are outlined in the following pages (pp. 93-97). Information on each rendition includes:

- A photograph of the five flat-pattern sizes explored; the smallest translates as a fist sized solid, each further pattern rendition increases by the Phi ratio. Within the specification sheet, patterns are categorised and referred to by number; No.1 being the smallest and No.5 being the largest iteration.

¹¹⁹ Regarded as the ascension or third eye chakra and associated with spirit/energy. Its 12 sides are used in many symbolic manifestations connecting heaven and earth including Dali's *The Sacrament of the Last Supper*, 1955

- Line drawing of the relevant Platonic Solid
- Technical line drawing of the final garment interpretation – back and front perspectives
- Photographs of models wearing the garments. The models differ in height by 20cm, in age by 60 years, body size by 2 sizes, both wear the same garment.
- Description of fabric, colour, and components used
- Descriptive garment overview



Figure 70 Dodecahedron flat patterns and fingerless glove toiles



Fig 71 10mm coloured tape subtly associates the chakras with the relevant Platonic solid shaped garment



Figure 72 Neutral tones of finished garments, recycled cardboard hangers, and hemp garment bags

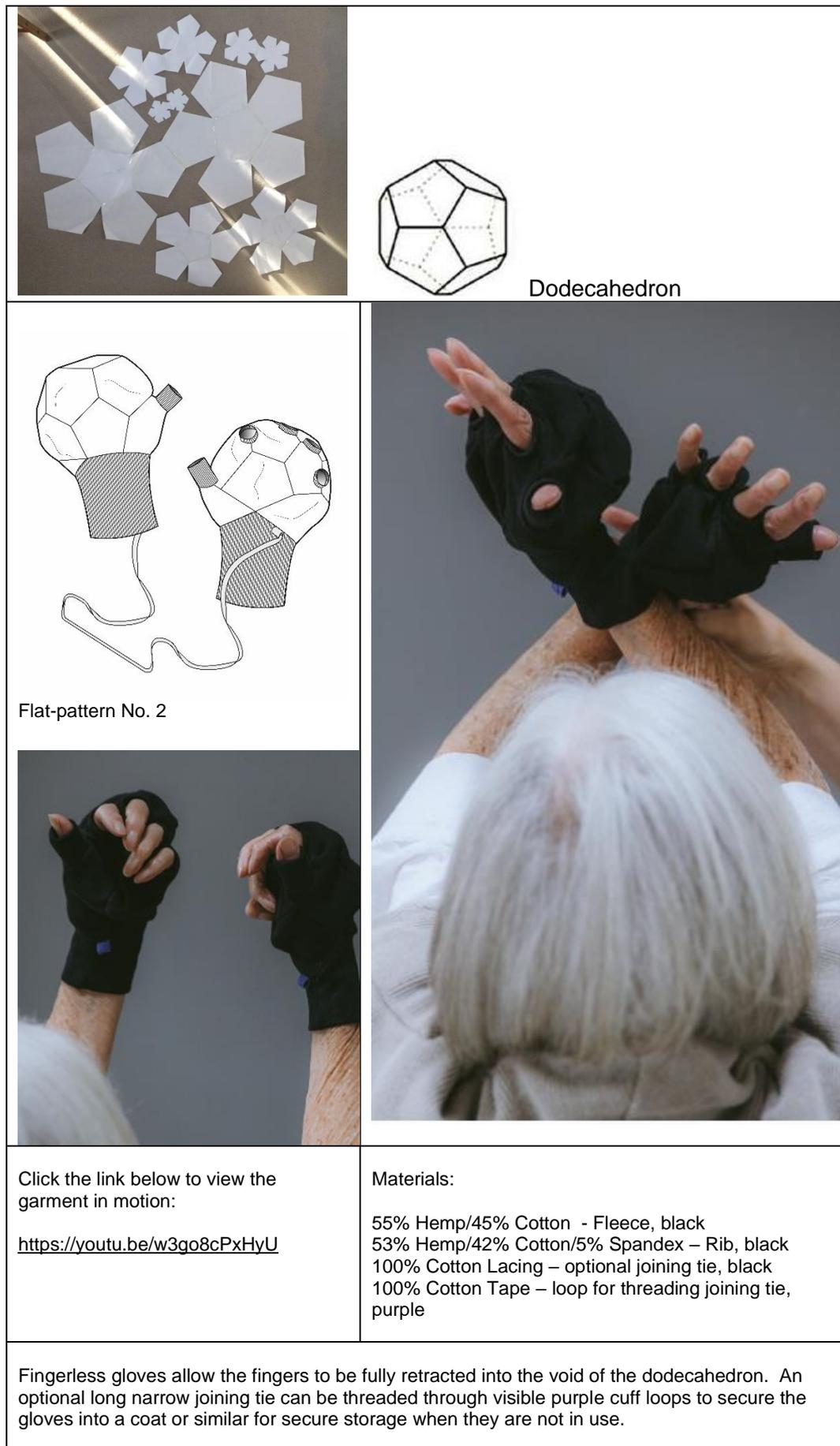


Figure 73 Dodecahedron Design Specifications



Figure 74 Octahedron Design Specifications

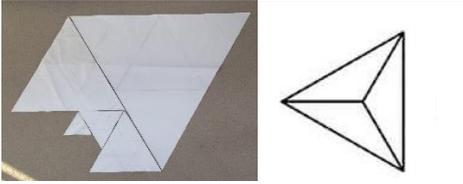
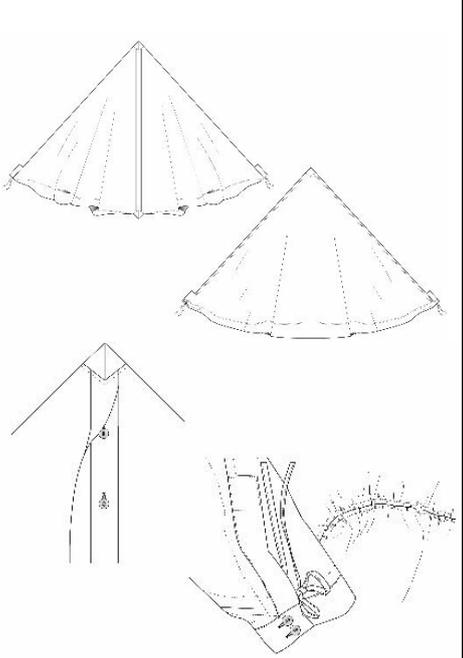
	<h3>Tetrahedron</h3>
	
<p>Flat-pattern No. 5</p> 	
<p>Materials:</p> <ul style="list-style-type: none">100% Hemp Voile – white100% Hemp Webbing 75mm - natural – Metal D ring - belt for styling100% Cotton Tape for styling 10mm – yellowNacre buttons – natural	<p>Click the link below to view the garment in motion:</p> <p>Tetrahedron Garment - YouTube</p>
<p>Interpretative multifunctional piece. Centre front concealed button fastening. Conventional shirt cuff openings and drawstrings on vertices allow for fullness control.</p>	

Figure 75 Tetrahedron Design Specifications

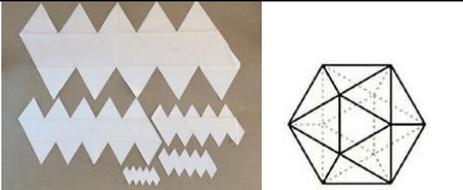
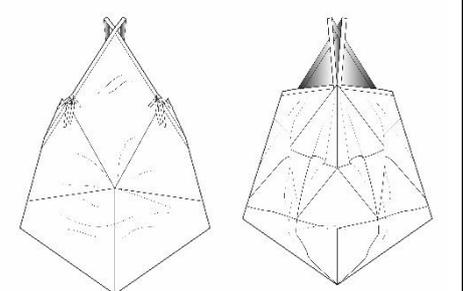
	<p>Icosahedron</p>
	
<p>Flat-pattern No. 3 (pocket bag) & 5 (pinafore)</p>	
	<p>Model (5' 10" tall, size 12) wears pinafore with pocket bags pannier style (above right). Model (5' 2" tall, size 8) wears shortened version and pocket bags inverted. Long orange ties inside the pinafore allow for length adjustments (left).</p>
<p>Materials: 50% Hemp/50% Linen Twill– natural 100% Hemp Muslin – black (pocket bag) 100% Cotton Tape for edging emphasis, straps, and side ties, 25mm - black 100% Cotton Tape 10mm – inside tabs for shortening – orange</p>	
<p>Pinafore topstitched with 100% undyed hemp yarn to emphasise the icosahedron's triangular formation. Internal orange tapes allow for length adjustments. Icosahedral pocket bags can be worn inside or out. Black cotton tape outlines geometric form and doubles as straps and adjustable side tie fastenings.</p>	
<p>Click the link to view the garment in motion: https://youtu.be/z8i_tp92tXw</p>	

Figure 76 Icosahedron Design Specifications

		<h3>Hexahedron</h3>
<p>Flat-pattern No.1, 2 & 3</p>		
<p>Materials</p>	<p>55% Hemp/45% Cotton - Fleece, black 53% Hemp/42% Cotton/5% Spandex – Rib, black 50% Hemp/50% Linen Twill facings – natural 100% Cotton Tape hanging tab 25mm – red 100% Cotton Tape drawstring lace -black Metal hook & eye upper centre front fastening</p>	<p>Model wears icosahedron pinafore with soft hexahedral jacket (above).</p>
		<p>Multiple voids accommodate flexible arm movements. Worn at a yoga workshop below.</p>
<p>Three Phi progressive hexahedra form each side of this soft fleece jacket. Long ribbed cuffs and a high mandarin collar anchor the voids created by the cubes. The waisted hemline has a long and narrow drawstring to minimise fullness if needed. Centre front concealed hook and eye fastenings run along the collar and upper edge of the centre front.</p>		
<p>Click the link to view the garment in motion: Hexahedron Garment - YouTube</p>		

Figure 77 Hexahedron Design Specifications

4.6 Summary

Chapter 4 outlined the creative journey of embodying and reifying each of the eight principles of ARC's Eudaimonic Design Framework (2.6)¹²⁰. The Alternative Regenerative Clothing produced is viewed as a vehicle, facilitator, and communicator of meaningful interactions between the mind, body, designer, maker, and wearer. The reflexive action methodology, and design framework (figure 78), sought to provide the theoretical material on which the study is founded. The embodied narrative, seeks to nurture mental, emotional, spiritual, and physical wellbeing in the wearer, and is explored in the following chapter – *Wearer Interaction Study*.

Eight Principles		Interpretative Realisation
1	Natural geometry and ratio	<ul style="list-style-type: none"> ○ Platonic Solids – hexahedron, tetrahedron, octahedron, icosahedron & dodecahedron ○ Phi ratio - 1.618
2	Spacious	<ul style="list-style-type: none"> ○ Platonic forms are non-contouring creating space between the body and the garment – <i>Ma</i> ○ Loose, comfortable, and versatile
3	Pure, natural, and plant-based	<ul style="list-style-type: none"> ○ Hemp, Linen, and Cotton in their purest forms and in varying textures and weights ○ Do not shed harmful micro fibres when laundering ○ Biodegradable
4	Long-lived –	<p>One size fits all, less is more - loose, non-contouring garments adapt with the wearer, transcending:</p> <ul style="list-style-type: none"> ○ Weight gain/loss ○ Pregnancy ○ Ageing ○ Disability ○ Lifestyle – versatile for multi occasions, outside trend, timeless, non-fashion ○ Facilitates sharing – breaking down barriers of age and body shape <p>Minimalism, simplification, and restraint from consumption fosters positive changes of more freedom, more time, more money, less stress (2.6)</p>
5	Sensorial	<ul style="list-style-type: none"> ○ Abstract relationship with the body through manifestation of <i>Ma</i> ○ Platonic solids and Phi have symbolic and spiritual connotations ○ Breathability, tactility, and thermodynamic properties of natural fabrics
6	Chakra activating	<ul style="list-style-type: none"> ○ Platonic forms are associated with chakra positions and Eastern wellbeing practices ○ Chakra colours are embedded within garments
7	Small, local, and honest	<ul style="list-style-type: none"> ○ Small, local design, production, and wearers ○ Sense of community and ownership, not based in exploitation, growth, and excessive profit but in craft and somaesthetic appreciation
8	Assigning value	<ul style="list-style-type: none"> ○ Transparency of origin from farm to wearer – higher-value wearer experience ○ High quality fabric and craftsmanship

Figure 78 Actioning the ARC - translation of the eight-principle Eudaimonic Design Framework

¹²⁰ More photographic imagery of creative production can be viewed in Vol. II, Appendix A – Design Diary

Chapter 5 - Wearer Interaction Study

5.1 Nature of Study

The questions if an essence of eudaimonia can be embodied within clothing through design strategies; physical interaction with the clothing over several days, in varied scenarios, was used to explore the 'qualia', the introspective accessible qualities perceived by individuals that constitute the phenomenal character of a particular experience (Tye, 2017). Because this idea maybe viewed as conceptual, I have tried to convey and explore it, for the purposes of the research design, in a tangible way through four aspects of consciousness (Jonkisz et al, 2017). These being understood in concrete dimensions as Spiritual, Mental, Emotional, and Physical (PsyPotential, 2020), as discussed within the Contextual Review (2.2.2.; 2.4.2). The four aspects of consciousness are interconnected and inseparable. For clarity and research design they are viewed as distinct from each other, the Wearer Interaction Study is therefore aligned with this understanding.

A Wearer Interaction Study was designed using an IPA (3.7) framework to explore and analyse embodied experiences of individuals whilst interacting with the Alternative Regenerative Clothing. The study took place during Autumn/Winter 2020, after several months of postponement associated with the Covid-19 pandemic. Further delay of the study was considered until easing of restrictions ensued, however, freedom of movement and human interaction remained uncertain within the given timeframe of the research. Reflecting on this situation a decision was made to progress with data gathering, accepting that opportunities for individuals to wear the pieces outside their home environment would be limited. The pandemic highlighted the need for strategies to facilitate eudaimonia, discussed in detail in the Contextual Review (2.4).

This chapter sets out a structure for the implementation of several, two-week, IPA studies designed to elicit deep and meaningful personal narratives of wearer experiences.

5.2 Participants

Smith et al (2009) suggest an interpretative phenomenological approach needs access to rich, specific personal narrative, elicited from people willing and able to

offer a viewpoint on the phenomena to be explored. Furthermore, participant selection should be based on gaining access to a particular perspective on the phenomena being explored, representing a mindset, rather than a population. Therefore, a relatively homogeneous sample was sought, as part of 'purposive' sampling (Smith & Osborn, 2008), the stricter the definition of the user group, the sharper the focus of the research (Mattelmaki, 2006).

A purposive homogeneous sample was defined within this study as individuals able to offer some meaningful insight into their experiences of wearing the clothing. The four intersecting bubbles¹²¹ that underpin and inform the study's concept aligned with individuals who possessed a fundamental belief in human and planetary flourishing. This belief being manifested through holistic sustainable practices, identified within this study as a fundamental contributor to eudaimonia, and were open and receptive to the philosophical and esoteric concepts embedded within the clothing.

Literature suggests that within IPA studies it is not the sample size, which is indicative of the quality of a study, but more importantly the "richness of data and sensitivity of analysis" (Tzanidaki & Reynolds, 2011, p. 376). Smith & Osborn (2007) found a small sample size to be important as in-depth analysis of individual transcripts can be time consuming; the aim being to comment in detail about perceptions and understandings of individual participants experiences rather than to make more general claims (3.7).

Women are the largest consumer group for clothing in the UK (Sabanoglu, 2020). They also actively campaign for greater transparency and awareness in the fashion supply chain and against the environmental impact of production systems (Fashion Revolution, n.d.) (2.3.3). These notions coupled with the fact that my particular area of expertise is womenswear-design informed the participant gender selection. As noted¹²², free-fitting geometric garments were designed to accommodate a broad range of attributes. A wide age, body shape/size, and height range was therefore sought to explore the physical versatility, aesthetics, and sustainability of the clothing and to explore the ARC's embodied wellbeing through a varied lens. Models (figure 80) aligned with this ethos were used for a photoshoot prior to participant interaction.

¹²¹ Biophilia, Natural Capital, Eudaimonia, and Somaesthetics

¹²² In Chapter 4 – Actioning the ARC

The participant selection criteria were:

- Female
- Age 25-75
- Height 150cm – 180cm
- UK Women’s Size 8-16
- Fashion aesthetic – no defining style, open-minded responsible consumers/outside fast-fashion
- Persona – Mindful, interested in personal and collective wellbeing, receptive to conceptual ideas
- Willingness to wear the clothing over a two-week period
- Commitment to record their experiences within a mood diary
- Agreed to be interviewed

Ten women who fulfilled the selection criteria were approached, in the first instance through email, and given the Participant Information Sheet (Appendix B) to read which detailed what was being asked of them and explored their willingness to take part. The ten people were individuals known to me through personal and professional realms, however, none of the women knew each other. From this initial exploration eight women agreed to take part (figure 79).

Name	Age	Height	UK Women’s Size	Fashion Aesthetic	Professional Background
Naomi	25	165cm	10	Young Professional/ Sportswear	Architect Environmental Fitness enthusiast
Safia	34	173cm	12	Young Designer/Sports Luxe	Holistic therapist Yoga Teacher Reiki practitioner
Alex	37	170cm	14	Contemporary/Functional	Scandinavian Restaurant owner
Helen	40	180cm	12	Mainstream/Ethereal	Psychologist Life Coach Reiki practitioner
Joy	56	163cm	16	Abstract/Avant- Garde/Japanese Designer	Textile designer & academic
Judy	62	155cm	10	Smart Casual/ Sportswear/Ethical	Holistic Beauty salon owner Spiritual Yoga Teacher Ethical Vegan & Nutritionist
Susie	63	161cm	8	Architectural/Geometric/Blacks	Retired Womenswear designer and academic
Jean	75	160cm	8	Chic/Elegant/Trendy	Retired Fashion academic & Property restorer

Figure 79 - Participant overview, the order is ascending in age, names are fictitious

5.3 Framework

The Alternative Regenerative Clothing was provided, sequentially and individually to each participant's home, either by personal delivery or through tracked courier and given to the wearer for their sole use over a two-week period.

Participants were invited to interact with the five items of embodied clothing, each piece being an accurate translation of a Platonic solid, fabricated with organic, sustainable fabric and trim (Chapter 4 provides a detailed description of the design concept and process). Individuals were encouraged to freely interact with the garments, wearing as little, or often as they chose, to carry out their normal daily tasks, or, for whatever occasion they felt appropriate over the two-week timescale of the study.

Two of the five items were 'recognisable' as gloves (dodecahedron) and a jacket (hexahedron), broadly conforming to a norm, in that it was clear to the participant the purpose of and how they might interact with the pieces. The remaining three, made from equilateral triangles forming an octahedron, tetrahedron, and icosahedron were more experimental and open to interpretation by the wearer (figure 80). Voluminous and non-body-contouring, they allowed for space and movement to be explored allowing for a "kinaesthetic sense of body in motion... beyond the Western conception of fashion as a primarily visual art form" (Negrin, 2019, p. 126). No explanation was given to participants as to how they might wear and style any of the garments at the time of delivery, intentionally aiming to explore how the wearers perceived, interpreted, and interacted with the pieces.

A colour palate of black, white, and natural tones ran through all elements of the garments aiming for inclusive, neutral, unobtrusive items and allowing for participants to be able to readily match garments with other items in their wardrobe. In line with the ethos of the project and its commitment to issues of sustainability individual items were presented to participants on sustainable cardboard hangers and enveloped by co-ordinating anti-bacterial hemp garment covers. The garments were left to be unveiled by the participant at their leisure, and within Government Covid-19 guidelines.



Figure 80 Octahedron, Tetrahedron, and Icosahedron garments open to wearer interpretations

Participants were invited to contact me at any time during the interaction period if they needed support and affirmation with any aspect of the study. If at any time participants did not feel comfortable in the clothing, or partaking in the study, they could withdraw at any time without giving a reason. Ethical considerations regarding involvement, data collection, analysis, publication, and anonymity were outlined in a Participant Information Sheet and Consent Form (Appendix B) provided via email prior to taking part (Smith et al, 2009).

Upon completion of each interaction period a videoed interview was conducted, either in person or online (determined by government Covid-19 restrictions),

designed to tease out and explore elements from the participant's particular experience. Filming allowed for an in-depth visual and oral commentary to be carried out during the analytical process. In addition, wearers were invited to record their particular experience by taking photographs and making notes in a mood diary over the interaction period, which was referenced in the concluding interview as an aide memoire, or photo-elicitation (Collier, 1957). As a qualitative research method, the mood diary provided a visual portal, a lens, through which participants could their share knowledge, thoughts, feelings, experiences, and understandings. Richard & Lahman (2015) suggest that such methods may help build participant/interviewer empathy.

Two sets of identical garments (five in each set) ran in parallel, affording less wear and tear on the garments, this also permitted a faster turnaround between the eight wearers. Each set being worn by four different individuals necessitated thorough laundering, steam pressing and un-packaging/re-packing in line with Covid 19 University Ethics approval. Clothes were returned to me either in person, or by courier, depending on the interview format, and the process reiterated with the next participant.

The study asked that participants interact with the five items of clothing over 14 consecutive days and note their experiences, which I felt was a considerable undertaking and therefore wanted to incentivise the task. Participants were offered a replica of any garment from the collection as an acknowledgement for taking part¹²³, gifted on completion of the research, and documented in the Participant Information Sheet (Appendix B).

Prior to the Wearer Interaction Study going live a scaled-down pilot study was undertaken. This consisted of interaction with one prototype garment, completion of a mood diary and an online interview, providing an opportunity for me to reflect on the practical aspects of implementation and the implications this has for the nature of the data collected and the insights that can be drawn. Personal and epistemological reflexivity encourages us to question the how, what, and why of the research design and of ourselves, "to reflect upon the assumptions that we have made" and their implications on the research (Willig, 2007, p. 10). The main observations from this scaled-down exploration were:

¹²³ Observations on participant garment choices are discussed in Appendix B – *Garment Preferences*

- opening the interview seemed abrupt and not conducive for a relaxed atmosphere
- as the interviewer I needed to slow down and give the participant time to open up
- questions needed memorising to improve flow
- the mood diary was difficult to view and engage with from my perspective via an online interview

The reflexive process is continual in validating the research's design, in-action implementation, and to identify gaps between one's own "intuitive understanding and the reality to which they refer" (Schon, 1983, p. 276). On completion of the first live study these assumptions were explored at the end of the interview from the participants perspective and can be viewed by reading Judy's interview transcript - Appendix B.

5.4 Elicitation Methods

Vagle encourages creativity when designing arts-based research, suggesting that "being as creative as possible is important, and do not assume that just because you have not seen a particular data-gathering-tool used in a phenomenological study it is off limits" (2008, p. 107). Mattelmaki (2006) suggests that when participants look back at the end of a period of study, they may not recollect their experiences with sufficient clarity, or that those recollections may become tainted or inaccurate. A variety of data gathering tools, referred to as prompts and probes within this section were employed to encourage sustained engagement over the 14-day interaction period and to help participants record their in the moment thoughts, feelings, and experiences.

Silverman (2000) suggests qualitative research, including the use of probes, tries to describe and understand the phenomenon and individual people, creating a confidential relationship between the researcher and the participant. Prompts and probes supported the wearer in eliciting and recording insights of their experience; participants were provided with a small bag made from 100% hemp canvas, dyed black, with natural undyed hemp webbing handles (figure 81), the bag contained:

- Individual information cards entitled: *Introduction, Participation, Photographs, Mood Diary, Garments, Fabric, Washing, Thank you* - they provided an overview and explanation of the project, expectations, and practicalities. Detailed copy can be accessed in Appendix B.

- A Kodak Printomatic digital instant print camera, recharging lead, and 40 sheets of photo paper, small sticky backed photographs are instantly printed (75mm x 50mm) enabling easy inclusion within the mood diary.
- A reversible white/natural facemask made from 100% hemp muslin, the participants to keep for use as they felt necessary, hemp has anti-bacterial properties, is thermodynamic and can withstand washing at high temperatures. Participants were made aware of this through the information cards and verbal affirmation when the garments were delivered.
- A sheet of handmade hemp paper creatively folded (figure 82) to provide a small (18cm x 14cm) 16-page/face mood diary to record thoughts, comments, imagery, and anything else that participants felt relevant. Eight transparent sticky notes inhabit the diary printed with prompts (figure 83)
- Line drawings of the garments and platonic solids (figure 84), printed onto small circular stickers, intended as an aide memoire and to encourage easy interaction with the mood diary.
- Blank transparent sticky notes to facilitate layering or note taking within the mood diary.
- A 0.5mm gel ink pen for writing in the mood diary.



Figure 81 A hemp bag and contents for participant engagement

Questions posed within each mood diary, and outlined below, were pre-printed on transparent sticky notes (figure 83) designed to draw participants thoughts towards their feelings and experiences during the interaction period, towards a *phenomenological attitude* rather than a garment appraisal of an object, a *natural attitude* (3.5). The sticky printed notes could be removed, repositioned, disregarded, written upon, or interacted with as the participant wished/needed. The questions were framed by the four dimensions of wellbeing– spiritual (S), mental (M), emotional (E), and physical (P), the bracketed letters (not visible to participants during the study) at the end of each prompt donates which wellbeing dimension it broadly aspires to explore:

- How is your mood? Has it changed? (E)
- How is your general wellbeing? Does wearing the garment have an impact on that? (M)
- How well are you sleeping? Have you noticed a difference during the time you've been adding to your mood diary? (P)
- How are your particular energy levels? Have you noticed any change in them? (P)
- Are you feeling positive? Has there been any change in your level of positivity? (E)
- Have you experienced any moments of clarity of thought? (S)
- Has there been any change in your ability to concentrate? (M)
- Were there any long-lasting effects from wearing the garment? (S)



Figure 82 Cutting and folding of a sheet of hand-made hemp paper to form the 16-page/face participant mood diary (a completed version photographed)

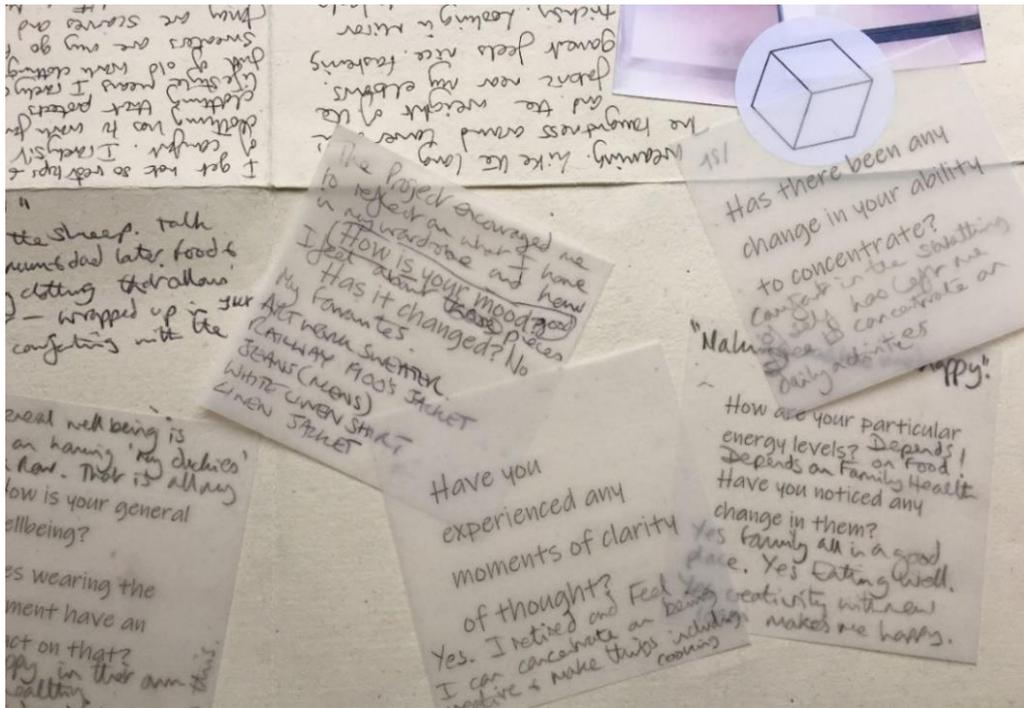


Figure 83 A completed participant mood diary makes use of circular stickers, instant photographs & transparent pre-printed sticky note prompts

The contents of the bag aimed to provide varied, attractive, and visually stimulating prompts and probes to help explore and capture participant's thoughts and feelings, and to motivate use. Mattelmaki (2006) suggests that writing diaries and documenting experiences can be laborious for participants and that material needs to be designed in a way that makes the task as fluent as possible. As noted, the sticky notes were pre-printed with a soft typeface like handwriting, and had an ethereal texture and opacity intended to quietly take away the emptiness of the blank pages. Participants were encouraged to draw, make notes, or anything else that came to mind.

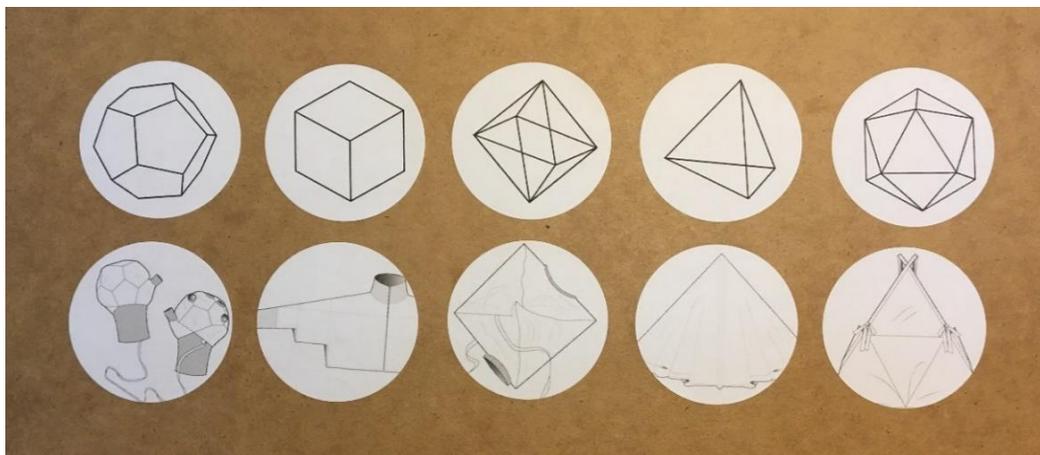


Figure 84 Sticker prompts of Platonic solids and cropped garment representations for use within the mood diary

Self-photography, according to Ireland (2003) can be used as an aide and a source of inspiration for telling personal stories and initiating accounts of people's experiences. Burton et al (2017) suggest that "photographs help participants make sense of their experiences providing detailed in-depth accounts" (p. 389). Carter & Mankoff (2005) concur and found that participants who had taken photographs talked more profoundly about their experience within an interview situation than those without imagery. The instant camera provided another means of participant engagement, the images printed immediately on sticky backed paper so could be readily included in the mood diary.

The completed diary had the potential to include notes, stickers, photographs, and anything else the participant choose to incorporate and was used as an IPA elicitation tool to reconnect with user experiences during the interview process.

5.5 Individual Interviews

A semi-structured conversational interview style was adopted to align with IPA methodology allowing the participant to share their personal experiences supported by the mood diary. An open responsive persona was assumed allowing the participant to freely vocalise their experience whilst not losing sight of "a clear sense of the phenomenon under investigation" (Vagle, 2018, p. 87). Furthermore, recognising that moving from a *natural attitude* to a *phenomenological attitude* (Chapter 3 – Research Methodology), therefore looking inward towards our perception of an experience can be intimidating for some people. Smith et al, suggest that:

The most important thing at the beginning of the interview is to establish a rapport with the participant. They need to be comfortable with you, to know what you want and to trust you (2012, p. 64).

In addition to the pilot study and to gain further experience of undertaking semi-structured interviews, I undertook a practice interview with a family member familiar with the research. Their brief was to be deliberately evasive, intimidated by the open reflexive nature of the process, not at all forthcoming, responding with a few words, avoiding depth and detail. This proved a challenging but useful exercise, and from that experience a playful task was developed to commence each interview intended to relax, focus, and ground the participant in the theme of study. The task involved exploring small wooden platonic solids through touch. Interviewees were then asked to offer one-word that spontaneously came

to mind (figure 85). This haptic exercise helped to centre their thoughts on the phenomenon under study, and offered an icebreaker, creating a relaxed landscape, an openness into their lifeworld, framing a tone towards a phenomenological attitude. It also allowed time to discreetly view participant mood diaries prior to the interview commencing, Mattelmaki (2006) suggests looking “into the material before the interview in order to make the interview go smoothly, in a spirit of spontaneity, so that it amplifies the material collected in the probes” (p. 86).



Figure 85 Sensory exploration of Platonic solids



Figure 86 A typical interview environment

A flexible interview schedule was designed, as a guide, being mindful that the interview could follow a course set by the participant aligned with the inductive principles of IPA. Smith et al (2012) suggest the interviewer’s role is that of an active listener, the participant being the experiential authority on the phenomenon. Furthermore, by careful listening and intuitive probing the tone of interview is determined, and the participant acknowledges the degree of intensity and detail sought.

The research question centred in wellbeing drives the narrative; interview questions (overleaf) were intended to be revisited several times to explore participants experiences for each of the five geometric garments. The interview schedule started, after the sensory task, with an open, conversational, straightforward question and progressed to more abstract concepts. Interview questions were designed to encourage the participant to talk, expanding on their experience at length and in detail. Smith et al suggest opening the interview with

a question “which allows the participant to recount a fairly descriptive episode or experience” (2012, p. 59). The opening question for the interview, was usually “is there a particular experience you could tell me about?”. Questions were memorised to foster a more confident and conversational persona. The interview questions in the order they were asked are:

- Is there a particular experience you could tell me about?
- How often did you wear the garment?
- What tasks did you carry out in the garment?
- Did they differ from normal tasks you would carry out?
- How was your general feeling of wellbeing during the study period?
- Did you notice any changes in your wellbeing?
- Can you tell me about your personal experience when you took the photograph?
- Were you drawn to a particular garment?
- What was your personal experience when wearing the garment? How did it make you feel?
- Is there anything else you would like to share with me to help me gain an insight into your particular experience?

The interview was documented using a mini video recorder (figure 86) mounted on a tripod and positioned discreetly so as not to inhibit the participant, a voice recording was also taken using a Voice Memo mobile phone app, this recording was used to transcribe the interview. The video recording enabled the film to be observed post interview to add a layer of visual commentary. It also had the benefit of avoiding the need for notetaking during the interview which could potentially be distracting for both parties. Participants gave permissions for the recordings through the Consent Form (Appendix B) at the commencement of their Wearer Interaction period. Interview locations varied depending on social distancing restrictions (Covid-19), and weather conditions, they were carried out in the participant’s home, their garden (figure 86), or online. The interviews differed in length from 23-60 minutes, making an average of 34 minutes, this includes time taken for the sensory shape exploration, and is further discussed and analysed in Chapter 6.

5.6 Summary

At the stage of commencing the Wearer Interaction Study one participant, Susie, changed her mind due to the Covid-19 pandemic, electing to self-isolate. This was regrettable as her input as a Womenswear Designer, accomplished academic and having a personal aesthetic aligned with the garment silhouettes

could have been insightful offering another perspective. The study progressed with 7 participants.

A summary of the Wearer Interaction Study Research Schedule:

- Wearer Interaction study planned and designed aligned with IPA principles.
- Pilot study – reflection, adjustment.
- Participants approached and given a Participant Information Sheet to read outlining expectations.
- Participants confirmed and given a Consent Form to read and sign.
- 14-day Wearer Interaction Study date agreed with the participant.
- Garments and probes delivered to the participant either in person or through a courier.
- Interview conducted at the end of each 2-week study, either in person or online.
- Garments, mood diary and probes retrieved, either in person or through a courier.
- Garments refreshed through restoration, laundering & steam pressing.
- Process repeated for each participant.

The Covid-19 pandemic impacted each study in that:

- Not all participants could be interacted with in person for the purposes of delivering & collecting garments and conducting the interview.
- Socialising in the garments was limited.
- Locations/destinations to wear the garments outside the home was restricted.
- Activities carried out by participant's was limited within the confines of their restricted environments.

Material in the form of participant transcripts, photographs, initial analysis, development of emergent themes and supporting information documenting each of the seven studies can be found in Appendix B – Wearer Interaction Study.

Chapter 6 - Analysis

6.1 Introduction

This chapter outlines the IPA process used to unpick, analyse, and interpret data and discusses how findings might support or oppose the research question - *Can clothes be designed to carry an embodied narrative for wellbeing?*

Data was gathered and analysed sequentially and independently from each of the seven participants (Chapter 5) aligned with IPA's "hermeneutic, idiographic, and phenomenological" nature (van der Merwe & Habron, 2020, p. 3). A group overview¹²⁴ then analysed the way in which participants were converging or differing in manifesting themes. These cross-case explorations aimed to reduce data and look for shared experiences and reaction to wearing the garments in order and produce concise statements of importance, searching for deep meaning and higher order concepts (Creely, 2016; Smith et al, 2012).

Creely suggests that "all experiences of a participant are significant and should be analysed as part of an inclusive and holistic treatment of the totality of a person" (2016, p. 11), and that "there is no clear right or wrong way of conducting this sort of analysis" (Smith et al, 2012, p. 80). IPA researchers should therefore be "innovative in the ways that they approach it" (ibid, p. 80). As a visual thinker I developed various graphic representations of individual, and cross-case experiences to help see patterns, insights, and to develop a close connection to the data: pie diagrams and symbolic fingerprints for each participant are visualised through the four dimensions of wellbeing¹²⁵ (2.2.2, 2.4.2, 5.1), tables and bar charts then explore cross-case connections from different perspectives¹²⁶. Colour-coding aligned with chakra positions and the Platonic solids are applied to the text to identify and highlight participant references to these phenomena (figures 89-90, 92). Viewing the data through different visual lenses aims to explore and "open up the phenomenon" (Vagle, 2018, p. 85) to aid interpretation and understanding.

¹²⁴ Explored and visualised through various cross-case analytical methods

¹²⁵ Emotional, mental, physical, and spiritual are wellbeing dimensions that form a research design framework for this study

¹²⁶ Located in Vol. II, Appendix B

6.2 Analytical Process

Data was analysed using a combination of recognised sequential processes (Creely, 2016; Smith et al, 2012) and by self-initiated visual interpretative analysis as outlined in the introduction (6.1). A flow chart dissects and clarifies the particular analytical model I developed and applied within this research for each participant, and cross references documents with process (figure 88). Organising the material in this way aims to facilitate the traceability of data throughout the analytical process (Smith et al, 2012) and so allows final reflections and conclusions to be traced back to primary sources. All documents listed in the flow chart can be accessed in this Chapter and/or Vol. II, Appendix B.

Dalberg et al (2008) suggest that context matters when interpreting phenomena as “the interpretation will be contextualised” (Vagle, 2018, p. 68).

Contextualisation was added to each participant’s analysis in the form of the locations, occasions, social context when interacting with the clothing, a brief participant profile, interview duration and location, plus a word count for comparative referencing (6.3). To fully immerse myself in the analytical process from a reflexive phenomenological and contextual perspective I wore the Alternative Regenerative Clothing whilst interacting with the data (figure 87).

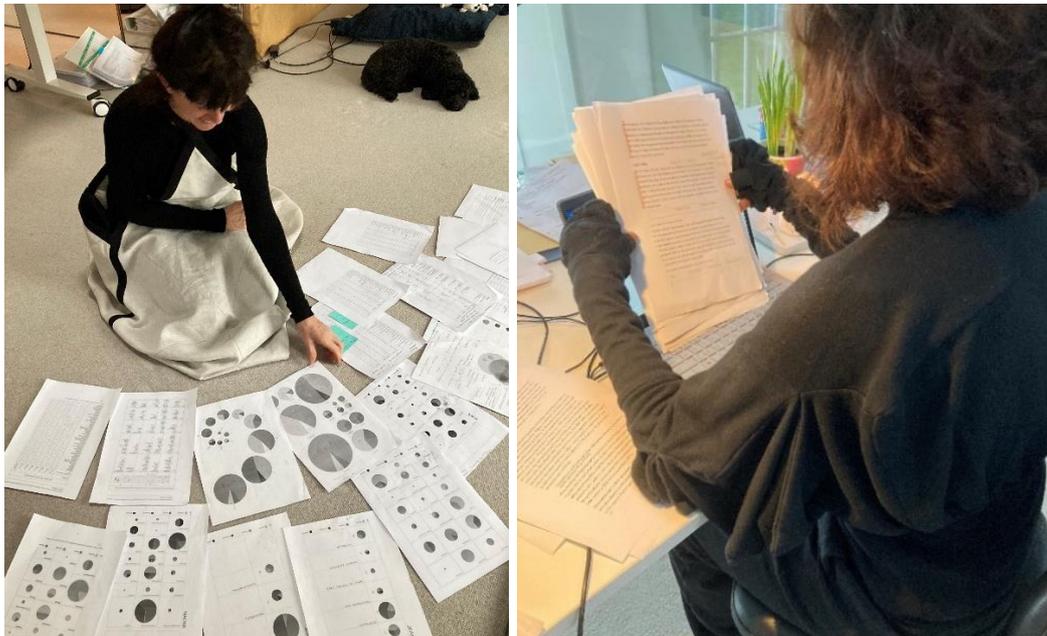


Figure 87 Wearing the Alternative Regenerative Clothing whilst interacting with and interpreting data

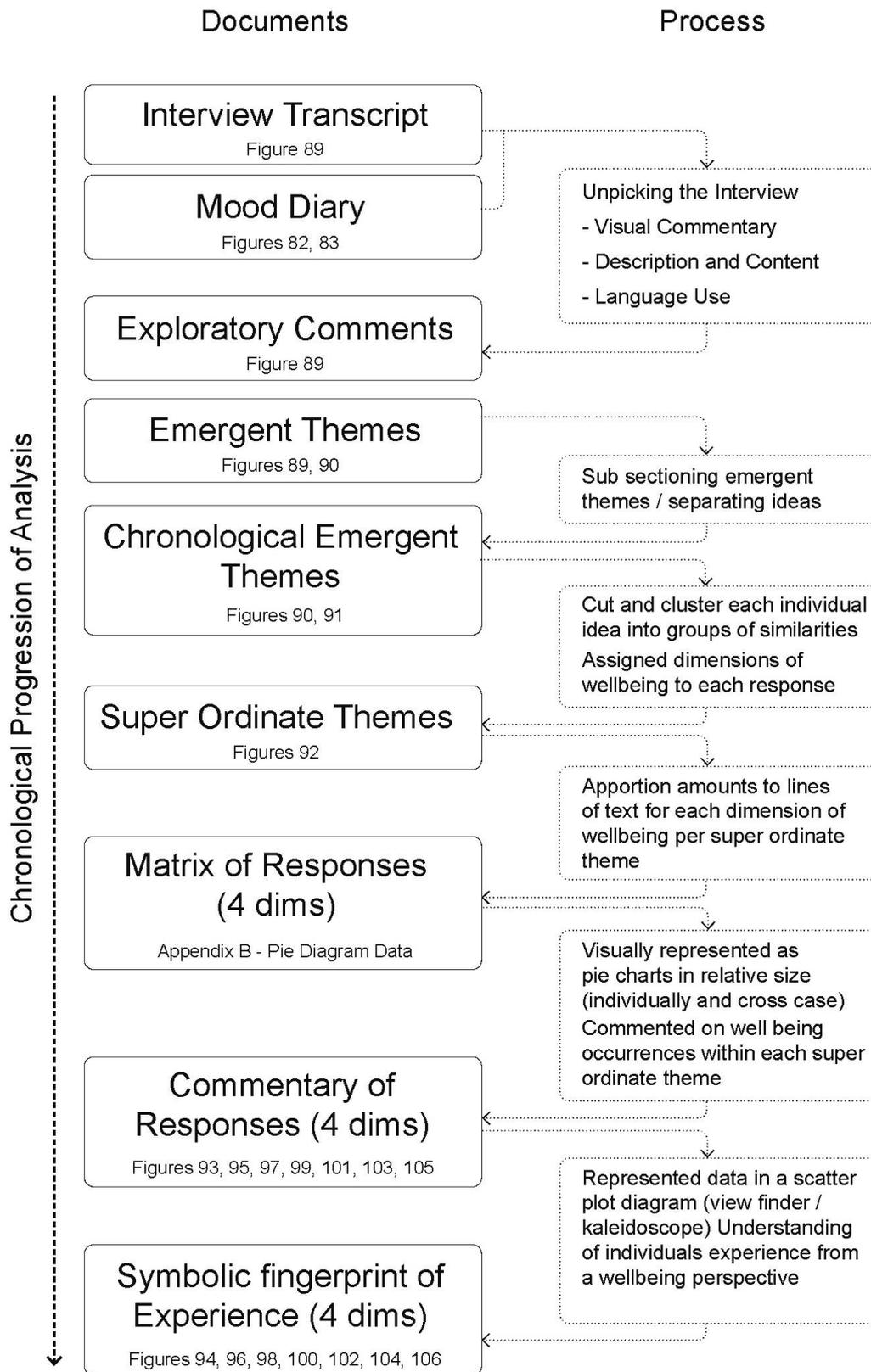


Figure 88 Analytical process for each participant

Introducing the process:

Voice recordings of the interviews were transcribed through digital software, to obtain an initial text draft. They were read and reread whilst listening to the audio-recording to obtain an accurate script and engagement with the voice (and its emotional nuance) of the participant, some interviews were more time consuming than others to decipher depending on the cadence of the individual. Participant mood diaries were also studied, and handwriting transcribed for ease of reference and analysis (figures 82 & 83)¹²⁷.

The next step involved listening and watching the videoed interview several times whilst checking the text transcript, and to facilitate an immersion and connection with the visual language of the participant. Notes and thoughts were recorded from initial data interaction to separate or bracket¹²⁸ my personal feelings and beliefs. This allowed focus to remain with the data rather than being overwhelmed by ideas and possible connections at the beginning of the analytical process (Chan et al, 2013).

The transcripts were then formatted; column headings were organised allowing for exploratory comments and emergent themes to be noted. Each layer of analysis was carefully unpicked to explore the meaning behind the experience of interacting with the clothing and added to the transcription grid (figure 89). To aid organisation and referencing of the transcript an identification column was included (Key); a sequential alpha-numerical code was assigned to the researcher and participant as they alternated speaking, the letter being arbitrary (figure 89). As noted, (6.1), a colour-coded system was implemented and assigned to each Platonic solid when referenced within the interview, this in turn aligned with its chakra attributes in garment form¹²⁹, text remained black if no reference to these phenomena were made. Colour-coding in this way allowed participant experience and garment to be easily identified when searching for data patterns.

¹²⁷ Mood diary imagery and transcriptions can be viewed in Vol. II, Appendix B

¹²⁸ Bracketing is a deliberate putting aside one's own belief about the phenomenon under investigation or what one already knows about the subject prior to and throughout the phenomenological investigation (Chan et al, 2013, p. 3)

¹²⁹ The same colours were embedded within each garment (2.4.4, 4.5, figure 71) aiming to reinforce research design and analytical alignments and embody wellbeing connections.

Icosahedron
Icosahedron
Tetrahedron
Icosahedron
Icosahedron

Interview Transcript, Initial Analysis and Development of Emergent Themes - Judy:					
Judy has a background in nursing and midwifery. She has now diversified into holistic healthcare and beauty and runs her own business offering massage, facial treatments, and yoga workshops. She is a qualified Inner Axis (a method for generating well-being) yoga teacher, ethical vegan, and has a keen interest in literature, theatre, and film. Judy has three independent adult daughters, one granddaughter, and lives alone with her dog.					
Key	Interview Transcript (R:= Researcher, J:= Judy) 31 minutes - 4834 words	Exploratory Comments			Emergent Themes
		Description & Content (summary of what is happening, key words, events, experiences)	Language use (certain words, repetition, hesitation, metaphor, ways that language highlights meaning-making)	Visual Commentary (animated, laughter, body language, expression)	Conceptual & Interrogative coding (what is happening here for them?)
A1	R: Judy, could you, could I just ask you to have a little feel of these shapes, and whatever word comes to mind, could you erm just say whatever word that is. So, which one are we feeling now? Is that the icosahedron? What word comes to mind there? At this particular moment?	Interactive, gentle introduction to the interview by asking the participant to feel small wooden representations of the platonic solids.	Hesitation	Relaxed, calming ambience Both seated Low level lighting	
A2	J: It makes me think of the Earth, with no association about chakras or elements or anything like that just makes me think of the Earth, in space. Yeah, that's what I feel.	Spiritual. Some prior knowledge of the solid's metaphysical associations.	Yeah, that's what I feel Earth, in space Chakras, elements	Judy feels the wooden shapes with eyes closed, moving them from hand to hand.	Self-Affirmation Sense of place of something bigger Other worldly

Icosahedron
Icosahedron
Tetrahedron
Icosahedron
Icosahedron

A10	J: Safe		Safe		Secure & protected
A11	R: Yeah, and sorry to digress, could we go back to this one, the icosahedron, one word?	Re alignment			
A12	J: Floaty Ethereal and other worldly		Floaty	Squeezes the whole shape, enclosing in her hand, opening & closing her fingers and keeps repeating this action.	Ethereal and other worldly
A13	R: This one, the dodecahedron?				
A14	J: Concerned		Concerned	Takes a firm grasp	Feelings of unease
A15	R: And another one, the tetrahedron.				
	J: This makes me think of again, I am trying to clear my mind consciously of associations that I know, rightly or wrongly, but to me this feels very much like a connection between myself and the higher, and that may be the connection this way or it may be connection this way. But it definitely feels like a connection between me and that which is above me or in front of me. It feels very heart, very Stellar Gateway, very connect, very connecting.	Awareness of pre-conditioning Positivity/repetition/reinforcing Strong reaction	Definitely Above/infront A connection between myself and the higher Connection/Connect/Connecting x 6 Feels very heart Stellar Gateway Very x 5 Feels x 3	Touches with fingertips only, spinning it. She raises it over her head with eyes closed whilst talking about a connection. She makes hand gestures above and in front of her to reinforces her words.	Awareness of pre-conceived knowledge and associations Beyond the physical body Part of something bigger
A16	R: So again, if you had to think of one word to describe how you feel about that what would it be?				

Figure 89 Two pages from Judy's interview transcript showing formatting and coding¹³⁰

Reducing the data by developing emergent themes was the next step in the process (figure 88). Smith et al suggest that the researcher becomes inextricably linked with the data through reduction, the resulting themes being unique to their particular interpretation of the phenomenon (2012). Van Manen adds that “reduction focuses on what is distinct or unique in a phenomenon” (2016, p. 229) and furthermore, aims to arrive at an intuitive essential insight or essence within the dissected data. Creely concurs, describing reduction as:

¹³⁰ Excerpt legibility maybe compromised by reproduction and reduction in size. The full-size document can be accessed in Vol. II, Appendix B, p43 & p45

“A process of finding and harvesting essences, which are the deep, absolutely necessary and substantive structures that reside in consciousness and in thoughts about an object, process or event. They are the frameworks on which experience, and consciousness are based” (2016, p. 11).

Hexahedron Icosahedron Tetrahedron Cube Dodecahedron

Chronological list of Emergent Themes within Judy’s interview transcript

Key	Keywords/Phrases/Mannerisms	Chronological list of Emergent Themes
A2.1	Yeah, that's what I feel	Self-Affirmation
A2.2	Earth, in space	Sense of place of something bigger
A2.3	Chakras, elements	Other worldly
A6.1	in connection with each other	Exploring connections between shapes
A6.2	Very sort of planet	Links to the Solar System
A6.3	Very Earthy and very sort of planet and spacey	Out of body experience
A6.4	Very Earthy and very sort of planet and spacey	Other worldly
A8.1	I know in my mind, I'm very aware	Aware of pre-conceived knowledge and associations
A8.2	Root chakra	Other worldly
A8.3	Slightly above the Earth, pedestal	Out of body experience
A10	Safe	Secure & Protected
A12	Floaty	Ethereal and other worldly
A14	Concerned	Feelings of unease
A15.1	I am trying to clear my mind consciously of associations that I know	Awareness of pre-conceived knowledge and associations
A15.2	Above me or in front of me	Beyond the physical body
A15.3	It feels very heart, very Stellar Gateway A connection between myself and the higher	Part of something bigger

Figure 90 An excerpt of Judy’s colour coded emergent themes¹³¹

Following my interpretation and reduction of the data the emergent themes were listed in chronological order as they appeared in the transcript (figure 90). The list of emergent themes (figure 90) was printed, and strips cut to separate each alpha-numerical coded line (figure 91, left). The strips of emergent themes were then moved around to form new cohesive groups (figure 91, middle) - searching for connections across themes is not a rigid process, the aim being to develop clusters that fit together (Smith et al, 2012). The strips from each new group

¹³¹ Excerpt legibility maybe compromised by reproduction and reduction in size. The full-size document can be accessed in Vol. II, Appendix B, p63

were reconfigured and reviewed to form succinct groups of similarity, collectively called super-ordinate themes (figure 91, right). The super-ordinate themes were then given a relevant title (figures 88 & 92). For example, Judy's emergent themes (figure 90) were arranged into 15 clusters of similarity (figure 92).

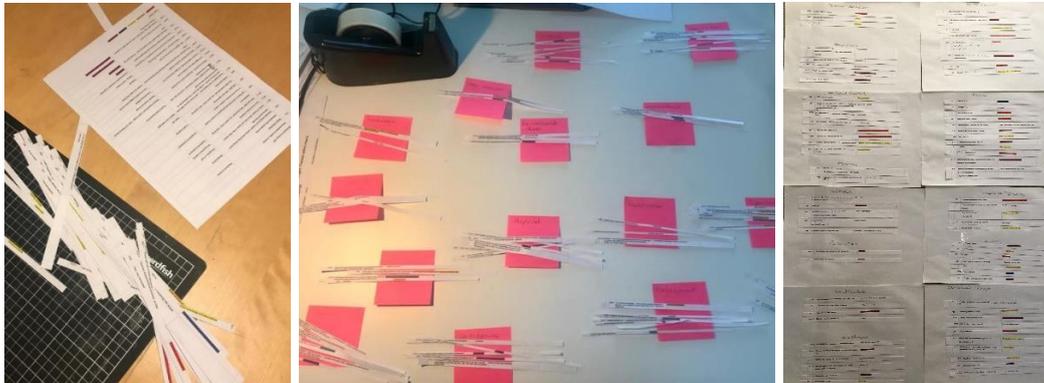


Figure 91 Evolution of super-ordinate themes

I allocated each exploratory comment that informed the emergent themes a dimension of wellbeing¹³² (5.1, figure 88). For example, figure 92 indicates that the super-ordinate theme of *Intuitive Responses* comprises of 10 emergent themes; each of these 10 exploratory comments informing the emergent theme is attributed a dimension of wellbeing, identified by a bracketed letter at the end of the comment (E), (M), (P), (S). In this example seven comments are attributed to the spiritual dimension (S) and three to the emotional (E) dimension of wellbeing. *Gratitude* comprises of four exploratory comments all attributed to the spiritual (S) dimension. (E)(M)(P)(S) wellbeing allocations were then added together to form numerical values¹³³ and used to create proportional pie diagrams for each of her 15 super-ordinate themes¹³⁴ (figure 93; 6.1). The aim of attributing emotional (E), mental (M), physical (P), and spiritual (S) dimensions to exploratory comments was to enable the formation of another layer of interpretation focusing on wellbeing. Pie diagrams are often associated with statistical and quantitative data; in this context although numerical data informs their proportions, the intention is to create a visual qualitative platform to communicate my interpretation of each participant's overall wellbeing experience. Allocation of wellbeing dimensions¹³⁵ (E), (M), (P), (S), to each emergent theme is my particular perception and interpretation of the phenomena; Merleau-Ponty

¹³² Emotional, mental, physical, and spiritual.

¹³³ Values can be viewed in detail in Vol. II, Appendix B, p.26 – Pie Diagram Data

¹³⁴ In this example

¹³⁵ A breakdown of wellbeing allocations attributed to each super-ordinate theme for all participants can be viewed in Vol. II, Appendix B, p. 26 - Pie Diagram data. Allocations are also traceable in "Super-ordinate themes" for each participant, these documents are also located in Appendix B

suggests that “explanation is invented, not discovered” and is always an interpretation (2014, p. 118).

Hexahedron Icosahedron Tetrahedron Dodecahedron

15 Super-ordinate Themes - Judy’s interview

Intuitive responses, Gratitude, Attachment, Heightened Experience, Transcendental, Mindful, Positivity, Sensorial, Garment Interaction, Empowerment, Fascination, Connection, Part of something bigger, Security, Validation.

Intuitive Responses:

A29	Very, very connected (S)	Subconscious desire/pull
A51.3	I just felt really smartly dressed and very professional I caught sight of myself (E)	Effect on state of mind – professional
A41.1	Loved it, loved it and still do love it (E)	Subconscious link/pull
A59	Fascinated by the shape, the design (S)	Intrigued/drawn to the shape
A100.1	'It's' bigger than your conscious mind (S)	Beyond conscious thought
A100.2	I couldn't make it do what I thought it was going to do (S)	Subconscious effects
A104.1	From my heart, with absolute honesty because that's the whole point of this (E)	Intuitive and open responses
A120	Wanted to be in the moment (S)	Here and now
A129	They didn't want to give them up, at all (S)	Subconsciously drawn to something
A61.1	Something very, very special about the white fabric... the way I perceived the light...really, really beautiful (S)	Surreal experience

Gratitude:

A104.2	She helped me. Give to her as a gift (S)	Gratitude
A106.1	Pass on the love...choose the love of choosing (S)	Gifting – give to others
A106.2	I think there's so much love and compassion in the garments (S)	Love/compassion embodied in garments
A108.3	So much love in them, so much (S)	Love embodied in the garments

Figure 92 An excerpt from Judy’s analysis - 15 clusters or super-ordinate themes were developed¹³⁶

Figure 92 also demonstrates the colour-coding system applied. For example, within the super-ordinate theme of *Intuitive Responses* Judy talks about four different garments/solids/chakra locations¹³⁷ – hexahedron (red), icosahedron (orange), dodecahedron (purple) and tetrahedron (yellow). She also talks generally about her experience; this narrative remains black. Exploratory comments clustered under the theme of *Gratitude* are mainly generalised observations (black text) with one specific comment directed towards the gloves (dodecahedron - purple). The context of these comments can be viewed in Judy’s full interview transcript in Appendix B.

¹³⁶ Excerpt legibility maybe compromised by reproduction and reduction in size. The full-size document can be accessed in Vol. II, Appendix B, p66

¹³⁷ Each garment/solid/chakra location all share the same colour

The individual pie diagrams were then amalgamated to form a symbolic fingerprint for each participant, retaining their proportion throughout to facilitate visual interpretation and cross-case referencing. The symbolic fingerprint was framed within an XY graph, each quadrant assigned a dimension of wellbeing, the pie diagrams¹³⁸ were positioned accordingly within this scatter plot framework. The symbolic fingerprint being an abstract visualisation and interpretation of data, communicating an overview of each participants wellbeing experience, and representative of my instinctive perception of the phenomena in their XY positioning (figures 94,96, 98, 100, 104, 106 & 109). An abstract collective overview of symbolic fingerprints, void of text and colour, concludes this chapter (figure 118).

The same process was repeated for all seven participants, each study being treated as a unique entity, aligning with the idiographic concept of IPA. Key insights from individual participant experiences are discussed in **6.3**.

The final stage of analysis searches for connections across cases. Smith et al suggests that it may be helpful to move towards more “higher-order concepts” which could embrace cross-case similarities, moving towards a more abstract reconfigured and relabelled landscape (2012, p. 101), discussed in section **6.4**. Viewing data from different perspectives may uncover correlations previously unseen, therefore supplementary material exploring haptic engagement with wooden Platonic solids (**5.5**), keywords, and garment preferences¹³⁹ were formulated to aid understanding. Elements from this material supports the following section (**6.3**).

6.3 Key Insights from each study

Sense making of experiences are personal and intimate. Creely suggests that they are “narrow and deep and involve non-observable states of internality as well as external actions” that reflect individual preferences, sensorial perception, emotional, somatic, and cognitive states (Creely, 2016, p. 3; Shusterman, 2012; Merleau-Ponty, 2014; Bayne, 2013). This section discusses my interpretations of these states of consciousness¹⁴⁰ and embodiment¹⁴¹ elicited by the ARC.

¹³⁸ Representing each super-ordinate theme framed in the four wellbeing dimensions

¹³⁹ The full documents are in Vol. II, Appendix B

¹⁴⁰ The *why* – intentionality; distinctive patterns in consciousness which shape a person's *Lifeworld* (Creely, 2016, p. 3-6)

¹⁴¹ The *how* – including what is felt and sensed (Creely, 2016, pp. 3-5)

The seven participant experiences are explored in sequential order of interaction with the clothing.

When interpreting, analysing, and discussing participant experiences direct quotes from interview transcripts are referenced, the excerpt location is indicated in brackets by an alpha-numerical code, for example A33 (Judy), and can be contextualised in her full transcript located in Vol II, Appendix B.

The muted colours assigned to pie diagrams and symbolic fingerprints is arbitrary and intended for clarity of data interpretation only.

As noted, (5.1), the studies took place between September-December 2020, during this time the UK was undergoing various restrictions associated with the Covid-19 pandemic. Some studies were conducted during periods of enforced lockdown and others under social gathering/distancing restrictions, individual wearer interaction contexts are briefly outlined for each participant.

6.3.1 Judy

Judy has a background in nursing and midwifery. She has now diversified into holistic healthcare and beauty, and runs her own business offering massage, facials, related treatments, and various types of yoga workshops. She is a qualified Inner Axis yoga teacher (a hybrid of breathing and movement therapy) ethical vegan, and has a keen interest in literature, theatre, and film. Judy has three independent adult daughters, two young grandchildren, and lives in a city centre apartment with her dog.

Judy wore the five garments at a one-day yoga workshop where she was the facilitator, and during the day-to-day management of her business over the two-week interaction period. Covid restrictions did not impact this study.

Her face-to-face interview lasted 31 minutes and took place in an evening in her apartment. The transcription has 4834 words. From the interview 15 super-ordinate themes were developed: *Attachment, Heightened Experience, Security, Connection, Intuitive responses, Sensorial, Empowerment, Fascination, Mindful, Garment Interaction, Part of Something Bigger, Transcendental, Gratitude, Positivity, & Validation* (figures 93 & 94).

The super-ordinate theme of *Sensorial* constituted Judy's predominant experience within which she referred to four of the five garments (figure 93). She

refers to the tight knitted cuffs of the hexahedron jacket (red) and dodecahedron gloves (purple) as “pressing on acupuncture points” (A33 & A108), this combined with the “expansiveness and ability to move freely” (A33) created by the geometric voids gave her feelings of sensorial extremes. She comments of “really liking the feel of the fabric” (A33) alongside the sensations of constraint and expansiveness. These perceptions made her feel “grounded, connected, and very secure” (A33) in what she was doing. She elaborates on the extreme sensations she experienced, trying to make sense of them by comparing and affirming her felt sensations to those experienced by others at a yoga workshop she facilitated:

“They were talking about them being like a tortoise shell (dodecahedron gloves) so that they could move in them, but yet they felt safe and the other people who were listening, for example, there’s a guy whose an architect and he was talking about that it could be something to do with insulation, because there was air between the skin and the fabric...and then a very experienced shiatsu practitioner said “and also remember that its pressing (the cuff) on your shiatsu and acupuncture points here”. Everyone was fascinated by them” (A108).

During a workshop break she displayed the garments and information cards¹⁴² and invited attendees to view. Several individuals tried on the dodecahedron gloves as these were easy to access: “they all asked, and then they tried them on, and they were like wow!”(A110). At her interview Judy handed me a note¹⁴³ written by one of the participants at the workshop who tried on the gloves, further elaborating on their sensorial effects:

“It was not until I put them on that I noticed how perfect they were to compliment my love for gloves...my first thought was ‘tortoise shell’ and my fascination in the shapes and pattern were endless. The fit of the fingers and the space left above my knuckles felt wonderful, and the more my eyes travelled their surface, the more corners I found to hide. They are stunning and intriguing to look at, and wonderfully unique. Yet, just like the shell of a tortoise, they mean so much more than meets the eye”.

The sensorial effects experienced by Judy, and comments from participants at the workshop support the ARC’s ideology in that:

- Clothing is a powerful means of communicative body covering operating on many levels. **(2.6)**
- Sensorial perceptive experiences can be elicited through clothing in many ways including movement, body position, body space, balance, tension/restriction, temperature, comfort, breath/stretch **(2.5.3)**

¹⁴² Appendix B, p. 23 entitled *Information Cards Provided to Participants*

¹⁴³ Appendix B, p. 74 entitled *Rosie’s Note*

- Empty space between the garment and body, the concept of *ma* in Japanese culture, is a reflective sensorial site, a void of energy, feeling and respect, facilitating possibilities for embodiment (2.5.4)
- Embodiment is an integrated communicative position between mind, body, and environment (2.5.2).

My allocation of wellbeing dimensions to Judy's *Sensorial* theme broadly positions it within the spiritual quadrant of wellbeing (figure 94) suggesting connection, vision, empathy, self-realisation, higher purpose, significance, and deep values.

The theme of *Intuitive Responses* is clustered by her open, honest, uninhibited, and spontaneous reflections. She talked enthusiastically about the tetrahedron shirt - "loved it, loved it, and still do love it" (A41)...there's "something very, very special about the white fabric...the way I perceived the light...I caught sight of myself (A51)...really, really beautiful" (A61). She "thought it was so versatile" (A41) and readily shared photographs of herself wearing the tetrahedron whilst meditating, practicing yoga, and at work¹⁴⁴ completely undeterred by the abstract complexity and ambiguity of the piece. The intuitive responses she shared within this cluster position it broadly within a spiritual wellbeing experience (figure 94).

Security was another key theme for Judy. *Completely safe, secure, and enclosed* (A10, A33, A45) were recurring keywords elicited mainly by the hexahedron jacket and tetrahedron shirt. Her feelings of resilience, positive emotions and security whilst interacting with these garments could be attributed to an emotional wellbeing experience.

Conscious of her thoughts, perceptions and interpretations of her own wearer experience are manifested in another key super-ordinate theme - *Mindful*: "I am trying to clear my mind consciously of associations that I know (A15)...I know in my mind, I'm very aware (A8)...tying hard not to have preconceived ideas (A33)...pre-conceptions aren't always true...I don't think it had the effect that I was thinking it would...so that was good. I was pleased that my preconceived ideas were not right" (A97). These comments are aligned with the tetrahedron shirt, hexahedron jacket, and octahedron shrug, she acknowledges that she had different experiences in each shape and tries to distance herself from personal

¹⁴⁴ Appendix B, p. 72 – *Imagery from Judy's mobile phone*

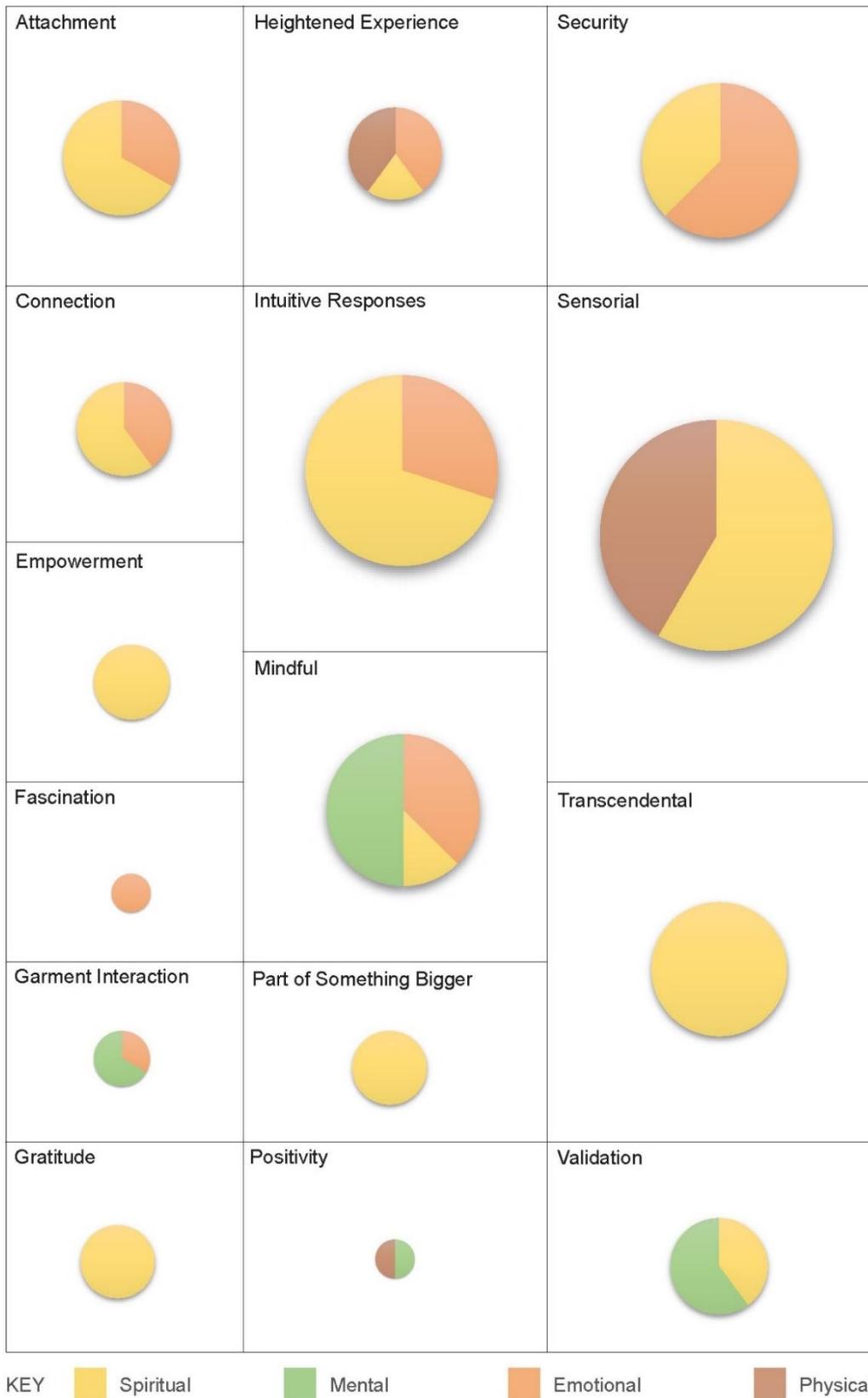


Figure 93 Judy's 15 super-ordinate themes visualised through the four dimensions of wellbeing

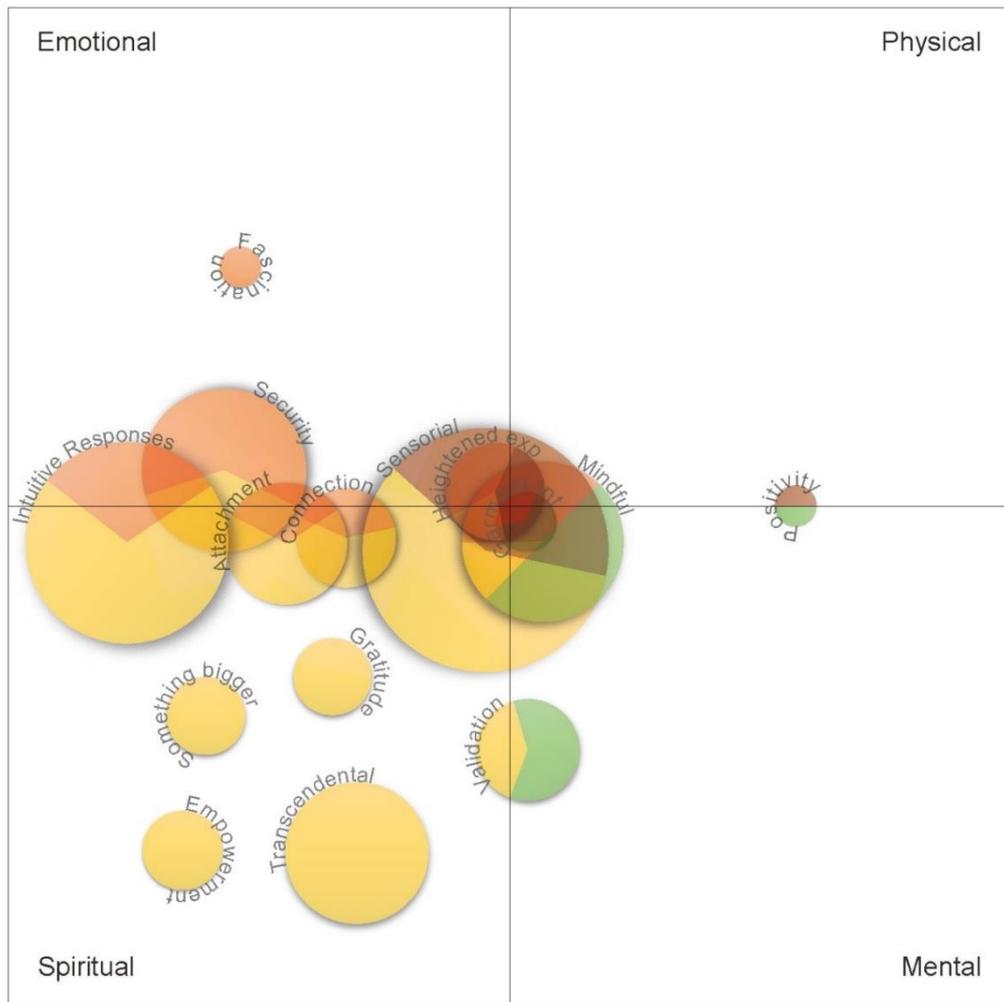


Figure 94 Judy's symbolic fingerprint – a scatter plot overview of her wellbeing experience

preference. In acknowledging these thoughts, she demonstrates awareness, emotional balance, and clarity, consciously interpreting and analysing her own experiences. I attributed most responses evoked within this theme to the mental quadrant of wellbeing (figure 93 & 94) suggesting aspects of consciousness - thinking, intellect, wisdom, logic, self-belief, outlook, and perspective.

The theme of *Validation* was attributed to areas of her interaction experience where she perhaps felt unsure, judged, intimidated, generally disliked, or felt an inappropriateness. When talking about the mood diary and instant camera that were assigned to participants as prompts (5.4), she clearly felt a sense of disconnection, stating:

“This wasn't my favourite part of it...I really didn't get the instant camera...I felt it was a function...it was something that I had to do (A135). In all honesty, the quality of the photos (on my mobile phone) is much much better, you have it with you all the time. It feels more contrived (the instant camera) than just picking up your phone in the moment (A139). I am a very wordy person...and that's why I think I haven't configured it (the mood diary), it didn't for me fit in with the rest of the experience. Because the rest of the experience was very, very deep, very personal, and very emotional, and I think you can see by looking at (the mood diary) that isn't, that isn't “(A145)

Judy embraced the Wearer Interaction experience and openly shared her thoughts and feelings with me. She wore all the garments over the two-week period and sought the opinions of others by discussing the concept and wearing the garments at her yoga workshop. She also recorded wearer interaction scenarios on her mobile phone¹⁴⁵. She was the first participant, and the study took place just before various Covid restrictions ensued, I felt data captured was enriched by this spontaneity.

Her overall wearer interaction experience is situated predominantly within the spiritual dimensional quadrant of wellbeing when interpreted through her symbolic fingerprint visualisation (figure 94).

6.3.2 Jean

Jean has a background primarily in fashion design and manufacture; she has worked in the fashion industry, ran her own fashion business, and taught a variety of crafts and textile based 'thinking through making' skills in women's prisons. She is also interested in property renovation and interior design and has renovated several properties throughout the UK. She is now retired and plays an active voluntary role within the local community. Jean has two adult sons, two teenage grand-daughters and lives alone in a cottage in rural Northumberland when not exploring the UK in her camper van with her dog.

The face-to-face interview lasted 32 minutes and took place one morning in the garden of her home. Covid-19 implicated this study restricting socialising opportunities. The transcription has 4370 words. From the interview 13 super-ordinate themes were developed: *Intuitive Responses, Therapeutic, Security, Opportunity, Enjoyment, Questioning, Tension, Sensorial, Confidence, Transcendental, Nostalgia, Heightened Experience, Impact on Mental State* (figures 95 & 96).

When visualised through Jean's pie diagrams (figure 95) *Questioning* is a dominant theme, situated mainly in the Mental dimensional quadrant of wellbeing (figure 96). The interaction experience saw her questioning her pre-conceptions as to clothing's value and purpose, a fundamental metanoic aim of the research.

Namely a change in our emotions, that changes our critical thinking, that then has a positive impact on our view of societies way of being. The ARC aims to

¹⁴⁵ Appendix B, p. 72 – *Imagery from Judy's mobile phone*

provide a vehicle for exploration of multi-faceted holistic wellbeing through

Metanoia, Jean began questioning this concept stating that she wanted:

“...to research it more because when I first came across you and this project my head has never gone further than designing clothes and patterns to make women look beautiful, sexy, whatever, that’s been my whole life and suddenly to be confronted with a different theory of wearing clothes was quite alien to me (C34). I took a long look at the meaning of clothes, more erm because I’ve never come across this concept before (C102)...and it took me so long to get the fashion thing out of my head and start thinking in a different way and it was an amazing experience really (C34)...I probably will wear more baggy clothes and I will think about the meaning of some things even more deeply” (C121).

She was eager to share her experience with me, challenging herself, analysing her thoughts and beliefs, perhaps questioning her own somaesthetic perception.

“I found myself questioning why we wore clothes...sexual attraction really, and it’s wrong because people should feel comfortable within their own skins, not have to look sexy and so forth to accentuate their body to attract people, male or female. It brings fashion into a very flippant way really” (C36).

Jean engaged with the prompts and probes taking photographs with the instant camera and sticking them in her mood diary¹⁴⁶. However, despite her engagement with the process I began questioning this element of the research design. Jean, like Judy, implied the camera and mood diary were more of a chore to be performed perfunctorily and with resignation, rather than an opportunity to unpick and record their in-the-moment thoughts and visual experiences as intended:

“...a nice friend came round and took photographs...well I’ve still got the fashion head on I suppose, and I wanted to show you how I looked in them which isn’t really important, how I look in them when I discovered that I thought wow! that’s good” (C108).

Tension was another key super-ordinate theme for Jean with a high level of allocations mainly in her Mental and Emotional dimensional quadrants (figure 96). The white tetrahedral garment generated feelings of anxiety, frustration, failure, lack of control, fear of not understanding, self-doubt, she comments:

“It made me feel very frustrated, I couldn’t, I couldn’t wrap it round me, I couldn’t get inside it, I couldn’t, I couldn’t put my legs through it, I couldn’t... the whole experience of it was irritating to me...I got cross with my thoughts in it (C18). I don’t like to not know how things work, and how it’s not working for me (C20). I didn’t wear it as much as the other ones (C24)...I probably got hold of the wrong idea of the concept” (C26).

She also had a negative experience with the Octahedron shrug:

“I did find it very claustrophobic...I didn’t feel comfortable at all...I don’t like to feel, you know, closed in so much, I wasn’t happy with that” (C60 & C62).

Clearly two of the five garments did not carry an embodied wellbeing narrative for Jean.

¹⁴⁶ Appendix B, p. 135 – *Jean’s mood diary*

The three super-ordinate themes of *Questioning*, *Tension*, and *Sensorial* dominated Jean's experience (figures 95 & 96). She particularly engaged with the *Sensorial* spaciousness of *Ma*¹⁴⁷ whilst interacting with the hexahedron jacket and comments on the embodied opposing forces of yin and yang - restriction and freedom. She sub-consciously comments on the Phi¹⁴⁸ progressive "building blocks" and grounding sensation elicited by the cubed¹⁴⁹ sleeves and tries to understand and justify these sensations. The fabric also generates a sensorial response:

"It reminded me of cubes of building bricks and the strength that you got from the bottom one to the tiny one at the top. I like the tight sleeves for some reason, that must be some psychological reason, I like the sleeves to fit tight. It felt good on, the lovely sleeves, and the fact that it fastened up to the neck (C50). I simply love the fabric; I love the softness of it. Yes, the fabrics are just amazing. I love them, I love them (C44)...love the fabric, that made me feel nice, I'm very sensitive to fabric...I like it" (C64).

She had a similar positive sensorial experience, one of freedom of movement and volume in the icosahedron pinafore and describes the feeling generated by using the shortening ties to adjust the garment's length:

"...you still felt good because you could move around (C30). I really liked to hook it up...I hooked it up...it was like wearing a crinoline almost (C40)".

Therapeutic is another of Jean's themes (figure 95 & 96)¹⁵⁰. When talking about the dodecahedron gloves, she interprets them as a therapy to relieve stress and anxiety, and again attempts to define and justify her experience. She also views the characteristics of the fabric as a key component of her perceived therapeutic experience:

"I'd really like to stuff it (the dodecahedron) and punch somebody when I get very cross...I also felt it was some kind of therapeutic glove...if you have treatments for arthritis or something and they blow them up so that you get some kind of beauty treatment inside them or something (C72). I felt it was some kind of meditation therapy (C76). The fabric is so soothing, and it calms you down...it's lovely to wear beautiful fabrics that you can stroke and then they're part of relaxing" (C94).

Jean's symbolic fingerprint represents her overall experience, several of her super-ordinate themes are overlaid, being situated at the intersection of the four dimensions of wellbeing suggesting that her particular experience was balanced with a leaning towards the spiritual/mental quadrants (figure 96). She ends her interview reiterating feelings outlined in paragraph three of this section (6.3.2) stating:

¹⁴⁷ *Ma* in Japanese philosophy relates to freedom in all aspects of life; defined as a deliberate pause, an interval, a negative space filled with nothing but energy, feeling and respect (2.6).

¹⁴⁸ The Phi ratio (1.618), the *golden* proportion, occurs in proliferation, throughout the natural world. Its spiralised biophilic growth patterns are evidenced in human embryos, animals, plants, shells, weather formations and much more natural phenomena (Hemenway, 2005) (2.2.4)

¹⁴⁹ An embodied design principle of the Eudaimonic Design Framework (2.6)

¹⁵⁰ More detailed information on themes and interview transcripts can be accessed in Vol II, Appendix B

“I want to thank you for asking me to take part in it because it’s actually made an impact on me, and I’ve really enjoyed doing it” (C121).

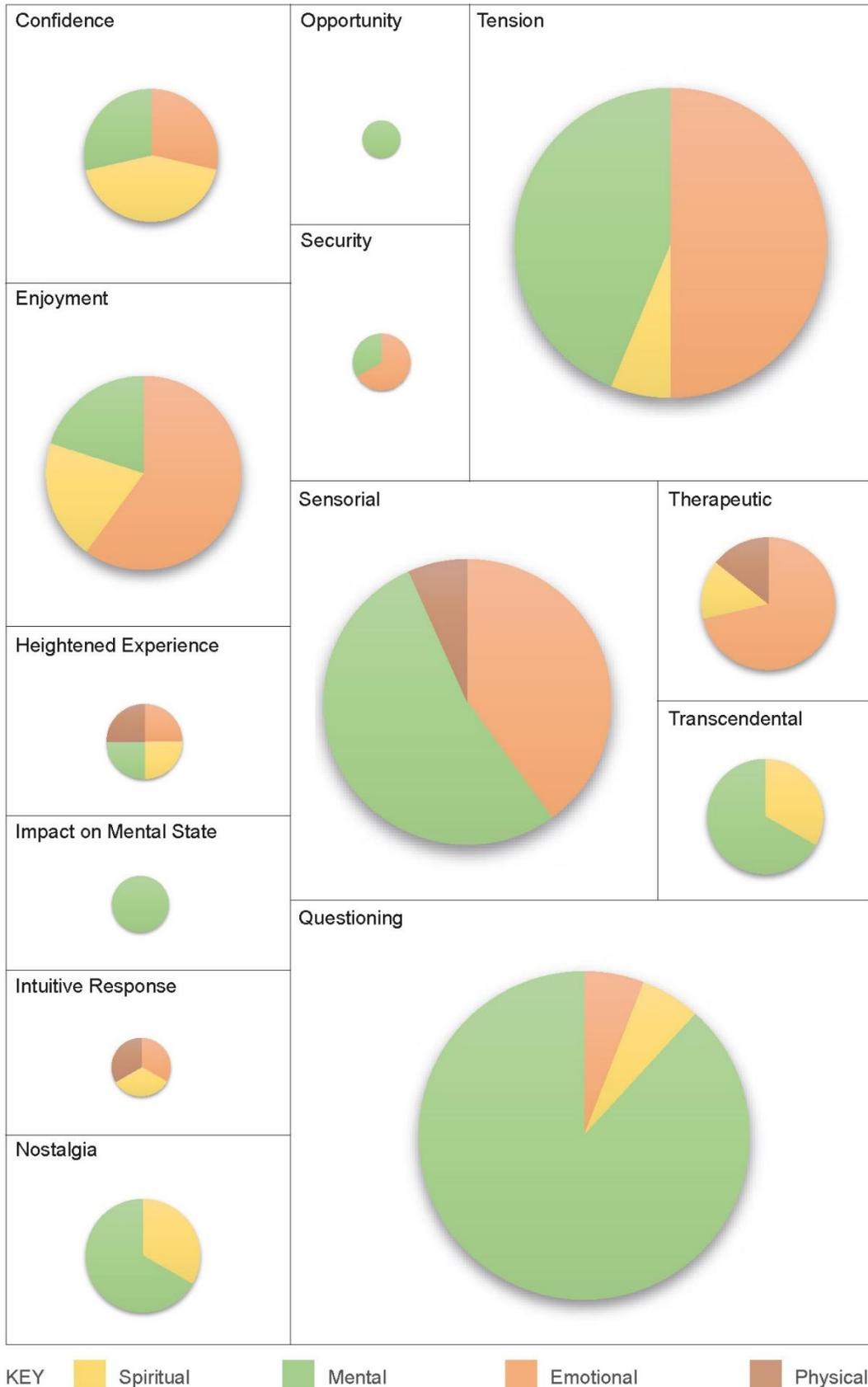


Figure 95 Jean’s 13 super-ordinate themes visualised through the four dimensions of wellbeing

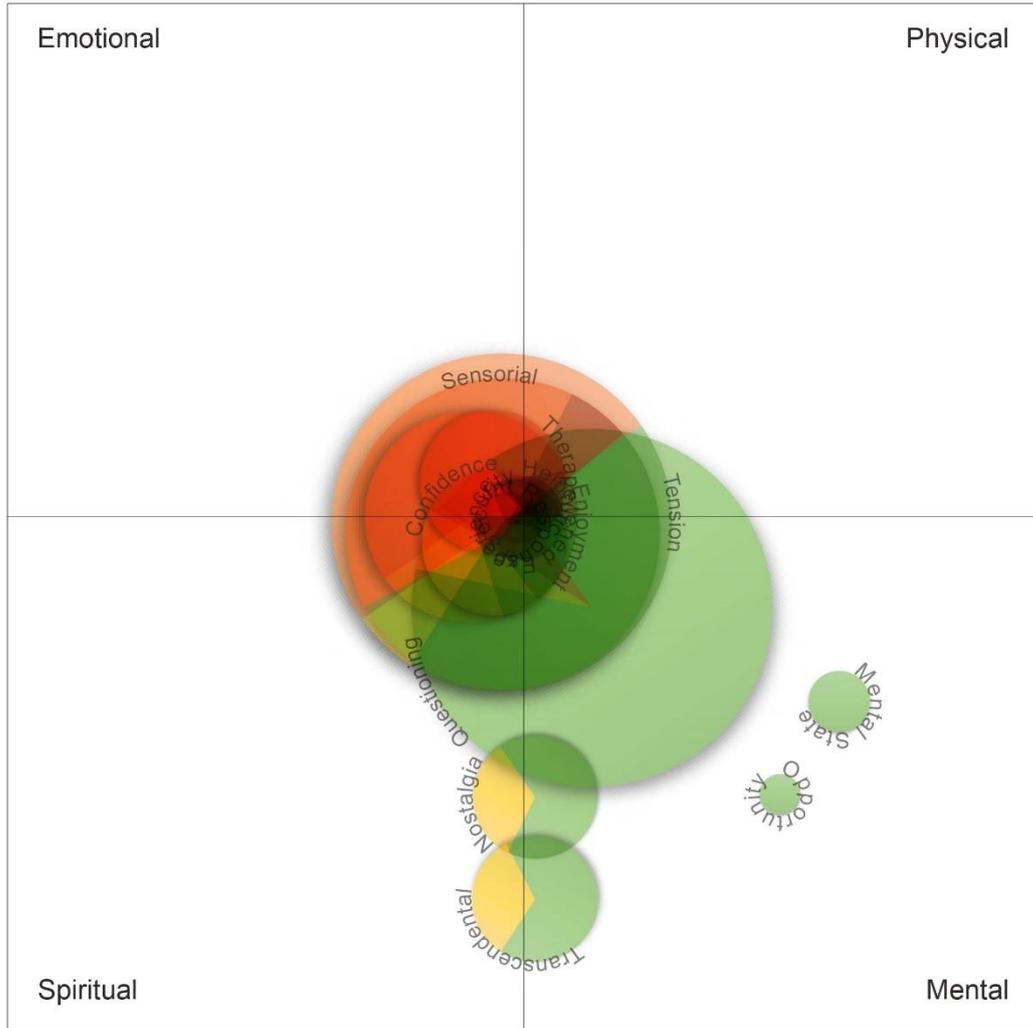


Figure 96 Jean's symbolic fingerprint – a scatter plot overview of her wellbeing experience

6.3.3 Helen

Born in East Germany, Helen's background is in psychology and cultural studies, she worked in Ireland & Sweden as a career/life coach before moving to the UK eight years ago. In England, she trained as a crystal therapist and reiki practitioner, managing a crystal shop in South Wales. She now runs her own company offering spiritually focused events, workshops, treatments, and individual intuitive life coaching sessions. Helen lives alone with her cat in rural Northumberland.

The interview lasted 23 minutes and took place one morning in the garden of her home. The transcription has 3937 words. From the interview 14 Super-ordinate Themes were developed: *Disorientation, Therapeutic, Garment Interaction, Balance, Grounding, Placement, Out of Body Experience, Embodied Energy,*

Seeking Reassurance, Sensorial, Transcendental, Heightened Experience, Natural World, Comparisons with Others (figures 97 & 98).

An interesting but overall unsatisfactory face-to-face interview, not aligned with an IPA methodology. Helen continually offered her perceptions of the experience of interacting with the clothing “rather than the experience itself” (van Manen, 2014, p. 300) despite my best efforts in steering her back to an experiential narrative.

Her particular experiential narrative was minimal. Van Manen suggests that “phenomenological analysis can only be conducted on a lived experience narrative and cannot be performed on data that consists of views, opinions, beliefs, perceptions, and interpretations of experiences” (2014, p. 299). Although this particular interview generally aligns with van Manen’s suggestion of a perception of an experience, rather than the experience itself, I have included it to explore and analyse my research design rather than to provide a detailed discussion of the narrative content itself.

Helen’s pie diagrams illustrate her overall experience is situated within the Spiritual dimensional quadrant of wellbeing (figures 97 & 98). When cross-referenced with her interview transcript and lists of emergent/super-ordinate themes I found the narrative informing the pie diagram data¹⁵¹ to be opinions of a spiritual nature, having minimal colour-coding¹⁵² attributed to them in comparison with the other six participants. Helen’s transcript contains more widespread comments with little colour-coded text, implying that the narrative content is mainly generalised, rather than specific.

A bar chart¹⁵³ cross-references data from another perspective, referencing garment mentions through lines of text within the interview transcript. When viewing Helen’s specific garment mentions within the bar chart, i.e., her particular experiences of wearing them, she has the lowest participant score across all five garments, perhaps indicating that she finds it difficult to relate to or articulate her particular experience.

¹⁵¹ Detailed information can be referenced in Vol II, Appendix B, p. 26 – *Pie Diagram Data*

¹⁵² Red (hexahedron jacket), Orange (icosahedron pinafore), Yellow (tetrahedron shirt/meditation space), Blue (octahedron shrug), and Violet (dodecahedron gloves). These same colours are also attributed to chakra positions and Platonic solids.

¹⁵³ Vol II, Appendix B, p. 38 – *References to garments within the interview*

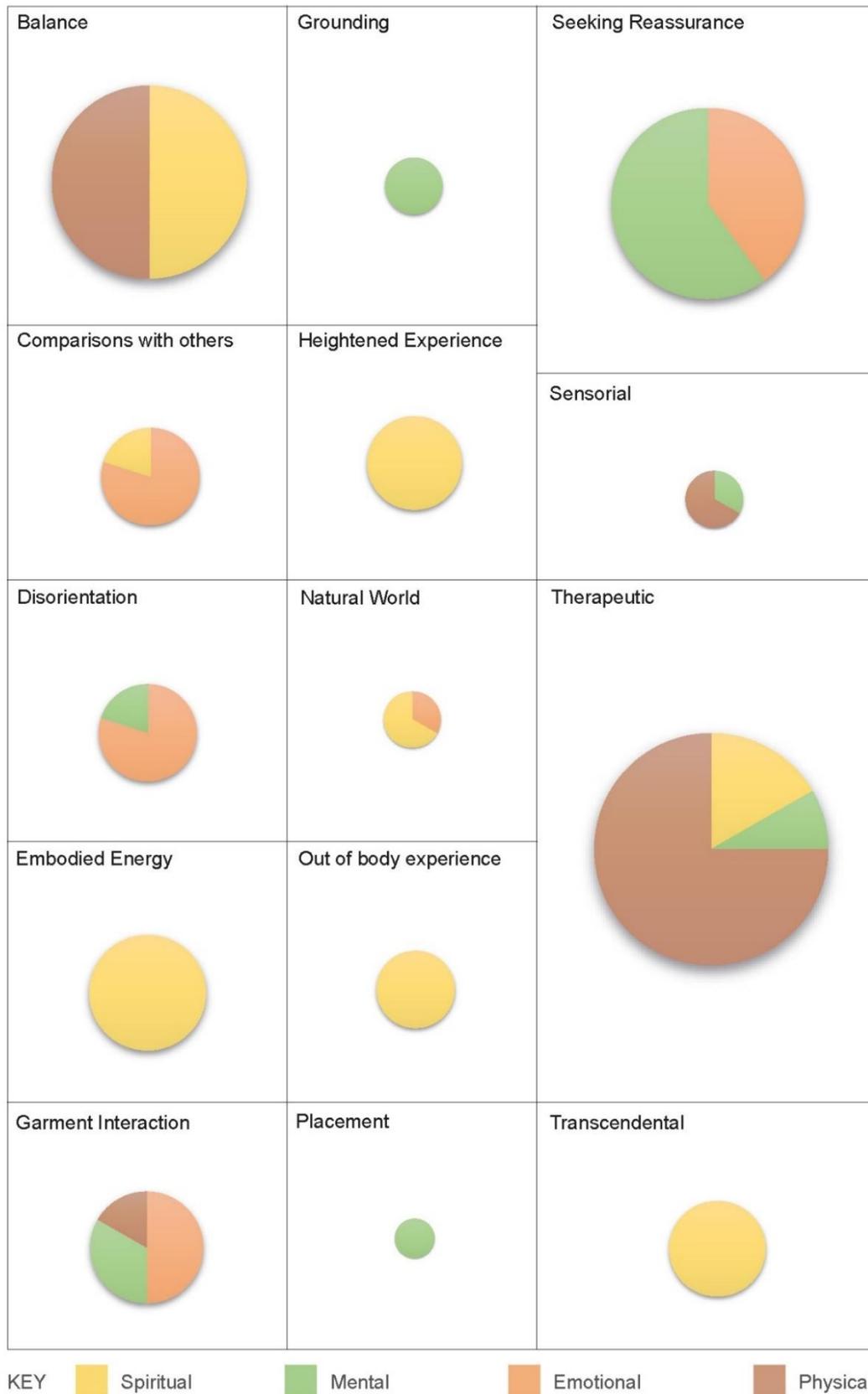


Figure 97 Helen's 14 super-ordinate themes visualised through the four dimensions of wellbeing

Helen implies that she was unable to wear the garments for any length of time because the garments held a strong and specific energy for her according to their shape, and over which body part they are worn. To address this energy surge,

she feels she needs to combine various geometric garments to achieve a feeling of balance:

“...they have like a crystal therapy impact on me...being an energetic holistic therapist my body is really in tune with frequencies, so if I'm wearing one energy (embodied garment) distinctively over only one part of my body I react really strongly. So, for me combining different ones (garments) helped to bring a certain balance to see what do I need? How much do I need? And where do I need it?” (B33).

She tries to clarify the intensity of her experience:

“I would have loved to have a trouser and something to ground because the energy got so high and I can't wear it longer than 30-45 minutes (B35)...for me it's almost like they fulfil their function (the garments), and then the job is done (B39). All of them, I couldn't wear, for me that's like I have an energetic treatment and I wouldn't have an energy treatment for a whole day (B37)... I'm really highly sensitive and trained (with the work that I do – B52) so I don't think you will always have those extreme reactions (B49).

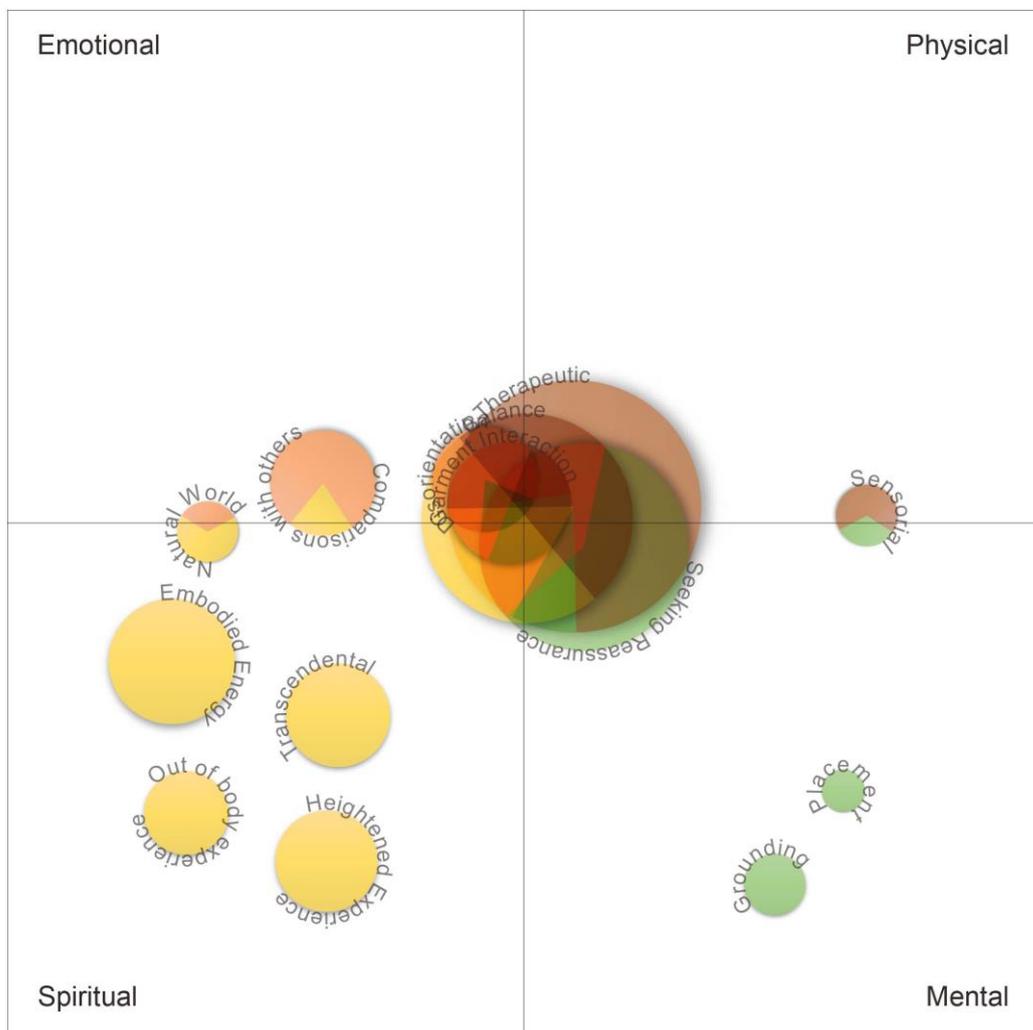


Figure 98 Helen's symbolic fingerprint – a scatter plot overview of her wellbeing experience

She suggests that the garments need to be more closely aligned to the chakra system. For example, the hexahedron (cube) is historically associated with the root/base/grounding chakra and therefore she feels the garment should be designed to be worn over this area of the body to enhance transmission of each

Platonic solid's/Chakra's embodied energy. Coincidentally during the design process, I explored aligning garment with chakra position, and extensively toiled hexahedra as dungarees, aiming to embody the base/root chakra through a grounded and practical item of clothing¹⁵⁴. Helen elaborates:

...to make it wearable for me for longer periods of time I would really need different elements to say here's my grounding, here is the pillar of light, and here is some kind of anchoring, you know, it would really need to go through all the chakras because the impact is so strong.

From this point the interview consists of Helen's suggestions for how I might develop the Alternative Regenerative Clothing for balancing energy and enhancing wellbeing, rather than her particular experience, and for this reason I have decided not to include this narrative in the analysis¹⁵⁵.

6.3.4 Alex

Alex is a confident and outgoing individual; she has a background in psychology and has worked with individuals on the autistic spectrum. She diversified to the hospitality sector working at renowned restaurants in London and Scandinavia where she met her chef husband. They now work together in a high pressure and busy environment running their own restaurant in rural Northumberland. Alex has no children and lives in an apartment above the restaurant with her husband and dog.

The face-to-face interview lasted 23 minutes and took place one afternoon in the restaurant garden. The transcription has 4245 words. From the interview 15 super-ordinate themes were developed: *Intuitive Responses, Pre-Conceived Ideas, Satisfaction, Unconventional, Practical, Confidence, Frustration, Sensorial, Enjoyment, Opportunity, Nostalgia, Nature, Questioning, Security, Transcendental* (figures 99 & 100).

Alex's experience was a logical, positive, and measured, as evidenced in her interview transcript¹⁵⁶, pie diagram, and symbolic fingerprint whereby responses generally sit within the mental dimensional quadrant of wellbeing (figure 100). Pie diagrams are small and quite uniform in size suggesting a balanced pragmatic approach to the study.

¹⁵⁴ Chapter 4 - Actioning the ARC, figure 66

¹⁵⁵ Her full transcript can be accessed in Vol II, Appendix B, p. 76 – *Helen – interview transcript*

¹⁵⁶ Her full transcript can be accessed in Vol II, Appendix B, p. 138 – *Alex – interview transcript*

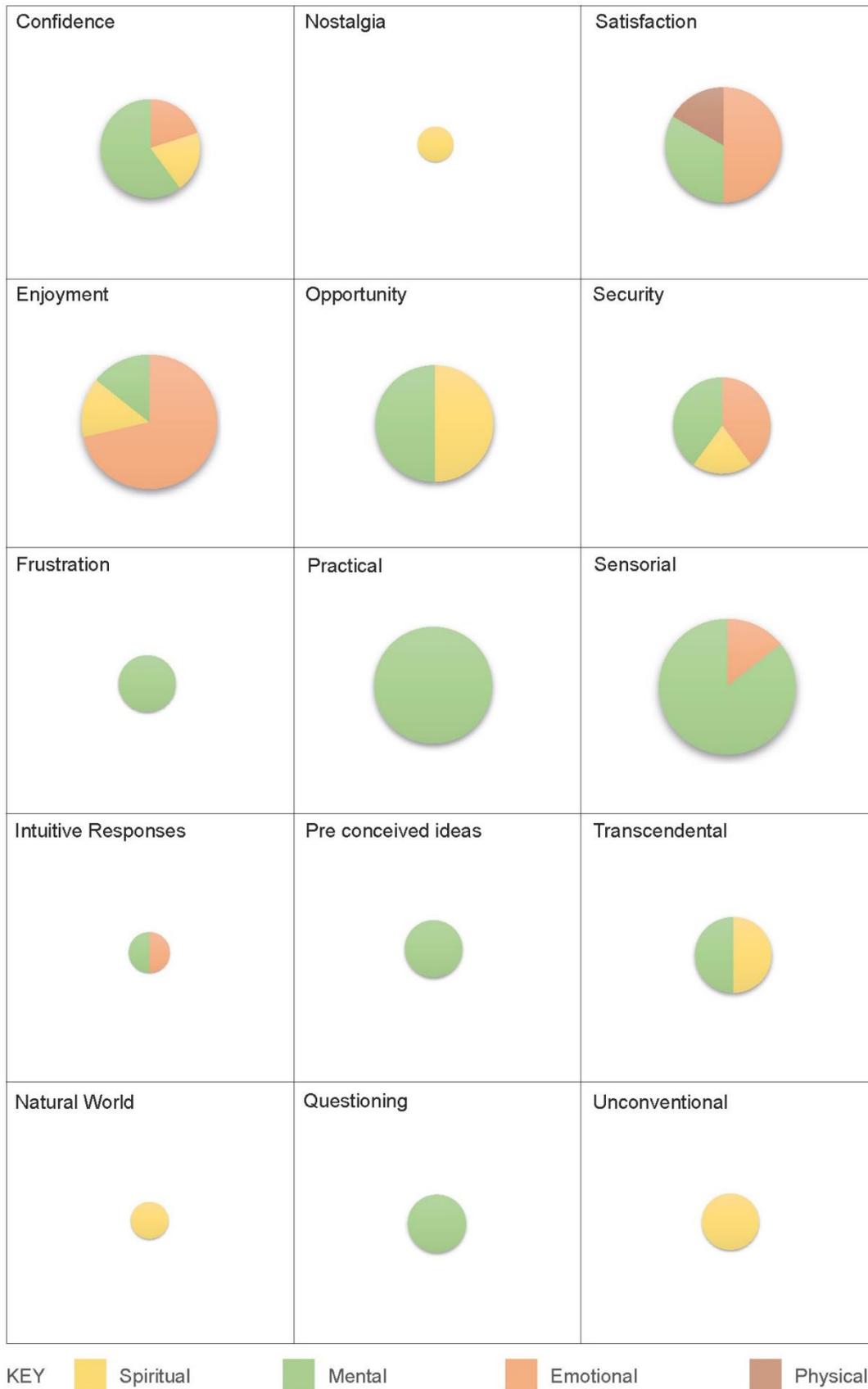


Figure 99 Alex's 15 super-ordinate themes visualised through the four dimensions of wellbeing

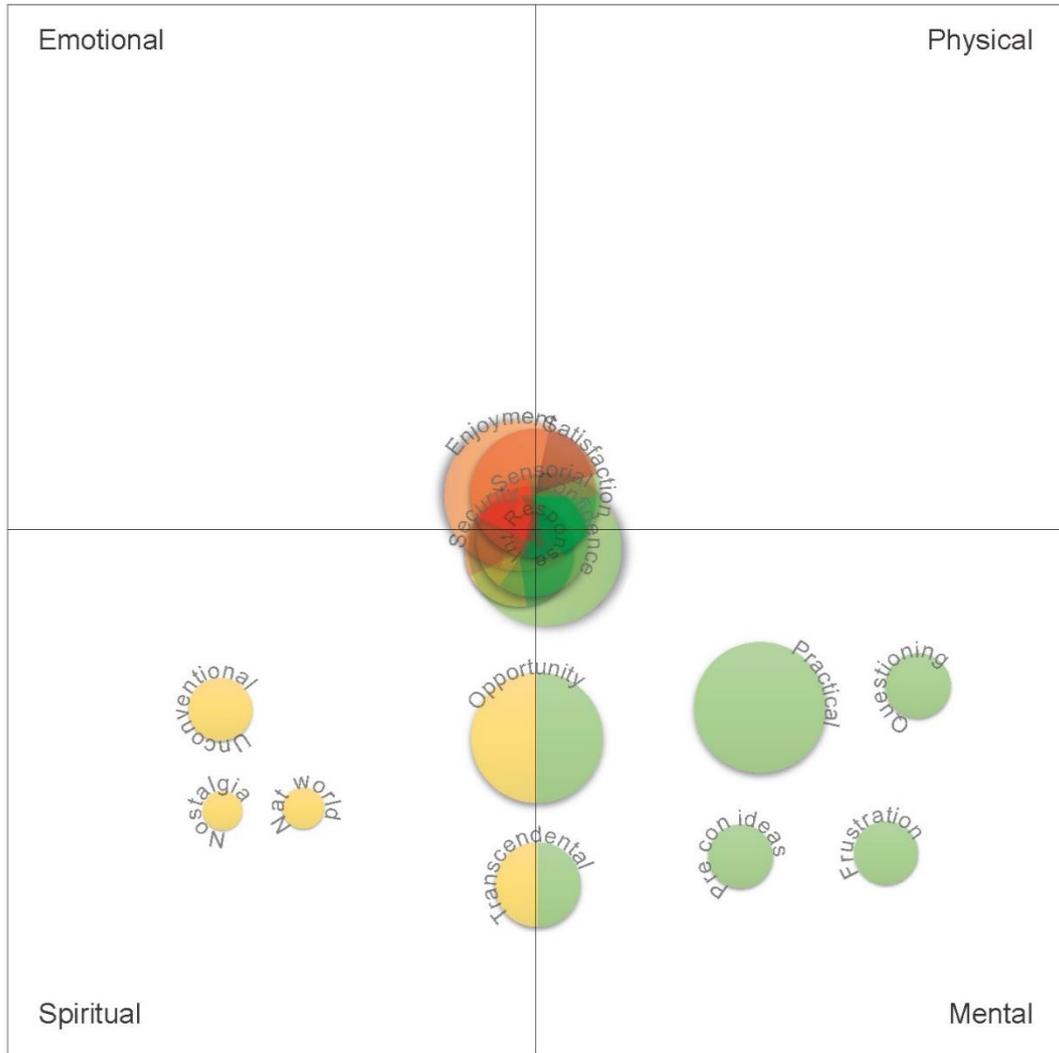


Figure 100 Alex's symbolic fingerprint – a scatter plot overview of her wellbeing experience

She describes, in a rational way, the *Sensorial* effects of freedom and restriction generated within her by the hexahedral jacket, perhaps embodying security and protection, providing somaesthetic liberation:

“I definitely like things that don't let air in, but then let me move around because sometimes when things are very airy and floaty you get cold and drafts, but when you've got cuffs and like sort of trouser legs that stop, then you can move around and your free, but then you don't have the draft I do like that, I'm like a little Old Nana, I wear like vests under things so that there's no possibility of flesh getting out” (D86).

She enjoyed (*Enjoyment*) the dodecahedron gloves¹⁵⁷ but seems reluctant to go deeper:

“I really love the mittens... I really liked them (D32)... you sort of stop thinking about what you're wearing and just wear them, I suppose, which is you know, I really enjoyed (D76)... I just, really enjoyed them... I just thought they were quite fun” (D124).

¹⁵⁷ Vol II, Appendix B, p. 42 - *Garment preferences*

The gloves generated positive emotions for her of enjoyment, fun and attraction, which I have interpreted and positioned within the Emotional wellbeing quadrant (figure 100). She spoke about the gloves more than any other garment¹⁵⁸. They provided her with an opportunity to access others in ways previously untouched. They gave her *Confidence*, *Opportunity*, and *Enjoyment* by providing a vehicle for communication:

“...they're very quirky and people commented on them...one of the housekeeper's said “what have you got on your hands”, I said “my gloves”, she said “oh they're a bit weird”, and then I talked to her about the shapes of what they were and, you know, they were a bit of a conversation starter as well...it's nice because then you're obviously interacting with people discussing things that you wouldn't normally have a conversation about, trying to explain Platonic states to one of the housekeepers, it's quite a sort of fun afternoon we had (D40).

I noted in my diary that day that I had a very productive day, and I did feel quite sort of like - you can do anything now, you know, I've got my gloves on”(D38).

She continued to speak of *Enjoyment* when encountering the large and voluminous icosahedral pocket bags within the pinafore, perhaps a deep and secret repository. I was able to access her inner lifeworld a little when she associated the sensations generated by the pockets with loving nostalgic memories of her grandmother:

“I think I love clothes with secrets...when you know something about the garment you're wearing that other people don't know I really find a lovely thing, but I think that's because when I was little my grandma used to sew little embroideries in our clothes so you always knew that on the hem of your skirt you had, you know, a horse or something hidden”(D56).

See continued to elaborate on the pockets and the *Satisfaction* perceived by interacting with the icosahedral pinafore:

“I just loved the pockets though; they were very satisfying... I had a very again productive day erm organising and trying to organise my life. So that was quite, again, a positive thing wearing the clothes (D52)...at the end of the day, I sat down, and I sort of had a glass of wine and thought well I've achieved a lot today, and that, that was, you know, that's always a really nice feeling isn't it... I've achieved something today...definitely helped my sort of well-being in that respect” (D66-68).

The tetrahedral shirt had a contrary and *Frustrating* effect and did not embody wellbeing:

“I actually thought when I first looked at all the pieces that was the piece that I would like the most, but I found it a bit more challenging (tetrahedral shirt) (D114)...it wasn't quite, it didn't quite, it didn't work for me. I wanted to wear that to do service one night and then I just thought I'm going to set myself on fire, all the fabric and candles and things...so I thought I better not, but I just couldn't get on with it” (D114-116).

Overall, most of the garments embodied a sense of wellbeing for Alex in that they allowed her freedom of movement. She reflected and noted her thoughts and comments in the mood diary provided but omitted to include any photographs¹⁵⁹, she felt that the instant camera:

¹⁵⁸ Vol II, Appendix B, p. 38 – *References to garments within the interview*

¹⁵⁹ Vol II, Appendix B, p. 161 – *Alex's Mood Diary*

“...didn't have the spontaneity there... I obviously wrote it retrospectively at the end of a day. So, I think if I had carried the camera around with me at all times, I would have probably been a little bit more inclined to take a photo here and there, but because I was writing it retrospectively, I felt if I went back and took photos of my feelings at the time it wouldn't be as authentic.

Writing a mood diary over the last couple of days has made me quite reflective. Not something I do as a rule but have found myself thinking about how I am feeling much more often. This could be just as much to do with the garments themselves as the whole process. I've loved wearing the garments because they all allow movement and give me a sense of freedom not constricting at all” (Vol II, Appendix B, p. 161).

6.3.5 Joy

Joy's background is in fine art, print, textiles, embroidery & fashion. She worked as a self-employed freelance textile and print designer for several high-profile interior brands before entering teaching, and now works as a full-time lecturer. She has a family-centred life and lives with her husband and three adult children in Derbyshire. Joy hobbies include gardening, decorating, and visiting flea markets.

The face-to-face interview lasted 60 minutes and took place one afternoon in the college where she works, Joy was open, generous, and eager to share her inner thoughts and memories with me, reflections often generated a tearful response. The transcription has 8420 words. From the interview 22 super-ordinate themes were developed: *Enjoyment, Inexplicable, Experimentation, Security, Connection, Part of Something Bigger, Empowerment, Pre-conceived Ideas, Positivity, Nostalgia, Commentary of Others, Garment Interaction, Symbolic, From Another Time, Comforting, Unconventional, Elevated, Frustration, Transcendental, Fascination, Questioning, Attraction* (figures 101 & 102).

Her symbolic fingerprint imparts a diverse and generous spread of bubbles both in size and in four-quadrant positioning, dominated by conscious thought (Mental).

Joy wore the clothing during her day-to-day work teaching textiles and art foundation studies to further and higher education students, this interaction frequently informed the narrative of her experience as she shared the concept with learners.

The garments were posted; upon opening the box, concentrated aromas from the natural plant-based fabrics were released, this evoked deep memories and emotions for Joy, and formed a theme of *Nostalgia*:

“... almost immediately I was remembering my Nan... opening the box just transported me to her cottage... smell of the garments, that sort of starch, sort of crisp smell... I went back to her cottage and that filled me with lots of lovely sort of memory and warmth and comfort and she was a very strong lady... I think the white garment (tetrahedral shirt) sort of really, you know, transported me back to that and the white linen in her house (J20)... It's something more than that, and I think that's the connection back to the Irish linen at Nan-Nans. Although she wasn't such a wealthy lady at all and had struggled, the fabrics that she had in her home were very, very special, top notch, and she took such a pride in having those, you know, obviously washing them, laundering them, and presenting them, and I think that's the same with the garments in the box (J295)... reminding me of how cloth that we wear can evoke so strong a memory (J297)... I'm drawn to garments like that, connections to others passed” (J263)

Joy lovingly talks of warmth, comfort, connection, memories - all evoked by the fabric's characteristics. As noted, one of the Eudaimonic Design Framework's principles is to adopt natural, plant-based regenerative materials in their purest form, close to their organic origin, as these have biophilic properties and proven stress-reducing sensorial effects (2.6).

A confident and questioning dresser with an experimental style, drawn to the aesthetics of Japanese design and the power clothing fields. She acknowledges how clothing acts as a communicator, creating a platform of recognition and intrigue, she openly shares her thoughts and observations with me:

“I've worn some very unusual clothes that I know have caused people to sort of comment loudly, or whispering, and I like that, I like that, I like the fact that clothes can do that, garments can do that (J36)... almost teases them (J38)... I sort of get a chuckle from that (J40)... people not knowing where I've actually got them from either, where they come from, who's made them, whose designed them...where are those from, who were the originators and I've really felt that this collection of garments has really sort of elevated that question (J42)... I just felt that I was wearing something that was unique, and, and erm again that idea of people, sort of, wondering “oh, what is that about, where's that from”?(J229). I like clothes that evoke some kind of conversation (J34). I could do with another fortnight to sort of question it”.

Attraction was a theme for Joy that evoked calmness and enjoyment, responses within this theme were attributed mostly to the spiritual and emotional quadrants. She has a busy work and home life and reiterated this on several occasions throughout the interview, she comments that the garments appeared to be asking her to slow down. I would argue that the sense of calm, and mindfulness to slow down, could relate to the spaciousness of the garments and the embodiment of *Ma*¹⁶⁰, a principle of the Eudaimonic Design Framework:

“My life is busy and yet wearing the garments made me feel that I could slow down and enjoy wearing them (J293)...(they made me feel) very kind of calm, and slow down Joy, and whether that was because it's white (tetrahedron shirt), not sure, I know that when I was wearing it, it felt, certainly felt special. The black piece (hexahedron jacket), that

¹⁶⁰ *Ma* in Japanese philosophy relates to *freedom* in all aspects of life; defined as a deliberate pause, an interval, a negative space filled with nothing but energy, feeling and respect. When this principle is applied through clothing design, it could enhance the way we think and how we engage with our surroundings. Within clothing the concept of space around and space between could convey a sense of simplicity, tranquility, stillness, and wellbeing. *Ma* also allows body coverings to be non-contouring, versatile and comfortable (2.6)

made me feel very sort of content either side of days that are sort of very, very, very busy” (J241).

Joy had a particular *Attraction* to the hexahedron jacket and comments on being drawn to cubes, she feels at one with the piece, perhaps creating an attachment to it by leaving “remnants of thread on it” (J113). She spoke about this item the most during the interview¹⁶¹:

“I’m just drawn to it. I like drawing cubes. I like, you know repeating them. I don’t know, it’s just a sort of thing that I’m drawn to more than other sort of shapes (J109). I actually forgot I’d got it on, I wore it over one of my own dresses (J111)... I’m not a big fan of my arms so the idea of it, sort of, kind of enveloping my arms and it felt comfy (J123)... I’ve warmed to that more than any of the other things (J127)... I felt you know, very, very special in it because it’s so unusual (J229)... I immediately was attracted to the quality of the fabric and the shape that unfolded” (J288).

The progressive cube repetition of the sleeve provided her with a sense of freedom, space, movement, and grounding¹⁶². She further elaborates on the piece as if trying to rationalise its deeper embodied purpose:

“There was a sort of element of something else happening as I pulled it on one shape was sort of almost converting into another shape, don’t know (J125)... I was sort of, you know conscious that there was a lot going on here that I couldn’t see (J99). I suppose it’s a shape that sort of doesn’t define curves, you know I could get into it and still it be a box and I suppose it’s that idea probably of not wanting clothes that would define or emphasize my particular shape, and I think that shape doesn’t do, I can get in that, and it still be a square or a cube (J107). I like garments that are androgynous (J259), and don’t define gender necessarily (J263).

Garments that were non-contouring, and spacious enough to provide a disguise resonated with Joy providing feelings of *Comfort, Security and Enjoyment*:

“The white garment (tetrahedron shirt), that’s, that’s the one that I have found probably the most enveloping (J48)... I’ve worn that on several days, I’ve felt that that’s created a huge comfort because it’s enveloped me (J50)... wearing that, and that idea of it being almost like a sort of kind of a facade, you know, almost like a protection (J241)... I enjoy garment shapes that cover and almost disguise my shape (J292)... voluminous shapes where my body size isn’t questioned, I’ve always enjoyed wearing larger sort of clothes” (J22).

*Garment Interaction*¹⁶³ was Joy’s fundamental theme, she spoke a lot about how she wore and styled the pieces, the fabric, and colour:

“I like the contrast between light and dark so if I’m wearing black, I might pop on something white (J119)... I was very pleased that the garments were black and neutral, and again my kind of, sort of palette (J22)... the quality of the cloth, and the differences in the cloth (J299).

Keywords¹⁶⁴ of special, complex, comfortable, connected, and secure were used frequently in relation to her interaction experience with the hexahedron jacket, tetrahedron shirt, and dodecahedron glove.

¹⁶¹ Vol II, Appendix B, p. 38 – *References to garments within the interview*

¹⁶² Grounding – a key spiritual function of the hexahedron, reconnects energy to earth and nature. Refocusing. Removes tension and eases physical stresses. Good for work (figure 57).

¹⁶³ Garment Interaction – generalised comments on how participants wore and styled the clothing

¹⁶⁴ Vol II, Appendix B, p. 39 - Keywords occurring during interviews in relation to a particular garment experience

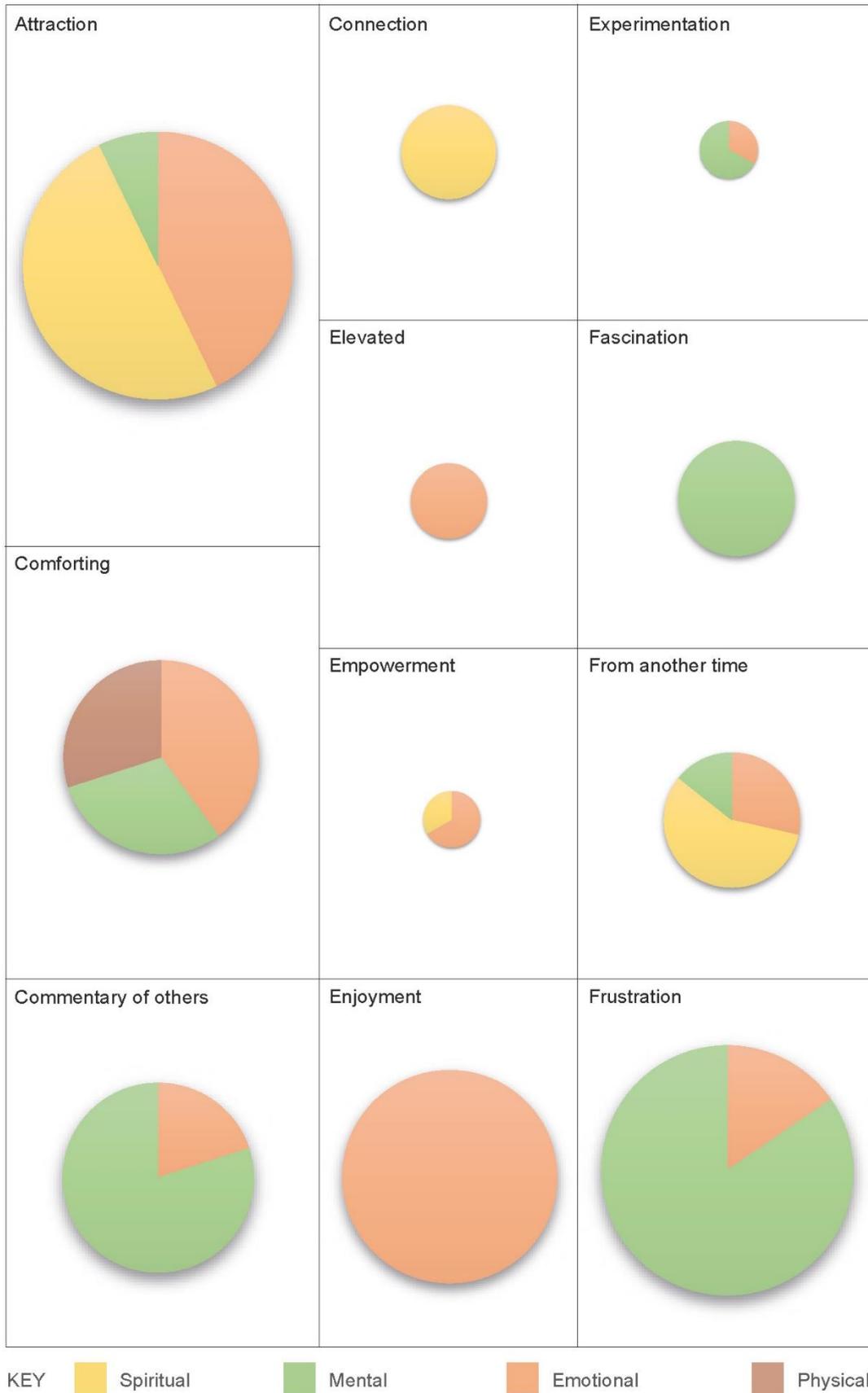


Figure 101 Joy's 22 super-ordinate themes visualised through the four dimensions of wellbeing

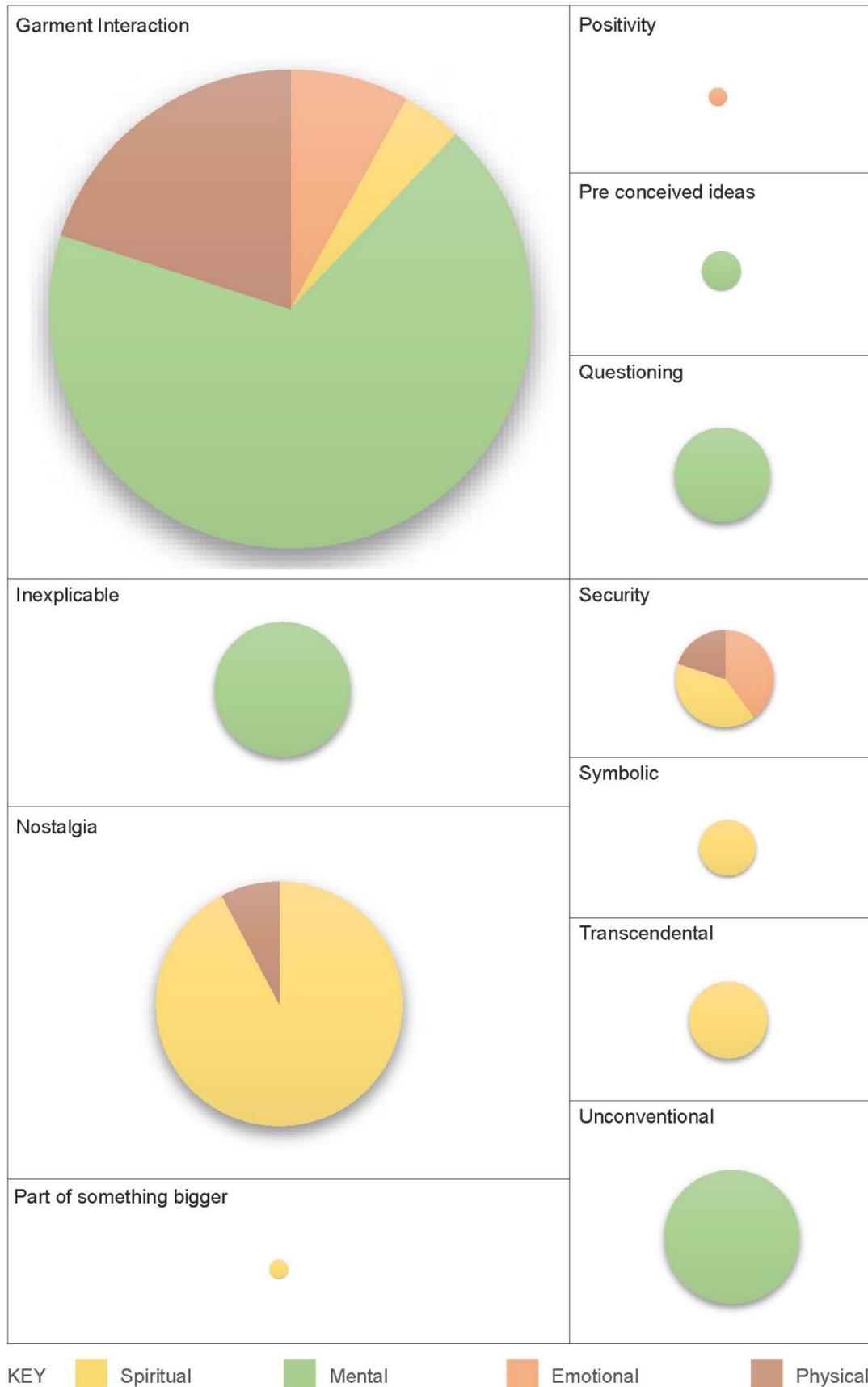


Figure 101 (cont.) Joy's 20 super-ordinate themes visualised through the four dimensions of wellbeing

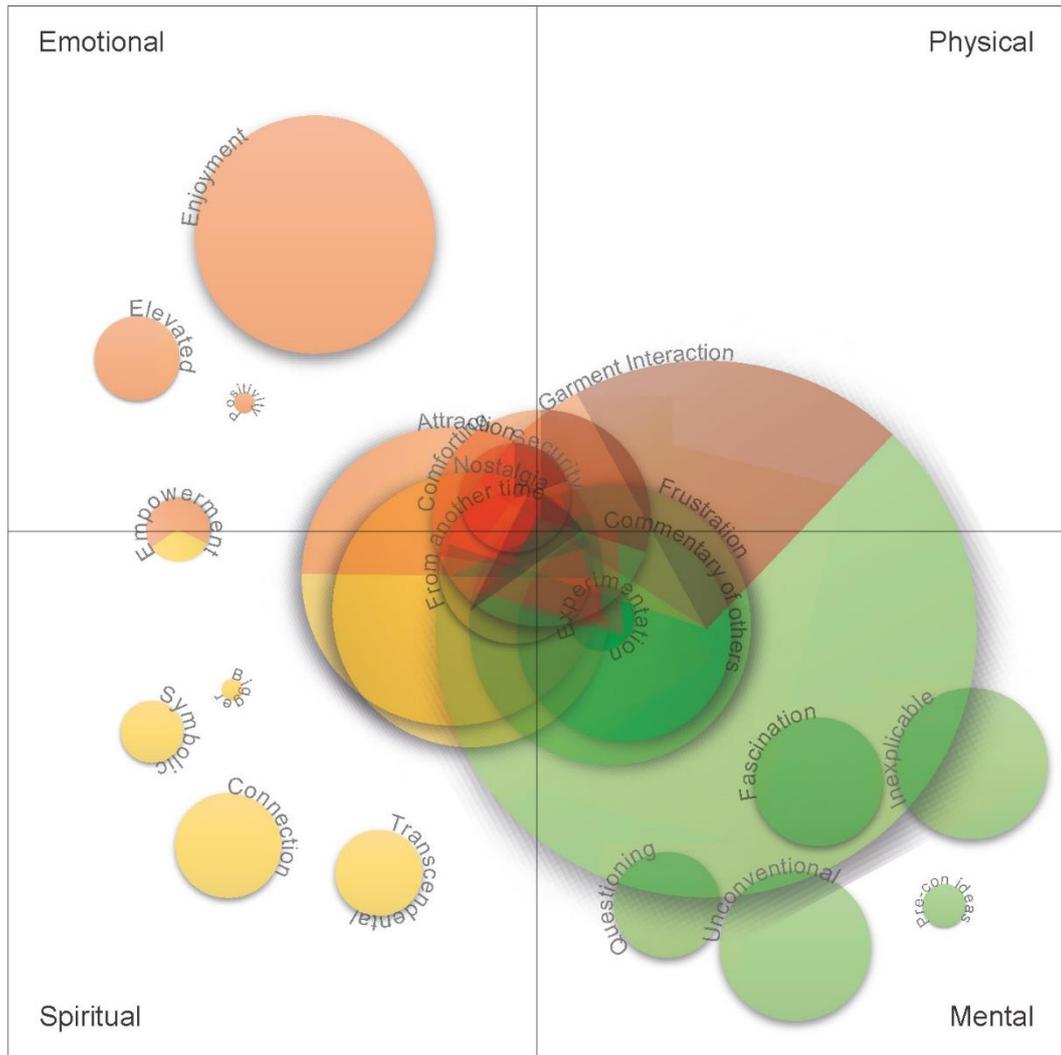


Figure 102 Joy's symbolic fingerprint – a scatter plot overview of her wellbeing experience

The embodied narrative of the clothing may have provided her with a space for reflection - *Ma* (footnote 34); she closes her interview with a powerful dialogue:

“My life is busy and yet wearing the garments made me feel that I could slow down and enjoy wearing them, and I mean again, I'm getting really emotional, but my life is hectic, it's really, really, full on and I suppose the only thing that I've got, a bit like we were talking earlier is my job, which I love, I love when I'm in the studio, my clothes, my continued interest in what I wear and my family, and they're very distinct things, and I suppose, I'm getting kind of pretty emotional about it because I think that what I wear no one ever in my family has ever sort of stopped me from being who I am through what I wear, you know, and I've worn some unusual things and actually celebrated that in me, and I think that's what these shapes have brought that back, that you can actually wear very unusual shapes and still be Joy” (J293).

Joy's experience provided a rich narrative centred around clothing, textiles, memories, and identity. Connection, familiarity, and respect for fabric, craft, and design was conveyed and reiterated. She felt confident and comfortable

interacting with the mood diary a familiar tool for her, recording more rich narrative¹⁶⁵:

At work: another day in the 'hexahedron' jacket and gloves. Feeling positive and 'dressed for the day'. Wearing black is a daily event for me and I returned to wearing this jacket with lots of positive energy and confidence.

6.3.6 Safia

Safia is involved with alternative energy practices including yoga, qigong, reiki, and family constellation counselling, which embraces relationship therapy, trauma, and health issues working between Northumberland and London. Keenly interested in fashion and young designers she is a member of the British Fashion Council Trust. Safia practices sustainability and regeneration in all areas of her life and is looking to diversify into bio-dynamic farming and regenerative agriculture. She lives with her boyfriend in a cottage on the Northumberland coast.

The face-to-face interview lasted 35 minutes and took place one afternoon in her garden. The transcription has 4234 words. From the interview 20 super-ordinate themes were developed: *Empowerment, Positivity, Nostalgia, Security, Negativity, Scale/Proportion, Garment Interaction, Fascination, Transcendental, Practical, Enjoyment, Clarity, Behaviour, Connection, Commentary of Others, Energised, Therapeutic, Attraction, Heightened Experience, Grounding* (figures 103 & 104).

Safia's experience was predominantly positioned in the Emotional and Spiritual quadrants of wellbeing (figure 104). She openly shared her thoughts, feelings, and beliefs, and how she thought the Alternative Regenerative Clothing may have impacted these. Her experience was uniform with several bubbles of similar size (figure 104).

She enjoyed (*Enjoyment*) interacting with the icosahedron pinafore, especially the sensorial effects of the deep icosahedral pockets: "I enjoyed playing, putting my hands in the pockets a lot, I really enjoyed that (K80). There was something quite childlike wearing it as well, I don't know if it was wearing something bigger and being able to put your hands in your pockets fully" (K86). This particular piece also embodied feelings of *Clarity* for her:

"When I put the pinafore on, I had like this mental kind of moment of clarity (K12). I was able to see it, as opposed to be it, if that makes sense, but then also see the mental patterning of how it had been a cycle and the clarity that came with that, and the clarity of making the choice over you know, do you want to get angry? (K16). I could see this kind

¹⁶⁵ Vol II, Appendix B, p. 218 – *Joy's Mood Diary Notes and Imagery*

of mental spiral that I could get into when I was doing it. I was able to see my patterning and my mindset more, so that was interesting, I found it quite comforting wearing it (K78), I felt quite grounded (K76), and there was a sense of like safety and being enclosed" (K86).

During the interview she spoke about the dodecahedron gloves the most¹⁶⁶ finding them enjoyable (*Enjoyment*) and *Practical*. "I loved the gloves actually; I really loved the gloves (K48)...and I found them also very easy to use as well and to wear" (K28). They generated *Therapeutic*, *Grounding*, and *Transcendental* sensations for her: "I was like wowzah these gloves are amazing (K46)... it was brilliant because I had the gloves on, but I just found that I was much calmer" (K44). They *Empowered* her with feelings of safety, grounding, calmness, eloquence, and patience... I was just able to be eloquent about what I believed in a way that wasn't insightful to him (her brother) (K44). They also generated *Nostalgic* childlike interactions:

I found something very childlike in them like I went back to something to do with my inner child, I was just there fiddling with them, you know as children do, kind of often, so that was quite nice actually (K38). when the strings came off it felt like there was a bit more freedom with them and a bit more adult... so that was that was good, too (K40)...I wrote down quite a few little notes about the gloves because they were the first ones I went for...I did feel like weirdly my skin on my hands was softer after I took the gloves off (K42)... I really liked them (K28)...in a weird way" (K36).

Similar therapeutic, heightened, and transcendental sensations were echoed by other participants interacting with the gloves (6.4).

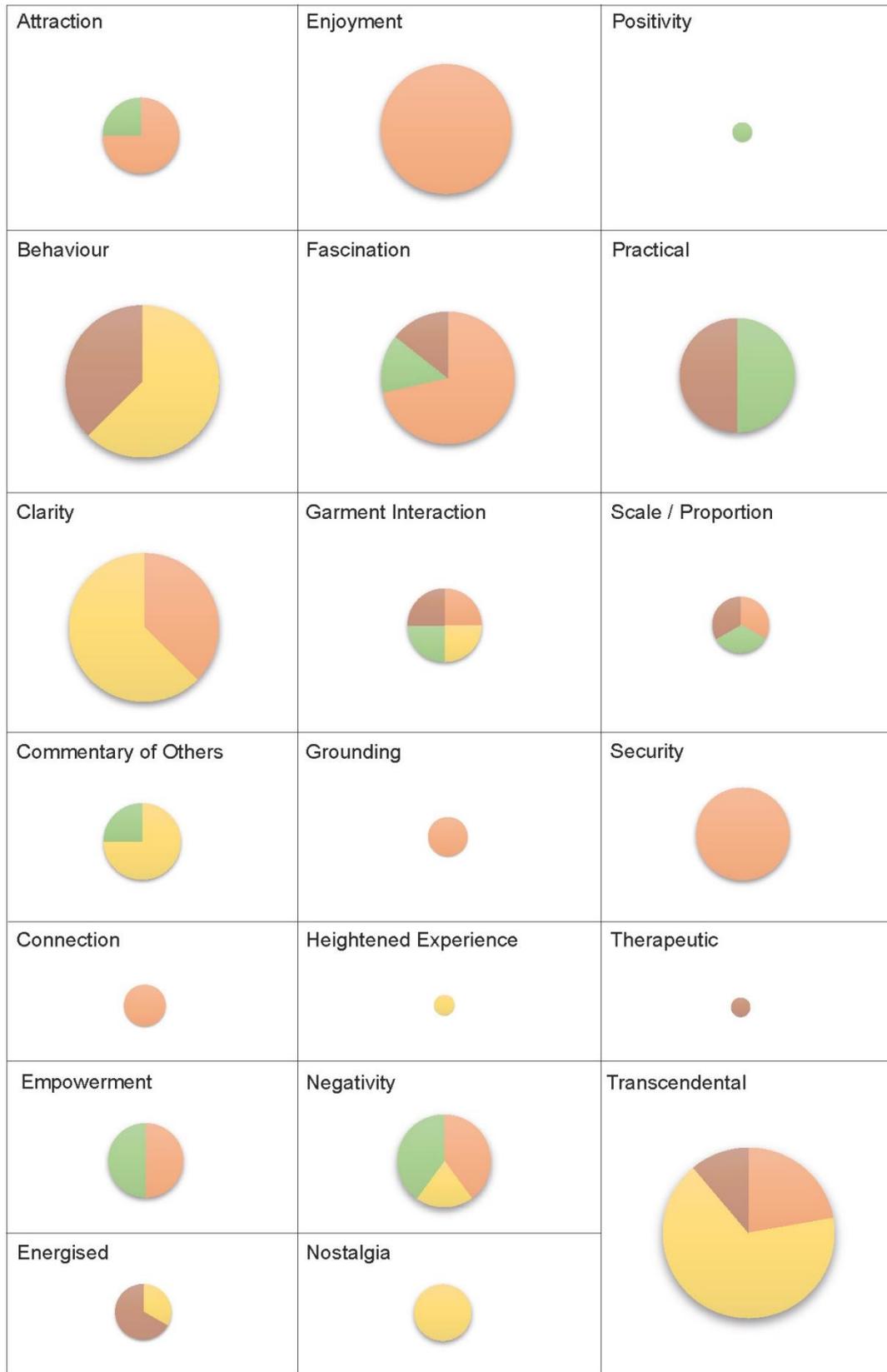
She felt *Connected*, *Empowered*, and *Energised* interacting with the hexahedron jacket; the sensations of restriction and freedom it created seemed to embody positivity:

It's funny because the shape's so different from something I normally wear but I didn't really feel that when I was wearing it (K94) It did feel like it gave me a burst of energy, I could just get on with things, and do things, that helped me focus actually (K96) I enjoyed wearing that, I had that on a few times, I liked that kind of almost like protection around the neck. I felt like it sort of gave you almost like gravitas, kind of made you sort of stand up tall (K92). It makes me sort of feel more confident and assertive (K100). I enjoyed, I very much enjoyed wearing that, it felt nice (K119).

She appeared concerned, defensive, *Fascinated*, and annoyed with the *Commentary* and opinions of *Others* whilst wearing the clothing, in particular an elderly relative:

"I had the pinafore on, and she'd be like 'I don't like that', but nobody's asking you, you know, it was just fascinating, it was fascinating, what it showed was actually the amount of judgment around, like around the zone within which you inhabit, that was really fascinating to me (K127). It's fascinating to kind of see the mental state of passive aggressiveness almost coming out towards you with regard to an outfit that they don't comprehend, or like (K129). Maybe it's about like translating them in a way that they're acceptable mentally to somebody who doesn't understand the whole concept" (K131).

¹⁶⁶ Vol II, Appendix B, p. 38 – *References to garments within the interview*



KEY  Spiritual  Mental  Emotional  Physical

Figure 103 Safia's 20 super-ordinate themes visualised through the four dimensions of wellbeing

She made several general observations about her particular interactive experience, she felt it to be:

“...some kind of process going on in the system, in the body, and the mental state whilst wearing them (K111)...to kind of move something, and then be more clear and one can definitely feel like some kind of process... I think it definitely helped with clarity (K113)... Yeah, almost like something's moved within oneself (K115). I think I've got a lot more energy in general (K90)...I decided to do Qigong again for the first time in ages. So, that was kind of interesting that I decided to go back into that after a really long time actually” (K98).

Safia’s engagement with the mood diary was minimal¹⁶⁷. Perhaps as with some of the other participants independent creative journaling, and my presentation of such (figure 82), could be interpreted as an alien and perhaps intimidating activity outside visually creative domains.

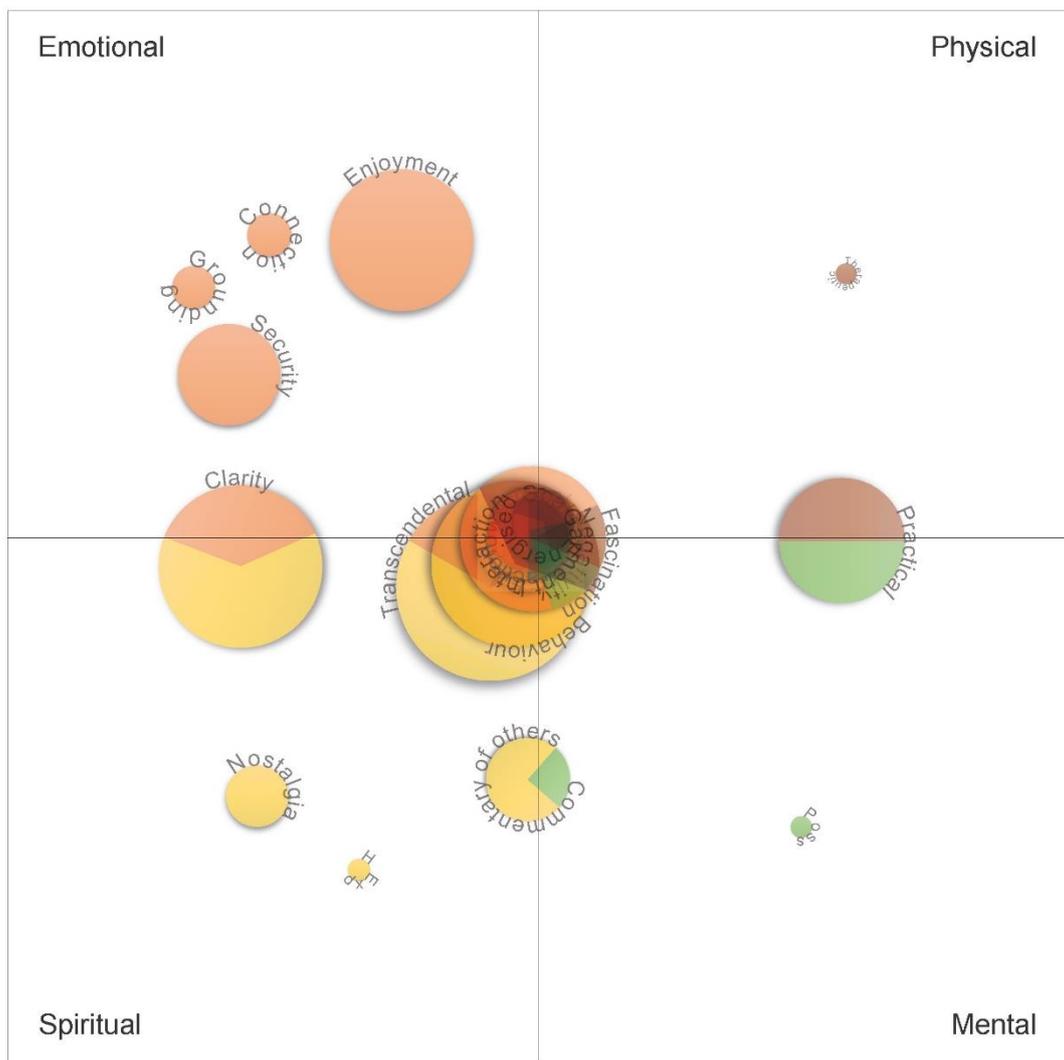


Figure 104 Safia’s symbolic fingerprint – a scatter plot overview of her wellbeing experience

¹⁶⁷ Vol II, Appendix B, p. 250 – *Safia’s Mood Diary Notes and Imagery*

6.3.7 Naomi

Naomi works for an Architectural practice in London. She has a keen interest in sustainability and focused her architectural thesis on regenerative lifestyle approaches using industrial hemp. She tries to live mindfully doing what she can to reduce her personal carbon footprint and is a member of the sustainability team at work. She enjoys keeping fit by dancing and going to the gym and has competed in several powerlifting competitions. She also enjoys reading, embroidery and visiting art and design exhibitions. She shares an apartment with her boyfriend in South-East London.

Garments and accessories were packaged and posted to Naomi in the same format as Joy (6.3.5). After unpacking the items, we had a zoom call to clarify the process (Chapter 5). During her interaction period she worked from home due to restrictions imposed by the Covid-19 pandemic.

Interestingly she chose to wear the hexahedron jacket for her virtual interview, the only participant to interact in this way. Naomi approached the study with a *phenomenological attitude* almost *bracketing* herself, by putting aside her own beliefs and pre-conceptions and opening herself to unfamiliarity stating: “I’m already psychologically in a space where I’m not confident that I’m coming across as my best” (N51). The interview was relaxed, yet focused on her interactive experience with the clothing, it lasted 37 minutes and took place one evening online. The transcription has 4810 words. From the interview 20 super-ordinate themes were developed: *Enjoyment, Negativity, Inexplicable, Sensorial, Experimentation, Powerful, Confidence, Mindful, Security, Connection, Playful, Part of Something Bigger, Uniqueness, Pre-conceived Ideas, Positivity, Nostalgia, Elevated, Commentary of Others, Garment Interaction, Heightened Experience* (figures 105 & 106).

Naomi’s pie diagrams and symbolic fingerprint (figures 105 & 106) suggests she had a rounded experience having representational bubbles in all dimensions of wellbeing, and several overlaid at the dimensional intersection, the largest being *Enjoyment* and *Garment Interaction*.

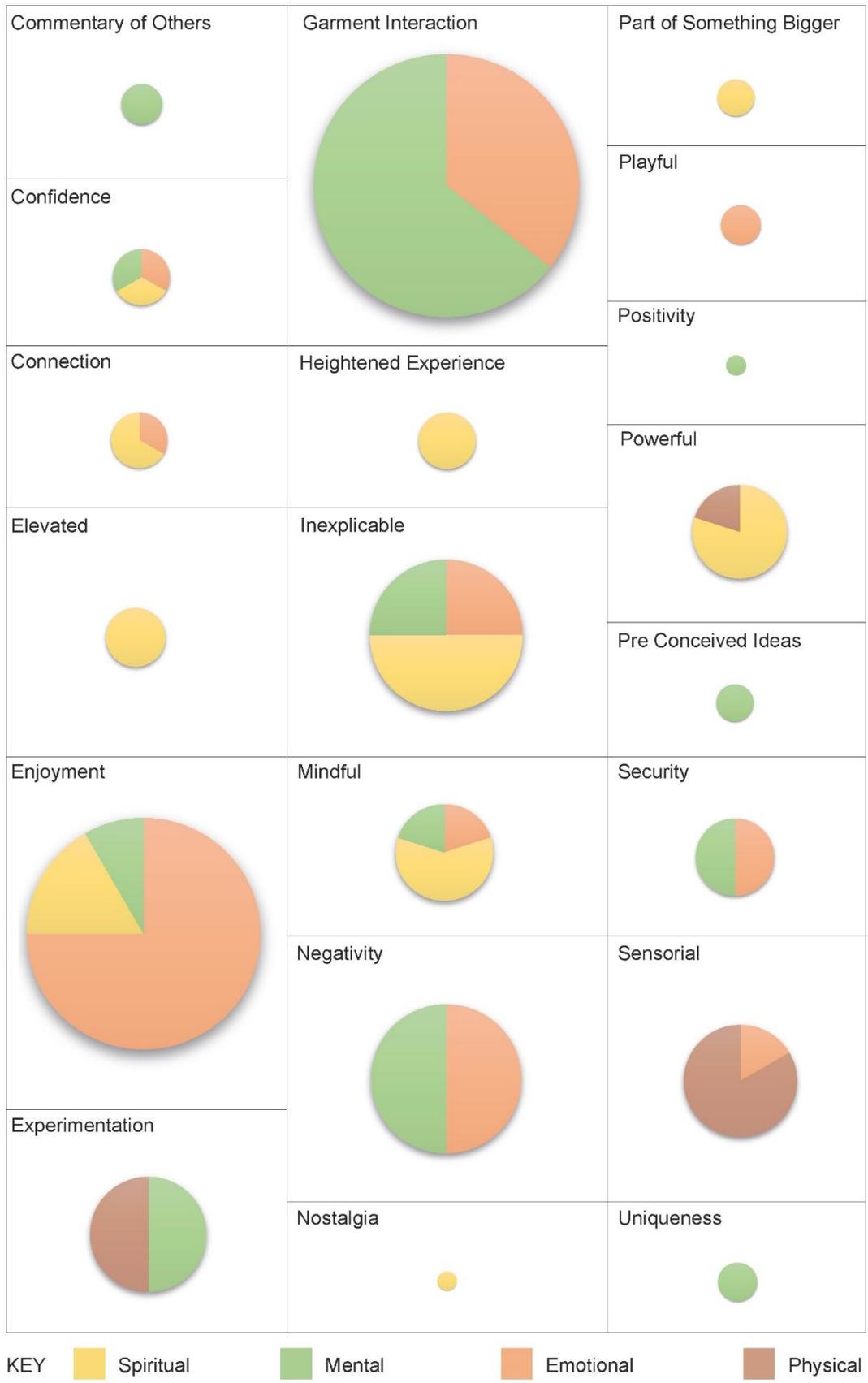


Figure 105 Naomi's 20 super-ordinate themes interpreted through the four dimensions of wellbeing

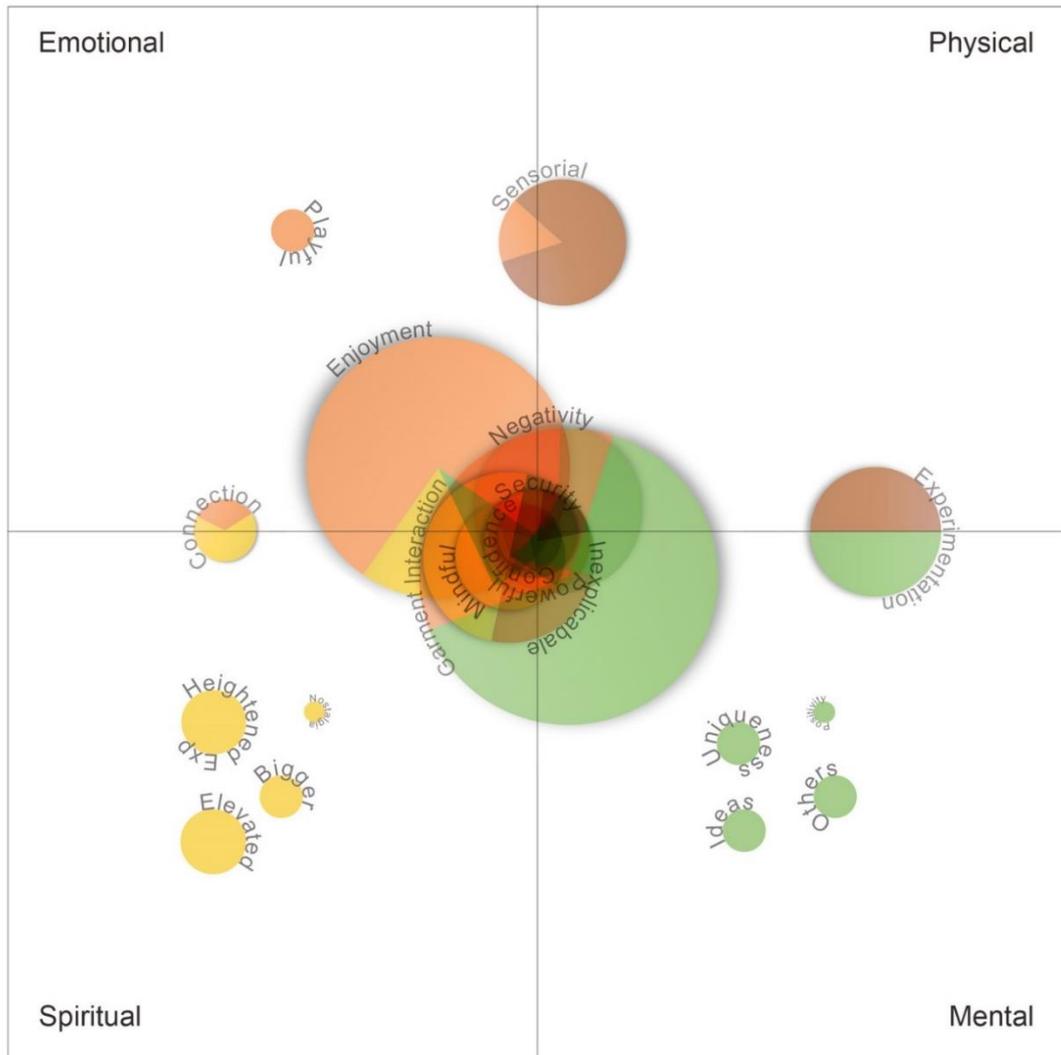


Figure 106 Naomi's symbolic fingerprint – a scatter plot overview of her wellbeing experience

During the interview she spoke about the hexahedron jacket more than the other garments¹⁶⁸ and selected this piece as her incentive for taking part in the study¹⁶⁹, and as noted, wore this item at her interview.

She *Enjoyed* the experience of interacting with the hexahedron jacket:

“I really loved the neckline on this one...when you went out you could do it up and it was like a scarf in itself (N30)... I really liked ‘them’ (the sleeves) (N33)... I’ve just like enjoyed the fun, the fun element of this sleeve, whenever I walk past a mirror, I’d never do normally, I just sort of stop to look at them, and they just make me smile because they were that bit different” (N93).

She comments on the restrictive neckline and voluminous sleeves interpreting this sensation as comfort and fun – a positive emotional wellbeing experience. She continues discussing the jacket, perhaps almost inferring that she was disappointed that no one else saw it, perhaps she wanted to share her experience with others :

¹⁶⁸ Vol II, Appendix B, p. 38 – *References to garments within the interview*

¹⁶⁹ Vol II, Appendix B, p 42 – *Garment preferences*

“But when you're outside, no one else saw it because erm it's winter, I was wearing a jacket over the top of it... my boyfriend's been the other person who's been able to see it, but I've enjoyed that private experience (N89)... it was purely for me, and I just was happy in it” (N39).

She also felt *Powerful* in this piece: “it's quite, erm quite powerful that you want to sort of, not wanting to refer to them as ‘wings’, and don't feel like I can fly as such, but I don't know there was just a strength from it” (N30). The sleeves generated *Enjoyable* and *Powerful* sensations for her, perhaps the freedom of the progressive cubes in the Phi ratio working in one with her own somatic movement gave the feeling of lightness.

The icosahedron pinafore also generated feelings of *Enjoyment*, and *Playfulness*: That one was fun to play with...fun to sort of try out different shapes (N71) I felt slightly fun, and slightly mischievous, I don't know why mischievous I was smiling the whole time I was wearing it, that I was conscious of” (N77). The voluminous loose piece with deep pockets, no restrictive balancing elements, and being a pinafore, elicited childlike sensations for her. Alex also had a similar observation about this particular piece (6.3.4).

The tetrahedron shirt produced *Negative*, uncomfortable, and unenjoyable feelings for her. She was concerned about how others might perceive her in a professional context:

“I actually didn't enjoy; I didn't feel comfortable in, I couldn't wear it over my head that almost felt too “KKK” (Ku Klux Klan) like to me... I had a couple of Zoom calls that day and because of the way it was ruffled, and I don't know if just because it's like sheer quality that's almost like a bed sheet on the screen it to me at least it came across almost like I was wearing a bed sheet ...I loved the cuffs, and I could see the cuffs, but they couldn't, and I don't know, I just felt a bit more uncomfortable and unprofessional... I wasn't coming across well through the screen and started sort of thinking, oh you know, what are they thinking about how I'm coming across, do they think I'm not making an effort, or whatever” (N47)

She also experienced negative feelings of being unconnected, too enclosed, and concerned with how others viewed her in the octahedron shrug:

“I knew that it was that sense of feeling too enclosed (N65)... I definitely didn't feel comfortable wearing that one out, I was fine wearing it inside the flat” (N69)... I really wanted to like it because I thought that at the beginning, I thought that would be the easiest piece to wear (N55)

The shirt (tetrahedron) and shrug (octahedron) had a negative effect on her wellbeing.

Naomi is a logical and practical creative nevertheless she found some of her somatic sensations *Inexplicable*. Speaking about the hexahedron jacket she's unable to rationalise her feelings: “I don't know what was going on (N30)... I

couldn't necessarily explain (N33)... I'm not hundred percent sure, but I just, I know that I have felt more positive, more confident wearing it" (N39). She also had a similar *Inexplicable* illogical experience wearing the dodecahedron gloves. This interaction had a profound effect of her, it was the first thing that she wanted to share with me at the beginning of her interview. She spoke about it enthusiastically, trying to justify and make sense of what she felt:

"They were the first item that I wore out of the house. I was wearing them on my way to the gym, and I remember just going up the stairs in the tube station, and I don't know, I just had this immense feeling of just sort of strength, it's sort of this feeling that I was safe, I could defend myself, I don't know why I felt it, it was just this very sort of, it was like everything was clear. There was no threat around me, so there was no reason for me to sort of feel that I think there was something, something, in the shape of the way that they were put together. It was like I was conscious that when I clenched my fists it was like this protective ball, this protective bubble, like I couldn't see my hand, but it was that sort of, I don't know it felt quite powerful still, you know, and you'd extend your hand, and this ball shape was still there. And yeah, it was just something that I was very conscious that I'd felt, and I wasn't sure why, but I just did" (N18)...I kept closing my hand feeling the ball and opening it back up again, and you'd still have the ball there. But yeah, it just felt quite a powerful, erm powerful, and strong item despite the fact that it was just, it wasn't even covering my fingers, you know, it's purely on the back of your hand which there's not really any point in necessarily you know, you usually think of the palm of your hand or your fingers" (N20).

She continued to experience the gloves on approximately 10 different occasions over the two-week interaction period:

"I kept wearing them, they felt really warm as well despite the fact that my fingers were exposed. There was definitely something with the material that I felt was retaining heat, so that was good (N28).

The dodecahedron (gloves) was the one which was in the public eye, you know, and I like the fact that it was different, you know, it was I don't know, there was just something about having something that was slightly unique, I've always liked. I've not been one that follows fast fashion (N89)

I combined the dodecahedron (gloves), and the hexahedron (jacket), I combined them, and I combined them on several occasions...I enjoyed pairing them together it kind of felt in a way that they should be" (N87).

Joy also made this observation and wore both pieces together. I would suggest that the differing shapes balance each other when worn together; metaphorically the cube (hexahedron) is associated with grounding and the dodecahedron with ascension.

She spoke more about the *Sensorial* and calming effects experienced through the fabric:

I really liked the smell of the clothes, and I don't know if that's just washing powder or the material itself, but there was something very calming about it. There'd be points where I would just, actually just, sniff, sniff the sleeve or sniff the gloves (N30)

Despite feeling unconnected and too enclosed wearing the octahedron shaped shrug she experienced positive sensations from the thermodynamic knitted hemp:

I was getting the smell from the fabric coming through which was calming, and I liked, I was just keeping everything off my face it wasn't getting too hot, it was quite cooling (N55)... the fabric felt lovely on my skin, and you felt warm, but without being overly hot,

you know it felt like you can regulate the temperature really well in it (N67)... Love it! So, the fabric and that's one which I have also just like stroked the garments on many times as well, really like the feel of the fabric (N69)

She felt at one with the hexahedron jacket, it empowered her with inner

Confidence:

I felt very, erm very calm and at peace (N30). I felt like I was making, almost like a statement, but privately, I don't know, you know when it's like an inner, an inner confidence that's coming through. So, it's not anything outlandish. I think almost in a weird way as well the fact that this wasn't something that my boyfriend just loved, you know he'd been sort of, "it's okay", you know, "it's a bit different", but I had felt really good in it, and I was like "I'm wearing this because I want to wear it, and I feel good in it", and that, that was just great, you know (N39)... I felt more confident (N87). I think there's also been something just quite nice again because of the smell and I found that calming and just feeling slightly enveloped, you know, as though you've been permanently hugged and I wonder if that extra bit of material kind of adds to that because it's more than you would normally have, erm, so yeah, I'm not hundred percent sure, but I just, I know that I have felt more positive, more confident wearing it" (N39)

The freedom and natural arm movement created by the sleeve's scale, proportion, and ratio, balanced with the security of the tight cuffs and collar could be creating these sensations by encouraging curved encompassing arm movements.

Naomi experienced positive somatic sensations during her interaction period that she attributed to the garments. Speaking of her overall experience at the end of her interview she comments:

I knew I was part of this kind of like experience of it, and that, that was like a greater thing, a greater being of me, and that just felt good I think it's been more of a sort of a collective experience in terms of just enjoying the interaction with them... elements from each of them that I had enjoyed interacting...knowing that they were something that had been hand crafted felt special (N79)... I was trying to be conscious and not overthink it, but that was just err something that I felt I was just continuously going through, I was just enjoying that process (N81). It was just a general consciousness (N85)

6.4 Cross-study analysis

The next stage in analysis involves looking for patterns across cases, as super-ordinate themes particular to individual cases may also be representative of deeper meaning across cases. Smith et al suggest that "some of the best IPA has this dual quality – pointing to ways in which participants represent unique idiosyncratic instances but also shared higher order qualities" (2012, p. 101). Searching for cross case nuances is critical for understanding and engagement with meaning (Creely, 2016) and began by engaging with visual data as a collection. Physical copies of the pie diagrams (figure 87) and symbolic fingerprints were collectively considered searching for visible patterns, and to get a feeling for overlapping threads. Super-ordinate themes developed from individual interviews were amalgamated in a table format (figure 107) to view the

Super-Ordinate Themes for the Participant Group								
Participant ⇨	Jean 13 themes	Helen 14 themes	Judy 15 themes	Alex 15 themes	Safia 20 themes	Naomi 20 themes	Joy 22 themes	Total number of correlations
53 Themes in the most frequently occurring order Across all seven participants ↓								
Security	x		x	x	x	x	x	6
Transcendental	x	x	x	x	x		x	6
Enjoyment	x			x	x	x	x	5
Garment Interaction		x	x		x	x	x	5
Heightened Experience	x	x	x		x	x		5
Nostalgia	x			x	x	x	x	5
Sensorial	x	x	x	x		x		5
Connection			x		x	x	x	4
Positivity			x		x	x	x	4
Commentary of others					x	x	x	3
Confidence	x			x		x		3
Empowerment			x		x		x	3
Fascination			x		x		x	3
Intuitive responses	x		x	x				3
Part of Something Bigger			x			x	x	3
Pre-conceived ideas				x		x	x	3
Questioning	x			x			x	3
Therapeutic	x	x			x			3
Attraction					x		x	2
Elevated						x	x	2
Experimentation						x	x	2
Frustration				x			x	2
Grounding		x			x			2
Inexplicable						x	x	2
Mindful			x			x		2
Natural World		x		x				2
Negativity					x	x		2
Opportunity	x			x				2
Practical				x	x			2
Unconventional				x			x	2
Attachment			x					1
Balance		x						1
Behaviour					x			1
Clarity					x			1
Comforting							x	1
Comparison with others		x						1
Disorientation		x						1
Embodied energy		x						1
Energised					x			1
From Another Time							x	1
Gratitude			x					1
Impact on Mental State	x							1
Out of Body Experience		x						1
Placement		x						1
Playful						x		1
Powerful						x		1
Satisfaction				x				1
Scale/Proportion					x			1
Seeking Reassurance		x						1
Symbolic							x	1
Tension	x							1
Uniqueness						x		1
Validation			x					1

Figure 107 An amalgamation of themes across the seven wearer interaction studies

most potent and frequent cross-case correlations. Cross-study similarities are presented and discussed in two formats, initially through wellbeing dimensions¹⁷⁰ (figures 108-111), followed by garment (figure 112-116).

Super-ordinate themes with the most potent and frequent cross-case correlations were selected (figure 107) for discussion and “lower-level themes became redundant” (Smith et al, 2012, p. 109). Therefore, only themes with cross-case correlations of three, four, and five occurrences are included in the following tables (figures 108-111). The super-ordinate themes selected could theoretically embrace several dimensions of consciousness¹⁷¹ depending on context (5.1). Consequently, their positioning within an emotional, physical, spiritual, and mental narrative is a generalisation, and my particular analytical interpretation to explore deeper meaning:

6.4.1 An Embodied Emotional Narrative (how I feel) –sub-conscious mind: encompasses feelings of self-awareness, positive emotions, resilience, security, being valued, intuition, insight, introspection, behavioural flexibility, creativity, capacity to see opportunity.

Super-ordinate themes attributed to Emotional dimension of wellbeing	Total no of correlations of super-ordinate themes across the seven participants	Selective quotes from participant interview transcripts contributing to the formation of super-ordinate themes	*Locator code within interview transcripts
Security	6	Naomi: I just had this immense feeling of just sort of strength...it's sort of this feeling that I was safe...I could defend myself.	N18
		Naomi: I think that it's the combination of I think the security, the security of feeling like you're wrapped, and you're hugged, but then the confidence coming with that.	N93
		Safia: I liked that kind of almost like protection around the neck	K92
		Safia: They made me feel quite cocooned quite like protected	K36
		Jean: It just enclosed you inside and yet you just, you still felt good I	C30
		Joy: My mood was lifted by this garment, this is the white one, it has a wide enveloping shape and I'm intrigued, I felt secure in it, wearing it around my back almost as a shawl.	J291
		Judy: Very safe, very secure, very enclosed. It made me feel very secure in what I was doing.	A33
		Judy: They were talking about how it made them feel...it made them feel safe...like a tortoise shell...they could move in them yet feel safe...air between the skin and the fabric.	A108
		Alex: it's a sort of a conversation starter isn't it when you're wearing something that's a little bit different...can talk about it and that sort of helps when you're in that social situation.	D74

¹⁷⁰ Alpha-numeric colour-coding relates to the location in the interview transcript, and to a particular garment.

¹⁷¹ Emotional, Mental, Spiritual, & Physical are viewed as four distinct dimensions for the purpose of research design, although they are interconnected and inseparable.

Enjoyment	5	Alex: I love clothes with secrets... when you know something about the garment, you're wearing that other people don't know I really find a lovely thing	D56
		Alex: I just, really enjoyed them... I just thought they were quite fun	D124
		Jean: I loved it, I really did, it was very good... as though I'd put some really lovely frock on and gone to a ball or something	C32
		Naomi: I was smiling the whole time I was wearing it, that I was conscious of	N77
		Naomi: I've just like enjoyed the fun, the fun element of this sleeve, whenever I walk past a mirror, I'd never do normally, I just sort of stop to look at them, and they just make me smile	N93
		Safia: I enjoyed playing, putting my hands in the pockets a lot...I really enjoyed that... I was just really enjoying putting my hands in them	K80/82
		Safia: I loved the gloves actually; I really loved the gloves	K48
		Joy: It did make me feel, very sort of again special	J241
		Joy: I just enjoyed looking and working out erm both the white and the other garment with the sort of tapes	J22 ¹⁷²
Sensorial	5	Naomi: I really liked the smell of the clothes, and I don't know if that's just washing powder or the material itself, but there was something very calming about it. There'd be points where I would just, actually just, sniff, sniff the sleeve or sniff the gloves	N30
		Naomi: The fabric felt lovely on my skin, and you felt warm, but without being overly hot, you know it felt like you can regulate the temperature really well in it... Love it! So, the fabric and that's one which I have also just like stroked the garments on many times as well, really like the feel of the fabric	N67/69
		Judy: Obsessed with these gloves...in the little letter she'd written to you. They all tried them on and were like wow!	A108/110
		Helen: My whole body was reacting	B49
		Jean: It reminded me of cubes of building bricks and the strength that you got from the bottom one to the tiny one at the top...I like tight sleeves for some reason, that must be some psychological reason, I like the sleeves to fit tight. Simply I love the fabric, I love the softness of it. Yes, the fabrics are just amazing. I love them. I love them.	C44
		Alex: I definitely like things that don't let air in, but then let me move around because sometimes when things are very airy and floaty you get cold and drafts. When you've got cuffs, you can move around and you're free, but then you don't have the draft, I do like that.	D86
Positivity	4	Judy: It was such a positive, positive experience. Loved that very, very much. It was amazing	A97
		Naomi: I've felt more positive in this one	N39
		Safia: Better, yeah, definitely (positivity). I think especially actually having had that period over the last couple of days with them wearing them a lot	K104
		Joy: I suppose I just was filled with kind of more positivity.	J227
Intuitive responses	3	Judy: From my heart, with absolute honesty because that's the whole point of this	A104
		Jean: Well, I did, for some reason (felt attractive)...I like the way it's fitted to my body with the points coming up and I love the pockets to put my hands in	C38/40
		Judy: Wanted to be in the moment	A120
		Alex: To be honest, I didn't notice it (the fabric against her skin), so that's always a good sign.	D108

*Colour key for transcript code: Hexahedron Icosahedron Tetrahedron Octahedron Dodecahedron

Figure 108 Themes and participant quotes related to the Emotional dimension of wellbeing

Six of the seven participants commented on feelings of *Security* using terms such as strength, protection, enclosure, and safety to describe their experiences. Different garments manifested these feelings for different participants. I found this an interesting and unexpected phenomenon. *Enjoyment* was another key theme manifesting positive wellbeing; smiling, fun, feeling special, love, self/garment admiration were keywords elicited by participants.

¹⁷² Black alpha numeric coding refers to generalised comments i.e., not specific to any particular garment

Sensorial encompassed many experiences elicited by the clothing including smell, tactility, temperature/draft control, softness, freedom, restriction, and movement. Several participants commented on the sensorial softness of the knitted hemp fabric used to make the octahedron shrug. However, this piece was unpopular and the least talked about within interviews¹⁷³, most participants found this a difficult piece to wear. The Platonic derived form of the garments is only one aspect of the concept, and it is interesting to note that other aspects are working in unison or in tension with this.

6.4.2 An Embodied Physical Narrative (how I appear) – cellular memory: describes mind/body awareness, bodily appearance, energy, self-regulation, stretch, breathing, posture, strength, flexibility, sleep.

Super-ordinate themes attributed to Physical dimension of wellbeing	Total no of correlations of super-ordinate themes across the seven participants	Selective quotes from participant interview transcripts contributing to the formation of super-ordinate themes	*Locator code within interview transcripts
Garment Interaction ¹⁷⁴	5	Safia: I started with the gloves, and I wore them a lot, and then I wore the hood thing lot	K104
		Naomi: I kept closing my hand feeling the ball and opening it back up again, and you'd still have the ball there	N20
		Joy: I didn't put the gloves on, I just wore them around my neck	J32
		Helen: I wore the white one and the cardigan on top of it and that worked because the white was longer, and the material was really light	B54/B54
		Judy: Different ways, different situations	A51
Therapeutic	4	Judy: Pressing on acupuncture points (both gloves and jacket cuffs)	A33/A33
		Judy: Really good sleep	A95
		Judy: I felt great, I feel very high energy	A93
		Very light, physically well, very good mood. Lots of positives	
		Jean: I also felt that it was some kind of therapeutic glove... if you have treatments for arthritis or something and they blow them up so that you get some kind of beauty treatment inside them or something	C72
		Helen: My body went into self-healing mode...I didn't even want to carry out a task, it's more like right absorb it and then go on...for me, it wouldn't be a garment I would wear in my day-to-day life because I would be in a deep healing	B90
		Safia: I did feel like weirdly my skin on my hands was softer after I took the gloves off	K42
		Safia: I've surprised myself in terms of with it being winter and dark so early how much energy I've had	K90
*Colour key for transcript code: Hexahedron Icosahedron Tetrahedron Octahedron Dodecahedron			

Figure 109 Themes and participant quotes related to the Physical dimension of wellbeing

¹⁷³ Vol II, Appendix B, p. 38 – *References to garments within the interview*

¹⁷⁴ Garment Interaction – for clarity this theme refers to generalised comments on how participants wore and styled the clothing

Several participants commented of a perceived *Therapeutic* effect especially in relation to the fingerless gloves whereby the deep tight cuffs opened into a generous dodecahedral void between the hand and outer fabric. This seemed to generate a physical sensation that several participants likened to a therapy.

6.4.3 An Embodied Spiritual Narrative (how I behave) – collective

consciousness: encompasses behaviour that embraces self-realisation, all levels of connection, community, family, friends, nature, higher purpose, enlightenment, greater joy, empathy, sense of purpose, vision.

Super-ordinate themes attributed to Spiritual dimension of wellbeing	Total no of correlations of super-ordinate themes across the seven participants	Selective quotes from participant interview transcripts contributing to the formation of super-ordinate themes	*Locator code within interview transcripts
Transcendental	6	Helen: To make it wearable for me for longer periods of time it would really need to go through all the chakras because the impact is so strong	B52
		Jean:...the joining together bit...I felt there was some significance in that whether or not you could actually imagine from one hand being transferred to the other hand	C78
		Alex: I think that the garments I found, you know, a bigger function than just wearing them and covering my body, I found I enjoyed more	D102
		Joy: there was a sort of element of something else happening as I pulled it on, one shape was sort of almost converting into another shape, don't know	J125
		Joy: I felt that something preventing me from putting it on and wearing it	J155
		Safia:...like a process of where there is some kind of process going on in the system, in the body, and the mental state whilst wearing them...to kind of move something, and then be more clear and one can definitely feel like some kind of process	K111/113
Nostalgia	5	Safia: I found something very childlike in them like I went back to something to do with my inner child, I was just there fiddling with them, you know as children do, kind of often, so that was quite nice actually	K38
		Joy: ...with the mittens, you know again, again this week I sort of started to talk to the students about the mittens, reminding me very much of the Oliver story, you know, picking a pocket, and having the mittens sort of threaded through	J74
		Naomi: ...it took me back, I'd sort of played around with towels, my towels as a kid, to see what sort of dresses could potentially be made from them. It kind of transported me back to that sort of experimentation of like what could be made with what you've got err in front of you as a continuous piece of fabric	N77
		Joy: The smell of the garments, that sort of starch, sort of crisp smell almost immediately I was remembering my Nan... opening the box (containing the garments) just transported me to her cottage and that filled me with lots of lovely sort of memory and warmth and comfort	J20
		Alex: When I was little my grandma used to sew little embroideries in our clothes, so you always knew that on the hem of your skirt you had, you know, a horse or something hidden so I really like the idea of like hidden things in your clothes.	D56
		Jean: I remembered the 70s and 80s with the big shoulders	C44
Connection	4	Judy: I felt very connected	A33
		Safia: it's funny because the shape's so different from something I normally wear but I didn't really feel that when I was wearing it	K94

		Naomi: The hexahedron, and the dodecahedron are the two that I was drawn to the most, undoubtedly, I've really connected with both of them so well	N89 N89
		Joy: I knew that I was wearing something that I was connected to, erm I suppose I put them with the jacket because of the complexity of them	J145
Fascination	3	Joy:... thought more about how to get in the garments, how to wear them, how maybe not to wear them, and just been intrigued by that	J24
		Joy: The sleeves were so sort of intriguing and complex that I kind of didn't want to do anything with that	J129
		Safia: I think the thing that irritated me was, for example, I had the pinafore on, and she'd be like 'I don't like that', but nobody's asking you, you know, it was just fascinating, it was fascinating, what it showed was actually the amount of judgment around, like around the zone within which you inhabit, that was really fascinating to me	K127
		Judy: They were fascinated. Everyone was fascinated by them	A108
Part of Something Bigger	3	Judy: Above and beyond conscious thought	A100
		Naomi: I knew I was part of this kind of like experience of it, and that, that was like a greater thing, a greater being of me, and that just felt good	N79
		Naomi: I combined the gloves, the dodecahedron, and the hexahedron, I combined them, and I combined them on several occasions...I enjoyed pairing them together it kind of felt in a way that they should be	N87/N87
		Joy:...this wasn't conscious because I was going to sort of, pick up a warm drink from a cold studio, that almost the idea of sort of doing that and the gloves are doing that	J137
*Colour key for transcript code: Hexahedron Icosahedron Tetrahedron Octahedron Dodecahedron			

Figure 110 Themes and participant quotes related to the Spiritual dimension of wellbeing

The theme of *Transcendental* groups together commentary on self-realisation and a sense of connection: six of the seven participants mention “something of significance/being part of a process/something else happening/bigger function” in relation to their wearer experience but seem unable to identify or articulate more. *Part of Something Bigger* and *Connection* share similar parallels, and on reflection these three themes could have been amalgamated to produce a more prominent and potent thread.

Nostalgia formed a key theme, five participants discussed memories of their childhood or deceased relatives: the gloves and the pinafore were garments that frequently evoked these feelings perhaps because of their juxtaposition of scale and proportion. Smell and texture of the natural plant-based fabrics was a key nostalgic trigger for Joy that instantly transported her back to warm childhood memories of her grandmother.

6.4.4 An Embodied Mental Narrative (how I think) – conscious mind:

embraces intentional thinking and memory, intellect, wisdom, logic, perception, self-belief, outlook and perspective, awareness, problem-solving, adaptability, clarity, calmness.

Super-ordinate themes attributed to mental dimension of wellbeing	Total no of correlations of super-ordinate themes across the seven participants	Selective quotes from participant interview transcripts contributing to the formation of super-ordinate themes	*Locator code within interview transcripts
Heightened Experience	5	Jean: ...thinking in a different way and it was an amazing experience	C34
		Safia: I was like wowzah these gloves are amazing	K46
		Helen: Having that around me (tetrahedron shirt) felt like I had an embrace, you know, it felt like angel wings	B84
		Naomi: It was just this very sort of, it was like everything was clear it felt quite powerful still, you know, and you'd extend your hand, and this ball shape was still there	N18
		Judy: Spacious expansive/expansiveness, so free. It was almost like it couldn't be tight enough in the areas where it was snug	A33
		Judy: Very, very deep. Very personal. Very emotional	A145
Commentary of others ¹⁷⁵	3	Joy: I knew that people were talking about me in the jacket, especially having seen the gloves	J32/J32
		Safia: It's just interesting the aggression that you don't realise is there before, and the reaction that's happening, and people, maybe it's about like translating them (the garments) in a way that they're acceptable mentally to somebody who doesn't understand the whole concept	K129/131
		Naomi: I know my boyfriend has been a bit questionable about it, he was a bit sort of like – "Why have they got that?", "What is it?"	N33
Confidence	3	Naomi: I felt like I was making, almost like a statement, but privately, I don't know, you know when it's like an inner, an inner confidence that's coming through. So, it's not anything out loud, outlandish. I think almost in a weird way as well the fact that this wasn't something that my boyfriend just loved, you know he'd been sort of, "it's okay", you know, "it's a bit different", but I had felt really good in it, and I was like "I'm wearing this because I want to wear it, and I feel good in it", and that, that was just great	N39
		Alex: I think confidence-wise there's a lot going on so it's quite an interesting, you know, piece to wear	D74
		Jean: When I put it on, I was, I was, climbing into a bit more strength and power because I was starting with the big one and coming down to the middle one... it just made you feel confident	C44/C50
		Jean: So, this is almost working in the reverse from another side. So, whereas the look of the clothes is conventional to get making people look confident and it's not, whereas this is to wear them, wear the clothes almost the idea of clothes inside out.	C102
		Safia: I feel like it makes me stand up taller when I wear the cardigan and it makes me sort of feel more confident and assertive	K100
Empowerment	3	Judy: Really very, very powerful	A125
		Judy: Aware of myself, rather than just aware of the other person...very strong sense of identity	A81
		Safia: I was just able to be eloquent about what I believed in a way that wasn't insightful to him	K44
Pre-conceived ideas	3	Joy: I felt special in it, I felt that it's been designed and made, with you know, crafted beautifully, and I felt, I think I've written the word elevated in it. I just felt that I was wearing something that was unique, and, and erm again that idea of people, sort of, wondering "oh, what is that about, where's that from"? Which kind of gives me, sort of lifts my mood... If I can do that with what I'm wearing, I feel like it's a success.	J229-233
Questioning	3	Joy: I could do with another fortnight to sort of yeah question it	J211
		Alex: I think because you're writing a diary and thinking and constantly questioning...it was very difficult to decide whether it was the garments that were affecting how I was feeling or was it because I was trying to be very reflective on how I was feeling	D126
		Jean: I probably will wear more baggy clothes and I will think about the meaning of some things even more deeply... I'd like to learn a bit more about this	C121

*Colour key for transcript code: **Hexahedron** **Icosahedron** **Tetrahedron** **Octahedron** **Dodecahedron**

Figure 111 Themes and participant quotes related to the Mental dimension of wellbeing

¹⁷⁵ Thoughts evoked in participants by the commentary of others

The hexahedron jacket was frequently referred to in terms of generating feelings of *Confidence, Empowerment and Heightened Experience*; the dodecahedral fingerless gloves were also mentioned under this umbrella. Some participants opted to pair these items together, perhaps because they were both black, of the same fabric, both confident self-supporting shapes having defined areas of freedom and restriction (figures 73 & 77).

Questioning clusters commentary of generalised thoughts of the ARC concept. Some participants felt they needed a longer interaction period to question the idea, others felt it had provided an alternative meaning of clothes and wanted to learn more.

6.4.5 Dodecahedron Fingerless Gloves



Figure 112 (left to right) Dodecahedron gloves - flat pattern, technical drawing, garment

The gloves were perhaps the least invasive item of clothing to interact with, easy and convenient to access and wear, practical, and warm (the Wearer interaction study took place during Autumn/Winter 2020)¹⁷⁶. Together with the hexahedron jacket they were the most frequently referred to item within participant interviews¹⁷⁷. Keywords¹⁷⁸ used repeatedly, and across cases, to describe them include - warm, comfort, therapy, interesting, safe, protected, strong, powerful, space, tightness, fun, enjoyment, tortoise.

The deep secure ribbed cuffs (fit beyond the wrist onto the forearm) extend to the oversized fullness of the dodecahedron and then back into restriction, created by the shallow ribbed finger apertures. The soft fleecy knitted surface¹⁷⁹ of the inside of the sensorial void (the internal fabric surface of the dodecahedron)

¹⁷⁶ More information is available in Chapter 5

¹⁷⁷ Vol II, Appendix B, p. 38 – *References to garments within the interview*

¹⁷⁸ Vol II, Appendix B, p. 39 – *Keywords occurring during participant interviews in relation to a particular garment experience*

¹⁷⁹ Detailed fabric and creative production information can be located at Embody – Design Phase Three (4.5)

elicited positive wellbeing feelings of warmth, insulation, cosiness, and comfort (Judy A108; Jean C72; Alex D38, Safia K28/36, Naomi N28, Joy J89)¹⁸⁰.

Beyond their functional practical form Jean (C76), Helen (B96), Safia (K42) and participants at Judy's workshop (A108) commented on the gloves feeling like a therapy/beauty treatment which could be interpreted as energising, nurturing, and uplifting, perhaps sub-conscious somaesthetic association with the forms spaciousness (*Ma*)¹⁸¹, airy lightness, tight cuff, and soft thermodynamic knitted fabric. Another interpretation of these feelings could be that a softly curled resting hand fits comfortably and instinctively within the void of a dodecahedron, allowing the hand to be unrestricted yet providing an outer protective covering, referred to by some participants as a "tortoise shell". I would argue that childlike and nostalgic memories and sensations were evoked for Safia (K38) and Jean (C78), by the oversized scale/proportion of the gloves in relation to their actual hand size, together with the secure joining string that elicited comforting, nurturing and protected feelings.

Naomi experienced a profound moment of clarity, beyond logical explanation, whilst wearing the gloves¹⁸²:

"I don't know, I just had this immense feeling of just sort of strength, it's sort of this feeling that I was safe, I could defend myself, I don't know why I felt it, it was just very sort of, it was like everything was clear it was just something that I was very conscious that I'd felt, and I wasn't sure why, but I just did" (Naomi - N18).

Spiritual associations with the dodecahedron's form (figure 57) suggest a sense of touch, the colour purple, the third eye chakra of awareness, intuition, and vision, encouraging a connection to one's higher self. One of the eight principles of the Eudaimonic Design Framework is *Chakra Activating*. This intangible concept within Western belief systems was consciously embodied within the design process through a purple loop for the joining strings to pass through; the sense of touch – a glove with exposed fingers; the form is representative of the ascension chakra – perhaps wearing the form could encourage inner clarity as experienced by Naomi.

From a design perspective creativity flowed and the gloves instinctively "felt right". The organic, ethereal shape of the dodecahedron's flat pattern connected me three-dimensionally with thoughts of opening and closing hands, tacit thinking

¹⁸⁰ Participant name and alpha-numeric code refers to interview transcript locations to validate the narrative

¹⁸¹ *Ma* in Japanese philosophy relates to freedom in all aspects of life; defined as a deliberate pause, an interval, a negative space filled with nothing but energy, feeling and respect

¹⁸² See also Vol II, Appendix B, p. 74 – *Rosie's note and transcript* for a similar reaction to the gloves

through making knowledge had transcended into the essence of the glove. The evolution of this piece was the most satisfying and enjoyable. When developing the glove creative flow occurred spontaneously and “the sense of time became distorted” (Csikszentmihalyi, 2002, p. 71). All participants experienced positive somatic sensations when wearing the dodecahedron gloves.

6.4.6 Octahedron Shrug

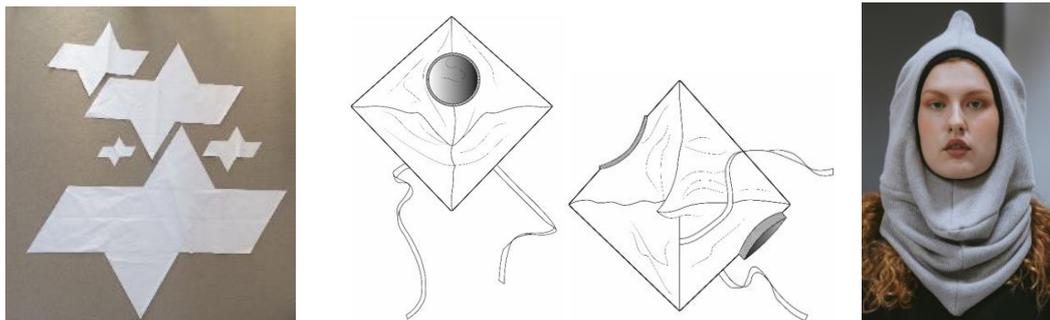


Figure 113 (left to right) Dodecahedron gloves - flat pattern, technical drawing, garment

This piece was the least popular with all participants¹⁸³ and proved difficult to wear. Restricted, claustrophobic, strange, tension, odd, are cross-case keywords from participant interviews that generally evoked negative wellbeing experiences. However, Alex (D102) and Naomi (N69) both commented positively on the softness and tactility of the knitted hemp fabric next to their skin, although Naomi found the natural undyed colour draining. Naomi (N55), and Judy (A97) both commented that they “really wanted to like it”, and thought it would be easy and comforting to wear, but their positive pre-conceived thoughts didn’t materialise when wearing.

Joy interpreted it as an accessory, not interacting with the head/neck apertures but using the ties to create a sailor type collar (J271). Naomi also went on to experiment with the octahedron and used it as a hair cover, pulled back off her face and using the ties to secure the garment in place around her hair (N59). Jean (C60) felt it restricting, claustrophobic and generally uncomfortable.

The octahedron is associated with the throat chakra in Eastern wellbeing practices, hence the body positioning of this piece. Whilst the fabric felt soft and luxurious next to the skin it was dense and heavy, and perhaps emphasised the octahedron’s six points in a bulky and visually unappealing way. Movement

¹⁸³ Vol II, Appendix B, p. 38 – *References to garments within the interview*

therefore possibly felt unnatural, the space between the skin and the outer fabric being flattened and not conducive to *Ma*. From a design perspective I felt that the scale, proportion and somaesthetic appreciation of this piece were not fully resolved, this may have impacted on positive wearer interaction experiences.

6.4.7 Tetrahedron Shirt/Reflective Space

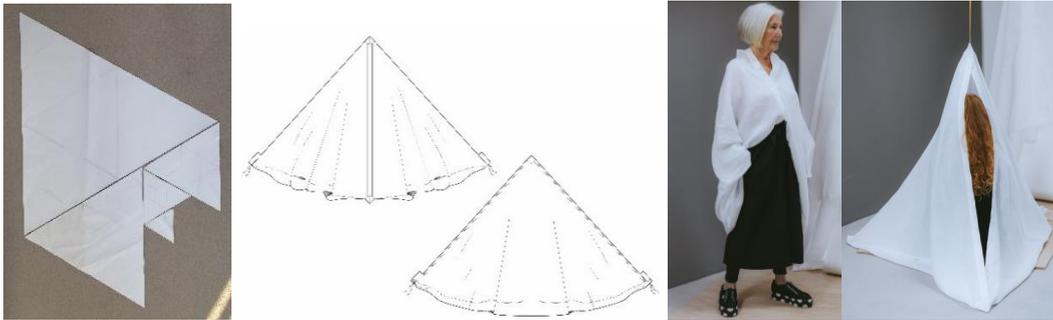


Figure 114 (left to right) Tetrahedron shirt/meditative space - flat pattern, technical drawing, garment

Judy, Helen, Safia and Joy loved this piece, Alex, Jean, and Naomi really disliked it. Keywords reflected this dichotomy: -

- amazing, beautiful, special, ethereal, calm, empowered, meditative, versatile
- bed sheet, ruffled, uncomfortable, unprofessional, challenging, irritating, Ku Klux Klan

Judy (A45), Helen (B84), Safia (K119), and Joy (J291) all commented on similar floaty ethereal sensations, of wings, of empowerment, of protection, perhaps suggesting it created a barrier, an invisible forcefield between self and the outside world:

I felt very light, and very empowered, but sort of floaty, that ethereal feeling where you just feel completely safe, and I thought a lot during the time about that ... I thought it was almost like a veil (of protection), I think there was just something very, very special about the white fabric of the pyramid and the fact that when it was over my head the way I perceived the light coming in was just really, really beautiful (A45). My mood was lifted by this garment, it has a wide enveloping shape and I'm intrigued, I felt secure in it, wearing it around my back almost as a shawl (J291).

In contrast uncomfortable parallels were experienced by Jean (C18), Naomi (N47), and Alex (D116) that negatively impacted wellbeing experiences, perhaps generated by feelings of being overwhelmed by the volume of fabric and uncertainty of the piece:

I didn't feel comfortable in. I couldn't wear it over my head that almost felt too "KKK" (Ku Klux Klan)...I wore it down, and it was all quite ruffled up... it's like sheer quality that's almost like a bed sheet...it came across almost like I was wearing a bed sheet.(N47). My arms felt strange through it, the whole experience of it was irritating to me.(C18). I just couldn't get it to sit well, and I got my sister to come and help me...I think I saw this big bit of fabric and I thought this is going to be the comfiest thing that I've ever put on, but I just couldn't get on with it (D116).

From a design perspective the sharp points of the tetrahedron juxtaposed with the fine semi-transparent fabric, unrestricted freedom, and fluidity of the piece felt slightly counterintuitive, unbalanced, and unresolved. The piece is ambiguous, and as seen here could be difficult to interpret by some individuals.

6.4.8 Icosahedron Pinafore

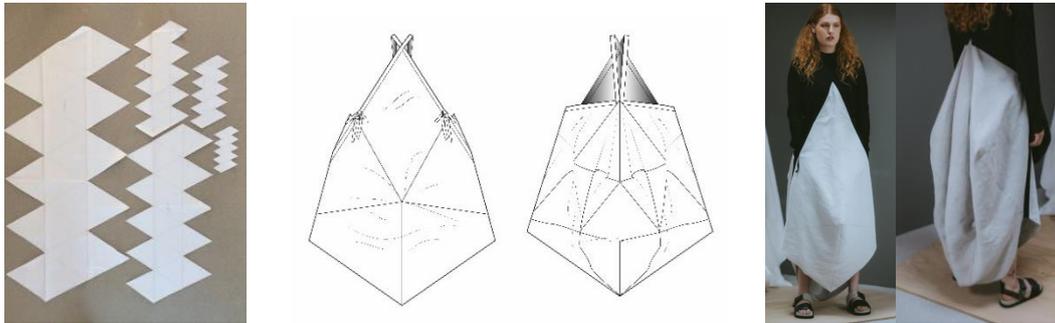


Figure 115 (left to right) Icosahedron pinafore - flat pattern, technical drawing, garment

A selection of keywords associated with the icosahedron pinafore reflected a likeable and positive interactive experience: pockets, intrigued, fascinated, fun, enjoy, playful, childlike, comfortable, voluminous/crinoline/pumpkiny. Interview commentary was generalised, most participants experienced feelings of freedom and comfort perhaps associated with the volume of the shape. The deep oversized pockets provoked playful childlike sensations, probably elicited by their scale and proportion being in a Phi ratio with the larger outer icosahedron. Perhaps the weight and luxuriousness of the fabric helped the solid to retain visible elements of its form when in motion, provoking intrigue and fascination:

It just enclosed you inside it and yet you still felt good because you could move around. I just felt good in it as though I'd put some really lovely frock on and gone to a ball or something. Although it didn't mean that to me because it wasn't, but it was the same feeling, like you suddenly had some confidence... I like the way it's fitted to my body with the points coming up and I love pockets to put my hands in (Jean C30/32/40). I enjoyed playing, putting my hands in the pockets a lot actually, I really enjoyed that... I wore them as pockets on the inside because I was just really enjoying putting my hands in them (Safia K80/82). I just loved the pockets though; they were very satisfying. I had an organising day and I just thought I'd like, you know something free, and you're not constrained and it's a very comfy...so, I had a productive day erm organising and trying to organise my life. So that was quite, again, a positive thing wearing the clothes (Alex D52). I love the shape and I wanted to play with the shape, almost as though it wasn't a garment, something to keep opening and sort of enquiring about (Joy J159). The fabric's so beautiful, and it is stunning ...I was fascinated by the shape (Judy A59/61). I felt slightly fun, and slightly mischievous, I don't know why mischievous, but I think it was because it was so unusual...I was smiling the whole time I was wearing it, that I was conscious of (Naomi N77).

Despite these collective positive experiences none of the participants selected this piece as their garment preference¹⁸⁴. The pinafore is confident, and perhaps a destination piece (Jean C30), during the climate of the study the Covid-19 pandemic restricted socialising, and this may have impacted wearer experiences.

¹⁸⁴ Vol II, Appendix B, p. 42 – *Garment preferences*

6.4.9 Hexahedron Jacket Progressing in Phi Ratio

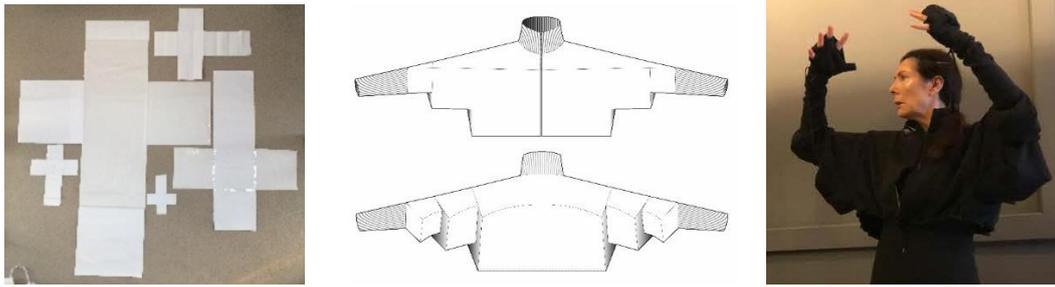


Figure 116 (left to right) Hexahedron jacket - flat pattern, technical drawing, garment

The hexahedron casual jacket, together with the dodecahedron gloves were the two most frequently referred to items within participant interviews¹⁸⁵. As with the gloves, all participants had positive interactive experiences wearing it. Three participants chose the jacket as their preferential piece (as with the gloves). Keywords¹⁸⁶ used repeatedly, and across cases, to describe the jacket include – special, confident, positive, complex, intriguing, elevated, comfortable, expansive, therapy, secure, protected, strong, powerful, strength, space, tightness, cube, root chakra, interesting, sleeves.

The jacket has other similarities with the gloves that could perhaps explain parallels in participant experience:

- Same fabric – soft, fleecy inside, warm, stretchy, casual
- Same colour - Black
- No ambiguity – straightforward to wear
- Voids created by the Platonic solids are closed by being connected to areas of tightness i.e., cuffs (wrist & finger) and collar
- Designed to follow natural somatic movements
- Smaller scale interpretations of the Platonic solids in comparison to the other garments

As noted the Phi ratio aligns with many growth patterns in the natural world including the human body (2.2.4). Each half of the jacket is informed by three Phi progressive hexahedra, aiming to embody a connection with nature, feelings of expansion, growth, opening, and the presence of Ma. Several participants experienced positive wellbeing sensations of “*something else happening*” (Joy J125) that could perhaps be attributed to these phenomena:

It just felt so spacious when I expanded my arms...I just felt so expansive and so free yet at certain points of my body felt very safe and very enclosed, and I was thinking, I knew that certain points were pressing on acupuncture points. Yet that combined with the expansiveness and the ability to move freely, and the groundingness of the shape I felt very connected (Judy A33).

¹⁸⁵ Vol II, Appendix B, p. 38 – *References to garments within the interview*

¹⁸⁶ Vol II, Appendix B, p. 39 – *Keywords occurring during participant interviews in relation to a particular garment experience*

It reminded me of cubes of building bricks and the strength that you got from the bottom one to the tiny one at the top and, it's sort of I don't know, it must have felt that way when I put it on that I was climbing into a bit more strength and power because I was starting with the big one and coming down to the middle one and I like tight sleeves for some reason, that must be some psychological reason (Jean C44).

I like drawing cubes. I like, you know repeating them... I don't know, it's just a sort of thing that I'm drawn to (Joy J107/109)

There was a sort of element of something else happening as I pulled it on, that you know, one shape was sort of almost converting into another shape, don't know (Joy J125).

As noted (2.4.3), within Oriental philosophy complementary, interconnected, and interdependent forces are essential for wellbeing and referred to as Yin and Yang. The freedom created by the Platonic voids and restriction of the collar and cuffs embody this philosophy. Jean described her experience as having sensations of masculine/feminine, strength/power:

So, you've got the, the, feeling of power and strength which was, was, almost masculine and the feeling of the softness that was feminine, I liked that very much. (Jean C44)

It was almost like it couldn't be tight enough in the areas where it was snug. I felt that the tightness of the fabric gave me, it made me feel very secure in what I was doing (Judy A33).

I definitely like things that don't let air in, but then let me move around (Alex D86)

Several participants spoke of feeling positive, confident, decisive, and energised whilst interacting with the jacket, suggesting that the garment was evoking these responses. The embodiment of Phi progressive hexahedra, the plant-based fabric, Ma, and sensations associated with the root chakra¹⁸⁷ were balanced and working in unison:

I've made a lot of important decisions in the last fortnight... I've made positive decisions, life-changing decisions... who's to say whether or not it's because I wore the jacket. I would like to think it was... I have been positive (Jean C46)

I've felt more positive in this one, and I think, and I was trying to sort of think when doing the diary, trying to sort of think what it was about it... there's like a subtlety to the uniqueness, in a way, and I don't know why. I felt like I was making, almost like a statement, but privately, I don't know, you know when it's like an inner, an inner confidence that's coming through (Naomi N39).

It felt good on, the, the lovely sleeves, I love those tight bits and the fact that it fastened up to the neck and it just made you feel confident (Jean C50).

... I found that calming and just feeling slightly enveloped, you know, as though you've been permanently hugged and I wonder if that extra bit of material kind of adds to that because it's more than you would normally have, erm, so yeah, I'm not hundred percent sure, but I just, I know that I have felt more positive, more confident wearing it. (Naomi N39)

It did feel like it gave me a burst of energy so that I could just get on with things, and do things, that helped me focus actually. (Safia K96)

Naomi refers to the sleeves as “wings” and then goes on to create their own identity and sense of importance by referring to “wearing them”.

You've always got these wings and it's the slightly unusual shape, it's quite, erm quite powerful that you want to sort of, not wanting to refer to them as wings, and don't feel like I can fly as such, but I don't know there was just a strength from it. I felt I stood taller, I felt I'd sit up taller in my chair when wearing them (Naomi N30).

She also found the smell of the natural hemp fabric elicited sensorial reactions that she found difficult to rationalise – “There'd be points where I would just,

¹⁸⁷ Root chakra functions – Grounding, earthing, refocusing. Removes tension and eases physical stresses. Encourages action and physical energy - see figure 57 for further information

actually just, sniff, sniff the sleeve or sniff the gloves, and I felt very, erm very calm and at peace, erm I don't know what was going on" (N30).

As noted, the jacket is a jacket and has no ambiguity, unlike some of the other more abstract pieces and is therefore easier and more straightforward to wear, as are the gloves. Perhaps this definability could also be a positive factor – "It is a jacket shape, two arms and a body, was easier to sort of deal with.(Joy J197)".

The silhouette of the jacket could be interpreted as having some associations with Edwardian bodices (circa 1895) in that it has a tight high neckline, deep close-fitting cuffs, and full sleeve. Historically this shape embodied elegance, femininity, and a straight upright posture. Several participants consciously and sub-consciously commented that the jacket embodied this phenomenon or perhaps implicit knowledge:

I have worn the jacket most of all. When I actually put it on, the first comment from one of my tutor groups was "Joy you look Victorian, it's the sleeves" and then we got to talking about Victorian and Edwardian (costume), and different sort of shapes, and that conversation went on probably 20 or 30 minutes in the studio (Joy J26).

I enjoyed wearing that, I had that on a few times...I liked that kind of almost like protection around the neck and I felt like it sort of gave you almost like gravitas. I feel like it makes me stand up taller when I wear the cardigan and it makes me sort of feel more confident and assertive. It's funny because the shape's so different from something I normally wear but I didn't really feel that when I was wearing it. It just felt good (Safia K92/94/100).

This line I think has made me feel like I should follow a string, I should be straight (Naomi N93)

I felt you know, very, very special in it... I think I've written the word elevated (Joy J229)

I actually felt really, really special in it, and smart, and probably also, sort of from another time.(Joy J32)

From a design perspective, and again as with the gloves, the hexahedra jacket felt satisfying and enjoyable to work on, creativity flowed, reifying, and embodying the Eudaimonic Design Framework's principles.

This section has described the breadth of participant responses through a dual cross-study analysis and made connections to aspects of the ARC. Key insights and how these might relate to higher order concepts are discussed in the following, and final section of analysis.

6.5 Findings

Various analytical tools have been used to examine data through different lenses aiming to explore and "open up the phenomenon" (Vagle, 2018, p. 85) to aid interpretation and understanding. This final section unpicks and discusses that data in order to produce concise statements of importance uncovered by the analytical funnelling process (figure 117). It explores deeper meanings

experienced by participants, how these might relate to the ARC (figure 5), and if these experiences have impacted their holistic wellbeing.

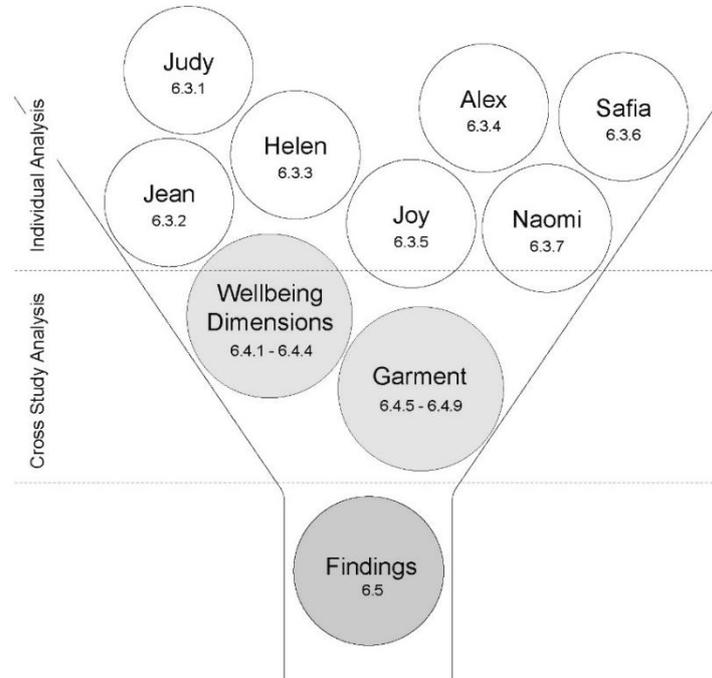


Figure 117 This research's analytical funnelling process

It has been recognised earlier in this thesis that wellbeing is complex to define and interpret, and that many factors affect it (2.4.2, 2.4.3, 2.4.4). The position taken by this research is to assert that four distinct dimensions constitute personal wholeness and wellbeing. The ultimate goal is to be balanced in all four dimensions (Willard, n.d.). This research proposes that a balanced position of wellbeing is achieved by embracing a eudaimonic persona and integration with nature (ARC, figure 5). Figure 118 depicts an abstract collective overview of participant wellbeing experience through symbolic fingerprints¹⁸⁸, void of text and colour. It could be argued that these illustrations are representative of participant personality type, however, the analysis sought to uncover nuances elicited by the clothing outside of personality trait. The fingerprints suggest that all participants encountered some balanced experiences that positively impacted wellbeing and these differed across participants.

Across cases the dodecahedron gloves, and hexahedron jacket, generated the most universal commentary within interviews, all narrative being positive, they

¹⁸⁸ Individual symbolic fingerprints can be viewed in figures 94, 96, 98, 100, 102, 104, & 106

were also the most popular pieces, and I felt the most resolved from a design perspective. Data suggests that they did embody a narrative for balanced wellbeing positioning them at the intersection of the scatter plot diagrams (figure 118)¹⁸⁹:

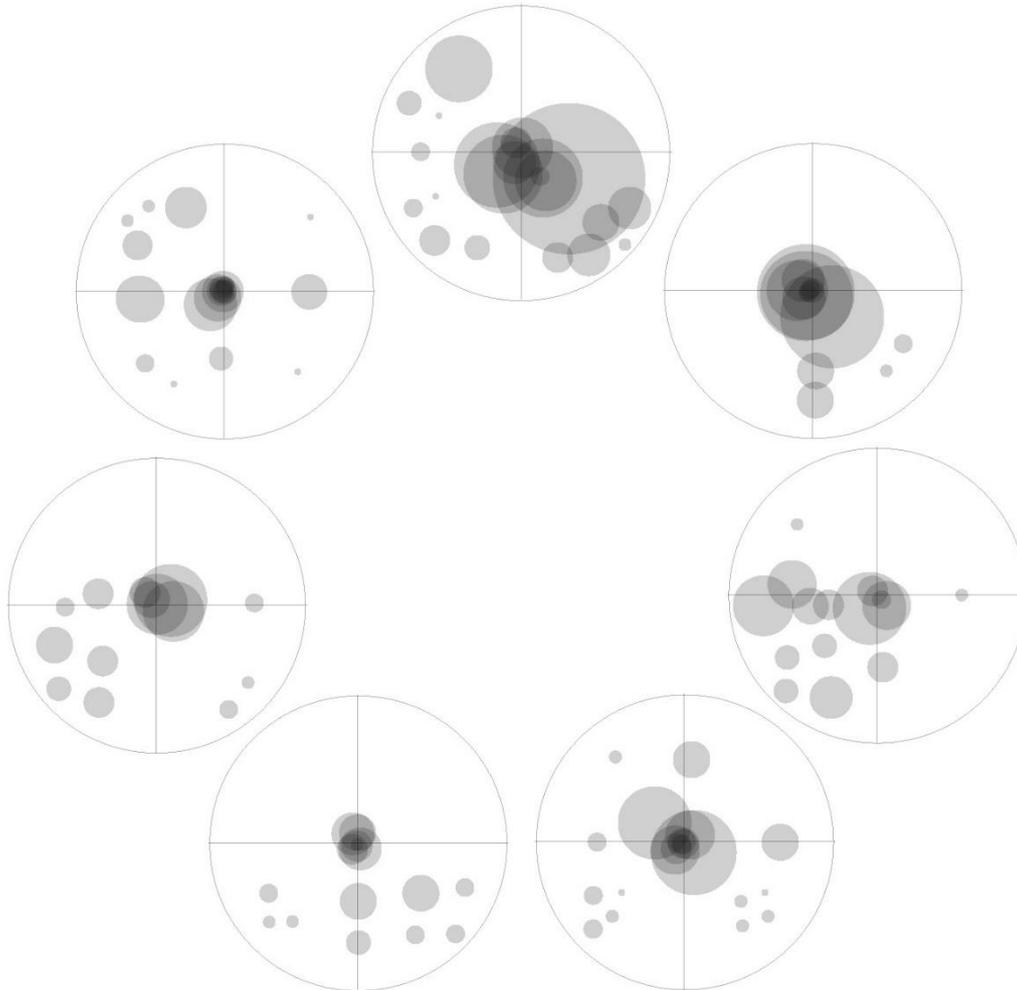


Figure 118 An abstract collective overview of participant symbolic fingerprints, void of text & colour

The gloves achieved this by embodying principles 1-6 of the Eudaimonic Design Framework (2.6, figure 43). They elicited contrasting and positive feelings of security, clarity, freedom/restriction, empowerment, comfort, warmth, somaesthetic and visual appreciation (6.4.5). They offered a sensory, reflective, haptic space of heightened awareness and offered a connection with something greater than oneself. Data suggests that the gloves met the aim of the research by embodying a narrative for wellbeing; aesthetic, practical and metaphysical

¹⁸⁹ Positive commentary is evidenced within all dimensions of wellbeing (figures 108-111)

elements worked in unison. Findings suggest that the gloves embodied feelings of protection, practicality, connection, and regeneration – fundamental components to human wellbeing positioning them at the intersection of the four dimensions of consciousness.

The hexahedron jacket also embodied principles 1-6 of the Eudaimonic Design Framework. The jacket and gloves interestingly shared several parallel responses from participants, beyond similarities of colour and fabric (6.4.9) for example: security, freedom/restriction, comfort, warmth, somaesthetic and visual appreciation. The jacket embodied feelings of security, confidence, freedom, and healing – essential elements for balanced wellbeing, also positioning this garment at the intersection of the four dimensions of consciousness. I would argue that the embodiment of the sequential phi ratio elicited liberated somatic sensations of being at one with nature. Findings suggest that body, movement, and nature are in unison within this garment: “something else is happening as I pulled it on, one shape was almost converting into another shape” (J125).

The gloves and jacket confirmed some expectations and pre-conceptions I had, in that clothing could be designed to carry an embodied narrative for wellbeing. The unanimous way this manifested in participant experience was surprising, unexpected, and exciting, particularly within these two garments. Several participants were unable to fully articulate their felt experience through a logical narrative suggesting something unfamiliar was evident: “they mean so much more than meets the eye” (Rosie’s Note); “I felt it was some kind of meditation therapy” (C76); “building bricks and the strength that you got from the bottom one to the tiny one at the top” (C50); “you can do anything now, I’ve got my gloves on” (D38); I was conscious that there was a lot going on here that I couldn’t see” (J99); “I did feel like weirdly my skin on my hands was softer after I took the gloves off” (K42); “it was just something that I was very conscious that I’d felt, and I wasn’t sure why, but I just did” (N18); “I’m not a 100% sure, but I just know that I’ve felt more positive, more confident wearing it” (N39). Two participants selected to wear the gloves and jacket together on several occasions suggesting they believed them to belong together, having a symbiotic relationship. However, wearing the garments together did not raise awareness or enhance experience, although it would be interesting to explore this concept of duality in further research.

The tetrahedron shirt/meditative space noted extremes in participant responses and I found this surprising (6.4.7). I also found it surprising that only one participant chose to explore it as a meditative space despite several participants having spiritual preferences. As with the gloves and jacket, the shirt embodied principles 1-6 of the Eudaimonic Design Framework but adopted a different design direction, exploring ethereal fabric, uncontrolled volume, and a dual purpose. This approach worked well for some participants and had an adverse wellbeing effect on others.

The icosahedron pinafore (6.4.8) elicited general feelings of fun, playfulness, and freedom in most participants, but manifested no extremes of experience as did the gloves, jacket, and shirt. This surprised me as I perceived the fabric and design detailing to be luxurious and the garment comfortable. The piece was bold and confident, as were the other garments, however the light natural tone, covering most of the body emphasised its form and presence. It would be interesting to explore participant experiences of this particular garment in a black colourway in future research.

Disappointingly, from a planetary perspective, the two garments in natural undyed/unbleached fabric were the least popular although participants commented on their sensorial connection, and attraction to fabric characteristics. Scale, proportion, and body positioning could all have impacted on preferences. The black and white garments were the most popular, as noted (4.5) their colour communication suggests an embodied balance, a recurring thread in the research findings.

Chapter 7 – Conclusions

I conclude this study by initially summarising the motivation, approach, and outcomes of practice-based research questioning if clothes can be designed to carry an embodied narrative for wellbeing. I then outline contributions to new knowledge, limitations of the study, and close the thesis with thoughts for further research.

7.1 Motivations

The foundation and motivation for this project grew out of my increasing awareness of our sub-conscious and conscious disconnection from nature through consumerism and associated behaviours, and the impact this separation has on the wellbeing of all living things.

The fashion industry is disconnected from nature in many of its actions; as a fashion practitioner, and consumer, I wondered what positive contribution towards reconnection I could make. A notion reflected by Kapsai is that “a return to pre-industrial practice is not the answer”, furthermore “a new paradigm for sustainable creative production is essential and it involves rethinking the way we make things” (2016, p. 124). The resulting body of practice-based research is my presentation of an alternative reconnective design paradigm, communicated through embodied clothing.

7.2 Approach

This thesis introduces and demonstrates a Eudaimonic Design Framework for clothing creation. The method I adopted to think of alternatives is multi-layered, as are the issues causing our separation from nature. Consequently, a wide area of literature focusing on reconnection with self, and nature was reviewed in Chapter 2 including:

- Reshaping economic models
- Reframing behaviour
- Respecting the environment
- Regenerative materials and production models
- Reconnective design strategies

Key insights from these areas were distilled to form a practical and interdisciplinary strategy of reconnection, living in unity with nature. The concept

was given a name – ARC (figure 5, p. 03), a metaphorical arc of connection with something greater than itself, and with this unique identity, the acronym, and concept become one.

7.3 Outcomes

To address the research question “*Exploring Eudaimonia Through Fashion: Can clothes be designed to carry an embodied narrative for wellbeing?*” four main objectives were established (1.3). This section summarises how the objectives were addressed and reified.

1. *To create a design framework, informed by transformative social initiatives, natural phenomena, and belief systems, that embodies a non-destructive, regenerative relationship with the environment and self.*

The outcome was a **Eudaimonic Design Framework** that embodied a regenerative ecological narrative through eight interrelated principles (2.6):

- Natural geometry and ratio
 - Spacious
 - Pure, natural & plant-based
 - Long-lived
 - Sensorial
 - Chakra activating
 - Small, local, & honest
 - Assigning value
2. *To utilise the framework as a practical tool to design and make clothing for improved wearer and planetary wellbeing.*

The eight principles were then interpreted and applied as tools to create Alternative Regenerative Clothing (ARC) – innovative expressions in dress created to embody wellbeing:

- *Natural geometry and ratio:* clothing was created outside of conventional fashion practice by selecting the five Platonic Solids as structural garment shapes, and the Phi ratio to inform their scale and

proportion. The Platonic Solids and Phi ratio are naturally occurring geometric phenomenon and as such embody a biophilic connection to nature.

Creation of the clothing was authentic to the geometric forms therefore no pattern drafting was needed; the Platonic netts being the actual flat patterns. The focus of garment design lay in the scale, proportion, and somatic positioning of the forms. This alternative approach to garment design and pattern drafting is in itself an innovative and alternative method for fashion students and practitioners.

- *Spacious*: “a space for reflection is one of the core qualities of somaesthetic appreciation, enabling one to listen to bodily sensation” (Jung & Stahl, 2018, p. 2561). *Ma*¹⁹⁰ in Japanese philosophy relates to freedom in all aspects of life; defined as a deliberate pause, an interval, a negative space filled with nothing but energy, feeling and respect. Space was created between the body and garment by the non-contouring geometric shapes.
- *Pure, natural & plant-based*: from the reviewed literature industrial hemp was selected as the fibre for the ARC’s fabrication because of its holistic regenerative properties (2.3.5). Every part of the plant has a use, it cleans the soil and air, it requires no water, pesticide, or herbicide, is fast growing, and biodegradable. The fibres from its stem can be used to make yarn that is naturally thermodynamic, antibacterial, strong, launder well, and are devoid of microfibres that pollute water systems.
- *Long-lived*: hemp is a strong durable fabric and therefore embodies longevity and thus reduces clothing consumption. The geometric pieces are positioned outside trend/season and therefore transcend fashion. They are spacious, one size fits all transcending weight gain/loss, pregnancy, ageing, disability - shape changes that may occur throughout one’s life, and as such embody longevity.

¹⁹⁰ There is no direct translation in English. See section 2.5.5 for further information on *Ma*

- *Sensorial*: the Platonic three-dimensional sculptural garment forms provided space and freedom from restriction, embodying a sensory and private space for somatic interaction, and *Ma*. Differing characteristics of the hemp fabric also provided many sensorial experiences (Chapter 6).
- *Chakra activating*: chakras¹⁹¹ were embodied through coloured elements within the clothing. They also have spiritual associations with the Platonic Solids, used for the garment structures.
- *Small, local, & honest*: this principle proved problematic to address as it relies on a small circular economic *Fibershed*¹⁹² model within a local environment for raw materials, processing, and creative production (2.3.4, 2.6). Industrial hemp is grown for fibre in East Yorkshire¹⁹³ and processed onsite into a coarse fibre for animal bedding, mattresses, and insulation blocks, not fine enough for yarn production. However, during the course of writing-up this thesis East Yorkshire Hemp are investing in finer processing machinery and working together with Seff¹⁹⁴ to explore textile quality yarns. Fabric for this project was therefore purchased from mills in Northern Ireland, historically skilled in high-quality bast fibre production, although the fibre was grown in Northern Europe.

Immediate to my locality are sheep and alpacas¹⁹⁵ producing natural fibre, albeit of animal origin. I questioned if this would not have been a more sustainable fibre option. Some researchers (Fletcher, 2018; Escobar, 2017; Schumacher, 1976; Dasgupta, 2021; Manzini, 2011; Steel, 2021; Steele 2020) suggest localism requires adapting to the attributes and skills of each specific region to safeguard its long-term success and celebrate its distinctiveness. This option requires further in-depth research to assess the carbon footprint and ethics of using animal fleece, and its associated impact on personal and planetary wellbeing.

¹⁹¹ Chakra – invisible energy centres of spiritual power in the human body

¹⁹² Fibershed (2.3.4) - Develops regional fibre and clothing production systems that build soil nutrients and protect eco-systems. <https://fibershed.org/>

¹⁹³ The closest hemp farm to my location in rural Northumberland

¹⁹⁴ Seff – Sustainable Environmentally Friendly Fibre - <http://seff-fibre.com/our-vision/>

¹⁹⁵ Bred with black wool to avoid invasive dyeing processes - <https://www.neroblackalpaca.co.uk/>

- *Assigning value*: Metanoia (Orr, 1993) is discussed (2.1; 2.3.3; 2.3.6) as a vision for societal transformation, whereby a change in our emotions, changes our critical thinking that then has a positive impact on our view of societies way of being. This concept is echoed in current literature (Santos, 2020; Escobar, 2017; Manzini, 2011). For example, this can be evidenced in the escalating attitude shift towards veganism and organic produce (Miguel et al, 2021) (2.3.3; 4.1) in that “diet is used as a control mechanism when confronted with overwhelming environmental challenges” (Downie-Melrose, 2020, p. 23) - in this context the ARC is the control mechanism and facilitator. A Wearer Interaction Participant felt a shift in her consciousness:

“It's actually made an impact on me, and I've really enjoyed doing it and I do feel happier in baggy clothes now, you know because I know the real me is inside anyway, so yeah, I probably will wear more baggy clothes and I will think about the meaning of some things even more deeply and I'd like to learn a bit more about this” (Jean C121)

Ways of viewing the world can be informed through knowledge and understanding (Macy & Johnstone, 2012). Empowering and communicating the ARC's embodied agency, gathering momentum for Metanoia could be facilitated through design education, information attached to the clothing (permanent and removable), online platforms, community engagement, and direct forms of experience. For the purposes of this study my motivations behind the project, and the Eudaimonic Design Framework were not shared with Wearer Interaction Participants to avoid bias.

3. *To design and implement a wearer interaction study to explore and identify wellbeing experiences through emotional, mental, physical, and spiritual sensations.*

The third objective was addressed and reified by a Wearer Interaction Study (Chapter 5) designed to explore participant's wellbeing through four dimensions of consciousness - emotional, mental, physical, and spiritual whilst interacting with the Alternative Regenerative Clothing.

4. *To interpret and analyse the wellbeing experiences of wearers after interacting with the embodied clothing.*

The last objective was to explore if participant wellbeing had changed by physical interaction with the clothing. Chapter 6 explored and discussed wearer experiences; IPA analysis suggested that the ARC has elicited sensorial interactions that had resulted in positive changes to wellbeing.

All garments sort to embody the eight design principles, however, the dodecahedron gloves, and hexahedron jacket elicited the most positive changes unanimously in all participants (**6.5 Findings**). Both pieces were designed, in addition to using the Eudaimonic Design Framework, to be in a symbiotic relationship with the body's natural movements by the placement and proportion of the solids. For example, a contained space for semi-clenched/opening hand movements (gloves), and expansive elbow/shoulder movements (jacket). These two particular pieces also had distinct areas of tightness/freedom/tightness that secured the solid and retained its authentic form (figures 73 & 77). The somatic connection experienced by these two garments seemed to enhance sensory interaction and elicit a heightened awareness beyond the physical garment. Somaesthetic interaction design - designing with the body, is in part embraced by the Phi ratio¹⁹⁶¹⁹⁷, however securing the solids in place over particular body areas is not an embodied principle, although it elicited encouraging sensory responses. This phenomenon would point towards further, more focused soma design research exploring connections between the mind-body-fabric-environment. and development of the Eudaimonic Design Framework accordingly. Interactive technology designer Kristina Hook support this perspective suggesting that:

“Meaning-making processes start in movement and bodily realities. That fact, in turn, has profound effects on design...you need to engage with and improve on your somatics – body, mind, emotion, empathy, intersubjectivity – and to do so you must train your somaesthetic appreciation skills” (2018, p 196).

¹⁹⁶ Within the hexahedron jackets sleeve configuration

¹⁹⁷ A principle of the Eudaimonic Design Framework

7.4 Original Contributions to knowledge

The research presented in this thesis makes two distinct contributions to new knowledge.

- A Eudaimonic Design Framework to embody positive changes in wellbeing through clothing **(7.4.1)**
- A creative production method of holistic clothing design from a fixed origin **(7.4.2)**

The contributions sit primarily within the field of fashion design practice including three-dimensional clothing design, somaesthetic interaction design, regenerative design, fashion sustainability, and critical design.

7.4.1 Design strategies for embodied clothing for wellbeing

The main contribution of this study is to offer an alternative way of thinking about and experiencing personal and planetary wellbeing, using clothing as a catalyst: - Eight principles form a Eudaimonic Design Framework **(7.3)** providing practical tools to embody clothing with a narrative for wellbeing to elicit sensory somatic interaction with something greater than oneself. The validity of these principles were explored through the practice-based aspect of the research. My interpretation of the framework is an initial exploration. Further exploration of the framework by other audiences and disciplines would be valuable in challenging, developing, and nuancing this theoretical proposition.

7.4.2 No-draft patterning – a fixed origin

Flat patterns for the Alternative Regenerative Clothing were fixed nets of the five Platonic Solids (figures 64, 73-77). Patterning was authentic to these shapes, and as such no flat-pattern origination was required¹⁹⁸. The design acumen lay in balancing the scale, proportion, ratio, and body positioning of those solids. This unconventional approach to garment design and pattern evolution is in itself an innovative and alternative method for fashion students and practitioners. The technique challenges the block, the fundamental method of Western pattern-drafting, and is outside recognised fashion practice, contributing to new knowledge in the field of pattern-drafting and clothing design.

¹⁹⁸ With the exception of straight rectangular cuffs on some pieces

Both contributions (7.4.1 & 7.4.2) question and transcend stereotypical perceptions of clothing's form and purpose.

7.5 Limitations of the study

This research set out to explore if clothes could be designed as a vehicle to carry an embodied narrative to address personal and planetary wellbeing. In response to this complex multifaceted question the Contextual Review (**Chapter 2**) discussed a wide range of subject matter through four distinct, yet symbiotic bubbles of Biophilia, Natural Capital, Eudaimonia, and Somaesthetics. Key insights from the bubbles were then used to develop the eight principle Eudaimonic Design Framework (figure 5). Principles seven and eight of the framework were difficult to embody within the context of the study in that a *small, local, honest* economic model was not available within my locality using plant-based fibres. *Assigning value* is an aspirational principle that could gather momentum if the concept had wider exposure (7.3). On reflection, and within the context of this research, the Contextual Review could have focused less on developing ideas for principles seven and eight.

When analysing cross-study correlations it became evident that there was a substantial amount of super-ordinate themes, and that some themes established from individual interviews were similar, for example, *Frustration/Tension, Seeking Reassurance/Validation, Connection/Part of Something Bigger*. These would perhaps have benefited from being amalgamated under one umbrella at the beginning stages of the analytical process to consolidate and strengthen the super-ordinate themes, however, I do not believe it had any impact on the findings. The allocation of themes to wellbeing dimensions was my intervention and interpretation and allowed data to be viewed through different visual platforms, this could be viewed as *developing* data. Merleau-Ponty suggests that "explanation is invented, not discovered" and is always an interpretation (2014, p. 118) as is IPA methodology.

Several participants felt uncomfortable, and perhaps intimidated, by mood diary interaction, Judy commented that she found it unnecessary (Judy A143). I hadn't fully considered this in the research design. Perhaps some people outside creative practices are unfamiliar and overwhelmed by this format and would benefit from a more structured/guided approach. However, the overall concept did help participants remember their particular interaction experiences within the

interview situation. The instant camera given to participants to visually record their experiences (5.4) was unsuccessful. It was clunky, unreliable, and delivered poor-quality photographs. Perhaps in a shorter facilitated workshop situation its novelty aspect would have been enjoyable, however, over the two-week independent scenario of the study it was irritating. On reflection asking participants to use their own mobile phone to visually record experiences¹⁹⁹ would have been preferable from a spontaneity, convenience, and quality perspective.

The Covid-19 pandemic impacted the Wearer Interaction Study by restricting socialising whilst wearing the garments (5.1). Joy was able to interact with others because of her employment status; Judy was the first participant and restrictions were not fully in place at this time. Judy facilitated a yoga workshop whilst wearing the garments and this provided rich data by sharing and involving others in her experience. The impact of these restrictions and differences in participant interaction on the data is difficult to assess.

7.6 Further Research

Exploring Eudaimonia Through Fashion has opened several channels for further investigation, albeit diverse, all focus on clothing as a medium of communication to explore personal and planetary wellbeing:

1. Dissemination of ARC

Dissemination, exploration, interpretation, and application by others of the eight-principle Eudaimonic Design Framework (2.6, p55) through:

- Fashion & interdisciplinary design practice
- Workshops
- Lectures & presentations
- Conferences
- Publications

¹⁹⁹ As Judy did, albeit unprompted – Vol II, p73, Imagery from Judy's mobile phone

2. Collaboration with farmers

The unavailability of environmentally regenerative local materials and processing facilities for the practical application of ARC was problematic, and necessitates further research through:

- Collaboration with local farmers to explore diversification and funding opportunities for the development of industrial hemp growing
- Funding opportunities for the development of a central hemp processing co-operative for fibre (the outer stem for yarn & fabric production) and shiv (the inner part of the stem to produce heating briquettes)
- Further research on the environmental impact of alpaca fibre, and how this might sit alongside hemp, and as a blended fibre, to produce sustainable, high quality, long-lasting clothing
- Development of a Northumberland Fibershed network to connect and support farmers, processors, designers, and makers wishing to create regenerative clothing production systems that build soil nutrients and protect eco-systems

3. Sensory and embodied pathways

The multisensory somatic phenomena experienced by several of the participants in the Wearer Interaction Study particularly by the dodecahedron glove warrants further focused research.

Initially product refinement is needed as hemp fleece used for the prototype glove (**4.5, p94**) necessitated multiple lockstitch seaming/overlocking of small components which added bulk and the potential for loss of pentagon definition/dodecahedron authenticity; exploration of alternative production methods, materials, and approaches need investigating to enhance the wearer's somatic experience. Collaboration with small, local craft groups specialising in hand-knitting, crochet, and patchwork will be explored.

Phenomenological research on wearer interaction with a developed glove could then be embarked upon, widening participation to include men and children.

7.7 Final thoughts

The somatic connective phenomenon elicited by the ARC concept has shown in a number of examples that it has the potential to communicate on deep, meaningful, and sensory levels that have positively impacted wellbeing, and articulating these experiences is difficult. The alternative theories introduced in this thesis point towards further development and exploration of ARC²⁰⁰, and the expansion of methods, and terminology to communicate the paradigm clearly and effectively.

²⁰⁰ Initial thoughts on further research are listed in 7.6 Further research

References

- Adam, H., & Galinsky, A. D. (2012). Enclothed Cognition. *Journal of Experimental Social Psychology, 48* (4), 918-925.
<https://doi.org/10.1016/j.jesp.2012.02.008>
- Adam, J. A. (2003). *Mathematics in Nature: Modelling patterns in the natural world*. Princeton University Press.
- Adamson, P. (2012, August 28). *History of Philosophy's Greatest Hits: Aristotle - The Golden Mean*. Kings College London.
https://www.youtube.com/watch?v=s7xKzUxGBKA&feature=emb_logo
- Aked, J., & Thompson, S. (2011, July 05). *Five Ways to Wellbeing: New Applications, New Ways of Thinking*. New Economics Foundation.
<https://neweconomics.org/2011/07/five-ways-well-new-applications-new-ways-thinking>
- Alcock, I., White, M. P., Wheeler, B. W., Fleming, L. E., & Depledge, M. H. (2014). Longitudinal Effects on Mental Health of Moving to Greener and Less Green Urban Areas. *Environmental Science & Technology, 48*(2), 1247-1255. <https://doi.org/10.1021/es403688w>
- Alexander, C., Ishikawa, S., Silverstein, M., Jacobson, M., Fiksdahl-King, I., & Angel, S. (1977). *A Pattern Language*. Oxford University Press.
- Allen, D. T. (1997). Effects of dogs on human health. *Journal of American Veterinary Medical Association, 210*(8), 1136-1139
- Appleton, J. (1975). *The Experience of Landscape*. Wiley
- Andrews, F. M., & Withey, S. B. (1976). *Social indicators of well-being: Americans' perceptions of life quality*. Plenum Press
- Ankita, B. (2020, September 03). *Phytoremediation: A Natural Cleaning Process*.
<https://owlcation.com/agriculture/Phytoremediation-A-Natural-Cleaning-Process>
- Anrealage (n.d.). *Spring/Summer 2021 collection 'Home'*. Retrieved March 25, 2021, from <https://www.anrealage.com/collection/100001>
- Antonovsky, A. (1979). *Health, Stress, and Coping*. Jossey-Bass Inc
- Aristotle vs Plato. (n.d.). *Aristotle vs Plato*. Retrieved February 07, 2021, from https://www.diffen.com/difference/Aristotle_vs_Plato
- Arvey, C. G. (2018). *The Biophilia Effect: A Scientific and Spiritual Exploration of the Healing Bond Between Humans and Nature*. Sounds True Publishing
- Bala, D. (2018, November 21). *Well Healed: Can Clothing Cure?* Retrieved January 18, 2021, from <https://www.vogue.fr/fashion/fashion-inspiration/story/victoria-beckham-fashion-as-wellness-ayurvedic/4109>

- Balling, J. D., & Falk, J. H. (1982). Development of Visual Preference for Natural Environments. *Environment and Behaviour*, 14(1), 5-28. Retrieved March 30, 2021, from https://www.researchgate.net/publication/249623275_Development_of_Visual_Preference_for_Natural_Environments.
DOI: 10.1177/0013916582141001
- Balling, J. D., & Falk, J. H. (2009). Evolutionary Influence on Human Landscape Preference. *Environment and Behaviour* 42(4), 479-93. Retrieved March 30, 2021, from <https://journals.sagepub.com/doi/10.1177/0013916509341244>
- Barber, E. J. W. (1992). *Prehistoric Textiles: The Development of Cloth in the Neolithic and Bronze Ages*. Princeton University Press
- Barratt, E., & Bolt, B. (2016). *Practice as Research: Approaches to Creative Arts Enquiry*. Tauris
- Batmanghelidj, F. (2008). *Your Body's Many Cries for Water*. Global Health Solutions.
- Bayne, T. (2013). *Thought: A Very Short Introduction*. Oxford University Press
- Becker, J. (n.d.). *Becoming Minimalist: Owning Less is Great, Wanting Less is Better*. Retrieved March 10, 2021, from <https://www.becomingminimalist.com/less-is-more/>
- Becker, W. & Hagens, B. (1984). The Planetary Grid – A New Synthesis. *Pursuit: Journal of SITU, The Society for the Investigation of The Unexplained*, 17(2), 5073. Retrieved March 01, 2021, from <https://documents.in/document/planetary-grid-a-new-synthesis-william-becker-bethe-hagens.html>
- Bernstein, A. S. (2021). The Medical Response to Climate Change. *Med*, 2(4), 361-65. Retrieved June 01, 2021, from <https://www.sciencedirect.com/science/article/pii/S2666634021001148>
doi:<https://doi.org/10.1016/j.medj.2021.03.012>
- Beshara, R. (2013). The chakra system as a bio-socio-psycho-spiritual model of consciousness: Anahata as heart-centred consciousness. *International Journal of Yoga Philosophy, Psychology and Parapsychology*, 1(1), 29-33. Retrieved February 06, 2021, from https://www.researchgate.net/publication/315445470_The_chakra_system_as_a_bio-socio-psycho-spiritual_model_of_consciousness_Anahata_as_heart-centered_consciousness. doi: 10.4103/WKMP-0041.123289

- Biodynamic Association. (n.d.). *Who was Rudolph Steiner?* Retrieved February 20, 2021, from <https://www.biodynamics.com/steiner.html>
- Bird, C. (1975). Planetary Grid. *New Age Journal*, 5, 36-41. Retrieved March 05, 2021, from <http://quantumagriculture.com/articles/planetary-grid>
- Birren, F. (1978). *Color and Human Response*. Van Nostrand Reinhold Company
- Bolton, A. (2002). *The Supermodern Wardrobe*. V&A Publications
- Bolton, A. (2011). *Alexander McQueen: Savage Beauty*. Yale University Press
- Borrelli-Pearson, L. (2016, October 07). *Made With Paper and Scissors, Swedish Artist Bea Szenfeld's Designs Rock*. Retrieved March 20, 2021, from <https://www.vogue.com/article/swedish-artist-bea-szenfeld-paper-clothing>
- Bosca, I., Mathe, P., & Hangyel, L. (1997). Effect of nitrogen on tetrahydrocannabinol (THC) content in hemp (*Cannabis sativa* L.) leaves at different positions. *Journal of the International Hemp Association*, 4(2), 78-79. Retrieved April 18, 2021, from <https://druglibrary.net/olsen/HEMP/IHA/jiha4207.html>
- Bourn, J. (2010, December 05). *Colour meaning: Meaning of the Colour White*. Retrieved February 14, 2021, from <https://www.bourncreative.com/meaning-of-the-color-white/>
- Bourn, J. (2010, December 15). *Colour Meaning: Meaning of The Colour Black*. Retrieved February 14, 2021, from <https://www.bourncreative.com/meaning-of-the-color-black/>
- Bradford, A. (2017, October 24). *The Five (and More) Senses*. Retrieved July 12, 2021, from <https://www.livescience.com/60752-human-senses.html>
- Bravo, L. (2020). *How To Break Up With Fast Fashion: A guilt-free guide to changing the way you shop - for good*. Headline Publishing Group
- Bringslimark, T., Hartig, T., & Patil G. G. (2007). Psychological Benefits of Indoor Plants in Workplaces: Putting Experimental Results into Context. *American Society for Horticultural Science*, 42(3), 581-87. Retrieved February 20, 2021, from <https://journals.ashs.org/hortsci/view/journals/hortsci/42/3/article-p581.xml>.
<https://doi.org/10.21273/HORTSCI.42.3.581>
- Britannica, T. Editors of Encyclopaedia (2016, March 17). life-world. Encyclopedia Britannica. Retrieved January 06, 2022, from <https://www.britannica.com/topic/life-world>
- Britannica, T. Editors of Encyclopaedia (2021, May 07). yinyang. Encyclopedia Britannica. Retrieved August 02, 2021, from <https://www.britannica.com/topic/yinyang>

- British Hemp Alliance (n.d.). *The Benefits of Growing Hemp*. Retrieved June 08, 2021, from <https://britishhempalliance.co.uk/about-hemp/>
- Brocki, J. M., & Wearden, A. J. (2006) A critical evaluation of the use of interpretative phenomenological analysis (IPA) in health psychology. *Psychology & Health*, 21(1), 87-108.
<https://doi.org/10.1080/14768320500230185>
- Browning, W., Ryan, C. O., & Clancy, J. (2014). *14 Patterns of Biophilic Design: Improving health & well-being in the built environment*.
<https://www.terrapinbrightgreen.com/wp-content/uploads/2014/09/14-Patterns-of-Biophilic-Design-Terrapin-2014p.pdf>
- Browning, W. D, & Ryan, C. O. (2020). *Nature Inside: A biophilic design guide*. Riba
- Buckmire, R. (2015). *Mathematics As A Liberal Art: Euclid, Geometry and the Platonic Solids*. Retrieved July 23, 2021, from
<https://sites.oxy.edu/ron/math/105/15/ws/CLASS-26.pdf>
- Burgess, R., & White, C. (2019). *Fibershed*. Chelsea Green Publishing
- Burton, A., Hughes, M., & Dempsey, R. C. (2017). Quality of life research: a case for combining photo-elicitation with interpretative phenomenological analysis. *Qualitative Research in Psychology*, 14(4), 375-93. DOI: 10.1080/14780887.2017.1322650
- Button, T. (2018). *A Life Less Throwaway: The lost art of buying for life*. Thorsons
- Cajochen, C., Altanay-Elici, S., Munch, M., Frey, S., Knoblauch, V., & Wirz-Justice, A. (2013). Evidence that the Lunar Cycle Influences Human Sleep. *Current Biology*, 23(15), 1485-88. Retrieved February 10, 2021, from
<https://doi.org/10.1016/j.cub.2013.06.029>
- Callaway, J.C. (2004). Hempseed as a nutritional resource: An overview. *Euphytica: International Journal of Plant Breeding*, 140, 65–72.
<https://doi.org/10.1007/s10681-004-4811-6> retrieved 21/10/20
- Cammarata, L. (2007, March 31). *Visualising With Colour*. Idea Health & Fitness Association. Retrieved January 20, 2021, from
<https://www.idealife.com/mind-body-recovery/visualizing-color-0/>
- Campbell, L. A. (2020, May 18). Interview with Joseph Hillier.
- Campbell, L. A. (2014). *Volumetric shape making and pattern cutting*. Shapeshifting: A Conference on Transformative Paradigms of Fashion and Textile Design, 14-16 April, Auckland, New Zealand.
https://openrepository.aut.ac.nz/bitstream/handle/10292/8578/SS20140Submission_05.pdf?sequence=1&isAllowed=y

- Capra, F. (1982). *The Turning Point: Science, Society, and the Rising Culture*. Simon and Schuster.
- Carlson, C. J., Codeço, C. T., Brauer, M., Evengård, B., Cai, W., Fuente, J., & Rautio, A. (2021). Climate and health: An evolving relationship. *Med*. 2(4), 344-347
- Carter, M. (1996). *Putting a face on things: studies in imaginary materials*. Power Publications.
- Carter, S., & Mankoff, J. (2005). *When participants do the capturing: the role of media in diary studies*. Proceedings of the SIGCHI Conference on Human Factors in Computing Systems. <https://doi.org/10.1145/1054972.1055098>
- Carter, S. M., & Little, M. (2007). Justifying knowledge, Justifying Method, Taking Action: Epistemologies, Methodologies and Methods in Qualitative Research. *Qualitative Health Research*, 17(10), 1316-1328. <https://doi.org/10.1177/1049732307306927>
- CDC. (2018). Centers for Disease Control and Prevention. *Health -Related Quality of Life (HRQOL), Well-Being Concepts*. Retrieved January 13, 2021, from <http://www.cdc.gov/hrqol/wellbeing.htm>
- Chan, C. Y. Z., Fung, Y. L., & Chien, W. T. (2013). Bracketing in Phenomenology: Only Undertaken in the Data Collection and Analysis Process. *The Qualitative Report*, 18(30), 1-9. <https://doi.org/10.46743/2160-3715/2013.1486>
- Changing Works (2021). *The Power of Abbreviations – Changing Minds*. Retrieved February 6, 2021, from http://changingminds.org/techniques/language/persuasive/power_abbreviations.htm
- Charney, D. (2011). *Power of Making: The importance of being skilled*. V&A Publishing and The Crafts Council.
- Cherry, K. (2021, April 11). *Heuristics and Cognitive Biases*. Retrieved May 16, 2021, from <https://www.verywellmind.com/what-is-a-heuristic-2795235>
- Chu, D. A. (2004). Tai Chi, Qi Gong and Reiki. *Physical medicine and rehabilitation clinics of North America*, 15(4), 773–vi. <https://doi.org/10.1016/j.pmr.2004.02.001>
- Collective authors - (2016, December 05) *Aristotle & Virtue Theory: Crash Course Philosophy #38*. Retrieved December 16, 2020, from https://www.youtube.com/watch?list=RDCMU6X6b17PVsYBQ0ip5gyeme-Q&v=PrvtOWEXDIQ&feature=emb_rel_end
- Collier, J. (1957). Photography in Anthropology: A Report on Two Experiments. *American Anthropologist*, 59(5), 843-59.

- Coombes, E., Jones, A. P., & Hillsdon, M. (2010). The relationship of physical activity and overweight to objectively measured green space accessibility and use. *Social science & medicine*, 70(6), 816–822.
<https://doi.org/10.1016/j.socscimed.2009.11.02>
- Cooper-Marcus, C. (2005): Healing Gardens in Hospitals, *IDRP Interdisciplinary Design and Research e-Journal*, 1(1), 1-27. https://intogreen.nl/wp-content/uploads/2017/07/cooper_marcus.pdf
- Cooper, G., Taylor, G., & Kiley, D. (2000). *Mirrors of Paradise: The Gardens of Fernando Caruncho*. Monacelli Press
- Cordua, B. (n.d.). *Why Pyrite Crystals Have Different Shapes*. Retrieved May 01, 2021, from
<https://minds.wisconsin.edu/bitstream/handle/1793/48105/PyriteShapes.pdf?sequence=1&isAllowed=y#:~:text=All%20pyrite%20is%20FeS2%20with,%20iron%20and%20sulfur%20atoms.&text=They%20found%20pyrite%20could%20form,at%20which%20the%20crystals%20grew.>
- Coulthard, S. (2020). *Biophilia: you + nature + home. A handbook for bringing the natural world into your life*. Kyle Books.
- Coxeter, H. S. M. (1973). *Regular Polytopes*. Dover Publication.
- Creely, E. (2016). Understanding things from within. A Husserlian phenomenological approach to doing educational research and inquiring about learning. *International Journal of Research & Method in Education* 41(1), 104-122. <https://doi.org/10.1080/1743727X.2016.1182482>
- Cregan-Reid, V. (2019). For the sake of our health, we need to kick the indoor habit. Retrieved March 20, 2021, from
<https://www.theguardian.com/commentisfree/2019/may/27/health-indoor-habit>
- Crinson, I., & Martino, L. (2017). *Concepts of Health, Wellbeing and Illness and the Aetiology of Illness Index*. Retrieved January 25, 2021, from
<https://www.healthknowledge.org.uk/public-health-textbook/medical-sociology-policy-economics/4a-concepts-health-illness/section2/activity3>
- Critchlow, K. (2007). *Time Stands Still: New Light on Megalithic Science*. Floris Books
- Cross, G. (2018, May 21). *Consumerism*. Retrieved March 14, 2021, from
[encyclopedia.com/history/united-states-and-canada/us-history/consumerism](https://www.encyclopedia.com/history/united-states-and-canada/us-history/consumerism)
- Csikszentmihalyi, M. (2002). *Flow: the classic work on how to achieve happiness*. Rider

- Cunningham, J. M. (2020, April 21). *Zipper*. *Encyclopædia Britannica*. Retrieved June 15, 2021, from <https://www.britannica.com/art/zipper>
- Dahlberg, K., Dahlberg, H., & Nystrom, M. (2008). *Reflective Lifeworld Research*. Studentlitterature AB.
- Dalcher, D. (2016). Thinking in Patterns: Problems, Solutions and Strategies. *PM World Journal*, 5(11). <https://pmworldlibrary.net/wp-content/uploads/2016/11/pmwj52-Nov2016-Dalcher-thinking-in-patterns-series-article.pdf>
- Dasgupta, P., (2021,February 2). *The Economics of Biodiversity: The Dasgupta Review*. Retrieved February 10, 2021, from https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/957629/Dasgupta_Review_-_Headline_Messages.pdf
- Davies, I. (2015). The values and motivations behind sustainable fashion consumption. *Journal of Consumer Behaviour*, 15(2), 149-162. <https://onlinelibrary.wiley.com/doi/abs/10.1002/cb.1559>
- Day, T. D., & Rich, C. (2009). A Theoretical Model for Transforming the Design of Healing Spas: Color and Platonic Solids. *HERD: Health Environments Research & Design Journal*, 2(3), 84-107. <https://doi.org/10.1177/193758670900200307>
- Deacon, S. (2020, October 12). Why the Biodiversity Crisis Matters to Fashion. *Fashion Capital*. Retrieved February 01, 2021, from <https://www.fashioncapital.co.uk/ethical/why-the-biodiversity-crisis-matters-to-fashion/>
- Degenstein, L. M., McQueen, R. H., McNeill, L. S., Hamlin, R. P., Wakes, S. J., & Dunn, L. A. (2020). Impact of physical condition on disposal and end-of-life extension of clothing. *International Journal of Consumer Studies*, 44(6), 586-596. <https://onlinelibrary.wiley.com/doi/abs/10.1111/ijcs.12590>
- De Hovitz, D. C. (2016). *The Platonic Solids: An Exploration of the Five Regular Polyhedra and the Symmetries of Three-Dimensional Space*. Department of Mathematics Whitman College, Washington. <https://www.whitman.edu/Documents/Academics/Mathematics/2016/DeHovitz.pdf>
- De Klerk, A. (2019). *Maria Grazia Chiuri created an inclusive garden for Dior spring/summer 2020*. Retrieved February 18, 2021, from <https://www.harpersbazaar.com/uk/fashion/shows-trends/a29205780/dior-spring-summer-2020/>

- De Longis A., Hemphill K. J., & Lehman D. R. (1992). A Structured Diary Methodology for the Study of Daily Events. *Methodological Issues in Applied Social Psychology. Social Psychological Applications to Social Issues*, 2, 83-109. https://link.springer.com/chapter/10.1007%2F978-1-4899-2308-0_5#citeas.
- De Vries, S., Verheij, R. A., Groenewegen, P. P., & Spreeuwenberg, P. (2003). Natural environments – healthy environments? An exploratory analysis of the relationship between greenspace and health. *Environment and Planning A*, 35(10), 1717–31. <https://journals.sagepub.com/doi/10.1068/a35111>
- Denzin, N. K., & Lincoln, Y. S. (1994). *Handbook of Qualitative Research*. Sage Publications
- Department for Environment, Food & Rural Affairs. (2013, June 13). *Industrial fibre crops: business opportunities for farmers*. Retrieved October 21, 2020, from <https://www.gov.uk/guidance/industrial-fibre-crops#history>
- Department of Health. (2014). *The Relationship Between Wellbeing and Health*. https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/295474/The_relationship_between_wellbeing_and_health.pdf
- Deshpande, P. B., Madappa, K. P., & Korotkov, K., (2013). Can the Excellence of the Internal Be Measured? – A Preliminary Study. *Journal of Consciousness Exploration & Research* 4(9) 977-987.
- Dezeen. (2020, March 09). *Coronavirus offers "a blank page for a new beginning" says Li Edelkoort*. Retrieved May 28, 2020, <https://www.dezeen.com/2020/03/09/li-edelkoort-coronavirus-reset/>
- Diamond, J. (2011). *Collapse: How Societies Choose to Fail or Survive*. Penguin
- Diener, E., Scollon, C. N., & Lucas, R. E. (2009). The evolving concept of subjective well-being: The multifaceted nature of happiness. In E. Diener (Ed.), *Assessing well-being: The collected works of Ed Diener* 67–100. https://link.springer.com/chapter/10.1007%2F978-90-481-2354-4_4
- Ditty, S. (2020). *Why still need a fashion revolution*. Retrieved October 28, 2020, from https://issuu.com/fashionrevolution/docs/fr_whitepaper_2020_digital_single_pages
- Dourish, P. (2001). *Where the Action is: The Foundations of Embodied Interaction*. MIT Press.
- Downie-Melrose, K. (2020). *The Protein Debate – understanding the movement to plant-based eating*. Kellogg Rural Leadership Programme.

- https://ruralleaders.co.nz/wp-content/uploads/2020/12/Downie-Melrose-Kate_Kellogg-report-final.pdf
- DRS, Design Research Society. (2021). Pivot 2021 Virtual Conference. July 22-23, 2021. *Dismantling Reassembling, tools for alternative futures*.
<https://www.designresearchsociety.org/events/call-for-participation-pivot-2021-virtual-conference>
- D'Silva, B. (2021, March 31). *The Art of Living - Have we got minimalism all wrong?* Retrieved July 10, 2021, from
<https://www.bbc.com/culture/article/20210330-is-a-simple-minimalist-life-the-key-to-happiness>
- Dunlap, R. E., Van Liere, K. D., Mertig, A. G., & Jones, R. E. (2000). Measuring Endorsement of the New Ecological Paradigm: A Revised NEP Scale. *Journal of Social Issues, 56*(3), 425–442.
https://web.stanford.edu/~kcarmel/CC_BehavChange_Course/readings/Additional%20Resources/J%20Soc%20Issues%202000/dunlap_2000_5_nep_a.pdf
- Dutta, S. (2019, April 19). *The Second Most Beautiful Equation in the World of Mathematics*. Retrieved October 11, 2020, from
<https://www.cantorsparadise.com/the-second-most-beautiful-equation-in-the-world-of-mathematics-4acbe761f637>
- Earls, M. (2011). *Herd: How to change mass behaviour by harnessing our true nature*. Wiley.
- Earth.org (2020, February 06). *Fast Fashion's Detrimental Effect on the Environment*. Retrieved February 9, 2021, from <https://impakter.com/fast-fashion-effect-on-the-environment/>
- East Yorkshire Hemp. (2021). *Hemp Fibre*. Retrieved February 9, 2021, from
<https://eastyorkshirehemp.co.uk/products/hemp-fibre/>
- Eco, U. (1977). *A Theory of Semiotics*. Indiana University Press
- Eden Project (n.d.) *Eden's Mission*. Retrieved August 05, 2021, from
<https://www.edenproject.com/mission>
- Ehrensing, D. (1998). *Feasibility of Industrial Hemp Production in the United States Pacific Northwest*. Station Bulletin 681. Oregon State University. Retrieved October 21, 2020, from
<file:///C:/Users/User/Downloads/PNWIHOSU.pdf>
- Ehrman, E. (2018). *Fashioned from Nature*. V&A Publishing
- Elerick, G. (2018, July 06). *To understand is to perceive patterns*. Retrieved February 01, 2021, from <https://georgeelerick.medium.com/it-was-isaiah-berlin-who-said-9d3332452f0c>

- Ellen MacArthur Foundation. (2017). *A New Textiles Economy: Redesigning Fashion's Future*. A full report. A-New-Textiles-Economy_Full-Report.pdf (ellenmacarthurfoundation.org)
- Eltringham, M. (2020, April 13). *Is salutogenic design the next big issue for the workplace?* Retrieved February 21, 2021, from <https://workplaceinsight.net/is-salutogenic-design-the-next-big-issue-for-the-workplace/>
- Emmer, M. (1982). Art and Mathematics: The Platonic Solids. *Leonardo*, 15(4), 277-282
- Entwistle, J. (2015). *The Fashioned Body: Fashion, Dress and Modern Social Theory*. Polity Press
- Escobar, A. (2017). *Designs for the Pluriverse: Radical Interdependence, Autonomy, and the Making of Worlds*. Duke University Press
- Etter, K. (2019, January 28) *Ethical CBD: Understanding Phytoremediation*. Retrieved October 21, 2021, from <https://www.cannabistech.com/articles/ethical-cbd-understanding-phytoremediation/#:~:text=Phytoremediation%20is%20just%20one%20of,o%20the%20soil%20and%20groundwater.>
- Evans, C. (2003). *Fashion at the edge*. Yale University Press
- Evangard, B. (2021). Climate and health: An evolving relationship. *Med*, 2, 344-347. [https://www.cell.com/med/pdf/S2666-6340\(21\)00109-4.pdf](https://www.cell.com/med/pdf/S2666-6340(21)00109-4.pdf)
- EWT, Energy Wave Theory (n.d.). *What is the Aether?* Retrieved April 04, 2021, from <https://energywavetheory.com/explanations.aether/>
- Fabbiano, S., Bellafante, E., Ramu, S. & Emambokus, N. (2021). Planetary health is human health. *Med*, 2(4), 343. Retrieved May 10, 2021, from [https://www.cell.com/med/fulltext/S2666-6340\(21\)00110-0?_returnURL=https%3A%2F%2Flinkinghub.elsevier.com%2Fretrieve%2Fpii%2FS2666634021001100%3Fshowall%3Dtrue](https://www.cell.com/med/fulltext/S2666-6340(21)00110-0?_returnURL=https%3A%2F%2Flinkinghub.elsevier.com%2Fretrieve%2Fpii%2FS2666634021001100%3Fshowall%3Dtrue)
- FAO. (n.d.). Food and Agriculture Organisation of the United Nations. *Key Facts and Findings*. Retrieved June 09, 2021, <http://www.fao.org/news/story/en/item/197623/icode/>
- Fara, P. (2015). A review article. Newton shows the light: A commentary on Newton (1672) 'A letter...containing his new theory about light and colours...'. *Philosophical Transactions of The Royal Society A, Mathematical Physical and Engineering Sciences*, 373(2039). <https://royalsocietypublishing.org/doi/10.1098/rsta.2014.0213>
- Fashion Revolution. (n.d.). Fashion's Future: The Sustainable Development Goals. Retrieved July 03, 2021, from

- <https://www.futurelearn.com/courses/fashion-s-future-and-the-un-sustainable-development-goals->
- Felder, A., & Felder, D. (2018). Plant the Future Collection. Retrieved 25 March 2021 from <https://felderfelder.com/?portfolio-item=green-is-always-in>
- Fell, D. R. (2010). *Wood in the human environment: restorative properties of wood in the built indoor environment*. University of British Columbia. Retrieved March 31, 2021, from <https://open.library.ubc.ca/collections/ubctheses/24/items/1.0071305>
- Feltz, B (2019). The philosophical and ethical issues of climate change. Retrieved March 05, 2021, from <https://en.unesco.org/courier/2019-3/philosophical-and-ethical-issues-climate-change>
- Fennetaux, A. (2018). *Birds of a Feather: Alexander McQueen's Victorian Bestiary*. <https://journals.openedition.org/cve/4328?lang=en>
- Fine, D. (2014). *Hemp Bound, Dispatches from the front lines of the next agricultural revolution*. Chelsea Green Publishing.
- Fiolet, S. (2020, June 19). *The Secrets of the Platonic Solids and Sacred Geometry*. Retrieved July 23, 2021, from <https://www.sacredgeometryshop.com/sacred-geometry/the-secrets-of-the-platonic-solids/>
- Fletcher, K. (2018). The Fashion Land Ethic: Localism, Clothing Activity, and Macclesfield. *Fashion Practice*, 10(2), 139–159. <https://doi.org/10.1080/17569370.2018.1458495>
- Fletcher, K., & Grose, L. (2012). *Fashion & Sustainability: Design for Change*. Laurence King Publishing
- Fletcher, K., & Tham, M. (2019). *Earth Logic – Fashion Action Research Plan*. JJ Charitable Trust. <https://katefletcher.com/wp-content/uploads/2019/10/Earth-Logic-plan-FINAL.pdf>
- Flowers, P., Larkin, M., & Smith, J. (2012). *Interpretative Phenomenological Analysis: Theory, Method and Research*. Sage Publishing.
- Foglia, L., & Wilson, R. A. (2013). Embodied Cognition. *WIREs Cognitive Science*, 4(3), 319-325. <https://wires.onlinelibrary.wiley.com/doi/abs/10.1002/wcs.1226>
- Forbes-Bell, S. (2018, October 17). Fashion is Psychology. *Fear and Arousal: The Psychology Behind Animal Prints*. Retrieved June 23, 2021, from <https://fashionispsychology.com/fear-and-arousal-the-psychology-behind-animal-prints/>

- Forestapp.cc (n.d.). *Forest, stay focused, be present*. Retrieved July 12, 2021, from <https://forestapp.cc/>
- Fossa, J. (2006). On the Pentagon as a Pythagorean Emblem. *Brazilian Journal of History of Mathematics*, 6(12), 127-137. Retrieved July 03, 2021, from file:///C:/Users/User/Downloads/Pentagram.pdf
- Frankel, S. (2001). *Visionaries: Interviews with Fashion Designers*. V&A Publications
- Frankel, S. (2003). *Dazed and Confused*, January 2003
- Frearson, A. (2017, February 24). "Simplicity is the key to excellence" says Dieter Rams. Retrieved May 06, 2021, from <https://www.dezeen.com/2017/02/24/dieter-rams-designer-interview-simplicity-key-excellence/>
- French, L & Manzanarez, M. (2004) *NAFTA & Neocolonialism: Comparative Criminal, Human, & Social Justice: Comparative Criminal, Human, and Social Justice*. University Press of America.
- Fromm, E. (1964). *The Heart of Man*. Harper & Row
- Frumkin, H. (2001). Beyond toxicity: human health and the natural environment. *American Journal of Preventive Medicine*, 20(3), 234-240. <https://www.sciencedirect.com/science/article/abs/pii/S0749379700003172>
- Fry, T. (2020). *Design Futuring: Sustainability, Ethics, and New Practice*. Bloomsbury.
- Fukai, A., Vinken, B., Frankel, S., & Kurino, H. (2010). *Future Beauty, 30 Years of Japanese Fashion*. Barbican: Merrell
- Fuller, R. A., Irvine, K. N., Devine-Wright, P., Warren, P. H., & Gaston, K. J. (2007). Psychological benefits of greenspace increase with biodiversity. *Biology Letters*, 3(4), 390–394. <http://doi.org/10.1098/rsbl.2007.0149>
- Fury, A. (2016, October 17). *Junya Watanabe, one of fashion's foremost thinkers*. Retrieved April 20, 2021, from <https://www.nytimes.com/2016/10/17/t-magazine/junya-watanabe-interview.html>
- Galle, K. (2018, January 08). *Johannes Kepler's Mysterium Cosmographicum*: Retrieved December 12, 2020, from [//www.thinking3d.ac.uk/Kepler1596/](http://www.thinking3d.ac.uk/Kepler1596/)
- Garcia, H. & Miralles, F. (2017). *Ikigai: The Japanese secret to a long and happy life*. Hutchinson.
- Garidi, C. (2018, December 21). *What is success? The Eudaimonia perspective*. TEDxDrapanosWomen. Retrieved February 7, 2021, from <https://www.youtube.com/watch?v=fj3-GcQo8gg>
- Gates, P. (1999). *Wild Technology: Inventions inspired by nature*. Kingfisher.

- Gelsthorpe, J. (2017). Natural History Museum. *Disconnect from nature and its effect on health and well-being*. Retrieved February 20, 2021, from <https://www.nhm.ac.uk/content/dam/nhmwww/about-us/visitor-research/Disconnect%20with%20nature%20Lit%20review.pdf>
- Ghilarov, A. (1995). Vernadsky's Biosphere Concept: An Historical Perspective. *The Quarterly Review of Biology*, 70(2), 193-203. Retrieved April 07, 2021, from <http://www.jstor.org/stable/3036242>
- Ghyka, M. (1946). *The Geometry of Art and Life*. Sheed & Ward
- Gimbel, T. (1994). *Healing with colour and light: Improve your mental, physical, and spiritual health*. Fireside Publishing.
- Giusti, M., & Samuelsson, K. (2020). The regenerative compatibility: A synergy between healthy ecosystems, environmental attitudes, and restorative experiences. *PLoS ONE* 15(1): e0227311. <https://doi.org/10.1371/journal.pone.0227311>
- Givhan, R. (2019). *Evaluating the environment and ourselves at the Comme des Garçons and Noir by Kei Ninomiya shows*. Retrieved July 09, 2021, from <https://www.washingtonpost.com/lifestyle/2019/09/29/comme-des-garcons-considers-gender-identity-noir-by-kei-ninomya-has-thoughts-environment/>
- Glennie, J. (2011, June 08). *Why haven't politicians heeded the wisdom of E F Schumacher?* Retrieved February 26, 2021, from <https://www.theguardian.com/global-development/poverty-matters/2011/jun/08/fritz-schumacher-economic-environmental-visionary>
- Glicken, M. D. (2003). *Social Research: A Simple Guide*. Allyn & Bacon
- Global Wellness Summit. (2020). *Smart Clothes That Actively Boost Health & Wellbeing: Trend: Well Fashion – Way Beyond Athleisure*. Retrieved December 29, 2021, from <https://www.globalwellnesssummit.com/trendium/smart-clothes-boost-health-wellbeing/>
- Goody, J. (2002). The Anthropology of the Senses and Sensations. *La Ricerca Folklorica*, 45, 17-28. <https://doi.org/10.2307/1480153>
- Google Arts & Culture. (n.d.). *9 Facts you might not know about the sari*. Retrieved July 23, 2021, from <https://artsandculture.google.com/story/9-facts-you-might-not-know-about-the-sari/ewli5LK9aiamJA>
- Gorchs, G., Lloveras, J., Serrano, L., & Cela, S. (2017). Hemp Yields and Its Rotation Effects on Wheat under Rainfed Mediterranean Conditions. *Agronomy Journal*, 109(4), 1551-1560. doi: 10.2134/agronj2016.11.0676.
- Gorvett, Z. (2020, February 18). *The mystery of why there are more women vegans*. Retrieved March 29, 2021, from

- <https://www.bbc.com/future/article/20200214-the-mystery-of-why-there-are-more-women-vegans>
- Gowans-Eglinton, C. (2017, January 17). *Dopamine Dressing: Fashion to Make You Smile This January*. Retrieved September 03, 2021, from <https://graziadaily.co.uk/fashion/news/january-shopping-buy/>
- Gray, C. (1996). *Inquiry Through Practice: developing appropriate research strategies*. Retrieved January 09, 2021, from https://www.researchgate.net/publication/260512592_Inquiry_through_Practice_developing_appropriate_research_strategies
- Gray, C., & Malins, J. (2004). *Visualising Research: A Guide to the Research Process in Art and Design*. Routledge
- Gray, D. (2017). *Doing Research in the Real World*. Sage.
- Greene, L. (2019, December 25). How a Minimalist Lifestyle Can Add to Your Green Efforts. Retrieved January 30, 2021, from <http://earth911.com/living-well-being/minimalist-lifestyle/>
- G7 Cornwall, United Kingdom (2021). *G7 2030 Nature Compact*. <https://www.g7uk.org/wp-content/uploads/2021/06/G7-2030-Nature-Compact-PDF-120KB-4-pages-2.pdf>
- Gullone, E. (2000). The Biophilia Hypothesis and Life in the 21st Century: Increasing Mental Health or Increasing Pathology? *Journal of Happiness Studies: An Interdisciplinary Forum on Subjective Well-Being*, 1(3), 293-321. <https://doi.org/10.1023/A:1010043827986>
- Gulmen, F. M. (2004). Energy Medicine. *The American Journal of Chinese Medicine*, 32(5), 651-658. <https://doi.org/10.1142/S0192415X04002429>
- Gunderson, R. (2014). Erich Fromm's Ecological Messianism: The First Biophilia Hypothesis as Humanistic Social Theory. *Humanity & Society*, 38(2), 182-204. <https://journals.sagepub.com/doi/10.1177/0160597614529112>
- Gwilt, A. (2020). *A Practical Guide to Sustainable Fashion (Basics Fashion Design)*. Bloomsbury.
- Gwozdz, W., Nielsen, K. S., Gupta, S., & Gentry, J. (2017). *The Relationship between Fashion and Style Orientation and Well-being*. Mistra Future Fashion. Mistra Future Fashion Report No. 2017:5. Retrieved August 01, 2020, from <http://mistrafuturefashion.com/wp-content/uploads/2017/11/D3.1.1.2-Style-versus-fashion-and-wellbeing.pdf>
- Hagens, B. (2006). Plato's Cosmic Container. *Parabola*, 31(3), 30-34 https://www.researchgate.net/publication/281785025_Plato's_Cosmic_Containerpdf

- Hagens, B. (2014). Geomantic Earthmind: Practising Earth Yoga a response to Krippern and Schroll. *Paranthropology: Journal of anthropological approaches to the paranormal*. 5(4), 66-69.
https://www.academia.edu/9136793/Geomantic_Earthmind_Practicing_Earth_Yoga
- Han, K. (2009). Influence of Limitedly Visible Leafy Indoor Plants on the Psychology, Behavior, and Health of Students at a Junior High School in Taiwan. *Environment and Behavior* 41(5), 658-692
<https://journals.sagepub.com/doi/10.1177/0013916508314476>
- Han, K. (2010). An Exploration of Relationships Among the Responses to Natural Scenes: Scenic Beauty, Preference, and Restoration. *Environment and Behavior*, 42(2), 243–270. <https://journals.sagepub.com/doi/10.1177/0013916509333875>
- Hankey, A., & McCrum, S. (2006). Qigong: life energy and a new science of life. *Journal of Alternative and Complementary Medicine*, 12(9), 841–842.
<https://doi.org/10.1089/acm.2006.12.841>
- Hart, G. (1998). *Neolithic Carved Stone Polyhedra*. Retrieved June 04, 2020, from <http://georgehart.com/virtual-polyhedra/neolithic.html>
- Hartig, T., Evans, G.W., Jamner, L.D., Davis, D.S., & Gärling, T. (2003). Tracking restoration in natural and urban field settings. *Journal of Environmental Psychology* 23(2), 109-123. [https://doi.org/10.1016/S0272-4944\(02\)00109-3](https://doi.org/10.1016/S0272-4944(02)00109-3)
- Hathaway, M. & Boff, L. (2009). *The Tao of Liberation: Exploring the Ecology of Transformation*. Orbis Books.
- Hautly, L. (2016). *Epistemological Perspectives in Qualitative Research*. Retrieved July 10, 2020, from <https://lisahautly.com/blog/epistemological-perspectives-in-qualitative-research>
- Heath, O. (2020). *What are the benefits of biophilic design?* Retrieved April 07, 2021, from <https://www.oliverheath.com/biophilic-design-connecting-nature-improve-health-well/>
- Heintzelman, S. J. (2018). Eudaimonia in the contemporary science of subjective well-being: Psychological well-being, self-determination, and meaning in life. In E. Diener, S. Oishi, & L. Tay (Eds.), *Handbook of well-being*. DEF Publishers.
- Hemenway, P. (2005). *Divine Proportion: Phi in Art, Nature and Science*. Sterling
- Hemp for Victory, (1942). 14-minute film produced by US Government. Retrieved June 09, 2021, from weirdovideo.com
<https://www.youtube.com/watch?v=v6RS3W98D5I>

- Henkel, L. C. (1937). Study of Hemp – Cannabis Sativa. Retrieved June 21, 2021, from https://www.hempsteadprojectheart.org/study_of_hemp#:~:text=Hemp%20may%20be%20planted%20at,any%20time%20during%20the%20year.
- Hess, S. (2017, September 17). *Biomimicry: Learning from Nature for a Better Future*. Retrieved July 26, 2021, from <https://outthereoutdoors.com/biomimicry-learning-from-nature-for-a-better-future/>
- Hill, C. (1994). Gallo-Roman Dodecahedra: A Progress Report. *The Antiquaries Journal*, 74, 289-292. doi:10.1017/S0003581500024458
- Hishinuma, Y. (1986). *Clothes by Yoshiki Hishinuma*. Yoshiba
- Hiskey, D. (2019, September 12). Humans have a lot more than five senses – here are 18. Retrieved January 10, 2021, from <https://www.considerable.com/health/healthy-living/humans-five-senses/>
- Hodge, B., Wigley, M., & Mears, P. (2006). *Skin + Bones: Parallel Practices in Fashion and Architecture*. Thames & Hudson
- Hole, G., & Hole, A. S. (2019). Recycling as the way to greener production: A mini review. *Journal of Cleaner Production*. 212, 910-915. <https://doi.org/10.1016/j.jclepro.2018.12.080>
- Hook, K. (2018). *Designing With the Body: Somaesthetic Interaction Design*. The MIT Press
- Hope, K. (2019, January 25). The Vegan Leather Brewed in a Lab. BBC News. Retrieved March 20, 2021, from <https://www.bbc.co.uk/news/business-46991449>
- Hrustic, A. (2010, November 23). *Plato's Collection by Amila Hrustić*. Retrieved July 14, 2020, from <https://www.dezeen.com/2010/11/23/platos-collection-by-amila-hrustic/>
- Huber, M. (2011). How should we define health? *theBMJ*; 343. doi: <https://doi.org/10.1136/bmj.d4163>
- Hundt, J. (2016, April 06). *The Biophilia Effect*. Retrieved May 02, 2021, from <https://foresightarch.com/the-biophilia-effect/>
- Hurst, T. (2017). Catalysts that Initiate Embodied Knowing: Reflections on Individuation, Synchronicity, & Ritual Space. *Paranthropology* 8(1), 56-62. https://www.academia.edu/31891728/Paranthropology_Journal_of_Anthropological_Approaches_to_the_Paranormal_Vol_8_No_1_March_2017_
- Husain, R., Weeden, H., Bogush, D., Deguchi, M., Soliman, M., Potlakayala, S., Katam, R., Goldman, S., & Rudrabhatla, S. (2019). Enhanced tolerance of industrial hemp (*Cannabis sativa* L.) plants on abandoned mine land soil

- leads to overexpression of cannabinoids. *PLoS one*, 14(8), e0221570.
<https://doi.org/10.1371/journal.pone.0221570>
- Huta, V., & Waterman, A. S. (2014). Eudaimonia and its Distinction from Hedonia: Developing a Classification and Terminology for Understanding Conceptual and Operational Definitions. *Journal of Happiness Studies* 15, 1425–1456. <https://doi.org/10.1007/s10902-013-9485-0>
- Hycner, R.H. (1985). Some guidelines for the phenomenological analysis of interview data. *Human Studies*, 8, 279-303.
- Ingold, T. (2012). *Thinking through making*. Institute for Northern Culture: Tales from the North 2012. <https://www.youtube.com/watch?v=Ygne72-4zyo> accessed 30.04.20
- Integral Institute (2007). *Integral Life: About Integral Institute*. Retrieved on February 22, 2021, from www.integralinstitute.org/public/static/abthistory.html
- IPPR. (2005, January 23). *Meeting the Climate Challenge; The Recommendations of the International Climate Change Taskforce*. Retrieved on March 29, 2021, <https://www.ippr.org/publications/meeting-the-climate-challenge>
- Ireland, C. (2003). *Qualitative methods, from boring to brilliant (pp23-29) in Design Research: Methods and Perspectives*. The MIT Press.
- Isseymiyake.com (n.d.). 1325. Retrieved on May 20, 2021, from <https://www.isseymiyake.com/1325/standard/>
- Jakimow, L. (2013, February 22). *Genesis 1:26-28 and Environmental Rights*. Retrieved on March 11, 2021, from <https://rightnow.org.au/opinion-3/genesis-126-28-and-environmental-rights/>
- Jeon, E. J. (2013). Thesis: *Designing enriched aesthetic interaction for garment comfort*. <https://core.ac.uk/download/pdf/195696529.pdf>
- Johansen, B. (2020). *Full-Spectrum Thinking: How to Escape Boxes in a Post-Categorical Future*. Berrett-Koehler Publishers.
- Johnson, K., Lennon, S.J., & Rudd, N. (2014). Dress, body, and self: research in the social psychology of dress. *Fashion and Textiles* 1, 20. <https://doi.org/10.1186/s40691-014-0020-7>
- Jonkisz, J., Wierzchon, M., & Binder, M. (2017). Four-Dimensional Graded Consciousness. *Frontiers in Psychology*. Hypothesis and Theory <https://doi.org/10.3389/fpsyg.2017.00420>
- Jung, H., & Stahl, A. (2018). Soma-Wearable Design: Integrating Somaesthetic Practice and Fashion Design for Somatic Wellbeing. Proceedings of DRS

2018. Presented at the DRS 2018 Design Research Society. Limerick, Ireland. 25-28 June 2018. <https://doi.org/10.21606/drs.2018.646>
- Kannaiyan, J. (2017, March 07). A Recipe for Eudaimonia. Retrieved May 22, 2021, from TEDxGurugram https://www.youtube.com/watch?v=L5ae0-JwDI8&feature=emb_logo
- Kapsali, V. (2016). *Biomimetics for Designers: Applying nature's processes & materials in the real world*. Thames & Hudson
- Kate T., Poonam, S., Sehgal, P., Jasuja, N., Anderson, W., Cabansag, C., & McKinney, I. (n.d.). *Aristotle vs Plato*. Diffen.com. Retrieved February 07, 2021, from https://www.diffen.com/difference/Aristotle_vs_Plato
- Kayseri, G. O., Özdil, N., & Mengüç, G. S. (2012). *Sensorial Comfort of Textile Materials*. Ege University, Textile Engineering Department, Izmir, Turkey. https://cdn.intechopen.com/pdfs/36908/InTech-Sensorial_comfort_of_textile_materials.pdf
- Keach, E. & Rosenborg, C. (2020). *Atonement: a new type of fashion brand for the locally minded and globally conscious*. <https://www.atonement.earth/>
- Kellert, S. R. (1997). *Kinship to Mastery: Biophilia in human evolution and development*. Island Press
- Kellert, S. R. (2005). *Buildings for Life: Understanding and Designing the Human-Nature Connection*. Island Press
- Kellert, S. R. (2012). *Birthright: people and nature in the modern world*. Yale University Press
- Kellert, S. R., & Calabrese, E. (2015). *The Practice of Biophilic Design*. www.biophilic-design.com
- Kellert, S. R., Heerwagen, J. H. & Mador, M. L. (2008). *Biophilic Design: The Theory, Science, and Practice of Bringing Building to Life*. Wiley
- Kellert, S. R., & Wilson. E. O. (1993). *The Biophilia Hypothesis*. Island Press
- Keniger, L., Gaston, K. J., Irvine, K. N., & Fuller, R. A. (2013). What are the benefits of interacting with nature? *International Journal of Environmental Research and Public Health*, 10(3), 913-935. Doi:10.3390/ijerph10030913
- Kenny, A. J. P. (n.d.). Encyclopedia Britannica. *Political Theory of Aristotle* <https://www.britannica.com/biography/Aristotle/Political-theory>
- Khramkova, E. (2020). *Biophilic Culture and its Nuances*. Retrieved August 05, 2021, from <https://medium.com/qu%C4%81lis/biophilic-culture-and-its-nuances-54339a15a6f3>
- Kimiecik J. (2016). The Eudaimonics of Health: Exploring the Promise of Positive Well-Being and Healthier Living. In: Vittersø J. (eds) *Handbook of*

- Eudaimonic Well-Being*. International Handbooks of Quality-of-Life. Springer, Cham. https://doi.org/10.1007/978-3-319-42445-3_23
- Kingsley, J. (2021, November 04). 46 Amazing Facts about the Number 5. Retrieved December 02, 2021, from <https://kidadl.com/articles/amazing-facts-about-the-number-5>
- Kisaki, Y. (2011, August 15). *When Less is More: Japanese Concept of MA, Minimalism and Beyond*. Retrieved November 04, 2021, from <https://wawaza.com/blogs/when-less-is-more-japanese-concept-of-ma-minimalism-and-beyond/>
- Knudsen, C. (2003). Pluralism, scientific progress, and the structure of organization theory, in H. Tsoukas & C. Knudsen (eds) *The Oxford Handbook of Organization Theory: Meta-Theoretical Perspectives*. Oxford University Press, pp. 262–86.
- Kofta, K. (n.d.). *Platonic Solids FW14*. Retrieved April 29, 2021, from <https://koftastudio.com/pages/creations>
- Korff, J. (2021, November 10). *Deep listening (dadirri)*. Retrieved November 20, 2021, from <https://www.creativespirits.info/aboriginalculture/education/deep-listening-dadirri>
- Kraut, R. (2018). *The Quality of Life: Aristotle Revised*. Oxford University Press
- Kühn, S., & Rieger, U. M. (2017). Health is a state of complete physical, mental, and social well-being and not merely absence of disease or infirmity. *Surgery for obesity and related diseases : official journal of the American Society for Bariatric Surgery*, 13(5), 887. <https://doi.org/10.1016/j.soard.2017.01.046>
- Kumano, M. (2018). On the Concept of Well-Being in Japan: Feeling Shiawase as Hedonic Well-Being and Feeling Ikigai as Eudaimonic Well-Being. *Applied Research in Quality-of-Life Studies*, 13(2), 419–433. <https://doi.org/10.1007/s11482-017-9532-9>
- Kyriacou, C., Forrester-Jones, R. & Triantafyllopoulou, P. (2021). Clothes, Sensory Experiences and Autism: Is Wearing the Right Fabric Important? *Journal of Autism and Developmental Disorders*. <https://doi.org/10.1007/s10803-021-05140->
- Laird, M. (2018, January 27). *Healing and The Platonic Solids*. Retrieved October 23, 2021, from <https://margotlaird.blog/2018/01/27/sydney-healer-healing-and-the-platonic-solids/>
- Lawler, R. (1982). *Sacred Geometry: Philosophy and Practice*. Thames & Hudson

- Lazarus, D. (2013). Paleooceanography, Biological Proxies Radiolarians and Silicoflagellates, *Encyclopedia of Quaternary Science* (2nd Ed), 830-840. DOI: 10.1016/B978-0-444-53643-3.00286-7
- Ledger, E. (2020). *Current UK hemp legislation and what it means for the industry*. Retrieved September 21, 2021, from <https://canex.co.uk/current-uk-hemp-legislation-and-what-it-means-for-the-industry/>
- Lehmann, S. (2019). *Reconnecting with nature: Developing urban spaces in the age of climate change*. Emerald Open Research. Retrieved August 29, 2021, from <https://doi.org/10.12688/emeraldopenres.12960.1>
- Lent, J. (2021). *The Web of Meaning: Integrating science and traditional wisdom to find our place in the universe*. Profile Books
- Lerpiniere, C. (2015). *The Textile Archive: Curating personal histories and family narratives (PhD thesis)*. De Montfort University
file:///C:/Users/User/Downloads/Lerpiniere%20-%20Thesis%20eVersion%20-%20print%20res.pdf
- Lewis, R. (2013). *Modest Fashion: Styling Bodies, Mediating Faith*. Tauris
- Ley, T., Shaman, R., & Bartley, J. (2020). Retrieved July 10, 2021, from *UK hemp manifesto - seeding the future for British hemp*.
<https://britishhempalliance.co.uk/manifesto/>
- Li, H. & Lin, H. (1974). *An archaeological and historical account of cannabis in China*. Econ Bot.
- Li, Q., Kobayashi, M., Kumeda, S., Ochiai, T., Miura, T., Kagawa, T., Imai, M., Wang, Z., Otsuka, T., & Kawada, T. (2016). Effects of Forest Bathing on Cardiovascular and Metabolic Parameters in Middle-Aged Males. *Evidence-based complementary and alternative medicine*.
<https://doi.org/10.1155/2016/2587381>
- Li, X. & Zhao, J. (2012). *An Approach to the Nature of Qi in TCM-Qi and Bioenergy*. doi:10.5772/28416. <https://www.intechopen.com/books/recent-advances-in-theories-and-practice-of-chinese-medicine/an-approach-to-the-nature-of-qi-in-tcm-qi-and-bioenergy>
- Lidwell, W., Holden, K. & Butler, J. (2015). *The Pocket Universal Principles of Design: 150 Essential tools for architects, artists, designers, developers, engineers, inventors, and makers*. Rockport
- Lindstrom, B. (2020). *Salutogenesis: an introduction*. Local Government Association. Public Health.
- Livio, Mario (2002). *The Golden Ratio: The Story of Phi, The World's Most Astonishing Number*. Broadway Books.

- Livni, E. (2017, April 06). *This Japanese word connecting mind, body, and spirit is also driving scientific discovery*. Retrieved February 10, 2020, from <https://qz.com/946438/kokoro-a-japanese-word-connecting-mind-body-and-spirit-is-also-driving-scientific-discovery/>
- Lloyd-Wright, F. (n.d.). *Frank Lloyd Wright Quotes*. Retrieved March 31, 2021, from BrainyQuote.com.
https://www.brainyquote.com/quotes/frank_lloyd_wright_127707
- Loidolt, S. (2017). *Phenomenological Pragmatism, Naturalist Pragmatism, and Intentionality. Pragmatic Perspectives in Phenomenology*. Routledge
- Love, B., Vetere, A., & Davis, P. (2020). Should Interpretative Phenomenological Analysis (IPA) be Used with Focus Groups? Navigating the Bumpy Road of “Iterative Loops,” Idiographic Journeys, and “Phenomenological Bridges”. *International Journal of Qualitative Methods*, 19, 1–17.
sagepub.com/journals-permissions DOI: 10.1177/1609406920921600
journals.sagepub.com/home/ijq first
- Luminet, JP., Weeks, J., Riazuelo, A. (2003). Dodecahedral space topology as an explanation for weak wide-angle temperature correlations in the cosmic microwave background. *Nature* 425, 593–595.
<https://doi.org/10.1038/nature01944>
- Lupton, E. & Abbott-Miller, J. (1993). *The abc's of the Bauhaus and Design Theory*. Thames and Hudson.
- Lurie, A. (1992). *The Language of Clothes*. Bloomsbury
- Lyle-Skains, R. (2018). Creative Practice as Research: Discourse on Methodology. *The Journal of Media Practice and Education*, 19(1), 82-89.
Retrieved April 28, 2020, from
<http://doi.org/10.1080/14682753.20117.1362175>
- Maas, J. (2006). Green space, urbanity, and health: how strong is the relation? *Journal of Epidemiology & Community Health*, 60(7), 587–92.
- Macy, J. & Johnstone, C. (2012). *Active Hope: How to Face the Mess We're in Without Going Crazy*. New World Library.
- Maggie's Oldham/dRMM. (2017, Jul 03). *ArchDaily*. Retrieved July 25, 2021, from <https://www.archdaily.com/874795/maggies-oldham-drmm> ISSN 0719-8884
- Magno, T. (2018). *Harmony in Japan: the art of a collectivist society*. Retrieved February 10, 2020, from <https://www.japamigo.com/2541/>
- Mair, C. (2018). *The Psychology of Fashion*. Routledge.
- Majid, A., & Levinson, S. C. (2011). The Senses in Language and Culture. *Senses & Society*, 6(1), 5–18

- Manzini, E. (2011). The New Way of the Future: Small, Local, Open and Connected. *Social Space*, 100-105.
https://ink.library.smu.edu.sg/lien_research/75
- Marshall, D. (1976). *Carved Stone Balls*. Retrieved June 05, 2020, from file:///C:/Users/User/Downloads/8959-Article%20Text-8913-1-10-20181026.pdf
- Martin, B., & Hanington, B. (2018). *Universal Methods of Design*. Rockport.
- Mass, E. (2009). *Hemp Fabric: The New, Old Fibre Makes a Comeback for Clothes and Home*. Retrieved October 21, 2020, from Hemp Fabric Comeback (life.ca)
- Matsumoto, K. (2020, April 24). *MA – The Japanese Concept of Space and Time*. Retrieved August 29, 2021, from <https://medium.com/@kiyoshimatsumoto/ma-the-japanese-concept-of-space-and-time-3330c83ded4c>
- Matsuoka, R., & Kaplan, R. (2008). Human needs in the urban landscape: analysis of landscape and urban planning contributions. *Landscape and Urban Planning* 84, 97-109.
- Mattelmaki, T. (2006). *Design Probes*. Publication Series of the University of Art and Design Helsinki. Gummerus
- Maxwell, N. (2017). *In Praise of Natural Philosophy: A Revolution for Thought and Life*. McGill-Queen's University Press
- Mayfield, A. (2010, November 17). *Embrace complexity to find simplicity*. Retrieved June 25, 2021, from <https://www.antonymayfield.com/2010/11/17/embrace-complexity-to-find-simplicity/>
- McKendrick, J., Brooks, R., Hudson, J., Thorpe, M., & Bennett, P. (2017). *Aboriginal and Torres Strait Islander Healing Programs: A Literature Review*. Aboriginal-and-Torres-Strait-Islander-Healing-Programs-A-Literature-Review.pdf (healingfoundation.org.au)
- McLeod, S. A. (2020, December 29). *Maslow's Hierarchy of Needs*. Retrieved February 12, 2021, from <https://www.simplypsychology.org/maslow.html#gsc.tab=0>
- McNerney, S. (2011, November 4). A brief guide to embodied cognition: *Why You Are Not Your Brain*. Retrieved February 19, 2021, from <https://blogs.scientificamerican.com/guest-blog/a-brief-guide-to-embodied-cognition-why-you-are-not-your-brain/>
- McQuillan, H. & Rissanen, T. (2020). Mind-Body-Garment-Cloth; Chapter 8 in *Crafting Anatomies, Archives, Dialogues, Fabrications*. Bloomsbury

- Meadow, M. (1993). Yogic Chakra Symbols: Mirrors of the Human Mind/Heart: *Journal of Religion and Health*, 32(1) 67-78.
<https://www.jstor.org/stable/27510726> Accessed: 18-05-2020 11:10 UTC
- Mehmedic, Z., Chandra, S., Slade, D., Denham, H., Foster, S., Patel, A. S., Ross, S. A., Khan, I. A., & ElSohly, M. A. (2010). Potency trends of Δ 9-THC and other cannabinoids in confiscated cannabis preparations from 1993 to 2008. *Journal of forensic sciences*, 55(5), 1209–1217.
<https://doi.org/10.1111/j.1556-4029.2010.01441.x>
- Mehta, D. (2018, April 26). *What Is Lagom, and How Can It Create a More Balanced Approach to Work and Life?* Retrieved March 11, 2021, from <https://blog.hubspot.com/marketing/what-is-lagom>
- Meierrieks, D. (2020). Weather shocks, climate change and human health. *World Development*, 138(C). <https://doi.org/10.1016/j.worlddev.2020.105228>.
- Mendes, V. (1999). *Black in Fashion*. V&A Publications
- Merleau-Ponty, M. (2014 - Translated by Landes, D. A.) *Phenomenology of Perception*. Routledge
- Merriam, S. (2009). *Qualitative research: A guide to design and implementation*. Jossey-Bass.
- Merriam-Webster. (n.d.). *Biophilia*. Retrieved March 24, 2021, from <https://www.merriam-webster.com/dictionary/biophilia>
- Metropolis Editors. (2016). *The A to Z of Issey Miyake: A lexicon and guide to the designer's ground-breaking portfolio, collaborators, and innovative thinking*. Retrieved April 10, 2021, from <https://www.metropolismag.com/design/the-a-to-z-of-issey-miyake/?cparticle=3&siarticle=2#Graphic>
- Miguel, I., Coelho, A., & Bairrada, C. M. (2020). Modelling Attitude towards Consumption of Vegan Products. *Sustainability*, 13(1), 9. MDPI AG. Retrieved from <http://dx.doi.org/10.3390/su13010009>
- Moore, C. (2020, December 07). *What is Eudaimonia? Aristotle and Eudaimonic Well-Being*. Retrieved December 10, 2020, from What is Eudaimonia? Aristotle and Eudaimonic Well-Being (positivepsychology.com)
- Moore, M., Townsend, M. & Oldroyd, J. (2006). Linking Human and Ecosystem Health: The Benefits of Community Involvement in Conservation Groups. *EcoHealth* 3(4), 255–261. <https://doi.org/10.1007/s10393-006-0070-4>
- Moorhouse D. (2020). Making Fashion Sustainable: Waste and Collective Responsibility. *One Earth*, 3(1), 17–19.
<https://doi.org/10.1016/j.oneear.2020.07.002>

- Moreno, I. (2020, October 06), *Hemp Countries To Watch: From dominant China to tiny Lithuania, more nations are embracing uses for the plant*. Retrieved December 19, 2020, from <https://hempindustrydaily.com/hemp-countries-to-watch-from-dominant-china-to-tiny-lithuania-more-nations-are-embracing-uses-for-the-plant/?cn-reloaded=1>
- Motif.org. (n.d.). *Biomimicry in Fashion: Clothing Inspired by Nature*. Retrieved July 26, 2021, from <https://motif.org/news/biomimicry-fashion/>
- Motoyama, H. (2016). *Theories of the Chakras: Bridge to Higher Consciousness*. New Age Books (4th ed)
- Muir. J. (n.d.). *John Muir*. Retrieved March 28, 2021, from BrainyQuote.com. https://www.brainyquote.com/quotes/john_muir_108391
- Mukherjee, S. (2015). Environmental and Social Impact of Fashion: Towards an Eco-friendly, Ethical Fashion. *International Journal of Interdisciplinary and Multidisciplinary Studies (IJIMS)*, 2(3), 22 -35.
- Murray. A. & Winteringham. G. (2015). *Patternity A New Way of Seeing: The Inspirational Power of Pattern*. Conran Octopus
- Mylo. (2021). *Mylo-unleather*. Retrieved March 25, 2021, from <https://www.mylo-unleather.com/>
- Nakamichi, T. (2011). *Pattern Magic - Vol. 2*. Laurence King Publishing
- National Geographic. (n.d.). *Anthropocene*. Retrieved October 22, 2019, from <https://www.nationalgeographic.org/encyclopedia/anthropocene/#:~:text=The%20Anthropocene%20Epoch%20is%20an,the%20planet's%20climate%20and%20ecosystems>
- Natural Capital Forum (n.d.). *What is Natural Capital?* Retrieved January 18, 2021, from <https://naturalcapitalforum.com/about/>
- Naturespace, (n.d.). *Naturespace Holographic Audio*. Retrieved April 19, 2021, from <http://www.naturespace.org/about-naturespace>
- Negrin, L. (2019). *Thinking Through Fashion, A Guide to Key Theorists: Maurice Merleau-Ponty, The Corporeal Experience of Fashion*. Chapter 7, p115-131. Bloomsbury
- Newport, C. (2019). *Digital Minimalism: Choosing a Focused Life in a Noisy World*. Penguin.
- NHS Forest (n.d.). *Evidence of Benefits*. Retrieved March 31, 2021, from nhsforest.org/evidence-benefits
- Niemiec, C. P. (2014) Eudaimonic Well-Being. *Encyclopedia of Quality of Life and Well-Being Research*. Retrieved February 6, 2021, from https://doi.org/10.1007/978-94-007-0753-5_929

- Niinimäki, K., Peters, G., Dahlbo, H., Perry, P., Rissanen, T., Gwilt, A. (2020). The environmental price of fast fashion. *Nature Reviews Earth & Environment* 1(4), 189–200. <https://doi.org/10.1038/s43017-020-0039-9>
- Nilsson, K., Sangster, M., Gallis, C., Hartig, T., de Vries, S., Seeland, K., & Schipperijn, J. (2011). *Forests, Trees and Human Health*. Springer
- Noble, H., & Heale, R. (2019). Triangulation in research, with examples. *Evidence Based Nursing*. Retrieved April 28, 2020, from <https://ebn.bmj.com/content/22/3/67>
- Noddy, T. (2021, July 12). Tom Noddy's Bubble Magic. *Geometry Matters*. Retrieved May 21, 2021, from <https://geometrymatters.com/tom-noddys-bubble-magic/>
- Nonaka, I. (1991). The knowledge-creating company. *Havard Business Review* (November-December) 96-104
- Nova (2020). *Who's Pythagoras?* Retrieved June 20, 2021, from <https://www.pbs.org/wgbh/nova/proof/puzzle/pythagoras.html>
- Novak, M. A. (2012, November 05). *Misunderstood Masterpiece: Salvador Dali's "The Sacrament of the Last Supper"*. Retrieved June 20, 2021, from <https://www.americamagazine.org/issue/misunderstood-masterpiece>
- O'Dea, C. (2020). *Behind the Seams*. https://issuu.com/charlotteodea/docs/odea_portfolio_thesis
- Ohira, T., & Matsui, N. (2013). Phytoncides in Forest Atmosphere in Qing Li ed., *Forest Medicine* 31. Nova Biomedical
- Olsen, S. (2006). *The Golden Section: Nature's Greatest Secret*. Wooden Books
- Omelich, Y. (2019, October 16). *The Impact of Fast Fashion*. Retrieved November 06, 2020, from www.codogirl.com › blogs › news › the-impact-of-fast-fashion
- Orgone Energy. (2019, December 12). *Star Tetrahedron Meaning - What is it?* Retrieved June 02, 2021, from <https://www.orgoneenergy.org/blogs/news/star-tetrahedron-meaning>
- Orians, G. H., & Heerwagen, J. H. (1992). Evolved responses to landscapes. In J. H. Barkow, L. Cosmides, & J. Tooby (Eds.), *The adapted mind: Evolutionary psychology and the generation of culture* (p. 555–579). Oxford University Press
- Orlov, D., Menshakova, M., Thierfelder, T. K. E., Zaika, Y., Bohme, S., Evengard, & B., Pshenichnaya, N. Y.(2020). Healthy Ecosystems Are a Prerequisite for Human Health - A Call for Action in the Era of Climate Change with a Focus on Russia. *International Journal of Environmental Research and Public Health* 17(22) 8453. doi:10.3390/ijerph17228453

- Orlov, M. (2020). *Kirlian effect, Aura and Energy Field. Any connection?* Retrieved February 03, 2021, from <https://mitya-orlov.com/eng/humanenergy/publications/pub-humen.htm>
- Orr, D. W. (1993). Love it or Lose it: The coming of the biophilia revolution. Chapter 14, p 415-440, in *The Biophilia Hypothesis*. Shearwater
- Overgaard, S. (2004). *Natural Attitude and Everyday Life. In: Husserl and Heidegger on Being in the World*. Phaenomenologica book series, vol 173. https://doi.org/10.1007/978-1-4020-2239-5_2
- Oxford Dictionary. (2021). Accessed through www.lexico.com
- Paço, A., Leal Filho, W., Ávila, L. V., & Dennis, K. (2021). Fostering sustainable consumer behaviour regarding clothing: Assessing trends on purchases, recycling, and disposal. *Textile Research Journal*, 91(3–4), 373–384. <https://doi.org/10.1177/0040517520944524>
- Park, B. J., Tsunetsugu, Y., Kasetani, T., Kagawa, T., & Miyazaki, Y. (2010). The physiological effects of Shinrin-yoku (taking in the forest atmosphere or forest bathing): evidence from field experiments in 24 forests across Japan. *Environmental Health and Preventive Medicine* 15(1), 18-26. <https://doi.org/10.1007/s12199-009-0086-9>
- Parry, L. (1996). *William Morris*. V&A, Pearson.
- Patel, S. (2015, July 15). *The research paradigm – methodology, epistemology, and ontology – explained in simple language*. Retrieved March 08, 2021, from <https://salmapatel.co.uk/academia/the-research-paradigm-methodology-epistemology-and-ontology-explained-in-simple-language/>
- Pearson, D. G., & Craig, T. (2014, October 21). The great outdoors? Exploring the mental health benefits of natural environments. Retrieved January 12, 2021, from *Frontiers in Psychology*. doi: 10.3389/fpsyg.2014.01178
- Penfold, L. (2017, October 02). *Tim Ingold's thinking through making*. Retrieved January 28, 2021, from <http://www.louisapenfold.com/4552/>
- Perry, P. (2017, August 15). *Why Imposing Restrictions Can Actually Boost Creativity*. Retrieved January 03, 2021, from <https://bigthink.com/mind-brain/why-imposing-restrictions-can-actually-boost-creativity/>
- Peters, G., Li, M., & Lenzen, M. (2021). The need to decelerate fast fashion in a hot climate - A global sustainability perspective on the garment industry, *Journal of Cleaner Production*, 295, <https://doi.org/10.1016/j.jclepro.2021.126390>
- Peterfalvi, A., Meggyes, M., Makszin, L., Farkas, N., Miko, E., Miseta, A., & Szereday, L. (2021). Forest Bathing Always Makes Sense: Blood Pressure-Lowering and Immune System-Balancing Effects in Late Spring and Winter

- in Central Europe. *International Journal of Environmental Research*, 18(4), 2067. doi:10.3390/ijerph18042067
- Pettinger, T. (2019). *Importance of Economic Growth*. Retrieved May 03, 2021, <https://econ.economicshelp.org/2009/11/importance-of-economic-growth.html>
- Physiopedia, (n.d). *Salutogenic Approach to Wellness*. Retrieved August 25, 2021, from Physiopedia (physio-pedia.com)
- Pietkiewicz, I., & Smith, J. A. (2014). A Practical guide to using interpretative phenomenological analysis in qualitative research psychology. *Psychological Journal*, 20(1), 7-14. https://www.researchgate.net/publication/263767248_A_practical_guide_to_using_Interpretative_Phenomenological_Analysis_in_qualitative_research_psychology. doi:10.14691/CPJ.20.1.7
- Pinder. R., Kessel. A., Green. J., & Grundy. C. (2009). Exploring perceptions of health and the environment: a qualitative study of Thames Chase Community Forest. *Health & Place*, 15(1), 349–56
- Pink, S. (2009). *Doing Sensory Ethnography*. Sage Publishing.
- Pivot 2021. (2021). *Dismantling/Reassembling: Tools for Alternative Futures*. Virtual Conference July 22-23, 2021. [file:///C:/Users/User/AppData/Local/Packages/microsoft.windowscommunicationsapps_8wekyb3d8bbwe/LocalState/Files/S0/4917/Attachments/CFP_Pivot2021%20conference\[17537\].pdf](file:///C:/Users/User/AppData/Local/Packages/microsoft.windowscommunicationsapps_8wekyb3d8bbwe/LocalState/Files/S0/4917/Attachments/CFP_Pivot2021%20conference[17537].pdf)
- Plato. (2021). *The Republic* (Kindle Edition). Digireads.com Publishing
- Plebian Design (n.d.). *Diffusion Choir*. Retrieved March 12, 2021, from <https://vimeo.com/187037469>
- Plebian Design (2014, August 18). *Breaking Wave*. Retrieved March 14, 2021, from <https://vimeo.com/102339558>
- Polanyi, M. (1969). *Knowing and Being*. University Of Chicago Press
- Popova, L. (2012). The Extended Parallel Process Model: Illuminating the Gaps in Research. *Health Education & Behavior*, 39(4), 455–473. <https://doi.org/10.1177/1090198111418108>
- Pretty, J., Peacock, J., Sellens, M., & Griffin, M. (2005). The mental and physical health outcomes of green exercise. *International journal of environmental health research*, 15(5), 319–337. <https://doi.org/10.1080/09603120500155963>
- Pretty, J., Peacock. J., Hine, R., Sellens, M., South, N., & Griffin, M. (2007). Green Exercise in the UK Countryside: Effects on Health and Psychological Well-Being, and Implications for Policy and Planning. *Journal of*

- Environmental Planning and Management*, 50(2) 211-231
<https://www.tandfonline.com/doi/abs/10.1080/09640560601156466>
- PsyPotential. (2020, March 24). *Boosting Resilience with the Four Dimension of Wellbeing during the COVID 19 Crisis*. Retrieved January 27, 2021, from <https://www.psypotential.com/boosting-resilience-with-the-four-dimensions-of-wellbeing-during-the-covid-19-crisis/>
- Quinn, B. (2002). *Techno Fashion*. Berg Publishers
- Quora, (n.d.). *Why does the red light have more wavelength and less frequency than blue light?* Retrieved July 14, 2021, from <https://www.quora.com/Why-does-the-red-light-have-more-wavelength-and-less-frequency-than-blue-light>
- Ragai, J. (1986). Colour: Its significance and production in Ancient Egypt. *Endeavour*, 10(2), 74-79. [https://doi.org/10.1016/0160-9327\(86\)90134-1](https://doi.org/10.1016/0160-9327(86)90134-1)
- Rascio, N., & Navari-Izzo, F. (2011). Heavy metal hyperaccumulating plants: how and why do they do it? And what makes them so interesting? *Plant science: an international journal of experimental plant biology*, 180(2), 169–181. <https://doi.org/10.1016/j.plantsci.2010.08.016>
- Ratini, M. (2021, March 20). *What Exactly Is Alternative Medicine?* Retrieved June 04, 2021, from <https://www.webmd.com/balance/guide/what-is-alternative-medicine>
- Regan, S. (2021, April 20). *Sacred Geometry Is Literally Everywhere — Here's Where to Look & How To Use It*. Retrieved May 09, 2021, from <https://www.mindbodygreen.com/articles/sacred-geometry>
- Richard, V. M., & Lahman, M. K. E. (2015). Photo-elicitation: reflexivity on method, analysis, and graphic portraits. *International Journal of Research & Method in Education*, 38(1), 3-22. doi:10.1080/1743727X.2013.843073
- Ringbom, S. (1966). Art in 'The Epoch of the Great Spiritual': Occult Elements in the Early Theory of Abstract Painting. *Journal of the Warburg and Courtauld Institutes*, 29, 386-418. Published By: The Warburg Institute
- Rinzler, D. (1984). Human disconnection and the murder of the earth. *Transactional Analysis Journal*, 14(4), 231-236. <https://doi.org/10.1177/036215378401400406>
- Ripple, W. J., Wolf, C., Newsome, T. M., Barnard, P., & Moomaw, W. R. (2019). World scientists' warning of a climate emergency. *BioScience*, 70(1), 8-12. <https://academic.oup.com/bioscience/advance-article/doi/10.1093/biosci/biz088/5610806>

- Roberts, G., Bora, R., Hoerning, E., Ley, A., & Long, M. (2011). *Five ways to wellbeing: how do you get the message across?* Retrieved December 06, 2020, from <https://www.dpt.nhs.uk/download/Bp30zqo5xG>
- Robinson, R. (1996). *The Great Book of Hemp*. Park Street Press
- Robinson, S. (2015, August 02). *Artistic Consciousness and Rudolf Steiner's Theory of Colour*. Retrieved March 10, 2021 from <https://transitionconsciousness.wordpress.com/2015/08/02/artistic-consciousness-and-rudolf-steiners-theory-of-colour/>
- Robinson, T. (2019). Attaining Poise: A Movement-based Lens Exploring Embodiment in Fashion. *Fashion Theory*, 23(3), 441-458, doi: 10.1080/1362704X.2019.1603876
- Rogers, K. (2019, June 25). *Biophilia hypothesis*. Encyclopaedia Britannica. Retrieved March 24, 2021, from <https://www.britannica.com/science/biophilia-hypothesis>
- Rojas, F., English, S., Young, R., & Spencer, N. (2016). *Bridging Mindfulness and Design*. In: UD16 – SUR/VIVAL, 22-23 July 2016, Aveiro, Portugal.
- Ross, C. B. (2019, March 01). *Sourcing eco-friendly zippers*. Retrieved April 20, 2021, from <https://www.the-sustainable-fashion-collective.com/technical-tutorial/sourcing-eco-friendly-zippers>
- Rossbach, S. & Yun, L. (1994). *Living color: Master Lin Yun's guide to feng shui and the art of color*: Kodansha USA
- Rouse Ball, W. W., & Coxeter, H. S. M. (1987). *Mathematical Recreations and Essays (13th Edition)*. Dover
- Ruwhiu, D., & Cone, M. (2010). Advancing a pragmatist epistemology in organisational research. *Qualitative Research in Organizations and Management an International Journal*, 5(2), 108-126. doi:10.1108/17465641011068884
- Ryan, R.M., & Martela, F. (2016). Eudaimonia as a Way of Living: Connecting Aristotle with Self-Determination Theory (pp 109-122). In: Vittersø J. (eds) *Handbook of Eudaimonic Well-Being*. https://doi.org/10.1007/978-3-319-42445-3_7
- Ryan, R. M.; Huta, V.; & Deci, E. L. (2008). Living Well: A Self-Determination Theory Perspective on Eudaimonia. *Journal of Happiness Studies* 9(1), 139-170. doi:10.1007/s10902-006-9023-4
- Ryff, C.D. (1989). Happiness is everything, or is it? Explorations on the meaning of psychological well-being. *Journal of Personality and Social Psychology*, 57, 1069-1081.

- Ryff, C. D., & Keyes, C. L. M. (1995). The structure of psychological well-being revisited. *Journal of Personality and Social Psychology*, 69(4), 719–727
- Sabanoglu, T. (2020, Sep 7) Share of individuals who purchased clothes (including sports clothing), shoes and accessories online in Great Britain in 2020, by age and gender. Statista. Retrieved 27 January 2021, from <https://www.statista.com/statistics/286096/clothes-and-sports-goods-online-purchasing-in-great-britain-by-demographic/>
- Sabharwal, S. (2017, February 23). *H&M, AND, DKNY: 10 Popular Fashion Brands & Their Full Forms!* Retrieved February 06, 2021, from <https://www.popxo.com/2017/02/fashion-brands-and-their-full-forms/>
- Santos, B. de S. (2016). Epistemologies of the South and the future. *From the European South: A Transdisciplinary Journal of Postcolonial Humanities*, 1, 17–29
- Santos, B de S. (2020). The Alternative to Utopia is Myopia. *Politics & Society*, 48(4), 567-584. Sage.
http://www.boaventuradesousasantos.pt/media/The%20Alternative%20to%20Utopia%20is%20Myopia_2020.pdf
- Sarda-Joshi, G. (2016). *7 ways your clothes change the way you think*. Retrieved August 25, 2021, from <https://brainfodder.org/psychology-clothes-enclothed-cognition/>
- Sasaki, Y., Vanduffel, W., Knutsen, T., Tyler, C., & Tootell, R. (2005). Symmetry activates extrastriate visual cortex in human and nonhuman primates. *Proceedings of the National Academy of Sciences of the United States of America*, 102(8), 3159–3163.
<https://doi.org/10.1073/pnas.0500319102>
- Saunders, M., Lewis, P., Thornhill, A., & Bristow, A. (2015). *Research Methods for Business Students. Chapter 4: Understanding research philosophy and approaches to theory development*. Pearson
- Schaffer, N. (2021, June 12). *What is a Social Media Influencer?* Retrieved August 17, 2021, from <https://nealschaffer.com/what-is-a-social-media-influencer/>
- Schon, D. (1983). *The Reflective Practitioner*. Perseus
- Schumacher, D. (2011, November 28). *Who was Fritz Schumacher?* Retrieved December 11, 2020, from TRANSCEND MEDIA SERVICE » Who Was Fritz Schumacher?
- Schumacher, E. F. (1976). *The World Crisis and the Wholeness of Life*. Retrieved March 26, 2020, from <https://centerforneweconomics.org/publications/the-world-crisis-and-the-wholeness-of-life/>

- Scrivener, S. (2000). *Reflection in and on action and practice in creative-production doctoral projects in art and design*.
https://www.researchgate.net/publication/26505678_Reflection_in_and_on_action_and_practice_in_creative-production_doctoral_projects_in_art_and_design
- Scrivener, S., & Chapman, P. (2004). *The practical implications of applying a theory of practice-based research: a case study*.
https://www.herts.ac.uk/__data/assets/pdf_file/0019/12367/WPIAAD_vol3_scrivener_chapman.pdf
- Selin, N. E. (2019). *Carbon sequestration*. Encyclopedia Britannica.
<https://www.britannica.com/technology/carbon-sequestration>
- Seymour V. (2016, November 18). The Human-Nature Relationship and Its Impact on Health: A Critical Review. *Frontiers in public health*, 4, 260.
<https://doi.org/10.3389/fpubh.2016.00260>
- Shaposhnikova, I. (2010). *Pessimism Prism*. Retrieved April 28, 2021, from <http://pessimism-prism.blogspot.com/2010/12/irina-shaposhnikova.html>
- Sharan, L., Rosenholtz, R., & Adelson, E. H. (2008). Eye movements for shape and material perception. *Journal of Vision*, 8(6), 219, 219a, <http://journalofvision.org/8/6/219/>, doi:10.1167/8.6.219.
- Shaw, R. (2010). Embedding Reflexivity Within Experiential Qualitative Psychology. *Qualitative Research in Psychology*, 7(3), 233-243, doi: 10.1080/14780880802699092
- Shekhar, A. (2021, June 11). *What is Merkaba? Merkaba Meditation Benefits*. Retrieved August 30, 2021, from ascendjiva.com
- Shinnick P. (2006). Qigong: where did it come from? Where does it fit in science? What are the advances? *Journal of alternative and complementary medicine*, 12(4), 351–353. <https://doi.org/10.1089/acm.2006.12.351>
- Sieden, L. S. (2000). *Buckminster Fuller's Universe, An Appreciation*. Perseus
- Shrivastava, A., Jain, G., Kamble, S. S., & Belhadi, A. (2021). Sustainability through online renting clothing: Circular fashion fuelled by instagram micro-celebrities. *Journal of Cleaner Production*, 278(3), 123772.
<https://doi.org/10.1016/j.clepro.2020.123772>.
- Shusterman, R. (2011). Soma, Self, and Society: Somaesthetics as Pragmatist Meliorism. *Metaphilosophy*, 42(3), 314-327. Retrieved March 01, 2021, from <http://www.jstor.org/stable/24439944>
- Shusterman, R. (2012). *Thinking Through the Body: Essays in Somaesthetics*. Cambridge University Press

- Shusterman, R. (2015). *Richard Shusterman on Somaesthetics and the Middle Way*. Retrieved April 05, 2021, from <https://www.youtube.com/watch?v=zlsDyONGykQ>
- Shusterman, R. (2016, April 12). *The University of Sydney Ideas Talk: Somaesthetics and Design*. Retrieved March 01, 2021, from <https://www.youtube.com/watch?v=lztWYpTyGIU>
- Silverman, D. (2000). *Doing Qualitative Research: A Practical Handbook*. Sage.
- Simons, H. (2009). *Case Study Research in Practice*. Sage.
- Slepian, M. L., Ferber, S. N., Gold, J. M., & Rutchick, A. M. (2015). The cognitive consequences of formal clothing. *Social Psychological and Personality Science*, 6, 661-668
- Smit, T. (2001). *Eden*. Bantam Press
- Smith, A. (2021). Salutogenesis: how philosophy shapes practice. *AIMS Journal* 33(1), 7-11. Salutogenesis by AIMS (Association for Improvements in the Maternity Services) - issue
- Smith, D. (2019, July 17). *Is Carbon Dioxide Harmful to People?* Retrieved January 07, 2021, from <https://learn.kaiterra.com/en/air-academy/is-carbon-dioxide-harmful-to-people>
- Smith, J. (2019). Participants and researchers searching for meaning: Conceptual developments for interpretative phenomenological analysis. *Qualitative Research in Psychology*, 16(2), 166-181. doi: 10.1080/14780887.2018.1540648
- Smith, J. A., & Osborn, M. (2007). Pain as an assault on the self: An interpretative phenomenological analysis of the psychological impact of chronic benign low back pain. *Psychology & Health*, 22(5), 517-534. doi: 10.1080/14768320600941756
- Smith, J. A., & Osborn, M. (2008). Interpretative Phenomenological Analysis, pp.53-80. In: Smith, J. (ed.) *Qualitative Psychology: A Practical Guide to Research Methods*. Sage
- Smith, J.; Flowers, P., & Larkin, M. (2009). *Interpretative Phenomenological Analysis: Theory, Method and Research*. Sage.
- Smith, M. K. (2001). Donald Schon: Learning, Reflection, and Change. *The Encyclopaedia of Information Education*. Retrieved April 30, 2020, from <https://infed.org/mobi/donald-schon-learning-reflection-change/>
- Snezfeld, B. (n.d.). *Haute Papier*. Retrieved September 03, 2020, from <https://www.szenfeld.com/collections/haute-papier/>
- Social Constructionism. (n.d.). *Oxford Reference*. Retrieved February 8, 2021, from

- <https://www.oxfordreference.com/view/10.1093/oi/authority.20110803100515181>
- Söderlund, J., & Newman, P. (2017). Improving Mental Health in Prisons Through Biophilic Design. *The Prison Journal*, 97(6), 750–772.
<https://doi.org/10.1177/0032885517734516>
- Sourcedenim.com. (2015, July 07). *In search of environmentally friendly zippers*. Retrieved May 03, 2021, from <https://sourcedenim.com/stories-of-source/2015/7/7/in-search-of-zippers#:~:text=The%20polyester%20used%20in%20most,prevents%20them%20from%20being%20recyclable>
- Stakhov, A., & Aranson, S. (2017). *The Golden Non-Euclidean Geometry*. World Scientific Publishing.
- Starck, P. (n.d.). *A Democratic Ecology*. Retrieved January 01, 2021, from <https://www.starck.com/about>
- Steel, C. (2021). *Sitopia: How Food Can Save the World*. Vintage
- Steele, S. (2020, July 03). *Building a British fibreshed and its benefit for fashion*. Retrieved February 03, 2021, from <https://www.the-sustainable-fashion-collective.com/2020/07/03/building-a-british-fibreshed-and-its-benefit-for-fashion#:~:text=The%20first%20to%20be%20founded,farm%20farmer%20Gala%20Bailey%20Barker>
- Steiner, R. (2001). *Colour: 12 Lectures by Rudolph Steiner* (Translated by Pauline Wehrle & John Salter). Rudolf Steiner Press
- Stelter, G. (2016, December 18). *A Beginner's Guide to the 7 Chakras and Their Meanings*. Retrieved March 08, 2021, from Chakras: A Beginner's Guide to the 7 Chakras (healthline.com)
- Stephenson, B. (2021, October 25). *What Are Smart Clothes? Discover how your clothes can improve your life*. Retrieved November 20, 2021, from <https://www.lifewire.com/what-are-smart-clothes-4176103>
- Stevenson, R. (2018, October 18). *Disconnection in a Connected World: An insight to our relationship with technology and each other*. Retrieved February 20, 2021, from <https://thriveglobal.com/stories/disconnection-in-a-connected-world-2/>
- Stonsny, S. (2009, April 25). *Creating Value: How important is it to make things important?* Retrieved May 20, 2021, from <https://www.psychologytoday.com/us/blog/anger-in-the-age-entitlement/200904/creating-value>
- Stroll, A., & Martinich, A.P. (2021, February 11). Epistemology. *Encyclopedia Britannica*. <https://www.britannica.com/topic/epistemology>

- Sudjic, D. (1990). *Rei Kawakubo and Comme des Garçons*. Rizzoli
- Sugarman, J. (2007). Practical rationality and the questionable promise of positive psychology. *Journal of Humanistic Psychology, 47*, 175-197.
- Sumathy, S., & Parmer, P. (2016). Effect of a single musical chakra activation manoeuvre on body temperature: an exploratory study. *Ancient Science of Life, 36*(1), 3-5. doi: 10.4103/0257-7941.195414
- Summers, J. K., & Vivian, D. N. (2018). Ecotherapy - A Forgotten Ecosystem Service: A Review. *Frontiers in Psychology, 9*, 1389. <https://doi.org/10.3389/fpsyg.2018.01389>
- Sutherland, S., & Adams, M. (2019). Building on the Definition of Social and Emotional Wellbeing: An Indigenous (Australian, Canadian, and New Zealand) Viewpoint. *Ab-Original, 3*(1), 48-72. doi:10.5325/aboriginal.3.1.0048
- Sutton, D. (1998). *Platonic and Archimedean Solids*. Wooden Books
- Taft, M. W. (2014). *Nondualism: A brief history of a timeless concept*. Cephalopod Rex.
- Takano, T. (2002). Urban residential environments and senior citizens longevity in megacity areas: the importance of walkable green spaces. *Journal of Epidemiology & Community Health, 56*(12), 913–918
- Tanveer, A. M., Bashir, M., & Azeem, M. (2008). Reliability and Validity of Qualitative and Operational Research Paradigm. *Pakistan Journal of Statistics and Operation Research, 4*(1) 35-45 doi: 10.18187/pjsor.v4i1.59
- Teng, Y. (2020). *Yeohlee Teng*. Retrieved April 05, 2021, from <https://twitter.com/yeohleeinc>
- Teppa, P. (2021). *Plant the Future*. Retrieved March 25, 2021, from <https://www.plantthefuture.com/>
- Terrapin Bright Green. (2014, April 14). *14 Patterns of Biophilic Design: Improving Health and Well-being in the built environment*. Retrieved October 21, 2020, from <http://www.terrapinbrightgreen.com/wp-content/uploads/2014/04/14-Patterns-of-Biophilic-Design-Terrapin-2014p.pdf>
- Tham, M. (2010). Languaging fashion and sustainability : towards synergistic modes of thinking, wording, visualising, and doing fashion and sustainability. *Nordic Textile Journal, 3*(1), 14-23. <https://www.diva-portal.org/smash/get/diva2:708971/FULLTEXT01.pdf>
- ThatsMaths. (2016, October 13). *Kepler's Magnificent Mysterium Cosmographicum*. Retrieved February 12, 2021, from

- <https://thatsmaths.com/2016/10/13/keplers-magnificent-mysterium-cosmographicum/>
- The Liology Institute. (n.d.). *Liology and Cognitive Neuroscience*. Retrieved March 13, 2021, from <http://www.liology.org/cognitive-neuroscience.html>
- The Museum at FIT. (2014, April 08). *Madeleine Vionnet: Virtuoso*. Retrieved June 10, 2021, from <https://exhibitions.fitnyc.edu/1930s-fashion-blog/2014/04/08/madeleine-vionnet-virtuoso/>
- The Prince of Wales (2010). *Harmony: A new way of looking at our world*. Harper
- The Schumacher Institute. (n.d.). *Small is Beautiful (1973)*. Retrieved December 10, 2020, from <https://www.schumacherinstitute.org.uk/about-us/e-f-schumacher/>
- The Vegan Society. (2020). *Why Go Vegan?* Retrieved May 01, 2021, from <https://www.vegansociety.com/govegan/why-go-vegan>
- Thirteen.org. (2004). *Concept to Classroom: What is Constructivism?* Retrieved November 04, 2020, from <https://www.thirteen.org/edonline/concept2class/constructivism/>
- Timko Olson, E. R., Hansen, M. M., & Vermeesch, A. (2020). Mindfulness and Shinrin-Yoku: Potential for Physiological and Psychological Interventions during Uncertain Times. *International journal of Environmental Research and Public Health*, 17(24), 9340. <https://doi.org/10.3390/ijerph17249340>
- Todorović, T., Čuden, A. P., Košak, K., & Toporišič, T. (2017). Language of Dressing as a Communication System and its Functions – Roman Jakobson’s Linguistic Method. *Fibres & Textiles in Eastern Europe*, 25(5) 125-33. doi:10.5604/01.3001.0010.4639
- Toffler, A. (1971). *Future Shock*. Bantam
- Tucker, I. (2019, June 23). The five: ways that fashion threatens the planet. Retrieved November 30, 2020, from <https://www.theguardian.com/fashion/2019/jun/23/five-ways-fashion-damages-the-planet>
- Twombly, C. (2016, October 11). *The History of Synthetic Fabrics*. Retrieved April 15, 2021, from <https://www.herculite.com/blog/the-history-of-synthetic-fabrics>
- Tye, M. (2017). *Stanford Encyclopaedia of Philosophy: Qualia*
Retrieved January 25, 2021, from <https://plato.stanford.edu/entries/qualia/>
- Tzanidaki, D., & Reynolds, F. (2011). Exploring the meanings of making traditional arts and crafts among older women in Crete, using interpretative phenomenological analysis. *British Journal of Occupational Therapy*, 74 (8), 375-382. <https://doi.org/10.4276/030802211X13125646370852>

- Ulrich R. S. (1984). View through a window may influence recovery from surgery. *Science (New York, N. Y.)*, 224(4647), 420–421.
<https://doi.org/10.1126/science.6143402>
- United Nations Population Division. (2019). *Urban population (% of total population)*. Retrieved March 23, 2021, from
<https://data.worldbank.org/indicator/SP.URB.TOTL.IN.ZS>
- Usvat, L. (n.d.). *Sacred Geometry and the Platonic Solids*. Retrieved December 20, 2020, from
<http://www.mathematicsmagazine.com/Articles/SacredGeometryPlatonicSolids.php#.YS-VPI5Kg2w>
- Vagle, M. D. (2018). *Crafting Phenomenological Research*. Routledge.
- van den Berg, A. E., Koole, S. L., & van der Wulp, N. Y. (2003). Environment preference and restoration: (How) are they related? *Journal of Environmental Psychology*, 23(2), 135–146. [https://doi.org/10.1016/S0272-4944\(02\)00111-1](https://doi.org/10.1016/S0272-4944(02)00111-1)
- van den Berg, A. E., Hartig, T., & Staats, H. (2007). Preference for Nature in Urbanized Societies: Stress, Restoration, and the Pursuit of Sustainability. *Journal of Social Issues*, 63(1), 79–96. <https://doi.org/10.1111/j.1540-4560.2007.00497.x>
- van der Merwe, L., & Habron, J. (2020). Exploring lived experiences of spirituality amongst five Dalcroze teachers. *Psychology of Music*, 48(2), 163–181.
<https://doi.org/10.1177/0305735618785011>
- van Manen, M. (2011). *A Resource for Phenomenological Inquiry. Guided Existential Reflection*. Retrieved September 23, 2021, from
<https://www.phenomenologyonline.com/inquiry/methods-procedures/reflective-methods/guided-existential-reflection/>
- van Manen, M. (2016). *Phenomenology of Practice: Meaning-Giving Methods in Phenomenological Research and Writing*. Routledge
- Veenhoven, R. Sociological theories of subjective well-being. In: M Eid , RJ Larsen (eds). *The science of subjective well-being*. New York: Guilford Press; 2008:44–61
- Veenhoven, R. (2008). Sociological theories of subjective well-being. In M. Eid & R. J. Larsen (Eds.), *The science of subjective well-being* (pp. 44–61). Guilford Press.
- Veisoh, N. (2019). *Markets with Memory, the words first data science book on the hemp and cannabis industry*. USA: Independently published.

- Verner, A. (2020). *Anrealage Spring 2021 Ready to Wear*. Retrieved March 25, 2021, from <https://www.vogue.com/fashion-shows/spring-2021-ready-to-wear/anrealage#review>
- Verschuren, L. (2016). Biophilic Graduate Collection. Home - Laudy Verschuren
- Villeneuve, P. J., Jerrett, M., Su, J. G., Burnett, R. T., Chen, H., Wheeler, A. J., & Goldberg, M. S. (2012). A cohort study relating urban green space with mortality in Ontario, Canada. *Environmental research*, 115, 51–58. <https://doi.org/10.1016/j.envres.2012.03.003>
- Vinje, H. F., Langeland, E., Bull, T. (2016, September 3). Aaron Antonovsky's Development of Salutogenesis, 1979 to 1994. In: Mittelmark. M. B, Sagy. S, Eriksson. M, et al., editors. *The Handbook of Salutogenesis* [Internet]. Cham (CH): Springer; 2017. Chapter 4. Available from: <https://www.ncbi.nlm.nih.gov/books/NBK435860/> doi: 10.1007/978-3-319-04600-6_4
- Vogue Runway. (2011). *Issey Miyake Fall 2011 Ready-to-Wear*. Retrieved March 31, 2021, from <https://www.vogue.com/fashion-shows/fall-2011-ready-to-wear/issey-miyake/slideshow/collection#2>
- von Busch, O. (2008). *Becoming fashion-able: Hacktivism and engaged fashion design*. Camino Forlag
- Wagner, W., & Wagner, S. (1995). Platonic duals. *The Mathematics Teacher*, 88(1), 74-76. Retrieved July 22, 2021, from <http://www.jstor.org/stable/27969198>
- Warmann, C. (2010). *Plato's Collection by Amila Hrustic*. Retrieved April 10, 2020, from <https://www.dezeen.com/2010/11/23/platos-collection-by-amila-hrustic/>
- Wauters, L. V. (2017). *Mandala Chakra: Awaken the One within*. Seven Earthly Virtues LLC
- Wellness-Space. (n.d.). *Electro-Photonic Imaging with Bio-Well GDV device*. Retrieved January 18, 2021, from Bio-Well & Energy - Wellness Space (wellness-space.net)
- Wells, H. (2019, April 26). *Joining the rebellion – hemp's solutions to environmental problems*. Retrieved May 19, 2021, from <https://blog.seedsman.com/joining-the-rebellion-hemp-solutions-to-environmental-problems/>
- Welters, L., & Lillethun, A. (2011). *The Fashion Reader, second edition*. Berg
- White, M. (2014, May 15). *The Rise of Consumerism*. Retrieved March 14, 2021, from <https://www.bl.uk/romantics-and-victorians/articles/the-rise-of-consumerism>

- White, M. A. (2020). *Ecotherapy and the Healing Power of Nature*. Retrieved March 24, 2021, from <https://www.healthline.com/health/mental-health/ecotherapy>
- White, M. P., Alcock, I., Wheeler, B. W., & Depledge, M. H. (2013). Would you be happier living in a greener urban area? A fixed-effects analysis of panel data. *Psychological Science*, 24(6), 920–8
- Wicker, A. (2020, January 31). *Fashion Has a Misinformation Problem. That's Bad for the Environment*. Retrieved January 27, 2021, from <https://www.vox.com/the-goods/2020/1/27/21080107/fashion-environment-facts-statistics-impact>
- Wilbur, K. (2008). *Integral Life Practice: A 21st Century Blueprint for Physical Health, Emotional Balance, Mental Clarity, and Spiritual Awakening*. Integral Books
- Wilcox, C. (2015). *Alexander McQueen*. V&A Publishing
- Wilczek, F. (2011, December 29). *Beautiful Losers: Plato's Geometry of Elements*. Retrieved October 23, 2020, from <https://www.pbs.org/wgbh/nova/article/beautiful-losers-platos-geometry-of-elements/>
- Willard, J. (n.d.). *The Four Bodies*. Retrieved January 10, 2021, from <https://goop.com/gb-en/wellness/spirituality/the-four-bodies/>
- Williams, D., & Tickell, A. (2019). *Fashion & Environment an overview of fashion's environmental impact & opportunities for action*. White Paper. Retrieved May 04, 2021, from <https://www.britishfashioncouncil.co.uk/uploads/files/1/NEW%20Fashion%20and%20Environment%20White%20Paper.pdf>
- Willig, C. (2007). *Introducing Qualitative Research in Psychology: Adventures in theory and method*. Open University Press
- Wilson, E. O. (1986). *Biophilia: the human bond with other species*. Harvard University Press
- Wohlleben, P. (2019). *The Secret Network of Nature*. Penguin Vintage
- Workagile. (n.d.). *The best of biophilic architecture – Maggie's centres*. Retrieved October 22, 2020, from <https://uk.work-agile.com/the-best-of-biophilic-architecture-maggies-centres/>
- Wulf, A. (2015). *The Invention of Nature: Alexander von Humboldt's New World - 1900*. Vintage Books
- Xue, F., SiuYu Lau, S., Gou, Z, Song, Y., & Jiang, B. (2019). Incorporating biophilia into green building rating tools for promoting health and wellbeing. *Environmental Impact Assessment Review* 76 (2019) 98–112

- Yarnall, K., & Baptista, F. G. (2010). *Gaudi's Masterpiece - Nature-Inspired Architecture*. Retrieved April 05, 2021, from <https://www.smartcitiesdive.com/ex/sustainablecitiescollective/gaudis-masterpiece-nature-inspired-architecture/18727/>
- Yin, R. K. (2014). *Case Study Research, Design and Methods*. Sage
- Yoo, S. Y., Cho, M., Eum, J. S. & Kam, S. J. (2020, February 07). Biomorphic Clothing Sculpture Interface as an Emotional Communication Space. *Frontiers in Psychology*. Retrieved May 08, 2021, from <https://www.frontiersin.org/articles/10.3389/fpsyg.2020.00117/full>
- Young, S. (2021, May 28). *The Fabrics with the worst environmental impact revealed, from polyester to fur*. Retrieved July 04, 2021, from <https://www.independent.co.uk/climate-change/sustainable-living/fast-fashion-sustainable-worst-fabrics-b1855935.html>
- Younkins, E. W. (2003). *Aristotle, Human Flourishing, and the Limited State*. Retrieved February 07, 2021, from <http://www.quebecoislibre.org/031122-11.htm>
- Yuen, J. W. M., Tse, S., & Yung, J. (2012). *Traditional Chinese Herbal Medicine - East Meets West in Validation and Therapeutic Application*. Retrieved July, 06, 2021, from https://www.researchgate.net/publication/221922440_Traditional_Chinese_Herbal_Medicine_East_Meets_West_in_Validation_and_Therapeutic_Application
- Zahavi, D. (2018). *Phenomenology: The Basics*. Blackwell's
- Zeyl, D., & Sattler, B. (2017). *Plato's Timaeus: Stanford Encyclopaedia of Philosophy*. Retrieved March 02, 2021, from <https://plato.stanford.edu/entries/plato-timaeus/>
- Zuardi A. W. (2006). History of cannabis as a medicine: a review. *Revista brasileira de psiquiatria (Sao Paulo, Brazil : 1999)*, 28(2), 153–157. <https://doi.org/10.1590/s1516-44462006000200015>