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Rethinking Jewellery for Korea: A Practice-led Approach to Creating High-Visibility Wearables

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Table of Contents

List of figures

List of tables

Thesis Abstract

This thesis introduces the idea of high-visibility wearables as a new way of thinking about craft (jewellery in particular) in Korea. This new idea is challenging for many people in Korea, because jewellery is still narrowly understood there either as that which has financial value or as an instrument of personal expression (social status, individual character, etc.). Jewellery in this sense clashes directly against the idea of high-visibility wearables, which are still strongly associated in Korea as a vocational uniform, something road-related workers wear, for instance, thus vitiating the personal meaning of wearing jewellery. The challenge for the designer-researcher, therefore, is to find a way to neutralize that tension between the two, so that high-visibility wearables can be accepted as socially desirable. The thesis argues that this tension is not a design problem per se, but a conceptual problem which requires a socially-conscious approach. Firstly, by taking jewellery into the field of road safety, it seeks to expand the idea of jewellery; by wearing a piece of high-visibility jewellery, the wearer declares not only what they want to be seen as, but also what their public right is as a pedestrian, so that jewellery becomes a visible sign of collective action rather than just an individual form of self-expression. In this sense, the jeweller who designs such an item, as well as the wearer, exercises her social responsibility.

This is identified as an area where the jeweller and the wearer can come together to break the current deadlock, pitting the former against the latter over the future of contemporary jewellery.

Secondly, the thesis proposes that by focusing on new ways of developing high-visibility materials, jewellers can – indeed will inevitably –break into interdisciplinary areas where collaboration is the norm rather than the exception. This is an area for further development, where investigation of materials can lead to cultural transformations, including environmentally-conscious changes.

Note on Korean names and the Romanisation system used in this thesis

A Korean name consists of a family name followed by a given name.

All Korean words and names have been Romanized according to the Revised Romanisation of Korea, with the exception of those who prefer their own personal Romanisation.

Unless otherwise noted, Korea refers to South Korea.

Autobiographical Preface

When I was an undergraduate, I had an opportunity to do archaeological site work in Korea. I remember uncovering a decorative roof tile one day and feeling deeply affected by it. That is how I became interested in craft. A piece of craft may be small in size, but it intersects many different areas of art. So it gave me an excellent vantage point to consider a variety of interconnected subjects in Korean art history.

The initial focus of my PhD study was on contemporary jewellery. I was impressed how European contemporary jewellery used non-precious materials. This was a departure from the traditional meaning of jewellery as understood in Korea, which is all about financial value. In wearing jewellery, there is always a process of choosing which item to wear and how to wear it. In choosing to wear non-precious, everyday materials, I felt I have more choices in the matter.

During 2008-2009, I made a field survey of contemporary jewellery in Europe, particularly in the UK and Germany, by visiting the Goldsmith Fair, Origin, Collect, ILJ (International London Jewellery), Schmuck-Denken in Idar-Oberstein, the Schmuck Fair in Munich, and jewellery galleries in London, Nijmegen, and Munich. I also attended the Making Futures Conference at Plymouth College of Art and the Ruthin Craft Centre Symposium. In April 2008 and November 2009 I gave talks at London Metropolitan University about my background research and practical work on contemporary jewellery. In March 2009, I presented the outline of my research at Room 419, Central House. My initial research interest was about how and why people wear creative jewellery made of ordinary materials. I was also interested in understanding what sort of emotion gets involved when people choose to wear such jewellery. Will it be similar to the way dressing up makes people feel elegant or the way wearing a military style item makes them act in a certain way?

From November 2010 to May 2012, I had to intermit my PhD study because my father had become seriously ill. During this period I did not wear any jewellery. Instead, I wore only functional things like plain, undecorated clothes, glasses, and my wrist watch. This led me to consider incorporating wellbeing into my research on jewellery and the wearing of non-precious materials.[1]

During my intermission, I had given birth to a son. One day I heard on the radio that Korea ranked no.1 in pedestrian fatalities among the OECD. As a mother raising a young son, I took that issue to heart, and so I became interested in high-visibility wearable design, which then became the central theme of this thesis research.

[1] Heewon Chang (2008) has written a referable book on autoethnography for novice and experienced researchers alike, who wish to include themselves in their traditional ethnographic studies. In this sense, what she advocates is akin to the "analytical autoethnography" advocated by Anderson (2006), which privileges theoretical understanding of broader social phenomena over the concrete understanding and theorizing that can be evoked from personal storytelling.
The first part of her book is an introductory overview of culture, self, and others, and their relationship to autoethnography.
Heewon Chang, *Autoethnography as Method* (London: Routledge Curzon, 2008).

Introduction

0.1 The aim of this thesis

Byeom Choi, an eminent critic of Korean craft and design, has said that "If somebody wants to understand contemporary craft in Korea, the first order of business is to forget about the word craft" (*gong'ye*),[2] for what goes on under that name of craft, he argues, has little value in explaining the actual reality it claims to represent. What is the reality of craft in Korea? It is the marginalisation or even absence of craft, Choi declares. What he means by craft is "that which was made by hand";[3] he goes on to characterize the state of contemporary Korean craft as sharply polarized between two camps: those who were educated overseas, many of whom now hold university positions, and those who make inexpensive souvenirs for foreign tourists. The former call themselves artists, while the latter, a dying breed if not one that has already been driven out by outsourced cheaper imports from China or Vietnam are called craftspeople. Therefore, Choi argues, with both camps long cut off from native traditions and no middling alternatives in between, there is no real craft left in Korea anymore.

This picture is too bleak, however, and it is possible that Choi exaggerates in order to drive his point home. Nonetheless, his view of craft is shared by many in Korea today, including many of the "artists" who teach in universities and those who he calls craftspeople. One of the purposes of this thesis is to call this idea into question and to propose a more optimistic and inclusive conception of craft. I argue, from my point of view exemplified in the practice-based research accounted for here, that it is not only anachronistic but also too narrowly defined to reflect the increasingly complex nature of contemporary craft in Korea.

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[2] Byeom Choi, *Hanguk dijain-eul boneun nun* [*The Eye That Views Korean Design*] (Seoul: Angraphics, 2006), p. 134.
[3] *Hanguk dijain-eul boneun nun*, p. 153.

Glenn Adamson, in *Thinking Through Craft* (2007), has suggested that craft should be "not a defined practice but a way of thinking through practices of all kinds".[4] He rightly points out that the current debate on the state of contemporary craft has reached a dead-end because it dwells exclusively on the idea of craft as a practice which, in the case of jewellery, is seen either from the jeweller's point of view or from the wearer's point of view. Adamson developed his view in *The Invention of Craft* (2013). Once we begin to see craft as a certain kind of practice, we tend to try to put walls around it, saying, as Adamson exemplifies it, things like: "It's not craft unless you involve your own hands in its making", or "unless you use certain kinds of material", or "unless you can wear it", and so on. The trouble with this approach is that it fails to acknowledge what Adamson characterises as "today's climate of post-disciplinary flux".[5] In short, it has become increasingly difficult to put walls around whatever practice you are engaged with and to call that practice a discipline.

That whole idea of "craft" is a modern invention anyway, Adamson argues, one created "as industry's opposite number, or 'other'".[6] Historically speaking, that idea of craft was also a product of Western imperialism: "Craft was invented as having positive qualities of creativity, rootedness, and authenticity", but "the ascription of authenticity to traditional culture [...] is actually inseparable from long-established Eurocentric mechanisms of domination".[7] In a Korean context, Choi's nostalgia for the lost idea of *gong'ye* calls for an analysis of his essentially pessimistic conclusion that there is no real craft left in Korea anymore.

It is important, therefore, that we reexamine the idea of craft in Korea today so that we can arrive at a new understanding of where we are and where we might need to go. As Adamson acknowledges, "thinking through craft" may be more easily said than done, since we are so used to regarding craft as a manual practice. "Thinking through craft" is what this thesis attempts to do: constructively

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[4] Glenn Adamson, *Thinking Through Craft* (Oxford New York: Berg, 2007), p. 7.
[5] Glenn Adamson, *The Invention of Craft* (London: Bloomsbury Academic, 2013), p. xv.
[6] *Ibid*. p. xiii.
[7] *Ibid*., p. xvii.

to examine craft as a problem and an array of possibilities that need to be thought through. It is the aim of this thesis to try to shake that little cottage called craft to let in some fresh air or, to change the metaphor, to knock down the walls to build a larger house on top.

0.2 High-visibility wearables as a new territory in Korea

In attempting to problematize and positively to extend notions of craft, this thesis introduces the idea of high-visibility wearables as a new way of thinking about craft in relation to jewellery. The thesis seeks to raise awareness of the potential of highly visible jewellery to address a serious psycho-social problem affecting people in Korea, which is the increasing number of traffic accidents amongst a general public resistant to wearing a reflector of a standard design.

As an aspect of contemporary jewellery, high-visibility wearables in general are a new introduction; there is practically no research on this topic, nor any previous attempt to view high-visibility wearables as a kind of jewellery. Two reasons can be offered to explain this state of the field in Korea in particular. Firstly, the idea of jewellery itself is still almost exclusively understood either as that which has financial value (to be pawned or sold on rainy days, for instance) or as an instrument of personal expression (social status, individual character, etc.). Jewellery in both senses (whether worn on the body or stored away for safekeeping) is limited to the personal. Secondly, high-visibility wearables are still seen mainly as something that road-related workers wear for reasons of personal safety, signifying the occupation of the wearer. People are reluctant to be seen as associated with roadwork, even if they agree in principle that their safety could be enhanced. From the Korean wearer's point of view, the two notions of worn jewellery, as an instrument of personal expression or for personal safety, are perceived as clashing with each other. The challenge for the designer-researcher here – and the impetus for this thesis – is to find a way to resolve the tension between the two, so that high-visibility wearables can be accepted as important and desirable.

The concept of safety jewellery is proposed here as encompassing all jewellery which contributes to safety and, thereby, also brings physiological comfort. It includes all high-visibility wearables which can be classified as jewellery but not those which, like a jacket, cannot be so classified.

Although I don't offer a single definitive solution, I aim here 1) to introduce the idea of high-visibility wearables as a new way of thinking about craft and jewellery, which is sorely needed in Korea, where road safety has reached a crisis point; and 2) to help raise awareness of the potential that highly visible jewellery has to alleviate a serious psycho-social problem affecting people in Korea.

Chapter 1, therefore, treats "conceptual jewellery" (recognized here as part of what is now called contemporary jewellery) as a precursor to my understanding of high-visibility wearables, and discusses its pros and cons. While visiting many conferences and jewellery galleries (including Schmuck fairs) during 2008-2009, I discovered the influence of fine art on contemporary jewellery, and how it had helped to expand a new territory in contemporary jewellery. I was especially impressed with the use of non-precious materials, which I tried to investigate and to incorporate into my own work. This process of "thinking through" involves my own personal and intellectual development, since I first started as an advocate of conceptual jewellery but gradually changed my mind about it; the sticking point for me was the issue of wearability. Chapter 1 also traces and documents the historical background of contemporary Korean jewellery to put the latter into perspective, which is supplemented by the chronological table of Korean crafts and arts in Appendix 1.

Chapter 2 discusses healing design and road safety in Korea. It discusses how Koreans understand "wellbeing" vis-a-vis "healing", and demonstrates how design can play a socially constructive role in helping to address some of the outstanding problems related to road safety.

Chapter 3 presents the research that I have conducted on high-visibility materials. My experience showed me that through working with materials a practice can enlarge its scope. High-visibility materials still have a highly restrictive identity in people's understanding, and for that reason considerable social resistance exists against their use in Korea, just like the longstanding prejudice against manual work. As a conceptual tool, however, the idea of high-visibility wearables is very useful, because it points to the intersections of various disciplines. Chapter 3 also illustrates this practical research on the wearability of various high-visibility materials. In addition, it shows how practical artefacts were experimented with to create high-visibility wearable materials, informed by the possibility of achieving positive psychological effects through the use of different forms and textures: organic shape, with flexibility, lightness of weight, softness of texture, and a ‘handmade’ effect.

Chapter 4 is the heart of the thesis, and documents my practical research between 2010−2016. It shows how I went through changes both in my thinking and in my personal circumstances as I responded to each piece of practical work. Crucial to my own way of working was the feedback I received from the respondents at each step of the way. Culminating in the practical artefacts became inseparable from my audience. It is not an exaggeration to say that the way I have outgrown the jeweller-centric tenets of conceptual or contemporary jewellery was greatly affected by my contact with the people who commented on my practical artefacts. Chapter 4 also ends with the issue of wearability. If there is one strong thread running through this thesis, it is this issue of wearability.

The concluding chapter summarizes my findings and discusses some of the future directions for high-visibility wearables.

Chapter 1. Conceptual Jewellery and Wearability

1.1 Conceptual jewellery and its wearer

Contemporary jewellery, especially conceptual jewellery, has undergone an innovative change due to the use of unusual, non-traditional materials. This has enabled greater freedom of thought and inspired experimentation among many jewellery designers. What is claimed in the name of conceptual jewellery is the assertion that the concept or idea it expresses is far more significant than its function. As a result, wearability has often been rejected in favour of what it expresses. In fact, wearability was seen, along with status, as traditional and therefore something to rebel against. Here is what Threes Moolhuysen-Coenders, one of the early supporters of contemporary jewellery, had to say: What chiefly appeals to me about non-precious materials like cork, fabric, auto tyres, plastic, laminate or paper, however, is that they are less connected with traditional views about status and wearability. I have always been in search of designers who have rebelled against the stipulated views about the status or value that is expressed in a precious material.[8]

In Germany, the term Conceptualism was used to describe and define an art movement in the 1960s. In 1967, Otto Künzli called jewellery an applied art; Ralph Turner described jewellery as ‘sculpture to wear’ while presenting the work of Emmy van Leersum and Gijs Bakker at the Ewan Philips Gallery in London. And Helen Drutt was quoted as saying in 2003, "They are artists, not designers, who have chosen to make jewellery".[9]

Experimentation and investigation became key words with regard to content and form, the use of unusual materials, and the means of production. Form, construction and material were approached as a staging ground for developing

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[8] Threes Moolhuysen-Coenders, comp, *Onedel Non-Precious* (Amsterdam: Uitgeverij Voetnoot, 2001), p. 42.

[9] Ida van Ziji, 'Gijs Bakker and Jewellery', in Yvonne G.J.M. Joris, ed., *Gijs Bakker and Jewellery* (Stuttgart: Arnoldsche, 2005), p. 52.

new ideas. In the specific socio-political milieu of Europe where such experimentation and investigation took place during the 1960s-1970s, however, it must be stressed that they often took the form of rebellion and protest. The self-professed purpose of conceptual jewellery was not to conform to the existing standards, so what they designed was seen as a visual sign of protest. The underlying ethos was democratic. The materials they chose as well as the aesthetic decisions behind their designs reflected the industrial technology of the time whose products were widely and readily available to anybody. And these ready-made materials included pieces of clothing, which were used in their natural state for jewellery.

It was the Dutch jewellers who took the lead in introducing textile materials and techniques to contemporary jewellery. In 1979, Marion Herbst was to break a new path with a body of work that embraced bright colour codes and fabrics. In collaboration with the wearer, Henriette Wiessing, Herbst's colourfully woven Ribbons took a cynical look at military honours and officialdom. With a sense of emancipation and informality, the similarities to Caroline Broadhead's work around that time were striking, though the expressed ideas and the formations were different. Furthermore, the BEO group members (Bond van Oproerige Edelsmeden, +/- Federation of Rebellious Gold and Silversmiths), such as Onno Boekhoudt, Francoise van den Bosch, Peter Berend Hogen Esch, Karel Niehorster, Gijs Bakker, Emmy van Lersum as well as Herbst, used tubular materials and various metals for unusual formal experiments. Their work developed simultaneously with the work of Ad Dekkers and other artists working in abstract and geometric styles.[10]

Frans van Nieuwenborg and Martijin Wegman were also an important partnership in the formal development of Dutch jewellery; they transformed zip fasteners into zip neckpieces that could be worn by either gender. Similarly, the necklets and armbands designed by Maria Hees from the 1990s were examples of objects that received a characteristic sculptural form; early on in that decade, Herbst had turned a chromium shower-hose tube into flexible arm pieces. These

[10] Maarten Bertheux, Paul Derrez and Gerry van der Linden, *Onedel Non-precious* (Schiedam, The Nethelands: Stichting Tekens en Ketens, 2001).

pieces were seen as fun to wear and modestly priced. Finally, the kinds of daring art jewellery work that led to new forms materialized in Gijs Bakker's laminated collars, Paul Derrez's jewellery made of cork, aluminum, and plastic, Richard Walraven's corroded necklets, and Lam de Wolf's wearable objects made of painted fabric.[11]

Given this democratically-inspired beginning, it is ironic how conceptual jewellery came to reject convenience and comfort for the wearer. In the end, those designs mentioned above were often more satisfying as products of an intellectual exercise than as things to wear on the body. In terms of their practical purpose, they were made by the jeweller as novel ideas rather than for the wearer.

Jewellery through association

From its very beginning, conceptual jewellery rejected jewellery's identity as decoration. In the place of decoration, it was through association that conceptual jewellery became jewellery. The works of Liesbet Bussche, Hilde De Decker, and An Alleweireldt belong to this category.

Liesbet Bussche produced sand sculptures as jewellery in the form of a clasp and a necklace with sand-moulds.[12] In another example, a pearl necklace was made from heaps of sand in a street that was being dug up. She made an urban jewellery series of installations from the land using sand, cement and other building materials.

Hilde De Decker's jewellery targeted nature, not people.[13] The 'growing' exhibition *Voor boer en tuinder* (for the farmer and market gardener) was held at Galerie Marzee in Nijmegen from August to October 1999. Tomatoes, peppers and aubergines were grown by the artist herself and were furnished with silver

[11] *Ibid*., p. 51.

[12] Liesbeth den Besten, *On Jewellery: A Compendium of International Contemporary Art Jewellery* (Amsterdam: Arnoldsche, 2012), p. 191.

[13] den Besten, p. 54.

rings in a real greenhouse. The fruits grown on the rings were then harvested and preserved in bottles of acid so that people could actually buy a pot with fruit and a ring. Her gardening as an open-ended art practice is a unique declaration of craft's self-sufficiency. Inspired by a newspaper article about a wedding ring that appeared twenty years after being lost with a potato growing inside it, she embarked on a project that was far bigger than jewellery but never deviated far from it. The installation was a living environment itself, bearing the fruits of her work. The reality provoked the imagination and resulted in ambiguous ornaments provided by nature, which challenges people's ideas about what is natural and what is artificial.

An Alleweireldt made a necklace with sliced radishes arranged in the form of a pearl necklace in 2006.[14] It was unwearable, but was immediately recognized as a necklace. The Pearl Chain Student Workshops by Ted Noten produced unique conceptual ideas in association with physical jewellery objects. For example, a drawing of a pearl necklace was projected on to a map of each city where he taught: Sheffield, Düsseldorf, Lisbon, Tokyo, and Nuremberg. Each student was assigned a pearl on the map. They then had to investigate the urban space contained within this circular outline, and the final task was to make a delicate 'intervention' in the urban landscape: a piece of jewellery as a part of public space. One participant attached a ring to the walls of the Sheffield football ground. This allows visitors to wear the whole stadium as a precious stone, which continues even to this day, as the ring is still there. Another spotted a tiny hole between two curb stones at a pedestrian crossing and filled it with a tight-fitting piece of cast plastic in which a couch, two lovers and a TV set are contained. Suddenly people lost interest in the traffic lights turning red or green and drew to a halt to stare at the scene at their feet.[15]

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[14] Lin Cheung, Beccy Clarke and Indigo Clarke, *New Directions in Jewellery II* (London: Black Dog Publishing, 2006), p.76.

[15] Ted Noten, *CH2=C(CH3)C(=O)OCH3 enclosures and other TN's Gert Staal* (Rotterdam: 010 Publishers, 2006), pp. 102-107.

Although these objects are clearly non-wearable, people continue to associate them with jewellery. This is because they are shaped in the form of a necklace or other familiar pieces of jewellery. It is this association, an idea, which Liesbet Bussche, An Alleweireldt, and Ted Noten played with (Fig 27).

Art and wearability

Wearable art, also known as Artwear or "art to wear", refers to individually designed pieces of (usually) hand-made clothing or jewellery created as fine or expressive art. While the making of any article of clothing or other wearable object typically involves aesthetic considerations, the term wearable art implies that the work is intended to be accepted as a serious and unique artistic creation or statement. Pieces may be sold and/or exhibited. The modern idea of wearable art has appeared more than once in various forms. Marbeth Schon's book on modernist jewellery refers to a "wearable art movement" spanning roughly from 1930 to 1960.[16] Most wearable art is made of fibrous materials and constitutes therefore a branch of the wider field of fibre art, which includes both wearable and non-wearable forms of art using fabric and other fibre products. Wearable art as an artistic domain also includes jewellery, or clothing made from non-fibre materials such as leather, plastic sheeting, metals, etc.

Wearable fibre art

Artists creating wearable fibre art may use purchased finished fabrics or other materials, making them into unique garments, or may dye and/or paint virgin fabric. Some artists make their own fabrics, for example on looms.

As with any other art form, the talent and skills of artists in this field vary widely. Since the nature of the medium requires craft skills as well as artistic skills, an advanced artist can be expected to study colour theory, chemistry, sewing, clothing design, and computer software such as Photoshop and Illustrator.

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[16] Marbeth Schon, *Modernist Jewelry 1930-1960: The Wearable Art Movement* (Atglen, PA: Schiffer Publishing, 2004).

Classes in clothing design and marketing may be learned from colleges such as the Fashion Institute of Technology in New York City.

The New Zealand city of Nelson has gained a worldwide reputation in the field of wearable art, with its World of Wearable Art Awards, which has been held annually since 1987. From 2005, the show moved to Wellington. In Australia, the Shearwater Wearable Arts or W.A.V.E. (Wearable Arts Vision in Education) has developed from a High School initiative to become a leading Wearable Arts Event.

Jewellery as wearable art: the mid-twentieth century "wearable art movement"

Some twentieth-century modern artists and architects sought to elevate bodily ornamentation — that is, jewellery — to the level of fine art and original design rather than mere decoration, craft production of traditional designs, or conventional settings for showing off expensive stones or precious metals. Schon explores unique and innovative wearable art objects created by surrealists, cubists, abstract expressionists, and other modernist artists working in the middle decades of the twentieth-century.

Extreme examples of wearable art

Not all garments created as wearable art are made from traditional fibres or fabrics, and not all such artworks are meant for ordinary, practical use. Performance and conceptual artists have sometimes produced examples that are more provocative than useful.

A well-known example is the "Electric Dress", a burqa-like costume consisting mostly of variously coloured electrified and painted light bulbs, enmeshed in a tangle of wires, created in 1956 by the Japanese Gutai artist Atsuko Tanaka. This extreme garment was something like a stage costume. Not really wearable in an everyday, practical sense, it functioned rather as part of a daring work of performance art (though the "performance" element consisted merely of the artist's wearing the piece while mingling with spectators in a gallery setting).

In Nam June Paik's 1969 performance piece called "TV Bra for Living Sculpture", Charlotte Moorman played the cello while wearing a bra made of two small television sets.

More recently, Canadian artist Andrea Vander Kooij created a group of pieces called "Garments for Forced Intimacy" in 2006.[17] These hand-knitted articles of clothing are designed to be worn by two people, and they, as the name states, compel the wearers to gaze into each other's eyes.

There is also what Ulrike Doris Oberlack calls "light jewellery". Described as a "light in interaction with the body", or "light choreography",[18] it is conceptually akin to the "spatial jewellery" by Petra Ahde, otherwise known as 'party jewellery' (in a crowded room you can project a ring of light on the ceiling right above your head so people can find you, for instance). Oberlack stresses that her wearable light is exhibited only through performances (or recordings in lens-based media). A light source lies outside the body, and the whole body becomes a light template. You 'wear' it only when a light is shone on you and you 'take it off' when it is switched off. Either way, its activation comes from outside.

But what about the 'wearers'?

"But what about the 'wearers' of these objects, if we can call them that? They might as well be thousands of miles away",[19] asks Adamson. Or we might as well rephrase it by asking, "Where is the body?" If the makers of these objects thought they could somehow elevate the status of their jewellery by denying its 'inferior' relation to the body (by calling it 'autonomous' for instance), they were mistaken, Adamson says. Earlier, in his first book *Thinking Through Craft*, Adamson pointed out "the fundamental impossibility of making autonomous jewelry" by saying that the so-called 'wearable sculpture' has always been "a problem for jewelers rather than a solution."[20] He goes as far as to call its "striving for autonomy...so very futile".[21]

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[17] Andrea Vander Kooij, 'Balaclava For Gazing Into Each Other's Eyes' (2006). < http://andreavanderkooij.com/works/kni_bal2.php >.

[18] Ulrike Doris Oberlack, 'I+E Illumination and Emanation; Light as Body Adornment and the Implications of Wearable Light' (unpublished doctoral thesis, University of the Arts London, 2011), p. 155.

[19] Glenn Adamson, 'Metal Against the Body', in Susan Cohn, ed., *Unexpected Pleasures: The Art and Design of Contemporary Jewellery* (New York: Rizzoli, 2012), p. 96.

[20] Adamson, *Thinking Through Craft*, p. 27.

[21] Adamson, *Thinking Through Craft*, p. 33.

Then again, the relationship that contemporary or conceptual jewellery has with the human body is full of contradictions. Another perceptive critic, Peter Dormer, had this to say: "...it might be argued that jewellers have used the body to reclaim jewellery as art. That is to say, not content with using the humdrum idea that people wear jewellery, art jewellers have used the body in photography as a near inanimate sculpture upon which their own art may work".[22] Dormer goes on: "[still] many art jewellers want people to wear their work in real life. This means making work that it is possible to wear… It also means making work that is possible to wear psychologically."[23] But that psychology of wearing unusual objects is "probably quite rare", he concludes.

Both Adamson and Dormer have seen right through the rhetoric; it is strictly from the maker's point of view. And there is something bitter about this rhetoric. Let us allow Dormer the final word on wearability:

Wearability is not a function of market research but a function of imagination in new jewellery… New jewellery is a product of the culture of individualism: there are shared values, but they tend to be shared between individuals within minorities rather than in crowds. This has been the raison d'etre of the last thirty-five years of craft or craft-like production of unique objects in an age of mass manufacture.[24]

[22] Peter Dormer, 'The Body and Jewellery', in Susan Cohn, ed., Unexpected Pleasures: The Art and Design of Contemporary Jewellery (New York: Rizzoli, 2012), pp. 109-110.
[23] *Ibid*., pp. 110-111.
[24] *Ibid*., p. 111.

1.2 Korean contemporary jewellery in the historical context of craft

Korea's modernisation came about due to many political and social upheavals that occurred during the Japanese colonial period (1910–1945). The Japanese resident-general was invested with full authority in regard to Korea's diplomacy, military affairs and administration. Through the council for improvement of Korean Administration, he pressed the Korean people to accept Japan's aggressive policy in the fields of finance, banking, agriculture, forestry, mining, social transformation and education. Special schools were established to provide various government agencies with skilled workers. The Japanese attempted to bring all schools under government management and to reduce the number of schools.

It was under these circumstances that the concept of craft was born in Korea. A Factory of Royal Family Yi's Art Pieces(1908-1936) had as its motto 'Promote Folk Craft'; the concept of craft, which included production and skill, was effectively converted into a division of art, and it was further divided into handicrafts such as metal craft, woodcraft, ceramic craft, and dyeing; musical instrument production was excluded. The word craft (*gong'ye*) was used in Korea for the first time in a diplomatic document sent by Japan in 1881 and, in Ilseongrok,[25] a Government forum series in 1882. Two years later, it was reused in a letter from America, through translation, and in this way the concept, if not its application, became fixed, as the Japanese folk craft movement, *mingei*, later incorporated it into its own image-making of the exotic Korean past.[26]

This was, therefore, the first experiment in combining character and structure in craft, and also the first step outside the original culture of craft activity as we understand it today. A succession of progress (1920-1930) brought about the

[25] Ilseongrok is a chronicle of the king's daily records of the royal court and important officials. http://www.unesco.org/new/en/communication-and-information/memory-of-the-world/register/full-list-of-registered-heritage/registered-heritage-page-4/ilseongnok-records-of-daily-reflections/ [accessed 29 June 2019].

[26] See Yuko Kikuchi, *Japanese Modernisation and* Mingei *Theory: Cultural nationalism and Oriental Orientalism* (London: Routledge Curzon, 2004) and Adamson, *Thinking Through Craft*, pp. 114-117.

fundamental change necessary in the production structure, since the swift mechanical revolution caused production to shrink the economic and social foundation of crafts. In 1932, the Japanese authorities established a craft division at the colonial art competition, the Joseon Art Exhibition, and craft became a part of the formative arts (Appendix 1). As Adamson put it, craft was "a crucial prop in the theatre of imperialism".[27]

We may identify a new beginning of metal craft in Korea in the first solo exhibition in 1966 based on the practical work of the Korean traditional craftsman Kim Kiryeon. Craftsmen who were mainly active in 1950-1960 spread metal craft/work activity (Appendix 1). From the early 1970s, organized by way of a national competition, craftsmen such as Choi Hyunchil, Kang Changyun,[28] Yoo Lizzy,[29] Kim Seunghee,[30] Lee Hyesook, and Jang Yoonwoo exhibited their work. These were all third generation artisans from a working group of A Factory of

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[27] Glenn Adamson, *The Invention of Craft* (London: Bloomsbury Academic, 2013), p. xvi.

[28] Changyun Kang (1938 -): Professor of Seoul National University /major of Metal Work, graduated from Seoul National University/Department of Applied Arts in 1963. He was educated in schools and studied Lara Craft, art school in Florence and in Italy in earnest from 1970. He has served as professor of Seoul National University College of Art from 1969 to the present. He has participated in many exhibitions, including at the National Museum of Contemporary Art, as well as in the United States and South Korea *Korea Contemporary Crafts* Exhibition and an exhibition gallery of modern art in 1998, were he held a number of solo exhibitions. He has exhibited internationally, including in the United States, Japan, and Germany, and has worked as the director of the National Museum of Contemporary Art, Korea, etc., Ho-Am Art Museum. His metalwork has been regarded as 'conventional propulsion' beyond the level of traditional crafts simple concept that gathered a contemporary craft in the concept of colourful colours.

[29] Lizzy Yoo (1945-2013): former Professor of the Department of Design, Seoul National University graduated from Seoul National University of Applied Arts and the United States Temple University Tyler School of Art. She introduced systematic modelling techniques and theory to strange the genre of metal crafts in Korea. She established the *Chi-woo* Craft Museum to develop the discourse of contemporary craft, which was the first private museum for the grounds of this research, dealing with contemporary craft and metal craft exhibitions in South Korea. She announced the theme of the funeral culture that opened the 2002 exhibition. She clearly demonstrated the identity of jewellery, the contemporary expression of jewellery and the formative feature in 2001.

[30] Seunghee Kim (1947 -): Supervising professor of Kookmin University of College Metal & Jewelry Design graduated from the College of Fine Arts of Seoul National University and the Graduate School of Indiana University USA in 1984. She primitives utilising modeling and colour metal research with the solo exhibition in 1969. By offering the evolution of research at Craft House in 1994, she used materials such as Amber, Lapis Lazuli, onyx and changed objects that are found in nature such as leaves, petals, and tree branches. Her objects represent the brooch as a value of the symbol and in 1997 the story of brooch design gained popularity. In particular, icons of Korean women's leadership wore her brooch.

Royal Family Yi's Art Pieces, and when they returned to Korea after studying in the United States they accommodated the influx of Western modern metal craft in the 1970-80s. The members of this group had a great impact as educators. Participation was huge among young craftsman and jewellers in the late 1970s, such as Nam Gyeonguk, Oh Youngmin, and Roh Yongsuk. Yoo Lizzy introduced the beginning of modern crafts with her initial works, which also included woodwork and furniture. Jewellery was officially classified as part of the field of craft from the nineteenth-century in Korea.

During the 1980s, many Korean jewellers who had studied and lived in the West, on their return to Korea planted the seeds of conceptual jewellery on their home soil. Traditional Korean jewellery design was profoundly challenged by the use by these newly returned designers of unconventional materials and a Western conceptual framework of jewellery making.

There are currently a handful of conceptual jewellery designers in Korea, among whom Lee Dongchun (the first pioneer of conceptual jewellery in Korea) and Chun Eunmi are identified here as significant contributors to the field, notably on account of their upholding that material follows concept rather than the other way around; nevertheless, they do not use a particularly wide range of materials.

The first generation of jewellery educators returning to Korea from abroad in 1980s tended to use abstract shapes to express their feelings, which led to the introduction of craft with novel ideas. However, there was still a strong tendency to hold to the traditional craft techniques and traditional symbolic motifs. Although the Korean Government supported contemporary craft making to some extent, notably in the souvenirs used during the 1988 Seoul Olympics, most contemporary craft continued to use traditional visual patterns, so government support had relatively little influence on the development of Korean contemporary craft. From the 1990s, contemporary jewellers began to hold independent craft exhibitions.

The Korean Arts Exhibition was populated with young artists from the 1980s who made an effort to discard the focus on traditional college education in Korea. The Korean Fine Arts Association was established and has organized the Korean Arts Exhibition from 1982 to the present. In 1987, the first Korea Hyundai Accessory Contest saw the jewellery sector itself become independent, and this made people more aware of the importance of metal jewellery. Then, in the later 1980s, postmodernism was introduced into metal craft. Nevertheless, it only started to imitate the appearance of postmodernism in artwork that did not even have a properly defined concept of postmodern style; it sought instead a return to the functional characteristics of the original craft, such as jewellery, furniture, and tableware rather than experimental work. From the late 1980s, the development of popular culture products started and naturally a small workshop emerged out of it.

As interest rose in the 1990s in decor and furniture accessories in parallel with rising living standards, industrial craft produced goods such as metal furniture, lighting fixtures, and metal crafts became popular. Even though the practical work was bold and it visualized abstract images, it fell short of reflecting an autonomous form of the work. Starting to use a variety of materials and techniques that were derived from modern industrial production, but many variations enabled the makers to develop processing techniques to enlarge the notion of conventional metalwork. It was a revivalist innovation at the orientation period of modern metal craftwork that actively sought to accommodate external influences from the West--and Japan too.

Since the end of the 1900s, jewellers have returned to focusing on an exploration of traditional beauty in the retro fashion movement. There was an awareness, especially among a new generation of jewellers, that the Western model had been accepted uncritically, without conscious reflection, and that they needed to attend to the loss of their own cultural traditions. Makers have since continued to make an effort to find traditional aesthetic values for jewellery. Jewellery exhibitions started to be held in the national museums, which showcase

examples of jewellery as worthy of attention. Among the big craft events in Korea, the Cheongju International Craft Biennale stands out as the one that tries to promote Korean contemporary jewellery as actively engaged in developing a working relationship with traditional Korean designs. I discuss two examples of this, which were shown at the *Cheongju International Craft Biennale 2015*, in greater detail in Section 1.3.

Recently, in the past decade, Korean contemporary jewellery has turned towards a greater variety of styles and materials. Jewellery that the Wolgok Jewellery Research Center investigated in a report of 'The Street Jewellery Awareness in Korea in 2013'[31] included: bracelet marble, dynamic colours, animal and flower motifs, antique styles, chains, bold necklaces, gold, layered rings, and various materials (mostly fabric).

Currently, many craft makers in Korea still maintain that technical and professional skills are more important than creative and conceptual expressions. Traditionally, most artisans learned their skills through lengthy apprenticeships; today, on the other hand, universities have taken over that role, but on a tighter time schedule. In contradistinction to most art departments, including fine art, interior design, and fashion, craft in Korea still tends to be conservative. Contemporary Korean jewellery predominantly favours metal, whereas we see a greater range of materials being used in other contemporary art departments.

1.3 Traditional Korean designs reinterpreted by contemporary makers: Hwang Samyoung's mother-of-pearl chair

Hwang is a master artisan of Korean mother-of-pearl lacquerware (*Najeon chilgi* in Korean), whose work was shown in the *Cheongju International Craft Biennale 2015*. The origins of this particular mother-of-pearl lacquer work are traced to the first century BCE, but it was during the Later Silla period (668-935 CE) when it became an important part of Korea's aristocratic culture. King Munjong (1019-

[31] Wolgok Jewelry Research Center, 'The street jewellery awareness in Korea in 2013', < https://w-jewel.or.kr/quarter_report/?idx=3061993&bmode=view> [accessed 29 June 2014].

1083 CE) of the Goryeo dynasty established a government-financed workshop to produce these sought-after pieces, and presented them to foreign kings and envoys.[32] Because the production process is complex and the technique is still reserved only for the few, the cost remains high. In the 1960s and 1970s (and even the 1980s, to a lesser extent) it was customary for many socially aspiring families to order a set of mother-of-pearl furniture for their daughter as a wedding present. But today this is out of fashion, and the technique is rarely seen in Korean luxury furniture design.

It is also rare to see master artisans of traditional craft experimenting with new designs; they mostly make what they have always made, keeping their primary focus on their skills rather than on creative design. But Hwang stands out in that he applies his traditional technique to new, contemporary designs; and he is open to working in collaboration with other artisans. His chair, entitled *Pebble*, is a work of traditional *Najeon* technique expressed in a completely new design, an interplay of history and modernity that is relevant to contemporary needs and views.

<Fig 1> Pebble by Hwang Samyoung, a chair exhibited in 2014 at the Cheongju International Craft Biennale. The lacquer finishing is by Ikjong Lee

[32] Lee Kwang-woong, 'Najeon juleumjil gibyep eui jejak gongjeong gwa yong'eo eui jeongnip (Clarifying the manufacturing process and terminology of the *Juleumjil* [grinding] technique of Najeon)', *The Journal of the Korea Society of Craft*, 12-1, pp. 1-18.

Gabriela Ligenza's hats

Gabriela Ligenza's hats, also shown at the *Cheongju International Craft Biennale 2015*, were a result of merging traditional Korean hat designs with the contemporary technique of 3D printing, which is the opposite of what Hwang Samyoung did with his mother-of-pearl chair.

A traditional Korean *Gat* is a type of hat that was worn by married upper-class men in Joseon Korea. It is cylindrical in shape with a wide brim, made of horse hair on a bamboo frame, and painted in black. Light in weight, it is designed to protect the wearer's topknot. At the end of the nineteenth-century, however, this proud symbol of the men's exclusive social class came under attack due to an edict prohibiting topknots that came into effect in 1895, under Japanese pressure in the name of modernisation. This hat eventually disappeared when Korea became a Japanese colony for forty years.

What is noteworthy in Ligenza's work is that by using 3D printing she was able not only to bypass the complicated socio-economic issue of traditional craft techniques, but also to create what was previously impossible with traditional millinery. This technology could have huge implications for the world of traditional hand-made crafts, which is having a hard time surviving in the current competitive market. To come to their rescue, the Korean government has instituted various measures. One is to designate master artisans as an Intangible Cultural Asset and to support them financially. Another is to set up specialty schools where young people can learn some of these crafts and become masters themselves. These measures may help them preserve the dying tradition, but they have not kept them competitive in the open market. A hat like *Gat*, due to its strong cultural and historical association with the topknot, is very difficult to wear as it is in the street today; the only current exception is those male performers who sing traditional Korean songs in their *hanbok* outfit.

Ligenza, on the other hand, took the traditional shape of the *Gat* and reinterpreted it, while also innovating with the use of new materials. In one of her hats, called Mobius Nautilus, she applied a mathematical ratio of the nautilus known as the Golden Ratio in order to create a new hat design; 3D printing also gave her waved lines, a departure from the traditional Gat design.

Her 3D printed hats were displayed in such a way that viewers could walk beneath them. Bathed in light, the hats cast shadows upon them and the floor (Fig 4). This shadow projection was a translation of the Korean letters into another language, so to speak. Where the shadows of the hats overlapped, the words became entwined via a cutting-edge technology.

<Fig 2> Hats by Gabriela Ligenza exhibited at the Biennale

<Fig 3> Traditional South Korean men's hats at the Biennale

<Fig 4> Hats by Gabriela Ligenza installed at the Biennale

1.4 Silhak Philosophy (practical learning) as a personal inspiration

Many Korean craft and cultural industries are pursuing a global presence in order to achieve more added values. In this climate, the Korean identity is gradually undergoing a redefinition. There is a greater need therefore for thoughtful reflection to better understand where we came from, so that we can better create something new. When, in the period 2008 – 2010, I was investigating my process of crafting art objects, I realized that I was influenced by Silhak philosophy.[33]

Silhak refers to a reform movement in nineteenth-century Korea that called for a more practical or pragmatic approach to solving the problems the country faced. It arose as a direct response to the increasingly metaphysical nature of the orthodox Neo-Confucianism that was adhered to by the ruling class, which was seen as hopelessly disconnected from the socio-economic changes occurring in Korea at the time.[34] Those who advocated this reform movement were mostly Confucian scholars themselves, but from factions excluded from power. They failed in their

[33] See Michael Kalton, 'An Introduction to Silhak', *Korea Journal*, vol. 15, issue 5 (May 1975), pp. 29-46.

[34] See Mark Setton, *Chong Yagyong: Korea's Challenge to Orthodox Neo-Confucianism* (Albany, NY: SUNY Press, 1999).

lifetime, but their teachings were rediscovered by independence fighters, under Japanese rule, in the 1930s.

The Silhak philosophers argued for reforming the rigid Confucian social structure, land reform to relieve the plight of peasant farmers, encouraging scientific studies, and fair trials in the courts of law. Most of all, they wanted the government to pay attention to the everyday welfare of the people, and to act accordingly. For this reason, they emphasized that the government should adopt a practical and empirical approach in their dealings with the people. Obvious as this may sound today, it was considered a heterodox idea at the time and was completely dismissed by the ruling faction.

For my own purposes, what I find particularly germane in Silhak philosophy is the following:

1) It argues that society should be understood as part of a larger world that has reciprocal relationships between its components;

2) Its pragmatic approach is substantive, in that it pursues the best method with which to improve people's lives, not a technique for its own sake, but something that proves its worth by its practical outcome in harmony with its organic realities; and

3) Its adaptation to a changing society ought to consider both material and spiritual aspects.

Altogether I find that these have great implications for the normative aspects of planning theory. In the spirit of Silhak, my design process has been inspired to pay attention to a holistic vision that includes both material and spiritual aspects as well as how to find the best harmonious method to improve people's lives. It is with this objective in mind that my design process tries to combine both the traditional and the contemporary.

Chapter 2. Wellbeing and Safety

This chapter considers healing design in relation to road safety in Korea. It begins with a discussion on how the idea of "wellbeing" is generally understood in Korea and how it differs from the idea of "healing". The succeeding sections deal with how design can play a socially constructive role in helping to address some of the outstanding problems related to road safety.

2.1 Wellbeing and healing

What is subjective wellbeing? It is defined as "a person's cognitive and affective evaluations of his or her life as a whole. These evaluations include emotional reactions to events as well as cognitive judgments of satisfaction and fulfilment".[35]

And is psychological wellbeing significantly different from subjective wellbeing? Michael W. Fordyce says that it is difficult to distinguish between the two, as both psychological and subjective wellbeings -- a feeling of happiness, satisfaction with life and morale, subjective quality of life, etc. -- are similar and correlated with each other.[36]

A more recent study by Chen, Jing, Hayes, and Lee essentially concurs: "These results suggest that psychological wellbeing and subjective wellbeing are strongly related at the general construct level, but their individual components are distinct once their overlap with the general construct of wellbeing is partialled

[35] Ed. Shigehiro Oishi Diener and Richard Lucas, 'Subjective wellbeing: the science of happiness and life satisfaction', *The Oxford Handbook of Positive Psychology*, 2nd ed., (London: Oxford University Press, 2009). <http://www.oxfordhandbooks.com/view/10.1093/oxfordhb/9780195187243.001.0001/oxfordhb-9780195187243-e-017>.

[36] Michael W. Fordyce, 'A review of research on the happiness measures: A sixty second index of happiness and mental health', *Social Indicators Research*, August 1988, Vol. 20, Issue 4, 355–381.

out."[37]

Carol D. Ryff and Corey Lee M. Keyes point out that the early idea about personal wellbeing was based on a limited theoretical background, so it missed a critical aspect of psychological health: that it is not enough to explain personal quality of life only by subjective wellbeing, but that the criteria for quality of life should include how a person functions as a member of society in terms of psychological health. Ryff and Keyes propose instead six distinct dimensions of wellness as opposed to the single-factor model, which are: Autonomy, Environmental Mastery, Personal Growth, Positive Relations with Others, Purpose in Life, and Self-Acceptance.[38]

This 6-factor model was tested in Korea by Jungmin Kim, and found to be appropriate as a conceptual tool to measure how Koreans felt about their own sense of wellness.[39]

Another study, by Jee Eun Paik questions whether there is any gender difference in the way elderly people experience their sense of psychological wellbeing. Taking her sample from a total of 705 elderly people aged over 65 years living in the Seoul and Gyeonggi areas, Paik found the following: firstly, the elderly men on the whole showed a higher sense of psychological wellbeing and a lower case of depression than the elderly women. Secondly, for the elderly men, objective characteristics mattered more for their psychological wellbeing and depression than subjective characteristics. For the elderly women, conversely, subjective characteristics had more impact on their psychological wellbeing and depression than objective characteristics. For example, the women tended to regard symptom as illness.[40]

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[37] Fang Fang Chen, Yiming Jing, Adele Hayes and Jeong Min Lee, 'Two Concepts or Two Approaches? A Bifactor Analysis of Psychological and Subjective Wellbeing', *Journal of Happiness Studies*, 14.3 (2013), 1033-1068.

[38] Carol D. Ryff and Corey Lee M. Keyes, 'The Structure of Psychological Wellbeing Revisited', *Journal of Personality and Social Psychology*, v. 69, n. 4 (1995), pp. 719-727.

[39] Jungmin Kim, *An Influence of Emotional Dissonance on Job Satisfaction and Psychological Wellbeing according to Personality Traits (*Gyeonggi University Service Management School, 2007).

[40] Jee Eun Paik, 'Noin-eui gaekgwanjeok teukseong-gwa jugwanjeok jigak teukseong-i shimnijeok anjeong-gwa uulgam-e michineun yeonghyang [How the elderly's objective characteristics and

Wellbeing and healing

The word "wellbeing" started being used in Korea in the early 2000s. The timing was not accidental. Korea had experienced rapid economic development between the 1960s and 1990s, when hard work paid off; it was a time of all work and no play. Then, in 1997, the Asian Financial Crisis put Korea on the verge of bankruptcy, and the IMF was called in to bail out the country. The restructuring measures the IMF imposed on Korea were draconian and neo-liberal in spirit, forcing a million workers out of their jobs overnight. The age of uncertainty had just begun. On the other hand, this kind of wrenching shock forced the hitherto hard-working people to start asking questions about the meaning of life and to reexamine their priorities. So the idea of wellbeing caught the attention of Koreans and it soon became a popular buzzword in thinking about a better quality of life. People began to emphasize the need to stay fit and eat healthier. To enjoy life became a legitimate goal, although many still continued working hard and finally, they became increasingly interested in nature. All kinds of outdoor activities, especially mountain -climbing, were pursued, and the whole industry of outdoor clothing and gear experienced a phenomenal growth. So too did the market for new, functional fabrics.

Then the word "healing" started being used along with “wellbeing”. If wellbeing meant an earlier focus on the sound body (better eating and better exercise, for instance), healing now meant a new focus on spiritual health or catharsis. The two words – healing and wellbeing – were often interchanged, as happens to such popular catch-all words.

With the objective of examining how to distinguish between wellbeing and healing and what each word meant, and in what context, Lee Jaeseung and Kim Taeho conducted a Big-Data analysis of a body of Korean newspaper articles between 2000s and 2010s. They found that "the collocations of wellbeing were closely associated with concrete materials while those of healing were more

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subjective understanding characteristics influence their psychological wellbeing and depression]', *Sahwoe yeongu* [*Study of Society*], vol. 14, No. 20 (2010), 137-173.

related to abstract things, even though both were health-related words".[41] They went on to conclude that the word wellbeing had more to do with maintaining one's health, while the word healing had more to do with curing oneself of one's own mental conditions.

It is important to keep in mind this distinction (between 'wellbeing', meaning keeping yourself healthy, and 'healing', meaning restoring yourself to health) when we try to apply the ideas of wellbeing and healing to the specific context of Korean craft. Based on this distinction, we can propose that safety jewellery falls into the wellbeing category. Hence my focus here on high-visibility wearables belongs to the category of wellbeing rather than of healing.

2.2 Wellbeing through design

Psychological benefits of curved shapes

It is known that curved shapes have an ability to promote a positive feeling within people.

Personally, I have a fear of sharp edges while drawing and making objects; I try to create forms which are comfortable. So when cutting materials, even in straight lines, I prefer to do so by hand to achieve softer, more natural forms.

The art therapist Park Youngju, who conducted research on curved lines and shapes, analysed their correlation with positive feelings.[42] She identified five categories of therapeutic shapes in her research:

1. With no straight lines
2. Elementary forms, such as a circle or a star
3. Wave-shaped
4. Spread out from a point and converging upon a point
5. Similar but not identical shapes together; and shapes having stains on shapes or colours

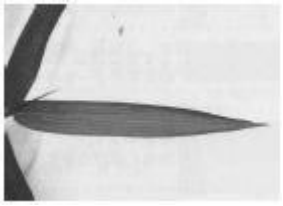
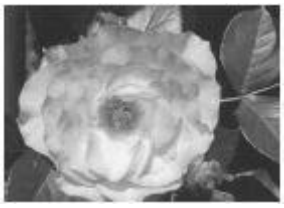
[41] Jae Seung Lee and Taeho Kim, 'An Empirical Study on Health-Related Words, Wellbeing and Healing, used in Korean Newspaper Articles', *The Journal of Linguistic Science,* 78 (2016), p. 327.

[42] Youngju Park, *A Research on the Formative Aspect and Background of Production in Millennium Design Trends* (Seoul: Hongik University, 2004), p. 224.

These categories are illustrated in Park's three diagrams (Figure 5):

 A horizontal line relates to relief	 A slightly concave line relates to leisurely/relaxed feelings	 A slightly convex line relates to joy/happiness
 A vertical line relates to a sense of freedom/independence	 A divided line relates to pleasure	 Plant-like lines relate to a relaxing environment
 A small circle relates to small delight	 A flower-like line relates to expandability/vitality	 A volute line relates to a cheerful change
 A long, gradual wavy line relates to a refreshing exclusivity	 A continuous wavy line relates to delicacy/a flow of time	 An angel's wing-like line relates to a sense of play

<Fig 5> Therapeutic effects by the shape of lines

 The slight tapering rather than a straight line makes it natural.	 An aggregation of fundamental shapes such as a circle and a star follows a continuation of a curve, not a straight line.
 Many natural objects have a vortex shape which blooms.	 Many natural objects spread out from a point and converge on a point.

<Fig 6> Therapeutic effects of shapes

Park further divides therapeutic texture and shape into five categories: imitations or transfers of live objects, handmade works using natural materials, things that light penetrates, things that overlap, and things that call up an aqueous or moist feeling.

 Animal fur retains warmth. A mixture of brown and white purifies, heals and relieves the body and mind.	 Adding a handmade effect like stitches, holes, patterns, old metals on things made of natural materials increases the therapeutic effect.
 People who want to avoid sunlight can be healed by soft light through transparent things.	 Human beings pursue abundance and exuberance; therefore, people are instinctively captivated by multi-purpose things. People like textures with moderate moisture.

<Fig 7> Therapeutic effects of textures

As obvious as this may sound, round and soft shapes, such as a cocoon, are easier to hold and give the holder feelings of intimacy.

In Chapter 3, I show how my own practice-led research concurred with Park's analysis of the positive psychological effects of form and texture: curved line, organic shape, round shape, aggregation of fundamental shapes, the warmth of animal fur, the feel and texture of natural materials, effects associated with handmade artefacts, and soft light these have all been evaluated in experiments into the embodiment of ideas associated with the 'organic' shape,[43] i.e. flexibility, lightness of weight, softness of texture, a 'handmade' effect, and psychological comfort.

Non-traditional designs and solutions: Moon Suneel's Bird Saver

Non-traditional designs and solutions have emerged to resolve some of the challenges caused by modernisation and human development. For example, an increasing number of birds fly into the soundproofing walls erected in front of apartment buildings, because they are constructed of a clear, reflective polymer. After collision, the birds either die or fall onto the road, where they are hit by passing cars. Apartment dwellers need the walls to block the noise from the roads, while the birds inhabit the forest belt near the roads and urban centres. Both parties need some kind of cohabitation. To solve this problem, the designer Moon Suneel was asked by the city of Seoul to come up with a series of predatory bird stickers. These stickers, designed to look like an eagle or hawk, are applied to the clear panels of the soundproofing walls, so that small birds keep clear of them.

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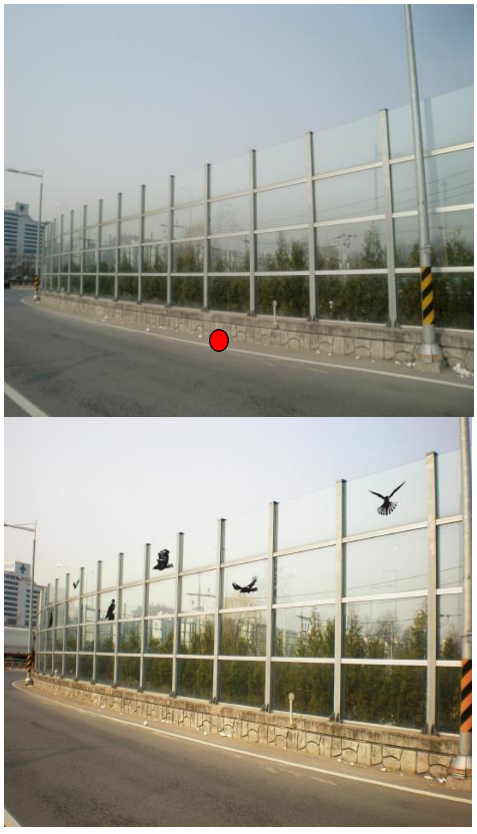
[43] Dutch designer Merel Bekking also found that people felt positive about organic forms with her participations.
In April 2014 in Milan, she had a public show of her research conducted through MRI scans that illustrated the brain's preference towards form, materials and colour. Twenty men and women between the ages of 20 and 30 took part in the experiment, which involved lying in an MRI scanner for an hour while being shown various images of textures, colours, shapes and paintings. The results showed that the brain reacts in a positive way to closed organic shapes.
Merel Bekking, 'How do you know the brain reacts in a positive way to looking at images, and it is not having just any reaction?', < https://www.merelbekking.nl/faq> [accessed 1 May 2014].

The purpose of this Bird Saver program is to protect not only small birds, but also the drivers on the road. According to the Wildlife Rescue Centre, the percentage of the birds that crashed into buildings in 2014 was 141 out of 692 (20.3%). Many of them suffered fractured legs and wings or, worse, were killed. After the stickers were applied on the walls, bird mortalities caused by collision significantly decreased. Many instances of bird crashes are caused by mistaking the green view, such as the sky, trees and forest reflecting on transparent walls, so the Bird Saver was there to prevent it. This is an effective example of well-being design: in the case of the city of Ulsan, for example, the Bird Saver reduced birds crashing into buildings by 90%.



Shanae interchange, Seoul, *Toegyewon*→*Bukbu* Expressway (to *Jongam*).

Banpo interchange, Seoul, *Gyeongbu* Expressway→Express Bus Terminal Station.

<Fig 8> Two Expressway interchanges in Seoul, Korea

2.3 High-visibility wearables and road safety

Road safety is one of the most pressing and intractable issues in contemporary Korea. As a designer interested in this issue, I have looked at reflective wearables as one way of dealing with it in the belief that just by wearing one the pedestrian will be in a better position to prevent or avoid an accident. Of course it is a matter of choice for the wearer, but it is the designer's responsibility nevertheless to provide better choices for people, in such a way that safety wearables will be more acceptable than they have been, and even attractive socially.

I will briefly consider the state of road safety in Korea, to put the issue of high-visibility wearables in perspective. In the OECD report entitled “Pedestrian Safety, Urban Space and Health”, pedestrian fatalities made up 37% of all road deaths in Korea in 2012, almost double the OCED average of 18%. More than 20,000 pedestrians die annually in OECD countries. While senior citizens aged 65 or older represent 13 to 20 of the population, they account for more than half the total pedestrian deaths.[44] In 2016, the OECD reported again: "Among the OECD member countries, South Korea has exhibited one of the highest per capita traffic fatality rates... In particular, pedestrians and the elderly are believed to be at higher risk than in other countries".[45]

Drive negligence and pedestrian behaviour are often cited as the main causes of such traffic accidents, but we need to consider some of the structural problems as well. Transport infrastructure opens new routes and generates new economic opportunities, but the resulting increased traffic flows also generate environmental and social costs. In Korea, the total length of paved roads has increased exponentially, from 580 km in 1951 to 87,000 km in 2014. The number of motor vehicles went from 1 million in 1985 to 22 million in 2017 (out of 50.8 million people), an increase of 2,100% in 32 years. For the same period, Korea's

[44] ITF, 'Pedestrian safety, urban space and health' (2012) OECD Publishing, p. 39, <http://www.oecd.org/publications/pedestrian-safety-urban-space-and-health-9789282103654-en.htm> [accessed 4 November 2017].

[45] Martin W. Adler and Rudiger Ahrend, 'Traffic safety in South Korea: understanding the vulnerability of elderly pedestrians' (2016) OECD Publishing, p. 4, <https://www.oecd.org/regional/regional-policy/Traffic-Safety-Korea-Vulnerability-of-Elderly-Pedestrians.pdf > [accessed 4 November 2017].

population increased by 24.48%. It is hard to dispute that this phenomenal explosion of road infrastructure and motorisation has little to do with high traffic fatalities.

Sang-kweon Park also examined road accidents in Korea from 1996 to 2005 and found that a rapid increase in the number of vehicles and licensed drivers is correlated with the higher rate of pedestrian fatalities.[46] Various traffic-related problems, such as road congestion, air pollution, and energy problems, have become worse as a consequence, but this automobile-dominated culture has not shown any sign of abating. In short, as there are simply too many cars in Korea, traffic accidents are bound to happen, so it is imperative for every pedestrian in Korea to take safety seriously.

Nevertheless, when we consider high-visibility wearables as potential protection and greater safety in the dark, people have been not so receptive until now. The following example illustrates the current situation. According to a study on bicycle safety by the Korea Consumer Agency (Table 1), only 9 out of the 500 riders who responded (less than 2%) said they always wear protective gear when bicycling.

Unit: Person, %

Details of Responses	Number of Responses	Percentage
I never wear it	305	61.0
I rarely wear it	142	28.4
I sometimes wear it	44	8.8
I always wear it	9	1.8
Total	500	100

<Table 1> Do you wear protective gear when cycling?[47]

[46] Sang-kweon Park, 'Road accidents in Korea', *IATSS Research*, vol. 32, no. 2 (2008).

[47] Korea Consumer Agency, 'Jajeongeo anjeon shiltae josa [A report on the reality of bicycle safety]' (October 2009),

<http://kca.go.kr/brd/m_46/view.do?seq=661&srchFr=&srchTo=&srchWord=%E&srchTp=&itm_seq_1=0&itm_seq_2=0&multi_itm_seq=0&company_cd=&company_nm=&page=74> [accessed 6 June 2017].

What are some of the reasons the respondents gave when they said they do not wear protective gear when bicycling? Number one (70.9%) is "because it's inconvenient", which is followed by "because it's expensive", and "because other people don't wear it" (Table 2).

Unit: person, %

answers	number of respondents	rate
Because it's inconvenient	317	70.9
Because it's expensive	62	13.9
Because other people don't wear it	57	12.8
Because it's unnecessary	8	1.8
Because I don't have it	3	0.6
Total	447	100

<Table 2> Reasons cited for not wearing protective gear

I found a similar attitude in my case study (discussed in Chapter 4) comparing a fluorescent safety vest with a glow-in-the-dark patch. Suffice it to say that it proved to be a matter of what is socially acceptable, not of functionality or job effectiveness.

Road safety in Korea

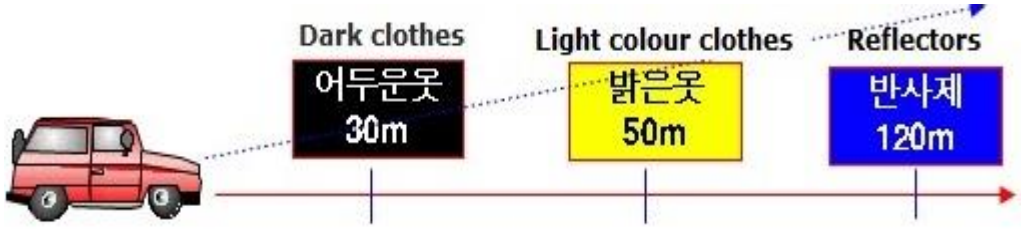
The City of Seoul analysed seventy cases of fatal traffic accidents that had occurred in Seoul between December 2014 and January 2015. They discovered that more than half of the fatalities reported involved by jaywalking at night. Of these, thirty-six (51%) died while crossing the road illegally, and twenty-three of them were aged over 60 years.[48]

The following are some of the problems faced by the elderly in traffic safety that are related to my concerns for elderly pedestrians who have various types of physical deterioration. There are several points to note regarding the elderly

[48] MBN News, 9 May 2015.

people's general physical characteristics: mobility decreases by a third; balance (ability to stand on one leg) is reduced by a third; muscular strength decreases by a half, and there is a 20% decrease in each of the following senses: balance (which can be assessed by ability to stand on one leg) is reduced by a third; muscular strength decreases by a half, and there is a 20% decrease in both visual acuity and hearing.[49] Behavioral issues found with elderly pedestrians include jaywalking and ignoring traffic signals due to slower reactions. The Transportation Safety Workshop hosted by the Daegu police department advised seniors to wear light-coloured clothing, and to use pedestrian crossings and overpasses, to cross at the next traffic signal only when the green light is flashing, to face oncoming traffic when walking on the sidewalk, to look both ways when crossing the road, to wear glasses and hearing aids, and not to jaywalk. Points that were particularly emphasized were: wearing light-coloured clothing, not jaywalking, facing oncoming traffic when walking on the sidewalk, and not to pick up dried vegetation on curved roads.

The following figure showing the driver's night cognition of distance was also provided by the Daegu police department.



<Fig 9> The driver's cognition of distance at night[50]

[49] In an email communication with the Daegu police department, April 22, 2013.
[50] In an email communication with the Daegu police department on April 22, 2013.

According to information about drivers' night cognition of distance, dark clothes can be recognized only 30 meters from the driver and lighter colour clothes can be recognized 50 meters away by drivers, while the yellow colour was more effective than other colours. Reflective material, which can be recognized 120 meters away, is the most effective. This data reinforces the need for research, such as that reported on here, into the use of highly-visible materials.

Yellow Carpet

Yellow Carpet is an example of safety design using colour for high visibility. It is a conspicuous, clearly defined yellow-painted area for children to stand in while waiting for their pedestrian crossing light to change, so that their silhouette is sharply delineated against a bright yellow background. The area is illuminated by a sensor-operated solar lamp above, which turns on when movement is detected below, day and night. As of December 2017, there are 214 such Yellow Carpets throughout Korea.

According to the Green Umbrella Children's Foundation, which is responsible for this design, 44% of the traffic accidents in Korea are child fatalities, and 81% of those fatalities occurred at pedestrian crossings.[51] They observe that in the great majority of those cases the driver did not see the child running into the street. Yellow Carpet is an excellent example of designers addressing the need for high-visibility safety design, one which has proven to be highly effective as a preventative measure: 76.4% of those drivers who responded to the foundation's questionnaire said they slowed down when they saw a child standing on a Yellow Carpet.[52] This successful design has raised social awareness that safety comes first, and has demonstrated that it is socially acceptable to make use of such a design without people feeling embarrassed at being looked at.

[51] Child Fund Korea, Yellow Carpet,< http://childmaeul.org/?page_id=2137> [accessed 1 May 2016].

[52] Yonhap News, 'Crosswalk in front of elementary school 'yellow carpet' had a child safety effect' (2017), <http://v.media.daum.net/v/20170307084610329> [accessed 7 March 2017].

<Fig 10> An example of Yellow Carpet in Seoul, Korea

<Fig 11> A larger view of Yellow Carpet in Seoul, Korea

Chapter 3. Materials Research

This chapter presents and discusses the practical research I have conducted on luminous high-visibility materials, and accounts for and discusses my assessment of the wearability of various alternative high-visibility materials with which I have experimented. It is through the investigation of materials that my practice has evolved and extended its scope.

In South Korea, there still exists considerable social resistance to applying high-visibility materials in applications other than those vocational ones which are conventionally and specifically associated with their use, such as workwear used on construction sites and in road maintenance. In this research, however, I have found the idea of high-visibility wearables to be beneficial as a conceptual research tool, because it has helped to point to intersections where various disciplines, which I might not otherwise have connected, are shown to meet.

In this chapter, I consider the following practical design elements: stability, flexibility, lightness, breathability, waterproofness, small size (less than the length of a thumb, as determined in focus groups; see Chapter 2), and convenience of wearability.

3.1 High-visibility materials

My initial experiments in creating high-visibility wearable artefacts were informed by the possibility of achieving positive psychological effects through the use of form and texture. As discussed in Chapter 2, Park Youngju (2004) argues that the following elements promote positive feelings: curved line, wavy line, organic shape, round shape, aggregation of fundamental shapes, the warmth of animal fur, the feel and texture of natural materials, effects associated with handmade artefacts, and soft light.

These ideals of simplicity, accessibility, and utility, and my practical methods of using everyday materials are explained and evaluated in this chapter.

3.1.1 Initial experiment in combining ordinary materials with fluorescent acrylic paint (October 2014)

My experiments began with thread to which paints were applied, in order to identify possible positive psychological effects of form and texture. Liquid materials were tested for their embodiment of ideas associated with the ‘organic’, with flexibility, lightness of weight, softness of texture, a ‘handmade’ effect, waterproofness, and psychological comfort. Silicon, sealing wax, and a glue-gun stick, materials which it is possible to colour, were tested to see how each material would respond when fluorescent paint was applied to it. Fig 12 shows representative examples of the results of these trials.

Images	Materials Description
	Silicon Fluid shape, flexibility, lightness of weight, softness of texture, a handmade effect, waterproofness
	Sealing wax, glue gun stick, a mix of both Fluid shape, flexibility, lightness of weight, softness of texture, a handmade effect, waterproofness
	Glue gun stick Fluid shape, flexibility, lightness of weight, softness of texture, a handmade effect, waterproofness

<Fig 12> Testing liquid materials in organic shapes

The test results were as follows:

- Silicon: flexible, waterproof, light, but cannot be dyed with fluorescent paint.
- Sealing wax: hard, waterproof, selectable colours, but cannot be dyed with fluorescent paint.
- Glue-gun stick: flexible, no colour, and cannot be dyed with fluorescent paint.

The experiments using liquid materials showed that they lent themselves well to the formation of suitable curved and fluid forms, and they were light in weight and potentially wearable. However, as none of these liquid materials satisfied my requirement that they could be combined with luminous paint, they proved to be unsuitable for my purposes.

3.1.2 Ordinary materials in combination with luminous and fluorescent materials

The following tests then focused on the use of ordinary, everyday materials (Chapter 4.3) which had physical qualities that I associated with wearability: cotton string, an onion packaging net, a scrap of fabric, rice paper, a button, and also a small magnet (used to post memos), in combination with readily available reflective materials. The experimentation involved combining each material with a reflective material; the artefacts shown below were the results.

The experimental aim was to see how combining these ordinary and reflective materials might work in various design applications.

Images	Materials Description
	Cotton loop, onion bag net, magnet flexibility, lightness of weight, reflective function
	Fluorescent loop, onion bag net flexibility, lightness of weight, reflective function
	Fluorescent tape, fabric, a button flexibility, lightness of weight, reflective function
	Rice paper, reflective tape flexibility, lightness of weight, new way of wearing

<Fig 13> Practical artefact tests combining ordinary and high-visibility materials

All four of the artefacts shown had the advantage of being flexible, light in weight, and reflector-compatible. In particular, the reflective sticker-type material proved to be the most portable and suitable for use in jewellery, in that it could be matched with the wearers' own clothes, depending on their mood.

3.1.3 Organic shapes made using cotton string and mountaineering rope in combination with high-visibility materials

Next, I explored the use of cotton string to create flexible, stable, lightweight, soft shapes, which I conceived of as a form of natural 'drawing' on the body. The Korean traditional knot, *maedeup*,[53] used here, is still popular for everyday decoration (e.g. in brooches, and mobile phone bags); and climbing knots, considering their safety associations, were also considered to be potentially useful.[54]

The experiment involved creating basic traditional Korean knots for decorative effect, while using mountaineering knots to convey a sense of safety. Using both of these methods, it is possible to create a wide variety of forms, such as those illustrated in Fig 14, with the advantage of being able to control the length of the items made. However, neither the traditional partly knotted string, nor the mountaineering rope, which included nylon, absorbed the fluorescent paints very well, so neither was judged to be very suitable for this purpose.

My experimentation then moved on to trying thick cotton string, which – unlike the string and rope based on non-absorbent synthetic materials – proved to absorb fluorescent paint well. Cotton rope can be readily formed into a wide variety of shapes, using various techniques including numerous knotting methods; the shapes are easy to wear on the body, so the rope is well suited for this purpose. Additionally, cotton straps are softer to the touch than nylon straps, and they also have practical features like washability. As Hae-Joo Choi and Hye-Soon

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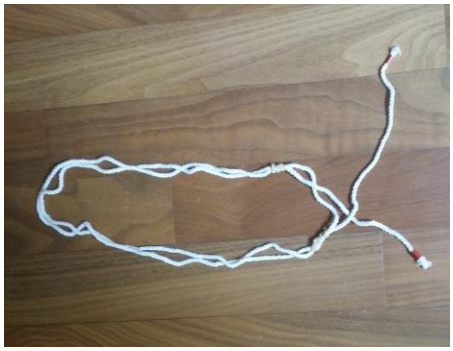
[53] National Museum of Korea, '*maedeup*', <https://www.museum.go.kr/site/main/relic/search/view?relicId=133348> [accessed 1 April 2021].

[54] Due to the topography of Korea, where 70% of the country is mountains, mountaineering ropes are a familiar material even if you are not a professional mountaineer. As they are a familiar material, mountaineering ropes are also used for everyday decoration.

Lee (2007) have shown, cotton has recently become strongly associated in Korea with domestic wellbeing.[55]

Simple techniques to connect the cotton rope, using small magnets and ordinary materials, such as an onion-packing net,[56] resulted in experimental jewellery

Code	Image	Materials; Description
CRJ#01		Cotton-rope (thickness 6mm), reflective tape Using Korean traditional knots technique Flexibility, lightness of weight, softness of texture, a handmade effect, washability, reflective function
CRJ#02		Cotton-rope (thickness 6mm), reflective tape Using a mountaineering knots technique Flexibility, lightness of weight, softness of texture, a handmade effect, washability, reflective function
CRJ#03		Cotton-rope (thickness 6mm), reflective tape Using a mountaineering knots technique Flexibility, lightness of weight, softness of texture, a handmade effect, washability, reflective function

[55] Hae-Joo Choi, Hye-Soon Lee, A Study on the Aesthetic Characteristics of Korean Wellbeing Fashion, *Journal of the Korea Fashion & Costume Design Association* (Korean Fashion & costume Design Association) 9-2, (2007),149.

[56] The ordinary onion packaging net in Korea is a mesh made of nylon thread, usually red but sometimes green, white or purple nylon mesh.

CRJ#04		Cotton-rope (thickness 6mm), onion bag net, magnets Flexibility, lightness of weight, softness of texture, a handmade effect, washability, reflective function Free style for wearing
CRJ#05		Cotton-rope (thickness 15mm), onion packaging net, magnet Flexibility, lightness of weight, softness of texture, a handmade effect, washability, reflective function
CRJ#06		Fluorescent-rope (thickness 8mm), onion bag net Flexibility, lightness of weight, softness of texture, a handmade effect, washability, reflective function

<Fig 14> Examples of Cotton Rope Jewellery with and without fluorescent paint

In particular, the traditional knots CRJ (Cotton Rope Jewellery) #1 and the climbing knots #2 and #3 were easy to wear because the rope length was adjustable. The CRJ #5 was also easy to wear with a magnet. The method was executed by attaching a magnet to the end of the rope and fixing it with reflective tape. Magnets were attached to both ends of the rope to form a circle, which can be worn on any part of the body like a necklace. The 15mm thick cotton rope was too thick to apply the crochet technique.

The CRJ#06, 8mm-thick rope was more complex than the 6mm cotton rope. It did not bend well enough for the knot technique. So the end part of the onion packing net was adjusted to be worn around the wrist and arm.

The cotton texture was soft, and natural and organic lines were created according to the body's movement when worn. Positive psychological effects: organic shapes, lightness of weight, softness of texture, and the handmade quality (Chapter 2.2).

As above, various fluorescent materials were used as the high-visibility material in this research.[57] However, the reflector material was used in limited amounts, such as CRJ#01-05. The reflector material uses fine glass beads for retro reflection. I avoided using these fine glass beads because it is highly likely to become a material that increases environmental pollution.

There are other methods of producing high-visibility, such as using LED and digital light; developing the luminous substances of jellyfish; deploying GFP (Green Fluorescent Protein), and substances of luminous mushrooms can be developed as a future fluorescent eco-friendly material (Conclusions 5.3 Prospects for cross-disciplinary collaboration and future directions).

[57] On December 10, 2015, I visited Reflomax, a high-visibility material company in Korea that approved a site visit. I touched the various high-visibility materials provided by the site manager and also heard an explanation of various types of luminescence. I also brought samples and experimented with various textures and effects. <https://www.reflomax.com/> [accessed 1 December 2015].

There are three main forms of luminescence at play: fluorescence, phosphorescence and chemiluminescence. Fluorescence and phosphorescence are two forms of photoluminescence. In photoluminescence, a substance's glow is triggered by light, in contrast with chemiluminescence, where the glow is caused by a chemical reaction. < https://www.enzolifesciences.com/>.

3.1.4 Crochet pattern-making in combination with fluorescent acrylic paint

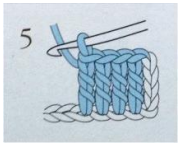
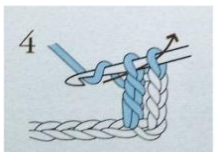
This next experiment focused on crocheting, because crochet can be designed to easily fit the curvy human body, and the material can be made to fit any individual body.

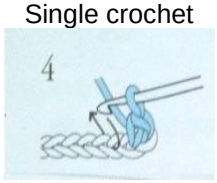
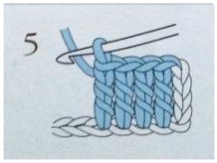
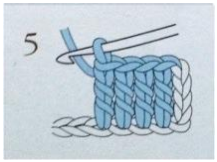
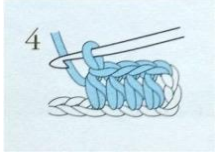
Before shaping the textile to suit the body, basic crochet techniques were used with plain cotton yarn, stretch yarn, glow-in-the-dark thread (fluorescent yarn), and fluorescent coated yarn. To add a fluorescent effect to the cotton yarn, I coated lengths of white cotton yarn with fluorescent acrylic paint and used it to weave with. Being a stiff material, however, due to the paint, it was difficult to crochet with. Overall, a thick coating of fluorescent acrylic material on the surface of the threads creates different shapes when using basic and less decorative crochet techniques such as cross-stitch; the fluorescent acrylic surface does not move smoothly between the needle and thread. The fluorescent effect is achieved, but the acrylic-finished yarns' surface is difficult to work with as the surface friction and movement between the threads is inconvenient for weaving.

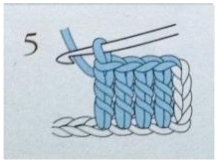
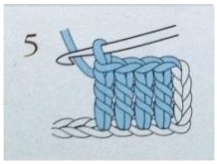
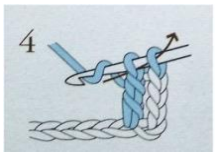
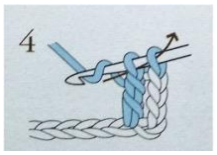
In order to resolve these issues, experimentation was needed to find possible solutions. Firstly, I decided to crochet by layering yarns of multiple rows, after thinly coating the yarn with fluorescent polyester. Secondly, I tried to twist thick fluorescent acrylic yarn material, but the coated fluorescent acrylic yarn was still difficult to weave with.

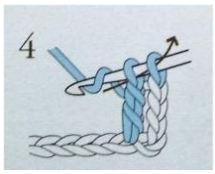
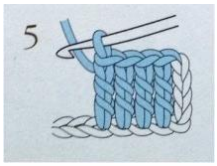
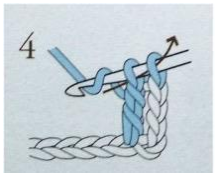
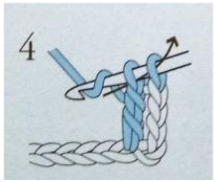
Fluorescent polyester thread with a thickness of 0.05cm is easy to twist; however, it is too thin to create a fluorescent effect, so I decided to increase the thickness. A modified form was created by increasing the thickness of the yarn to 0.8cm through chain-stitch. I discovered that the various strings in Fig 15 contributed to achieving convenient wearability, with the crocheted object contributing to wearability with its lighter weight. In addition, the material's surface and thickness proved to be a critical factor that had to be taken into consideration when it came to hand crocheting with fluorescent materials.

The results of this research indicate that in considering comfort and aesthetics for the wearers, it is important to make an easy-to-wear and lightweight artefact and that it is possible to create comfortable and highly fluorescent effects by employing crocheting and knotting methods. Tests were conducted in applying contemporary jewellery by using other knotting methods. The crochet technique could be used to make items to fit any individual body.

Codes	Image/ Name of Crochet stich	Technique info Crochet needle size/ Materials Thread type (cm) Description
Cro-01	 Chain 	Technique info: Hardware metal crochet needle for lace No.1 Materials: Painted acrylic paint polyester white thread/ thickness 0.1cm As the material's thickness increased, the material's fluorescence also increased. The effective visible material was acrylic fluorescent painted thread. The crocheting skills created a better fluorescent effect than normal glow-in-the-dark thread as the fluorescent acrylic covered thread is thicker but there were problems as follows: The fluorescent acrylic thread was uneven in thickness and it was difficult to crochet and to create the desired shapes, i.e. as per the diagram in column 3. The fluorescent acrylic thread had a stiff surface, which meant it was not possible to do smooth weaving. Thus, research was needed for another material.
Cro-02	 Chain stitch 	Hardware metal crochet needle for lace No.8 Materials: Polyester glow-in-the-dark thread/ thickness 0.05cm The fluorescent thread was too thin and was better if twisted (Thickness: 0.05cm). Using a chain-stitch technique increased the thickness to 0.8cm (adapted by using crocheting techniques with chain-stitched thread.) Creating a decorative and high fluorescent effect by using a method of knotting used for climbing rope, general crochet threads and the traditional knot. Applications that can be interpreted in a contemporary design by using other knot methods.

Cro-03		Single crochet 	Hardware metal crochet needle for lace No.8 Materials: Polyester white thread/ thickness 0.1cm Various crochet techniques were tested: Cro-03, 04, 05, 06, 07 and 08 with different size crochet needles. Techniques used with chain-stitched fluorescent thread. Crocheting techniques combined with fluorescent tapes, fabrics, nets etc.
Cro-04		Double crochet 	Hardware metal crochet needle for lace No.8 Materials: Polyester white thread/ thickness 0.1cm
Cro-05		Chain 	Hardware metal crochet needle for lace No.8 Materials: Polyester white thread/ thickness 0.1cm
Cro-06		Half double crochet 	Hardware metal crochet needle for lace No.1 Materials: Polyester white thread/ thickness 0.1cm

Cro-07		Double crochet 	Hardware metal crochet needle for lace No.1 Materials: Polyester white thread/ thickness 0.1cm
Cro-08		Chain 	Hardware metal crochet needle for lace No.1 Materials: Polyester white thread/ thickness 0.1cm
Cro-09		Chain stitch 	Hardware metal crochet needle for lace No.8 Materials: Transparent rubber band/ thickness 0.1cm I experimented with transparent and thin rubber bands that can be used to replace hinges and joints. Tested for comfort and wearability.
Cro-10		Chain stitch 	Hardware metal crochet needle for lace No.1 Materials: Transparent rubber band/ thickness 0.01cm Cro-09 and 10 used the same technique: chain stitch with different size crochet needles. Thicker needles result in thicker lines. The rubber bands were too thin and created a stiff surface, which made it difficult to crochet the desired shapes

Cro-11		Chain stitch 	Hardware metal crochet needle for lace No.1 Materials: Nylon thread wrapped dark green rubber band/ thickness 0.12cm This nylon thread wrapped around dark green rubber band is not stiff and is thicker than the transparent 0.1cm rubber band above.
Cro-12		Love knot 	Hardware metal crochet needle for lace No.8 Materials: Nylon thread wrapped dark green rubber band/ thickness 0.12cm Nylon thread wrapped around dark green rubber band made it possible to create the desired shapes. It had less stretchiness than the transparent 0.1cm rubber band with wider crocheting techniques.
Cro-13		Chain stitch 	Hardware metal crochet needle for lace Materials: No.1/ No.8 (According to the thickness of raffia) Raffia The variety in the thickness of the line is in correspondence with the natural yarn. Organic shapes. This natural raffia had an uneven thickness and it was difficult to crochet into the desired shapes.
Cro-14		Chain stitch 	Hardware metal crochet needle for lace No.1 Materials: Baby pink nylon ribbon/ width 0.4cm Crocheted with the biggest sized ribbon.

<Fig 15> Practice crochet techniques for rough finishing

As seen in Chapter 1, contemporary jewellery, especially conceptual jewellery has played a significant role in expanding the art field with a novel idea. However, the practical aspect of wearing jewellery has been overlooked. In conceptual jewellery, everyday materials such as cotton thread, rubber bands, and raffia are used to convey uniqueness through the different purposes of everyday materials. However, considering that practicality is not found in conceptual jewellery, my crochet technique and used of such materials as rubber bands were deliberately used to create various shapes and a rubber band that can be stretched to suit normal human movement. The crochet technique has a handmade effect and can be used to make items to fit any individual body. While using a crochet technique with a good sense of ignition on each individual's body and curved body, a test was conducted to enhance road safety by painting luminous paint on the cotton thread.

3.1.5 Cotton-wool and felt in combination with high-visibility material

I considered cotton-wool as a suitable material to be worn, because it has some of the most important properties I was looking for in my practical research: it is flexible, soft, fluffy, light, free-style, and non-precious. The thickly coated fluorescent painted threads are brighter, but the acrylic painted threads' surface fractionizes, and the threads are inconvenient for weaving.

For a comparison, I decided to include felt, and cotton-wool, which shares many of the same properties as crochet thread.

In contrast to the stiffening effect of fluorescent paint on cotton thread, felt and cotton wool absorb fluorescent paint well and have smooth spreadability that ensures a good fluorescent effect. Cotton wool is used for disinfection and make-up removal in everyday life, and felt is also a widely used everyday material. Cotton wool and cotton strings are also suitable, with qualities that give psychological benefits (Chapter 2.2): flexibility, lightness of weight, softness of texture, a 'handmade' effect, waterproofness, and organic shape.

To combine the high-visibility materials with cotton wool and felt, I applied the paint to the cotton-wool and felt, using the balloon plastic to make a piece of high-

visibility jewellery in its own right. Both of the high-visibility materials have the advantage of being highly flexible in their applications.

The wool fibre absorbed the fluorescent paint to give a great luminous effect. With the Glow in the Dark paint, I decided to squeeze the tube out to create three-dimensional organic shapes instead of painting with a brush.

Codes	Image	Description
CVJ#01		Materials: Cotton-wool, Glow in the Dark Paint (Green) Commentary: Soft, fluffy, light to wear, free style for wearing. The wearer can tear as much as they want and the shape they want to wear. It can be worn on an ear or wherever the wearer wants it. It was strong enough to glow in the dark.
CVJ#02		Materials: Cotton-wool, reflective tape, Glow in the Dark Paint (Green) Commentary: Soft, fluffy, light, free style for wearing. It was strong enough to glow in the dark.
CVJ#03		Materials: Cotton-wool, reflective tape, Glow in the Dark Paint (White Base Undercoat) Commentary: Soft, fluffy, light, free style for wearing.
CVJ#04		Materials: Glow Magic Balloon Plastic Commentary: Delicate, light, to wear. It glows in the dark.

CVJ#05		Materials: Glow Magic Balloon Plastic Commentary: Flexible, light to wear Organic shapes and the effect was strong enough to glow in the dark.
CVJ#06		Materials: Glow Magic Balloon Plastic, thread Commentary: Delicate, Flexible. Light to wear. Soft. Organic shapes. It glows in the dark.
CVJ#07		Materials: Felt, Glow in the Dark Paint Commentary: Flexible. Soft. Light to wear. It glows in the dark.

<Fig 16> High- visibility conceptual jewellery

The tests with these materials showed that cotton-wool was best at absorbing the luminous paint, but it did not hold its shape well when attached to a piece of fabric. Felt, on the other hand, did not have that problem. In fact, it turned out to be a better choice than cotton-wool, because its ability to absorb the paint was never an issue and its softness was as good as cotton-wool. Finally, the Glow Magic Balloon plastic kept its softness and fluffiness when blown, but its light emission quality was not strong enough unless it gained a sufficient thickness. When the application of fluorescent acrylic thickness was about 0.08mm or more, the shape could be recognized when the lights were turned off in a curtained room with normal eyesight.

3.2 Experiments in combining ordinary materials with fluorescent acrylic paint (October 2014)

As seen above, the cotton wool absorbed the fluorescent paint well, and it was good enough to satisfy the positive psychological and practical aspect, including a high-visibility effect. However, the material itself was difficult to keep in its original shape every time it was rubbed, and a feeling of use appeared.

Therefore, I needed to look for other ordinary materials that would work better with the fluorescent paint. These are two of the candidates that I put to the test: repairable screen-door mosquito net, and raffia.

In the case of a household with windows, the repairable screen-door mosquito net, which is used to fill holes created by the age of most insect screens, is an everyday material that can be easily found in stationery and general stores. Because it is a sticker type, it can be attached anywhere. Raffia is an everyday material used for wrapping or tying gifts and for various other purposes. Also, it is a material that corresponds to flexibility, lightness of weight, softness of texture, and waterproofness and it is suitable in terms of the elements that give psychological benefits (Chapter 2.2).

FL-1 (FL code means fluorescent acrylic paint artefacts, see Fig 17 below):
repairable screen-door mosquito net and painted fluorescent colour thread (49mm x 49mm).

As the material's thickness increased, its fluorescence also increased. The most effective visible material was the fluorescent painted thread. The thickness of 0.05cm yarn is too thin for a fluorescent effect, but as the layers of yarn increase the thickness and visibility also increases.

The repairable screen-door mosquito net and thread are flexible and soft. Those are important elements of my practical work. The original purpose of the repairable screen-door mosquito net is as a patch to cover holes in screen-doors. It was difficult to make smooth and natural shapes by sewing the net's grid with yarn.

On the back of the repairable screen-door mosquito net there are stickers, which can be stuck to clothes. The purpose of the sticker is to be lightweight,

easily transportable and attached at any time. The viewer is likely initially to recognize the material as an everyday material. My subsequent use of it as an ornament in a different context transformed the material from the ordinary to the extraordinary.

FL-2: repairable screen-door mosquito net, painted fluorescent colour thread (49mm x 49mm).

In sewing the net's grid with yarn it was difficult to make smooth and organic shapes from FL-1. After initial trials, I tried one layer of thread, such that it was like embroidering on a mosquito net to make an organic shape, but the single thread was not visible enough to glow in the dark. As shown in the case of the Glow Magic balloon, the thread needed to be 0.08mm or more, but this thread was 0.05mm. The pattern on the net looked more free style than multiple layers of thread but the effect was not strong enough to glow in the dark.

FL-3: repairable screen-door mosquito net, fluorescent acrylic colour (49mm x 49mm).

The use of the holes in the net material was not conducive to constructing an intuitive shape. This mosquito net sticker brooch can be worn on any part of the body or clothes and is flexible. This net is kept the acrylic colour and intuitive shapes better than stitching and sewing the net's grid with yarn.

FL-4: fluorescent paint, painted fluorescent colour thread (49mm x 49mm).

A piece of paper in the shape of a drop of water was placed in the middle of the net and the rest of the net was painted with fluorescent acrylic colour. Once the colour had dried, the paper was removed from the net. The above is similar to the effect of intaglio engraving but it did not illustrate the water drop shape well.

FL-5: name tag clip, vinyl, fluorescent stone, fluorescent thread (49mm x 128mm).

In order to compare the visibility effect of the fluorescent stone and fluorescent thread, the objects were placed in vinyl that was divided by sealing the shapes with a hot iron. Vinyl is flexible and soft, both of which are important elements of this practical work. A badge clip allows for attachment to clothes. The fluorescent

thread was used for visual effect rather than as a means of hanging the object from the clothes or body.

FL-6: vinyl, fluorescent thread (50mm x 165mm).

A fluorescent thread is used for visual affect and for wearing on the body or clothes. The fluorescent thread was placed in vinyl divided by a hot iron. The temperature used was the same as the temperature for ironing cotton. The fluorescent thread was used for the visual effect of the material in FL-05 but this thread can be attached to more places on the body and clothes than a clip could.

FL-7: raffia, fluorescent acrylic colour, felt (120mm x 170m).

The rolled-up raffia and fluorescent acrylic colour uses intuitive shapes and aims to give a more natural shape and feeling. The dark grey felt supports both objects and creates spontaneous lines well. A warm feeling is created by using felt (texture), rolled raffia (technique), and natural lines (visual effects) and this enhances the hand-made quality of this brooch well.

FL-8: fluorescent stone, vinyl, fluorescent colour, felt (90 mm x 120 mm).

This intuitive shaped fluorescent colour and a fluorescent stone have good visual effects. Hand stitched, intuitive shaped fluorescent colour, natural wrinkled vinyl, hand-cut felt creates a hand-made quality and intuitive shapes.

FL-9: raffia, fluorescent acrylic colour, vinyl, paper, name tag clip (95mm x 125mm).

The use of a readymade name tag supports the creative idea. A badge clip is used to attach the artefact to clothes. The name tag allows for different flat objects to be placed inside and therefore it can be changed as desired according to the wearer’s mood and needs.

FL-10: fluorescent stone, fluorescent acrylic colour, felt, vinyl, name tag clip, thread. (150mm x 130mm).

This brooch is a bigger piece than others to wear. The big piece of fluorescent acrylic colour is attached by stitching it on to the felt. The big piece of fluorescent acrylic colour has better visibility in the dark but the clip with the big piece dangles when the wearer moves.

FL-11: fluorescent stone, fluorescent thread, felt, vinyl, thread (135 mm x 80 mm).

The single chain stitched fluorescent thread has much less visibility than the fluorescent stone. However, the single chain stitched fluorescent thread has a spontaneous line. The fluorescent stone was placed between the vinyl and felt with stitches instead of the traditional stone setting used to display gemstones. It can be worn as a brooch or put in a pocket.

FL-12: fluorescent acrylic colour, felt, thread (60mm x 208 mm).

This artefact can be worn with the felt or separately just with the single chain string and fluorescent acrylic colour. It is lighter than FL-10 as it is a much smaller piece of fluorescent acrylic colour. When it is worn on the clothes, it looks like a traditional *norigae* ornament.

FL-13: raffia, fluorescent stone, vinyl, thread (92 mm x 260 mm).

In the middle of this piece is a cotton thread crochet, which has a natural rounded shape. The shape of this natural concentric circle is associated with the shapes and patterns of art in the primitive age. The artefact can be worn long or short depending on how many times the raffia strip is rolled up.

FL-14: fluorescent stone, fluorescent acrylic colour, thread (50mm x 50mm).

The crochet gives a hand-made quality. The fluorescent acrylic colour gives a natural rounded shape. The crocheted cotton thread gets dirty easily. It can be washed but can be damaged after several washes.

FL-15: fluorescent acrylic colour, thread (35 mm x 140 mm).

The fluorescent acrylic colour creates an intuitive shape. The single chain of cotton thread is soft and flexible but it is not able to replace the strap as it is fixed to a fluorescent acrylic colour.

FL-16: raffia, fluorescent acrylic colour (60mm x 140mm).

The chain stitched raffia strap is a bit stiff and creates a spontaneous twisted shape. The raffia strap is stiffer than cotton thread, but it gets dirty less easily. This organic material gives a natural feeling. A raffia strap could be used to replace it. Fig 17 shows representative examples of the results of these trials.

#	Image	Description (Objective view) Materials, Date, Dimensions, Commentary
FL-01		Materials: Repairable screen-door mosquito net and painted fluorescent colour thread Date: 2014 Oct Dimensions: 49mm x 49mm
FL-02		Materials: Repairable screen-door mosquito net, painted fluorescent colour thread Date: 2014 Oct Dimensions: 49mm x 49mm
FL-03		Materials: Repairable screen-door mosquito net, fluorescent acrylic colour Date: 2014 Oct Dimensions: 49mm x 49mm
FL-04		Materials: Repairable screen-door mosquito net, painted fluorescent colour thread Date: 2014 Oct Dimensions: 49mm x 49mm
FL-05		Materials: Name tag clip, vinyl, fluorescent stone, fluorescent thread Year: 2014 Oct Dimensions: 49mm x 128mm

FL-06		Materials: Vinyl, fluorescent thread Year: 2014 Oct Dimensions: 50mm x 165mm
FL-07		Materials: Raffia, fluorescent acrylic colour, felt Year: 2014 Oct Dimensions: 120mm x 170mm
FL-08		Materials: Fluorescent stone, vinyl, fluorescent colour, felt Year: 2014 Oct Dimensions: 90 mm x 120 mm
FL-09		Materials: Raffia, fluorescent acrylic colour, vinyl, paper, name tag clip Year: 2014 Oct Dimensions: 95mm x 125mm

FL-10		Materials: Fluorescent stone, fluorescent acrylic colour, felt, vinyl, name tag clip, thread Year: 2014 Oct Dimensions: 150mm x 130mm
FL-11		Materials: Fluorescent stone, fluorescent thread, felt, vinyl, thread Year: 2014 Oct Dimensions: 135 mm x 80 mm
FL-12		Materials: Fluorescent acrylic colour, felt, thread Year: 2014 Oct Dimensions: 60mm x 208 mm
FL-13		Materials: Raffia, fluorescent stone, vinyl, thread Year: 2014 Oct Dimensions: 92 mm x 260 mm

FL-14		Materials: Fluorescent stone, fluorescent acrylic colour, thread Year: 2014 Oct Dimensions: 50mm x 50mm
FL-15		Materials: Fluorescent acrylic colour, thread Year: 2014 Oct Dimensions: 35 mm x 140 mm
FL-16		Materials: Raffia, fluorescent acrylic colour Dimensions: 60mm x 140mm

<Fig 17> Practical work combining ordinary materials with fluorescent acrylic paint (FL)

In summary, the materials research began with finding ordinary materials that could combine psychologically comforting elements, and the focus was on high-visibility materials.

Having tested liquid materials such as silicon, sealing wax, and a glue-gun stick, these were found to be unsuitable because the materials could not be dyed with

fluorescent paint. Further experiments involving cotton string, onion packaging net, rice paper, and stickers were done. These materials were more successful than the last in terms of combining them with fluorescent paint.

The cotton string, in particular, shows the advantage of flexibility and softness, which give a positive psychological effect when worn. Compared to cotton string, a polyester thread is similar in terms of paint absorptivity and the psychological effect. However, it is not as natural-looking as the cotton string when braided thickly.

Finally, contrary to my expectations, the experiment with cotton wool was not satisfactory because it failed to hold its shape. However, the glow magic paint tube helped to achieve the best result in terms of high-visibility. The experiment was conducted by squeezing the paint out of the tube directly onto a surface. Also, wearing rice paper on the skin is a new method, but it does not last longer than 5 hours.

Based on the findings from this materials research, I will proceed to conduct a series of wearability tests in the next Chapter.

The attempt to wear ordinary materials like jewellery is about bringing a change of thought as they are used for purposes other than the original intended use. Such wearability and change of thought will be explored further through my exhibitions and case studies in Chapter 4.

Chapter 4. Practical Work Research

The preceding chapter considers contemporary jewellery design in relation to the use of everyday materials, and accounts for the experimental work undertaken to assess how design elements, such as ‘organic’ shapes and lightness in weight (Chapter 3.1), give psychological benefits. Additionally, it seeks to assess whether and how high-visibility materials can be combined with objects consisting of everyday materials in order to demonstrate, through examples, the psychologically comfortable forms and textures that the everyday materials can afford.

Following initial experimental exhibitions that addressed the nature of ‘jewellery’ and the limits of people’s conception of jewellery, this chapter (Chapter 4), which aims to go beyond preconceived notions of protective safety equipment and high-visibility materials, discusses a range of artefacts that are presented in case studies and exhibitions, where participants chose what to wear daily, and consider what is comfortable to wear and what they think about wearing high-visibility protective wearables. In order to optimize the wearing of high-visibility artefacts, with the aim of increasing personal safety, it is necessary to determine which factors hinder their wearability and acceptability. This chapter addresses the aims of expanding the range of high-visibility equipment that can be worn, and improving the convenience and acceptability of wearing it, with the objective that the wearer will utilize it in everyday life and in situations where high-visibility is necessary.

Based on the assessment in Chapter 3 of physical form in relation to positive psychological effect, this chapter discusses further tests, an exhibition, and a case study that were carried out to evaluate people’s preferences regarding wearable elements of contemporary design. The artefacts arising from the practical experimentation, shown in Figures 13 and 28, and in Table 3, exemplify these developments. Hence, the following exhibitions and case studies were conducted:

In the United Kingdom:

4.1 Reading session, April 2010

4.2 Solo Exhibition: *Jewellery of Ordinary Materials*, November 2010

4.3 Solo Exhibition: *about jewellery*, February 2013

4.4 Solo Exhibition: *about unexpected jewellery*, August 2013

In South Korea:

4.5 Group Exhibition: *The box*, September 2013

4.6 Case Study: Everyday materials, March 2013

4.7 Group Exhibition: *The paper*, October 2014

4.8 Case Study: High-visibility wearables, June 2015

4.9 Wearability test for high-visibility materials, February 2016

Having conducted the initial high-visibility and ordinary materials research accounted for in Chapter 3, the tested artefacts were found to have positive psychological effects: organic shapes, lightness of weight, softness of texture, and a handmade effect. The tested artefacts discussed in Chapter 3 were then used in the case studies and exhibitions listed above, between 2010 and 2016, with the aim of identifying the participants' perceptions of conceptual jewellery and how they might feel comfortable while wearing safety jewellery. The list of case studies and exhibitions shows how my thinking changed as I responded to each successive practical stage of my experimental artefacts. Crucial to the artefacts in the practical research tests was the feedback I received at each step of the way, from the respondents to questionnaires and in the open-ended discussions. It is through these responses that I came to question the jeweller-centric tenets of conceptual and contemporary jewellery that had dominated my thinking at the outset, and that were more clearly revealed to me as the work progressed.

Generally, safety wear devices are manufactured according to regulations rather than design, but the purpose of safety jewellery mentioned in this thesis is to contribute to safety while applying contemporary design so that it can be worn in

everyday life. Therefore, by applying a survey on perceptions of contemporary design and wearing to the test object with feedback from the participants, applying contemporary design also suggests the possibility of improving safety awareness and combining safety and jewellery rather than a standard design for only safety purposes. The participants' feedback was helpful to provide the option of wearing high-visibility wearables even to people who did not like the standard design.

This chapter ends with a discussion of wearability, which is a central thread that runs through this thesis.

There may be many perspectives on conceptual jewellery. However, the freedom of conceptual jewellery mentioned in this practical work has the importance in terms of converting perceptions into novel and creative ideas through everyday materials rather than the monetary value of jewellery. Moreover, it is important for jewellery to be born again as a contemporary design with a simple form or metaphysical form, rather than a technique emphasizing splendid forms.

I agree that conceptual art has expanded the concept of art through the transition of creative thinking and perception through ready-made objects. In contrast, the jewellery category should not overlook how conceptual jewellery is translated in physical terms. Hence, practicality is important for convenient wearing and support for safety based on a contemporary design. Therefore experimental research is conducted through exhibitions and case studies as described below.

In addition, the intention of the test works and my exhibition, which utilized everyday materials and spaces, was to recycle objects used in daily life. I aim to utilize the objects in the display and then be able to return those to daily spaces.

This chapter reports on several investigative stages that led to my development of wearable and culturally acceptable high-visibility jewellery, made with the aim of enhancing personal safety at night.

4.1 Reading Session: April 2010

For this Reading session, I specifically chose straw as a testing material. I had in mind a tradition in Korean Buddhism, according to which monks wear loosely woven straw sandals. They do so in order not to harm any insects or worms, should they step on them accidentally. This respect for the environment we live in is one aspect of their wellbeing.

In April 2010, I showed a body of practical work consisting of preliminary models made using Korean straw at a session called 'reading of objects'.[58] As this session was aimed at a specialized audience, the participants invited were three professors (two from the U.K. and one from Germany) and two PhD students (one from Italy and one from the UK). I offered them no explanation at all, and just listened to and noted their opinions. The display table was divided into two sections: one showed items made of only straw, and the other items made of various combinations of both straw and everyday materials.

<Fig 18> Reading session (April 2010), London, UK

[58] Through this example, experimental objects are created using straw grass, as in the example below. The works are created from the perspective that wellbeing can be practiced in everyday life by wearing a material. A survey regarding the perception of materials and wearability is conducted with a reading session with these tested artefacts.

The first discussion the participants raised was wearability. They agreed that the items made of everyday materials, featuring long strings, were wearable. They were also aware that the straw items with a safety pin or a needle could be worn as jewellery.

Cultural understanding was the next topic raised. The participants were curious about the use of straw, which reminded them of something primitive, and nearly all of them related it to their own historical culture. The straw doll reminded them of a voodoo doll,[59] whereby pins are inserted into an effigy as a means of practicing magical witchcraft; this was the most commonly noted association.

<Fig 19> Reading of objects; items made of only straw

[59] Every participant mentioned that straw is a simple material. To some, straw evoked a specific shape and meaning, like a human shape or a voodoo doll. The session shows that the participants focused more on the material's metaphysical form rather than a concrete form reminiscent of a customary meaning, like a doll. Hence, future experimental practices will be created in a metaphysical form. Also, all of the participants accepted that everyday materials could be used as wearable materials. They mentioned that long straps are one of the wearable elements.

<Fig 20> Reading of objects; items made of various combinations of straw and everyday materials

The main discussion is about shapes in terms of straight lines and curves. The participants did not comment as much on the straight-cut straw pieces in the paper box as they did on the other works. When they did, their remarks were limited to the fact that, because of their unaltered, unadorned appearance, the straight-cut pieces stood out among the items on display. For that reason, they considered them simply as material, not as a work of art. On the other hand, they did ask why the straight-cut straw pieces had been placed in a box.

As a result of this initial reading session, I reached the following conclusions:

1) the participants recognized the use of ordinary materials for a piece of art;
2) the participants recognized that perceived wearability turns such a piece into jewellery;
3) the participants understood a change of material to be an essential quality of art; but
4) the participants did not consider a spatial shift to be a sufficient condition to qualify as art.

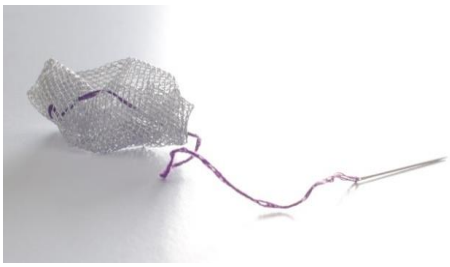
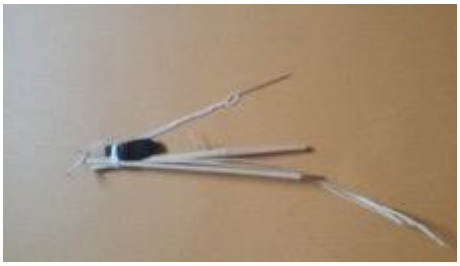
4.2 Solo Exhibition: Jewellery of Ordinary Materials 2010

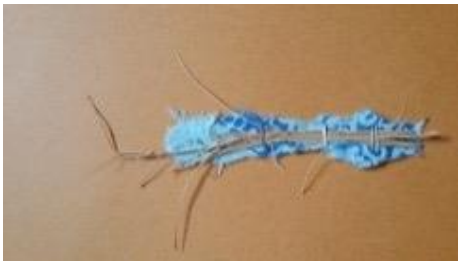
In November 2010, I conducted a practical investigation to test my use of some materials that are conventionally considered to be ‘ordinary’. The venue was my university office. A total of twenty-nine pieces were displayed on the office wall, without any guide or explanation. The materials used were straw, cotton, metal, rubber, paper, wax, plastic, etc., none of which were bought especially for this occasion; they were taken from my everyday life, and there was no financial value in these displayed pieces as far as I was concerned. Most significantly, this practical work was not intended to be 'an exhibition' per se. Rather, it was conceived of as just part of my ordinary, day-to-day life, and nothing special. The title, Jewellery of Ordinary Materials, was not displayed anywhere.

In this exhibition, I had set out to gain some data that is not only jewellery made from ordinary materials but the displayed artefacts are also not under the explicit heading of "jewellery", in order to discourage any preconceived notions about what constitutes a piece of jewellery.

My motivation for using these materials was strongly guided by environmental concerns; the displayed pieces could easily be deconstructed so that they could go back to their original shape or be recycled. The overarching questions for me, however, remained the same: "What is jewellery?" "Would people recognize these pieces as jewellery?"

Six passers-by, who are randomly in the vicinity (five students and one security guard), entered the office and asked questions about what they saw. The guard, who noticed something unusual as he looked in, asked, "Is this supposed to be jewellery?", to which I replied by saying, "I'm testing if it is". Then he said, meaningfully, "So this could also be jewellery".

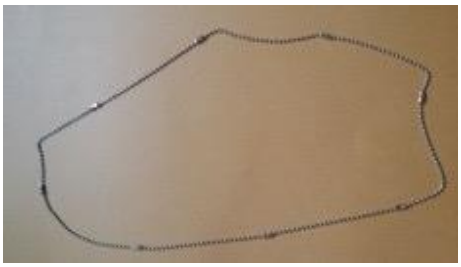
Image **Code** JOM(Jewellery of Ordinary Materials)	**Materials**
 JOM-2008#01	Needle, cotton thread, aluminium mesh
 JOM-2008#02	Safety pin, straw, change
 JOM-2008#03	Rubber, straw, cotton thread, needle
 JOM-2008#04	Cotton thread, straw, Transparent cellular tapes
 JOM-2008#05	Straw, traditional paper, wax

 JOM-2008#06	Straw, traditional paper, metal staple
 JOM-2008#07	Straw, cotton thread, safety pin, a bottle
 JOM-2008#08	Straw, cotton thread, bubble wrap, a mirror
 JOM-2008#09	Straw, cotton thread, plastic bag
 JOM-2008#10	Traditional paper, name tag

 JOM-2008#11	Straw, cotton thread, paper, paper clip
 JOM-2008#12	Straw, cotton thread, safety pin
 JOM-2008#13	Straw, cotton thread, paper napkin, doublet stone, rubber
 JOM-2008#14	Straw, cotton thread, paper napkin
 JOM-2008#15	Straw, cotton thread, plastic bag, silver

 JOM-2008#16	Straw, cotton thread, safety pin
 JOM-2008#17	Silver coloured cotton thread, straw
 JOM-2008#18	Straw, cotton thread, tape
 JOM-2008#19	Straw, safety pins
 JOM-2008#20	Cotton string, straw, plastic bag, silver

 JOM-2008#21	Straw, cotton thread, a part of a bath top cap
 JOM-2008#2	Straw, cotton thread, wire
 JOM-2008#23	Straw, cotton thread, elephant dung paper
 JOM-2008#24	Straw, string, safety pin
 JOM-2008#25	Straw, rubber band, safety pin

 JOM-2008#26	Straw, paper roll
 JOM-2008#27	Straw, cotton thread, paper roll
 JOM-2008#28	Metal ball chain
 JOM-2008#29	Raffia
 JOM-2008#30	Raffia, cotton thread, safety pin, nail

<Fig 21> The experimental artefacts in my research exhibition, *Jewellery of Ordinary Materials* (November 2010), London, UK

<Fig 22> Exhibition, *Jewellery of Ordinary Materials* (November 2010), in my office space, Central House, London Metropolitan University, London UK

The students' responses were less receptive and positive. One of them went as far as to say, "I'm not ready to accept this". The one exception was a PhD student in fine art, who said, "This is (an) art jewellery", and took photos.

These initial responses made me feel positive about continuing with this line of inquiry; that is, to keep asking questions rather than trying to arrive at definitive answers.[60]

[60] This exhibition was based on objects made of everyday materials, and investigated the audience's perceptions. It was important to ask the visitors many questions and get responses as quickly as possible, so I minimized my definition and the answers I gave to the audience.

Having seen the initially informal feedback process as a good way to conduct research and as a basis on which to organize my future exhibitions, I asked myself what conclusions could I draw from this exercise?

1) Although four respondents (too few to be statistically meaningful) were reluctant to accept my conceptual jewellery pieces as "jewellery", the initially informal feedback process informed me about perceptions of contemporary jewellery in ways which were helpful to me in organizing my future exhibitions.

2) Would those negative respondents have reacted differently had I described my exhibition pieces as "jewellery" (or "conceptual jewellery") and displayed them in a formal gallery space under that description? This is precisely what I decided to find out in my next exhibition.

4.3 Solo Exhibition: about jewellery, February 2013

In February 2013 I held a research exhibition, *about jewellery*, in my office space at London Metropolitan University. Unlike the previous exhibition, which proceeded without a title, this time I decided to display the title. It was written in lower-case type and was meant to be open-ended, implying that the occasion was part of an ongoing research project. The sign, about jewellery, was placed on the main building entrance and notice board, as well as on my office door. To elicit information from the attendees, I prepared a questionnaire form for them to fill out.

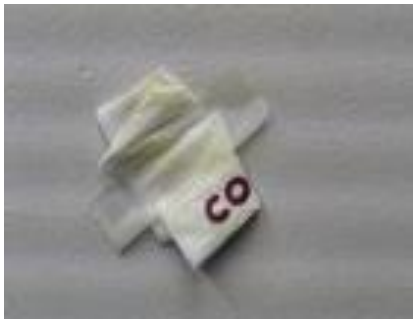
On display inside the office were ordinary, everyday materials arranged in a manner that did not require any special skills from the attendees. The materials used did not have, and did not signify any financial value. Since my last exhibition, I had become a career twice over, as my son was now one year old, and I was shuttling back and forth between Seoul and London. Therefore, what passed as ‘ordinary’ had changed because of these new circumstances. The materials constituting the works on view included medicine spoons, vitamin capsules (which were some of my ordinary things because I was caring for my sick father at the

time), gauze, napkins (with which to wipe a patient's saliva off), and plasters (which also took on a particular meaning).[61]

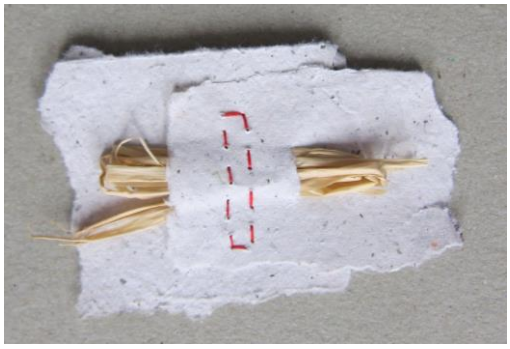
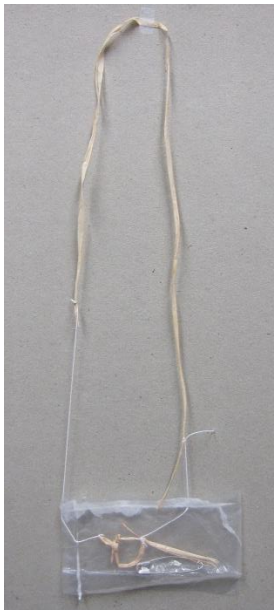
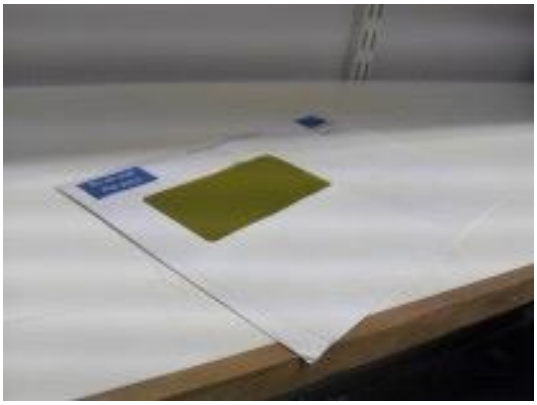
<Fig 23> Exhibition, *about jewellery* (February 2013), in my office space, Central House, London Metropolitan University, London, UK. The out-of-focus central image is intentional

The visitors were then left to wander around the office freely, and I served them tea and light snacks. Several visitors were surprised, and even confused, when they arrived to find the exhibition held in such an office. My role was limited to answering any questions and asking them if they would like to fill out the questionnaire.

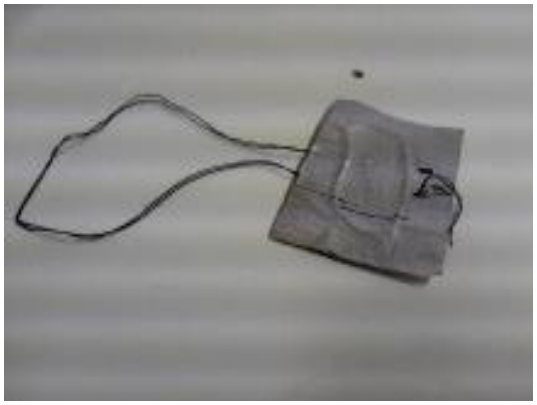
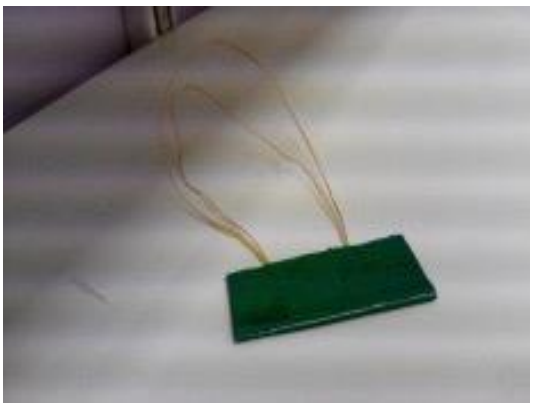
[61] The materials selected for making the practical artefacts are influenced by my situation; Autoethnography is also referred to as an Autobiographical Preface. Autoethnography is a qualitative study that provides an insight into social phenomena based on the researcher's self-reflection. The material chosen by the researcher can also be linked to that related to their situation.

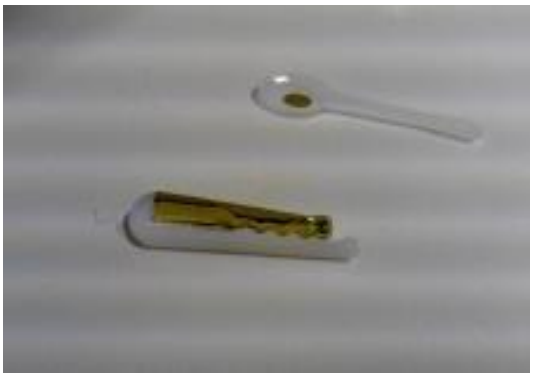
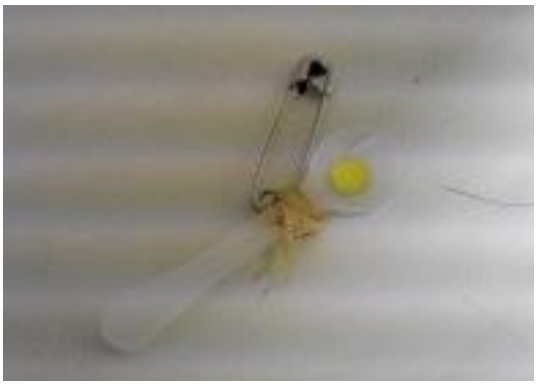
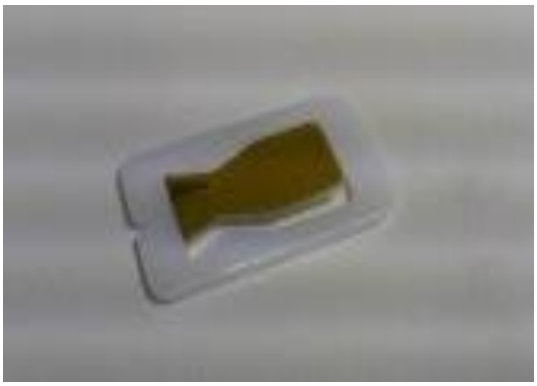
Image Code of pieces	Material
 AJ-2013#01	Plastic cup, pearls
 AJ-2013#02	Plastic bag, name label, safety pin, rubber band, hair pin
 AJ-2013#03	Used tissue, masking tape

 AJ-2013#04	Plastic bag, straw, cotton thread, imitation stone
 AJ-2013#05	Plastic bag, straw, cotton thread, safety pin
 AJ-2013#06	Straw, pearl, rubber

 AJ-2013#07	Straw, elephant dung paper, cotton thread
 AJ-2013#08	Plastic bag, straw, safety pin, silver, metal nail
 AJ-2013#09	Envelop, gold coloured paper

 AJ-2013#10	Pearl, napkin paper
 AJ-2013#11	Plaster, gold coloured paper, napkin paper
 AJ-2013#12	Straw, plaster, gold coloured paper
 AJ-2013#13	straw, safety pin, gold coloured paper

 AJ-2013#14	Gauze, cotton thread
 AJ-2013#15	Cotton thread, metal wire, silver coloured tape
 AJ-2013#16	Straw, green coloured tape
 AJ-2013#17	Medicine spoon, gold coloured paper, safety pin

 AJ-2013#18	Plastic pin, gold coloured paper, medicine spoon
 AJ-2013#19	Medicine spoon, straw, gold coloured paper, safety pin
 AJ-2013#20	Plastic clip, gold coloured paper
 AJ-2013#21	Vitamin capsule, straw, gauze

<Fig 24> The author's artefacts at the exhibition, *about jewellery* (February 2013)

Visitors were invited to have a photo taken for their own customized exhibition brochure; an exhibition brochure template had been prepared, with a blank page to insert the visitor's photo for those who wanted a personalized brochure. The visitors were divided roughly equally between those who had walked in from the street and those affiliated with art and design in the university.

The questionnaire contained seven questions:

1. How many wearable pieces did you find?
2. Why do you think they are wearable?
3. What characteristics do you expect wearable pieces to have?
4. What is the most important piece to you?
5. Why is this piece so important to you?
6. How would you define jewellery in words?
7. Have you been overseas? (If so, for how long?)

According to the twenty one participant's feedback, ten out of the twenty one respondents said that they preferred to wear traditional jewellery rather than contemporary jewellery.[62] However, the ten respondents[63] recognized the displayed works they saw as "conceptual jewellery", characterising it as "experimental", "unique", and "creative". They added that they would wear it

[62] 15 people said that their jewellery is meaningful when given by a loved one. This means that people wear jewellery in a traditional sense. Eight people answered that they had received their most precious jewellery from their family members; seven people had received it from their loved ones. Among them, eleven respondents noted that the precious jewellery was made of gold, silver, and gemstones of monetary value.

[63] These ten respondents are students of jewellery and craft and they are not familiar with jewellery made of everyday materials. They asked numerous questions about the display. They discussed and wanted to see more contemporary jewellery in my research field that corresponds to the names organized through a twentieth-century jewellery survey: avant-garde jewellery, art objects, decorative objects, objects to wear, sculpture to wear, miniature sculptures and conceptual jewellery. Ten participants asked specific questions about the kinds of jewellery related to the field. To answer these questions about the name and definition of jewellery and the jewellers, I prepare an exhibition about unexpected jewellery (2013).

themselves and wanted to know more about it. In particular, they asked verbally how far I would take this kind of experimentation and whether there is any limit to it.

On the other hand, when it came to wearability, the same respondents who recognized particular pieces as experimental and creative answered that the way it is worn on the body is another element to consider in determining whether an item is jewellery. In response to Question 2, for example, eleven of them mentioned “friendly”, “comfortable”, “easily wearable”, and similar qualities in their answers.

The same attitude was found in the answers to Question 3. Out of the nineteen respondents who answered that question, fourteen mentioned “comfortable”, “easily accessible”, and “practicality” among others. Five of them wrote “delightful”, “unusual”, “aesthetic pleasure”, or “curiosity”. As seen above in regard to the research exhibition, Jewellery of Ordinary Materials (November 2010), most of the respondents associated a long string or attachable devices such as a safety pin with wearability. Some expressed a positive interest in new ways of wearing jewellery.

For Question 6 in the questionnaire, one of the respondents explained that her jewellery defines a decoration. She further explained that jewellery as decoration is connected with spirituality, so it is beneficial to health and wellbeing. According to her definition of jewellery, the role of decoration is linked to spiritual wellbeing. This aspect connects the intention of this thesis that wearing safety jewellery will bring physiological comfort through contemporary design.

In conclusion, it was apparent that wearability was still of importance to most of the attendees, and it remained the burning question for this stage of my research; I began to think that this could indeed be an Achilles heel for conceptual jewellery. I set myself the task of investigating wearability further, through future practical work.

4.4 Solo Exhibition: *about unexpected jewellery*, August 2013

This next research exhibition, held in August 2013 at Toynbee Hall, London, had the appearance of being more formally constituted.[64] The venue was a panelled, late-nineteenth-century lecture room. I chose this public space intentionally in contrast with my last exhibition, which was in my own university office. I wanted a seminar room effect: chairs were placed in front of a screen that displayed the twenty contemporary jewellery pieces by other makers, without revealing their names, the significance of which is discussed in the conceptual jewellery section of Chapter 1. None of the pieces shown were made of precious materials. Instead, many of them were made of unusual materials for jewellery: for example, food ingredients, automobile body parts, synthetic materials, marks created on fabric or on the human skin, and, a powder mark left on clothes through performance. Some of them were unusual spatially, too: one was part of a public space, while another was oversized in relation to the human body.

<Fig 25> Research exhibition, *about unexpected jewellery* (August 2013), at Toynbee Hall, London, UK

[64] According to the *Toynbee Hall* website, the hall was created in 1884 by Samuel Barnett, a Church of England curate, and his wife Henrietta, in response to a growing realisation that enduring social change would not be achieved through the existing individualised and piecemeal approaches. The radical vision was to create a place for future leaders to live and work as volunteers in London's East End, bringing them face-to-face with poverty, and giving them the opportunity to develop practical solutions that they could take with them into national life.

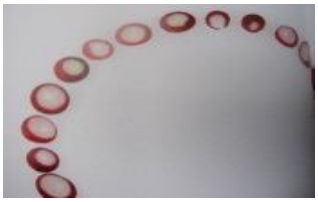
The title of the exhibition is displayed at eye level on the opposite wall when the viewers enter the main gate. A blank was left in between the words, about and jewellery, in the exhibition title (Fig 26). The visitors were invited to fill it in on the questionnaire in the blank space of the opened title with their own words from their thoughts about the displayed jewellery (Fig 25-26).

<Fig 26> The title, 'about jewellery', was decided on collectively by the participants in the exhibition

Although the title of the exhibition 'about unexpected jewellery' was displayed on the building and the website,[65] viewers were guided to decide on the title after viewing the exhibition. Some of the words uttered by the visitors at this exhibition, such as "unusual", "curious", "creative", "experimental", and "ordinary" were displayed randomly on the floor and on the wall (Fig 25-26). These words had been prepared in various fonts and in various sizes on the wall and the floor, to encourage the attendees to think more freely with their own words to complete the title of the exhibition. I discuss to contextualize this group of advantageous and highly conceptual thinkers and makers in Chapter 1.1 conceptual jewellery and the wearer, but I made a reference to debate it (Fig 27).

[65] This exhibition was introduced on the website of Toynbee Hall as a research exhibition.

The location is influenced by the kinds of people who attended. The surroundings of Toynbee Hall include Old Spitalfields Market (food, fashion, arts and crafts), New Spitalfields Market (wholesale fruits and vegetables), and Petticoat Lane Market (fashion and clothing), and many small and specialty shops. Among the thirty respondents, twenty five respondents agreed to reveal their occupation, and seventeen respondents said they were in arts/cultural industries.

	Images	Name	Materials
1		Marga Staartjes	Bottle brush, plastic
2		Paul Derrez	Cork
3		Min-Ji Cho	Rubber gloves. gold-plated silver
4		Andrew Lamb	Radish
5		Eun Mi Chun	Pig skin, seed, hair, silver, gut, steel wire, thread

6		Kim Buck	Metallic plastic foil
7		Johanna Dahm	Pins (Anodized aluminium)
8		Gijs Bakker	Laminated Paper
9	 	Ted Noten	Mercedes Benz E-Class car body
10		Ted Noten	Icepack, gold ring, synthetic diamonds, cocaine, textile, cultivated pearls

11		Tiffany Parbs	Blister
12		Naomi Filmer	Ice
13		Hilde De Decker	Object trouvé, tomato, glass container, vinegar
14		Gésine Hackenberg	Antique collector's ceramic plate
15		Monika Brugger	Fabric marked by red lipstick, fire, and sun
16		Lisa Walker	Felt, glue, silver, lacquer

17		Caroline Broadhead	Nylon
18		Nathalie Perret	Gypsum powder, elastic strip
19		Liesbet den Besten	Excavator making public jewellery in the sand
20		Ted Noten	A drawing of a pearl necklace on the map where he was teaching. Jewellery is placed as a part of the public space.

<Fig 27> Images of the examples shown in the exhibition *about unexpected jewellery*

A questionnaire presented to the attendees contained these five questions:

1. Do you think this is jewellery?
2. Do you think this is wearable?
3. Do you think this is a good material for jewellery?
4. Do you think this is innovative as jewellery?
5. Do you think this could help people's sense of wellbeing?

The responses to Question 1 show no great surprises. No. 7 (with pins) receives the highest number of votes (26), follow by No. 5 (25), No. 14 (24), No. 6 (21), and No. 8 (20) (Fig 27). These are all different materials, but what they have in common, with the exception of No. 7 (still attachable with pins), is the fact that you could wear them around the neck. Six of the respondents said that they could not recognize No. 16 as jewellery, while ten chose No. 9 in that regard. So, as far as they know, jewellery is worn on the body, and the selected jewellery cannot be hung on, or attached to the body.

There is a similar pattern in the answers to Question 2. No matter how unusual the materials used are, the majority of the respondents chose the function over the concept in determining the wearability. On the other hand, No.13, the tomato ring, and No. 19, the sand necklace (Chapter 1.1), made by the excavator received four votes each.[66]

In the respondents' minds, wearability is strongly associated with the body.

As for Question 3, the materials question, there was no discernible prejudice against non-traditional materials: No. 1 plastic, No. 2 cork, and No. 3 rubber got the most votes along with metal and gemstones. The fewest votes went to radish,

[66] No. 13 shows a tomato plant vine growing and inserted into the middle of a ring. The jewellery designer put the ring on a tomato fruit in the greenhouse and let it grow as it was. The ring was raised so that even if the tomato fruit grew, the ring would be inserted in the middle. Five respondents who saw this ring explained verbally that it was reminiscent of a wedding ring, which does not come off your finger as you grow old. No. 19 is symbolic jewellery that cannot be worn. No. 20, the sand, was dug with a forklift and several circles that were small and round like a sandcastle were connected to form a single pearl necklace. Many spectators asked verbally whether it can be jewellery even though it cannot be worn with only a reminiscent form.

sand, and the drawing on the map (Fig 27). The respondents explained verbally that those jewelleries, made of radish, sand and locations on the map, cannot be hung on or attached to the body. Once again, the respondents confirmed that wearability is considered to be an important aspect of jewellery.

Regarding Question 4, the pig-skin necklace, the bottle-brush necklace, and the antique collector's plate were voted as the most innovative jewellery.

In response to Question 5, the sand necklace made by the excavator got the most votes. This was an unexpected winner, which made me think about the possibility that wearability and a sense of wellbeing is not necessarily as closely related as I had previously assumed.

Additional Practical Work: *3D: mind the glitter*

Alongside the projected display at Toynbee Hall, I conducted an additional practical work called 3D: mind the glitter. A length of elastic band, powered with glitter, was installed at chest level across the rear entrance to the room. I chose the glitter as a test material because I wanted to see whether its sparkling character led people to respond to it in a positive way.

A question was then asked: ‘Do you think the glitter transferred from the installation jewellery, 3D: mind the glitter is jewellery?’

<Fig 28> My installation jewellery, 3D: mind the glitter, in the exhibition *about unexpected jewellery*

Seventeen people said yes to the extra question, "Do you think the powdered glitter from 3D: mind the glitter is jewellery?" Four said no, while the remaining nine respondents chose not to answer.

From the results of this exhibition, I concluded that the concept of jewellery could be expanded to include new ideas and materials whereas the issue of wearability still firmly belongs to the province of function. Based on this insight, I began to see the possibility of conceiving safety jewellery without sacrificing its wearability.

4. 5 Group Exhibition: *The box*, September 2013

In September 2013, I conducted my first practical work Group exhibition: *The box*, in South Korea. The gallery was a hallway inside a subway station in Deagu, so the target group was commuters or subway riders in general. As it turned out, a number of young families stopped by this exhibition. What appeared to be an opened jewellery box was placed on the table, and attendees were asked to write down on the questionnaire what they expected to find in the box, although it is an empty jewellery box.

<Fig 29> My installation jewellery as part of the group exhibition, *The box* (September 2013)

A total of thirty-two responses were collected. Seven respondents expected to see rings; six expected various types of precious jewellery; four expected luxury watches; three expected money or gold; and two expected to see either shiny stuff or necklaces.

Among the answers regarding the items that are expected or associated with what would be in an empty jewellery box, twenty two responses showed a strong association between jewellery, on the one hand, and rings, necklaces, earrings, and watches, on the other. In addition, most of those survey thought that jewellery should be made of shiny, precious materials and should be heart-shaped or a chain of pearls or precious stones.

This practical investigation, exploring how people in Korea perceive jewellery, did not yield any unexpected responses.

4.6 Case Study: Everyday materials, March 2013

When an everyday material is used as a work of art by changing its original use, it has value in the creativity of the art object (ready-made) by causing a shift in popular thinking. In order to apply the novelty of conceptual art as an element of contemporary art to contemporary design (Chapter 1.1), I used everyday materials for the test objects in Chapter 3.

In order to create safety jewellery to be used in everyday life in Korea, it was necessary to know the concept of the everyday materials of Korean people. In the current case study, thirty five applicants were randomly selected at the Catholic University of Daegu.

In March 2013, I conducted a case study to record the items people touch on a daily basis from waking up to falling asleep. They were asked to write down freely about the daily items that touch their hands during a day.

The meaning of touch can be interpreted as everyday objects that the person

uses or exists around. Through what they touch on a daily basis, the records of Korean daily materials were surveyed.

Of the items they touched every day, 30% are composed of ingredients to cook with and 35% are stationery; 3% are medicines for patient treatment.

When I recorded the items that I touch in my daily life, the everyday items are according to personal circumstances.

All of the thirty five participants mentioned items concerning food, clothing and shelter at least once. The food, clothing and shelter items are counted following the criteria; food included not only a dish or beverage, but also a spoon and dishware. And things that could be put on bodies such as clothes, tops, trousers, socks, glasses and accessories are regarded as clothing. Bedding like blankets and pillows are considered as shelter. 13.4% of the respondents use for example, books, pens, towels, toilet paper, hand cream, and cosmetics. The items are to carry supplies. 10.58% states that they used daily supplies that is high frequency dependent on living in an environment changes (e.g. bedrooms and bathrooms, elevator buttons, tables, dishes, spoons, chopsticks, cups) to lead a life of routines; and 4.77% of the respondents use functional items with the use of the facilities (e.g. clothing, bags, wallets, money).

4.7 Group exhibition: *The Paper*, October 2014

In the case study above, things made of everyday materials were touched, in everyday life, with the aim of creating safety jewellery to be used in Korean everyday life. (As discussed in Chapter 1.1, everyday materials are used in contemporary jewellery for novelty.) As all of the thirty-five participants mentioned food among their everyday items, I tested soy sauce and coffee as examples of liquid everyday food ingredients. It was found that these ordinary liquid materials can be used make natural organic shapes which can be psychologically comforting. ; I also experimented with clay suspended in water as third medium for hand drawing organic shapes.

In October 2014, I participated in a group exhibition called *The Paper*, at CU Gallery, Daegu, Korea. My individual work consisted of a series of drawings done in coffee, soy-sauce, and clay.[67]

<Fig 30> My work, Coffee, Soy-sauce, Clay – Routine Play on Paper, in the group exhibition, *The paper* (October 2014)

The hand drawing created organic shapes using everyday materials in the exhibition. The organic shapes might give a psychologically positive feeling. So I use part of the organic shapes to make a test artefact with a glow-in-the-dark effect that was about a thumb length size to attach to the body (Chapter 4.8). The part of organic shape in Fig 30, which was presented in *The paper* exhibition, will use a test piece for the following case study: High-visibility wearables.

[67] Soy-sauce, coffee and clay are items that I touch on a daily basis and use for personal wellbeing to have a positive feeling in my routine. Food items based on the thirty five participants of the case Study: Everyday materials 2013.

<Fig 31> One of my drawings from Coffee, Soy-sauce, Clay – Routine Play on Paper, converted into black and white

My research goal is to find some agreeable forms that I could use in designing fluorescent safety patches. I chose one of my better defined drawings and converted it into black and white. Then I transferred the image onto a sticker-type reflective sheet for laser cutting. That is how my first fluorescent safety patches were made.

In Chapter 3, the experimental artefacts in everyday materials are tested (Chapter 4.8) on a design that applied elements for psychological benefits: organic shapes, lightness of weight, softness of texture, and a handmade effect. As one of the exhibited drawings (Fig 31), I will continue to find organic shapes through drawing in liquid form and apply them to an easy-to-wear luminous patch (refer to the Glow-in-the-dark patch in Table 3), which I will make about a thumb length size to attach to the body. The positive psychological effects (Chapter 3.1.1) were also linked to this test result.

4.8 Case Study: High-visibility wearables, June 2015

On 29 May 2015, at the Catholic University of Daegu, Korea, a discussion and test was carried out with eleven participants[68] in relation to everyday wearable objects. At the end of the session, each participant was given one of the glow-in-the-dark items I had designed (refer to the Glow-in-the-dark patch in Table 3). The participants were not given any information or instructions about wearing these objects, and they were free to wear them as they liked. On 5 June 2015, feedback was received from the participants.

The participants were then given questions about a fluorescent sticker in the form of flowing liquid (Fig 31), whose size was around 15 cm long and 5 cm wide. When they recognized that the proposed purpose of the material was related to visibility, they asked whether the function of the test piece was related to safety. It was discovered that the visible material itself caused people to think about safety. When they asked questions about the visibility of the material, they were invited to compare the test pieces with a safety vest. Of the eleven participants, all of whom were in their 20s, only one tried to wear the safety vest; most participants said that they were reluctant to wear a fluorescent safety vest, because it is a specific safety item. However, all of the participants tried to attach the test pieces to their body or their possessions, such as bags, mobile phones, and clothing.

The wearing test was carried out in order to ascertain the following: strong and weak points of the patch design, points and ideas to improve, and a comparison with fluorescent safety vests. Eleven participants were given the test pieces to wear and they were able to choose how long they wore them for.

[68] They use public transportation on a regular basis. And they were willing to wear my test piece for more than a day and give me their feedback.

The results were:

7 days: 1 person

4 days: 1 person

1 – 3 days: 3 people

Less than a day: 6 people.

All of the participants answered that it was to be worn during the day and night.

	Fluorescent safety vest		**Glow-in-the-dark patch**	
Images				
Characteristics	Clothes with a specific purpose (Security guard, road worker)	4	Designed for safety	2
	For the purpose of improving visibility in night-time specific job roles (cleaning, construction sites)	3	The visibility is high at night due to luminosity.	1
	Wear with special purpose	2	Stuff that children can play with	1
	Special waterproof materials	2	Toy	1
	Reflect the light	1	For interior	1
	Prevent heat loss	1	Fluorescent material	1
	Clothes category that can be worn.	1	Object category that can be removable.	1

Strong points	The visibility is high at night because of luminosity.	2	Easily worn: higher frequency of use.	3
	It looks comfortable.	1	Easy to use	3
	It is advantageous to wear in the daytime because the reflection by the sun.	1	Put anywhere I want.	2
			Walking at night when visibility is high. (Children, the elderly)	2
			Can be used for safety reasons even if don't have a specific job or purpose (night, when bike riding)	1
			Simple	1
			Visually pleasing design	1
Weak points	Fashion purpose difficulties / other than the purpose of fashion	7	Poor wearability (It may fall)	3
	The ventilation is poor.	3	Convenient but no continuous use due to being disposable / waste of resources.	2
	This design is not pretty. (Colour, shape)	3	Light-coloured clothing is visible during the day, so there is no need for the weak luminous sticker.	2
	Difficult to be casual	2	The small size is less visible.	1
	The jacket is thin.	2	Limit of endurance (damage concerns)	1
	This activity falls off stretch.	1	The limits of the area	1
	It may have a bias to the wearer because the outfit represents a specific profession.	1		
	It is not the wearer wants style transformation.	1		
Improving Ideas	The processing line in a plain t-shirt design	1	Preferred reflective material to the luminous material (e.g.) reflective material Backpack	1
	Focus on convenient and efficient design to fit real life rather than 'mokjeokseong' for 'safety'	1	Replaced by the luminous paint	1
	Using exercise as usual attire by applying a variety of colours / designs	1	Stickers type symbolising a particular object	1
	It adds a cooling function	1		
	Climbing used to increase the surface area of the line	1		

<Table 3> Comparison between fluorescent safety vest and glow-in-the-dark patch

In evaluating what they felt about wearing the patch, the participants mentioned the following (Table 3): ease of applying the patch to different materials (six people); freedom to apply the patch anywhere they liked (four people); a good visibility-luminous effect (four people); and satisfaction with the shape (two people). In response to the question about visibility, two people answered that it was easy to find the things in the dark when they were attached to a mobile phone.

However, there were some issues: the adhesive strength eventually weakened (eight people); and the size of the sample patch was too small and inconvenient (three people). In addition, the luminous effect was no good in the city due to neon signs and streetlights (two people); the waterproof function decreased (two people); and it was not suitable for safety (two people).

More than half of the respondents state verbally that the thumb length size is comfortable for wearing, and the larger size is uncomfortable.

To address these issues, the participants made the following recommendations: to enhance visibility, the most important consideration is to increase the thickness or size of the test piece; and, instead of the adhesive, Velcro should be used. Their recommendations for improving the appearance were: change the material (use fibre emission, reflective material); change the thickness and size; and increase the range of colours. Furthermore, the participants said that the most important improvements would be for use in daily life, and their preference was for a design that could adhere to fashion items.

In comparing the fluorescent safety vest to the glow-in-the-dark test piece,[69] the participants answered that the test piece was more convenient than the vest in everyday life, because the latter is associated with specific jobs. Also,

[69] This safety jewellery research investigates the design and use of body decoration, in the form of high visibility jewellery and the effects on the wearer's self-confidence. While five respondents stated verbally that they saw the importance of wearing high-visibility materials, all of the respondents agreed and said that they recognized the functionality of high-visibility while wearing the glow-in-the-dark patch and felt safe and comfortable especially when walking at night.

it was pointed out that the safety vest was more uncomfortable and less breathable. In terms of visibility, the participants answered that the vest is easier to use more than once and it is more visible than the test piece.

In conclusion, the participants preferred to wear objects that can be worn as a natural part of their everyday life, and that are lightweight, practical and well-designed. The design is a very important consideration, so more research must be done to improve these points (Table 3).

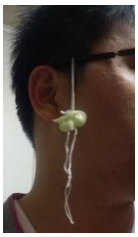
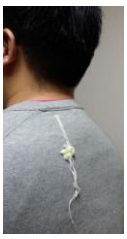
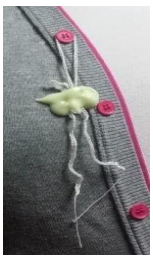
The participants regretted that, as people change their clothing regularly, the patch could not be re-used easily. These results confirm the need to find lightweight, visible objects that are easy to attach to clothes and the body.

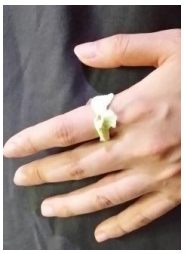
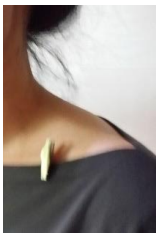
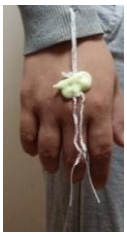
As noted in the Introduction, very little interest has been shown in safety jewellery among Korean designers, but during and in the wake of the global Covid-19 pandemic in 2020-21, a new awareness of such a need emerged. A facial mask is one obvious example. I took this opportunity to help design a coronavirus safety mask for the elderly and needy in my local community (1,181 households) in Seoul. In early April 2020, I initiated a DIY reusable face mask drive through my local government by providing an easy-to-follow design format. This was a critical moment, when the idea of safety jewellery materialized in the form of a mask with visual materials.

4.9 Wearability test for high-visibility materials, February 2016

In February 2016, I conducted a wearability test using high-visibility material. Among the participants, a total of thirty two people, used public transportation on a regular basis and are not in any art or design field.

I asked my volunteers to wear various shapes of high-visibility material on their person. I conducted two sets of tests: first, I asked to the wearers as they pleased; and secondly, I suggested where to wear them. The first set revealed that the majority of them were most comfortable in wearing a piece of high-visibility material on their upper arm. This was clearly a socially-conditioned or socially-acceptable response. The participants chose the upper arm, and twenty five out of the thirty two participants said that they did so because other people would notice them less.

Where to wear		Body		wearability
	hair		glasses	
	neck		front	
	shoulder		rear	
	arm		side	
	wrist		on button	

	finger		clothes edge	
	hem		sleeve	
	foot		pocket	

<Fig 32> Wearability test for high-visibility materials

The second set of tests included what they considered to be unconventional places such as glasses, hair, hem, etc. After the test, I explained to them the reasoning behind my choices: how, for example, cyclists could wear a high-visibility piece on the temple of their eye glasses, or how pedestrians could wear another one on their hem or around their ankle. They saw the point, but it was not clear whether they were persuaded.

Above is an illustration of the wearability test I conducted.

In terms of the results of this exhibition, I concluded that the concept of jewellery could be expanded to include new ideas and materials whereas the issue of wearability still belongs firmly to the province of function. Based on this insight, I began to see the possibility of conceiving safety jewellery without sacrificing its wearability

While I was in London, my initial research on conceptual jewellery focused on three aspects: 1) how the designer understands it; 2) how people respond

to it; and, most importantly 3) the use of new materials and how people responded to their use. In contradistinction to the South Korean participants in my research events from 2013 onwards, all of those who participated in my Reading Session (4.1) and attended the exhibitions of Jewellery of Ordinary Materials (4.2) about jewellery (4.3), and about unexpected jewellery (4.4) were from Europe.

From 2013 the orientation and focus of my research shifted towards personal wellbeing and safety, and my perspective on and engagement with jewellery changed, in recognition of a need to wear it in real, everyday life rather than as conceptual art. Once I returned to Korea, I began to see wearability as more important than a concept. The research exhibition about unexpected jewellery was the first public manifestation of this transition; although it inquired into the meaning of conceptual jewellery, the elastic band and glitter installation probed how people might enjoy the effect of the powered glitter from the band in their real life. The attendees' responses during 2013 contributed to the turn in my research aims towards how jewellery contributes – and might potentially contribute – to wellbeing.

In Korea, my productive journey led to investigating how jewellery can connect with and help achieve personal safety in real life, and how people might feel comfortable while wearing safety jewellery. From 2013 to 2016 I undertook research exhibitions for that purpose, *The box*, and *The paper*, after which I conducted case studies, and wearability tests for high-visibility materials. The feedback from the participants in these was helpful for me in considering how best to design safety jewellery for real-life use. Those exhibitions and case studies explored the participants' opinions regarding contemporary wearable design, using everyday and high-visibility materials. I aimed to see how my safety jewellery would be utilized in the participants' everyday lives. I hoped that such jewellery would help to reduce the occurrence of road traffic accidents involving pedestrians in Korea, where the significance of wearing safety equipment, other than for particular occupations, is not widely appreciated (Chapter 2.3).

Two types of materials that are used for safety jewellery in this thesis: high-visibility materials and everyday materials. The purpose of the materials is as follows. The high-visibility materials are used to prevent traffic accidents and improve awareness of high-visibility wearability, and the everyday materials are used to expand the concept of contemporary jewellery. I also considered the role of preventing traffic accidents for the wearer with jewellery made of high-visibility materials. In other words, the goal of the safety jewellery is to help automobile drivers reduce traffic accidents, as they would be able to see the people wearing the high-visibility jewellery in the dark. The high-visibility wearables are for road safety. Therefore, the safety jewellery design had to be improved so that the high-visibility wearability could change people's perceptions. Often, less than 2% of riders are reluctant to wear safety gear (Chapter. 2) such as a safety vest, which reminds most people of a specific occupation (Table 3). For this reason, I borrow creative ideas from conceptual jewellery to develop the contemporary design that is useful for public wearing.

As the safety jewellery designs exercise my social responsibility as well as that of the wearer, I improved the high visual wearable jewellery so that more people could wear the high-visibility wearables. Although the high-visibility jewellery is made for safety, added elements of psychological comfort are applied to comfortably wearable design. Safety jewellery in the future needs to be developed to fit more with personal needs and to be improved as personalized jewellery for their safety, it is possible to help revitalize public use.

Conclusions

5.1 Review of practical works

Conceptual jewellery is based on the conviction that the idea or concept is the most important aspect of the work. Many of the early conceptual jewellers of this persuasion got their inspiration from the world of conceptual art during the 1960s-1980s. Like their fine art counterparts, these jewellers developed an experimental and conceptual approach to the making of jewellery. They emphasized creativity in their working process, and gave freedom to the application of materials and techniques, all in the name of expressing the idea or concept through their final work.

In the early stage of carrying out research for my practice-based research, I came under the influence of conceptual jewellery (Chapter 1). Coming from the background of Korean jewellery making, which is conservative in its aim and narrow in its use of materials,[70] I found conceptual jewellery to be liberating. Influenced by considering pedestrian safety and Silhak philosophy, I was particularly taken in by the use of psychological comfort form, high-visibility materials, and everyday materials in conceptual jewellery. So the first half of my practical work, reported on in Chapter 3.1, High-visibility materials, was devoted to testing the application of such materials and experimenting with their various forms and combinations in my jewellery design.

During this stage of my research, I focused on materials that I identified for their comfort and that might afford psychological help: materials which are flexible, soft, fluffy, and light- were preferred, and organic shapes were considered. To find contemporary and ordinary items (as informed by

[70] Conceptual jewellery should not overlook how jewellery is translated into physical terms. For this reason, the experimental work for this paper needed to consider practicality. At that time, in 2011, I heard on the radio that Korea ranked no.1 in pedestrian fatalities among the OECD. Hearing the news, I wondered if there was a way to reduce traffic accidents by adding practicality to contemporary jewellery.

conceptual jewellery), I compared the items I touched daily with the items other people touched daily for the definition of ordinary materials (Chapter 4.6). I then proceeded to the next round of my research using those materials found in most use according to the comparison (such as domestic and stationery items). At this stage, however, I was not confident whether my practical work was "conceptual" enough – that is to say, whether I was expressing a novel idea or concept through my work.[71]

Then, two big changes in my personal circumstances made me see things differently. Firstly, as I had to take care of my seriously ill father in 2010, I began to think about jewellery as a way of healing; and secondly in 2011, I became a mother, which along with concern for the wellbeing of the elderly, raised my awareness of the issue of road safety. In light of these influences, my practical work turned towards something more useful: I became interested in designing pieces of "jewellery" that would be visible in the dark but which are also perfectly wearable in the daytime. From my initial experimentation in conceptual jewellery, I would take and retain the use of ordinary materials, but would change my approach to – or even leave out completely – the conceptual part. As a consequence, it was safety jewellery or, to be more specific, high-visibility wearables that would occupy the rest of my practical research work, as shown in Chapters 3 and 4.

In the course of my research on high-visibility wearables, I learned that the darker the clothes pedestrians wear, the higher the rate of road accidents they experience, owing to poor visibility. This finding led me to use glow-in-dark materials in order to make visually appealing artefacts, which would enhance visibility, especially at night. I also chose materials that are readily available in everyday life, such as fluorescent paint and tape, to see how they contribute in

[71] I agreed with the ordinary materials that correspond to the 'conceptual' of conceptual art. However, I wondered about the position of wearable art that I should not miss the wearability and practicality by contemplating how jewellery is translated in physical terms within the category of 'jewellery.'

a real situation.[72] An additional but equally important factor in selecting the particular materials was affordability.

In summary, my practical work research has shown that wearability is of prime importance in designing and making safety jewellery. By considering the wearer's point of view, therefore, I was able to clarify and ascertain the limits of conceptual jewellery. While investigating jewellery that emphasized the concept with everyday and inexpensive materials from the monetary concept of jewellery adorned with gemstones, I thought of jewellery wearing un-precious materials to have a humble attitude and mind. However, due to experiencing a changed daily life in terms of wearing items only for practical purposes rather than conceptual jewellery, I changed my mind about whether safety jewellery was more valuable than jewellery that symbolized responsibility. Also, the reason why only 2% of cyclists wear high-visibility wearables (Table 1) is that they are inconvenient (Table 2, Chapter 2.3). Moreover, as shown in table 3 (Chapter 4.7) in a case study in 2015, it was found that people did not wear fluorescent safety vests because they are reminiscent of specific job roles (cleaning, construction sites). Therefore, a contemporary design with a positive psychological effect was added to the participant to find an alternative by wearing the work tested in Chapter 3. The participants' feedback was important to test the possibility of generalisation and to induce wearability in a large number of people.

5.2 Final project evaluation

The main contribution that this thesis makes to the field of contemporary jewellery is that it introduces the idea of high-visibility wearables as a new way of thinking about jewellery, especially as exemplified in South Korea. This new idea is a challenge for many Koreans, because jewellery is still narrowly understood, either as something that has financial value or as an instrument of

[72] In other words, wearing jewellery made of a luminescent material helps pedestrians to be seen in the dark, and thereby could help prevent some traffic accidents in Korea (Chapter 2.3).

personal expression (social status, individual character, etc.). Jewellery conceived of in this established sense clashes directly with the idea of high-visibility wearables, which are still strongly associated in most people's minds with vocational uniforms, such as those worn by road workers, this conception overriding and being in conflict with the prevailing personal meaning of wearing jewellery. The challenge for the designer-researcher of high-visibility wearables in this regard, therefore, is to find a way to make them acceptable and socially desirable. This thesis argues that one way to address this is to view this challenge not so much as a design problem, per se, but as a conceptual problem that requires a socially-conscious approach. Firstly, taking jewellery into the field of road safety expands the idea of jewellery. This has political implications: by wearing a piece of high-visibility jewellery, I declare not only who I am socially, but also what my right is as a pedestrian; that is to say, I assert my right to safety as a citizen. It is still a matter of individual choice whether I should wear it or not, but once I decide to wear it, I claim my right as a citizen who is asking other citizens in my community to play their part. Jewellery becomes a visible sign of collective action, rather than just an individual one. In this sense, the jeweller who designs such an item, as well as the wearer, exercises my social responsibility as well as the wearer. This could be an area where the jeweller and the wearer could come together to break the current deadlock (Chapter 0.2 High-visibility wearables as a new territory in Korea, 1.1.6 But what about the ‘wearers’?), pitting the former against the latter over the future of contemporary jewellery (Chapter 1.1 Conceptual jewellery and its wearer).

Finally, I hope that this thesis will help to open up a new area of research in Korean contemporary jewellery. This kind of conceptual enlargement is not unprecedented in Korea; the new category of safety jewellery, proposed in the Introduction and Chapter 2.1, includes jewellery-related high-visibility wearables, is proposed as a new part of that growing list.

5.3 Prospects for cross-disciplinary collaboration and future directions

This thesis also argues that by focusing on new ways of developing high-visibility materials, jewellers will inevitably break into cross-disciplinary areas where collaboration is the norm rather than the exception. This could be an area where material investigations could lead to cultural transformations, including socially-conscious changes.

LED jackets

These are currently available in the market for cyclists and runners, though their high cost is still an obstacle to widespread use. If this trend continues and they become more widely used, it will help to pave the way for people to accept high-visibility wearables in general. Wide acceptance will also open up an area of potential collaboration between designers and road-safety policymakers.

Digital collaboration

As an example of wearable electronic devices, the wireless Sensor Tag, a Bluetooth kit for smart phones, which can be used as a temperature sensor, humidity sensor, pressure sensor, accelerometer, gyroscope, magnetometer and LED warning proximity sensor, is promising. In reflector jewellery, an additional function could be added to alert the wearer, through its LED light sensor, when a car or a bicycle suddenly approaches.

However, in order to develop the LED warning proximity sensor, software engineers are needed to develop the code to communicate between the proximity sensor and the LED lighting. Although this product's proximity sensor cannot yet distinguish between objects and people, if it had a haptic interface for vibration alerts, it would be suitable for people with sight disabilities.

Developing environmentally friendly materials

There is growing concern that many of the current reflective materials contain microplastics, which pollute the environment, so we need alternative materials that can replace them. Among these, the bioluminescent property known as GFP (Green Fluorescent Protein) found in jelly fish, for instance, is being researched for its feasibility. This is not without a problem, however, as ethical issues remain.

The most probable bioluminescence to date is self-luminous plant and fungal luminescence. A self-luminous plant, BioGlow, has been developed to sea bacteria that cause the bioluminescence phenomenon in chloroplasts are inserted into light-emitting bacteria (Appendix 2). Fungi bioluminescence was mentioned by Dennis E. Desjardin, Anderson G. Oliveira and Cassius V. Stevani (2008),[73] who established the feasibility of using fugal bioluminescence genes to produce glowing plants. The fungal bioluminescence gene from fungal caffeic acid, the caffeic acid cycle, is not toxic in plants (Appendix). However, self-luminous plants and fungal luminescence and genetic manipulation of plants also have ethical problems.

Another light-emitting material, fluorescent carbon nanoparticles, is being developed at KAIST (Korea Advanced Institute of Science & Technology). Known for its "unique optical properties, great biocompatibility, water dispersion, and facile surface functionalization",[74] this material holds great promise for high-visibility wearable applications.

Therefore, it is necessary to continuously study and observe new luminescence materials, especially environmentally friendly materials, and examine their wearability.

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[73] Dennis E. Desjardin, Anderson G. Oliveira and Cassius V. Stevani, 'Fungi bioluminescence revisited', *Photochemical & Photobiological Sciences* (The Royal Society of Chemistry and Owner Societies), 7(2) (2008), 170-182.

[74] See Zihnil Adha Islamy Mazrad, Kyueui Lee, Ari Chae, Insik In, Haeshin Lee and Sungyoung Park, "Progress in internal/external stimuli responsive fluorescent carbon nanoparticles for theranostic and sensing applications," *J. Mater. Chem. B*, 2018, 6, 1149-1178.

Appendices

1. Chronological table of Korean crafts and arts

2. List of high-visibility material research

Appendix 1: Chronological table of Korean crafts and arts

As Korea entered the modern and contemporary eras entered the modern and contemporary eras,[75] the country underwent significant changes as it adopted westernized approaches to education.[76] Corresponding changes in art and art education had an impact on crafts as well. Jewellery design and making in Korea reflected these changes in the craft scene as a whole (Section 1.2: Korean contemporary jewellery in the historical context of craft).

In Appendix 1: Chronological table of Korean crafts and arts. I have organized this so as to enable an understanding of the background of craft and art in Korea in the table. Events related to the crafts and arts field by period are listed sequentially from the beginning of the modern era to the present.

In 1881, the Joseon government dispatched Youngseonsa[77] and Sinsayulamdan[78] to neighbouring countries, and in 1883, the diplomatic group, Joseon Bobingsa was sent to the USA to express the will of enlightenment.

Modern crafts in Korea have undergone drastic changes according to the system of enlightenment and industrialization in line with the changes of the times. From the middle of the eighteenth-century onwards, modern craft was also derived from the Northern School of Practical Learning's forward-looking theory of technology promotion. The production environment of traditional handicrafts began to diverge into production and creation. In modern crafts, two routes of production and creation influenced the structuring process of the craft field. The

[75] In Korean terms, the modern era is from the port opening in 1876 to the March First Independence Movement 1919 and the contemporary era is from the late nineteenth-century to the present.

[76] Korea's modernisation came about due to many political and social upheavals that were brought about during the Japanese colonial period. When modernization meant that Korea became westernized, the lifestyle and wearing of western clothes with western decorations, such as pendants, necklaces and bracelets became fashionable instead of the traditional ornaments with the traditional attire, such as *norigae, daenggi, got, and binyeo*.

[77] *Yengsunsa* was an envoy who travelled to China with young international students to tour China's new culture to learn about the Qing Dynasty's weapon manufacturing method, and to pre-tune diplomatic relations with the USA. The diplomatic group, *Yengsunsa*, operated for two years.

[78] *Sinsayulamdan* was an envoy who was dispatched to inspect new cultures in Japan.

term ‘craft’, which is an abbreviation of ‘industrial art’, was also coined from the perspective of the industry.

Both the fields of Sculpture and craft emphasized practicality rather than the Fine art aspect at that time. However, unlike the practicality of sculpture, crafts had an important role in promoting the industry of their own country.

Jang Jiyeon (1864-1920) wrote articles that were published in the daily newspaper, Hwangseong. While recognizing craftsmen who produced crafts as the makers of creations, he stressed that crafts were important for the self-reliance of the country. Around 1908, as handicrafts and machine production were divided, the concept of 'art crafts' was actively introduced to refer to just handicrafts. The Yi Royal Family Art Factory in the late 1910s consisted of 11 divisions, with six divisions related to metal crafts. This trend suggests that the metal craft work process required a more diverse division of labour than other craft fields, and that the tastes and demands of the royal family and other high-end consumers were still focused on metal crafts.

Crafts were included in the 11th Joseon Art Exhibition from 1932, which means that crafts were included in the realm of fine art. In nominal terms, crafts mainly came into the realm of pure art, but in reality, craft was used for the purpose of practicality and for the self-reliance of the state.[79] However, through the 'exhibition space' of various exhibitions, the visualization of crafts in fine art began.[80] The Joseon Art Exhibition was promoted through the media and the public, who had few opportunities to experience art and were thus able to gain an insight into modern art.

During the period of Japanese colonial rule in Korea (1910-45), the cultural extermination policy did not bring about a subjective change in Korean crafts. However, after the liberation, craft education based on Western-style education

[79] In the Joseon Dynasty, under the influence of the Confucian ideology, academics were admired and technology was seen as insignificant, but commerce and craftsmanship were inferior. The reason for the recognition of commercial goods is that profiting from trade in goods is contrary to Confucianism, which values morality. Therefore, during the Joseon Dynasty, commerce was managed and operated by the state.

[80] Art museums impart norms and power to art. In other words, the moment people enter the museum, they look at the displayed work with the premised concept of 'art' or confirm the concept of art while looking at the work, and unconsciously accept the socially approved order. A museum can be a social space that visualizes public memories that everyone should share.

developed differently from traditional crafts; a distinct Korean approach to contemporary jewellery emerged in the 1980s. The chronology of modern and contemporary Korean arts and crafts, which affords the context of Korean jewellery, is summarized in the table below.

Year	Korean Modern and Contemporary Crafts	Korean Modern and Contemporary Arts in General
1881	The term 'Craft' was used in government documents *Ilsunglok.*	
1885		Art education as institutional education was promulgated by the Elementary School Decree. A new education system in the modern sense of Korea began to be established.
1883	The diplomatic group, *Joseon Bobingsa*, visited the Chicago Fair in the USA.	
1884	The Musée national de céramique de Sèvres factory's manufacturers were invited to Joseon and helped with founding an arts and crafts school.	
1886	Joseon began a cultural exchange, including exporting ceramics, with the Musée national de céramique de Sèvres Museum. In this year the France-Joseon Treaty was ratified.	
1888	The Joseon Emperor, Gojong was given European pottery by the French minister Collin de Plancy.	

1889	The governmental commerce and engineering school, Sanggong School, was the first modern vocational school in Korea. It was established in Myeongdong in May, under the Commercial and Industrial School Control (Emperor Gojong's Decree No. 9). The control of commercial and industrial schools was the first modern law to be passed regarding vocational schools. The purpose of the establishment of the commerce and industry school was to educate people in the practical studies necessary for commerce and industry.	
1893	The diplomatic group, *Joseon Bobingsa*, participated in The Chicago World Fair and submitted lacquerware inlaid with mother-of-pearl, a wardrobe, and a folding embroidery screen.	
1894	*Gapohgyungjang*, the political reform, constricted the production base of hand crafts. Najeon lacquerware, ceramics, and woodwork were popular because the Japanese preferred Joseon's antiques.	
1900	Remyon, a French railway engineer and potter, visited Korea. A group of master craftsman participated in The Paris World Fair, in which lacquerware inlaid with mother-of-pearl and potteries selected by the government were submitted. Jang Jiyeon contributed an article about crafts to the daily newspaper, *Hwangsung Shinmun*.	
1902	Set the Provisional Fair office.	A Jungsik drew a portrait of Gojong, the Joseon Emperor, and his son the prince.
1905	The first draft textbook Mechanical Drawing was published for Middle School by Oh Yeonggun.	

1906	The Handcraft course was promulgated by the Joseon Education Ordinance, but it was closer to technical education than modern art education. The Seri Cultural Inheritance School was opened in Deagu.	The Suam Seohwagwan was established by Kim Yutak and was one of the first commercial galleries.
1907	A government institution industry inheritance school was started, which was a kind of crafts school. It had 6 specialized subjects: dyeing, pottery, metalwork, carpentry, applied chemistry, and civil engineering. The Held Gyeongseong Exhibition in May exhibited about 10,000 works.	Kim Gyujin opened the first photo studio called Cheonyeondang in Seoul. The Art Education Centre was established.
1908	The Hanseong Craftwork Manufactory was founded to manufacture crafts for the royal family of Korea. The institute led the modern craft movement in Korea. The factory established a modernized manufacturing system by separating design and production. It produced metalwork, dyeing, and woodwork during its early years. The factory also aimed to modernize and improve traditional technologies. The Samhwa Goryeo Celadon Centre was a celadon factory established in Jinampo, South Pyungan Province. The Industrial Research Association was established in September.	Advertisements for the gallery Hanseong Seohwagwan, in the newspaper, *Daehanmaeil Shinbo* (18-27 October) show that not only did the gallery sell old and new books and artwork; it also employed Jo Seokjin as its resident artist due to the consideration of the preferences of the arts and calligraphy enthusiasts who comprised its clientele.
1909	The Industry was Korea's first industrial and technical magazine. It was published for the first time on 28th January.	The first museum established in Korea was the Jesil Museum, which was opened in November by the Imperial Family of the Korean Empire. Goh Huidong was the first Korean to study Western painting in Japan. Lee Doyoung drew the first newspaper cartoon.

1910	The Hanseong Craftwork Manufactory; the name was changed to the Craftwork Office of the Yi Dynasty in December. The Hanyang Goryeo Celadon Centre was a celadon reproduction factory in Mukjeongdong, Seoul, founded around 1910.	Goh Huidong entered the department of oil painting at Tokyo Art School.
1911	The Hanseong Craftwork Manufactory made new divisions: metalwork, dyeing, and woodwork.	The Gyeongseong School of Painting and Calligraphy was established in March as Korea's first modern art education institution; it was founded by Yoon Youngki. Kim Gwanho entered the department of oil painting at Tokyo Art School and graduated with honours in 1916.
1912	The Central Testing Laboratory was created, which was a governmental technical research and development institute This institute aimed to promote technological innovation by industrializing craftwork, and based on its results, to develop Korea. The institute consisted of five divisions at the beginning: the analysis division, the applied chemistry division, the dyeing division, the ceramic division, and the brewing division.	Kim Chanyeong entered the department of oil painting at Tokyo Art School.
1913		The Gogeum Calligraphy and Painting Gallery was established in Sogongdong by Kim Gyujin. It reflected the new identity and social customs assumed by calligraphers and painters within twentieth-century Korean society. Na Hyeseok entered the Tokyo Women's Art School and became the first woman to major in Western painting in Korea.
1915	The Technical Professional School was the first junior college in Korea and was founded to implement technology education based on the Regulations of Professional Schools (Act 26)	The National Museum was opened in Gyeongbokgung Palace on 1st December. The Research Association, Seohwa Yeonguhoe (Research Association of

	promulgated in 1915. Haeju Technical High School was established.	Calligraphy and Painting), an educational institution for calligraphy and painting, was opened in May by calligraphy artist Kim Gyujin. Na Hyeseok graduated from the Faculty of Western painting at Tokyo Women's Art School.
1916	Jeonju Commercial High School and Yongsan Technical High School were established.	A western painting exhibition of Kim Gwanho was held in Pyongyang. It was the first private exhibition in Korea.
1917	A magazine, *Art and Crafts*, was published for the first time.	
1918	A hand craft division opened in Ewha Girls' High School and Holston Girls' High School.	The Joseon Art judging committee was formed. The Joseon Art Exhibition regulation was promulgated. The Society of Painters and Calligraphers was the first modern art organization to be made up of only Koreans and was active from 1918 to 1936. It aimed to develop the new and old calligraphy by mobilizing Joseon's calligraphers to study and educate Eastern and Western art, and to raise public interest in art. The Exhibition of Calligraphy and Art, held by the Calligraphy Association, was widely regarded as Korea's first modern comprehensive art exhibition, but its power weakened after the Joseon Art Exhibition was opened in 1922. In addition to member activities such as an organized event, Hwihohoe (a spontaneous calligraphy and painting event), and exhibitions, they also devoted efforts to education for young people and enlightening the public.
1919		The artist group, Goryeo Hwahoe, was organized in November by art students: An Sokyong, Kang Jingu, Kim Changseop, and others.

1920	The recreation of Goryeo celadon was booming. Jeon Seongkyu worked as a lacquerware inlaid with mother-of-pearl craftsman at Tongnyung Lacquerware Company. He was invited to work at the Joseon lacquerware company in Takaoka, Japan.	Lee Yeosung and Do Unhae held an art exhibition in Daegu.
1921		The Society of Painters and Calligraphers published the magazine, *Calligraphy and Painting Club*, for the first time in October. Na Hyeseok held the first private exhibition of oil paintings.
1922	The Craftwork Office of the Yi Dynasty was renamed the Joseon Artwork Studio Corporation.	The Joseon Art exhibition was held until 1944 (total 23 times) as part of an art work competition held by the Government-General of Korea. The Young Women's Calligraphy and Painting Institute was established in Gongpyeongdong to educate female secondary school students in calligraphy and painting.
1923		The Society of Painters and Calligraphers, Seohwawon, opened in Dongsungdong and operated for two years. Seohwawon was a training centre for young people and recruited students by dividing them into three groups: oriental painting, western painting, and calligraphy. The art association, Towol misul yeonguhoe (Towol Art Institute), and the art association, Goryeo misulhoe (Goryeo Art Institute), were established. The Towol Art Institute was created in August by Kim Bokjin and An Seokju, who were in charge of the theatrical stage art of the Towolhoe Theater Company. It conducted art research and education activities.
1924	The Folk Art Museum of Korea displayed Yanagi Muneyoshi's	

	collection of Korean ceramics, crafts, and folk paintings at Jipgyeongdang in Gyeongbok Palace during the colonial period.	
1925	Kim Bongyoung got a silver prize (lacquerware inlaid with mother-of-pearl) and Jeon Sunggyu got a bronze prize (lacquerware inlaid with mother-of-pearl) at the World Decorative Crafts Fair held in Paris.	Sakseonghoe, an artist group of the Northern Star Society, was formed in Pyeongyang by Kim Gwanho and Kim Changyeong, who were Western style artists, and Kim Yunbo and Kim Gwangsik, who were traditional artists. The group ran a two-year educational institute known as the Saksanghoe Painting Institute, where Western and traditional painting were taught. The Gyeongseong Women's Art Institute was established. The Joseon Comic Artist Club was established by Kim Bokjin and An Seokju. An Seokju published his six strip children's cartoon, *Ssidongyi*'s Horse-Riding in *Eorini*, in Child's magazine for the first time, in January. During this period, the demand for political and satire comic artists increased, and the newspaper, *Maeil Shinbo*, publicly recruited cartoonists. The inaugural meeting of the Korean Artists Proletarian Federation took place on 24th August.
1926	The Gyeongseong Women's Art Class was raised to the status of a school. An art exhibition was held at Gyeongseong Technical High School.	The Gyeongseong Women's Art School exhibition was held.
1927	The Mother-of-pearl Craft Training Centre was an educational institute founded in 1927 in Gyeongseong.	
1928	Lee Sunseok graduated from the design department of Tokyo Art University. Im Sukjae, after returning to Korea, established his own design studio in Angukdong, and began covering design and crafts for a newspaper, *Dongailbo*. He contributed articles entitled *Crafts and Design* in *Dongailbo*. And he introduced the concept of Design for the first time.	

1929		The Joseon Art Museum was designed by Oh Bongbin, the first exhibition curator in Korea. Andreas Eckardt, a German, published the first book on the history of Korean art with the title, Joseon Art History. The art association, Joseon changjag panhwahoe (Joseon Creative Printmaking Association), was formed and was the only one in Joseon colonial Korea to specialize in printmaking.
1930		Dongmihoe, an artist group, was formed by alumni of the Tokyo School of Fine Arts. The 1st Dongmihoe Exhibition was held in April at the *Donga Ilbo* Auditorium. The art association, Baekmanyanghwahoe (Baekman Western Painting Association), was formed.
1931	The Gyeongseong Technical School was established.	Hong Deuksun organized the second exhibition of Dongmihoe in April, and, unlike Kim Yongjun, he criticized traditional art and Western contemporary art. The artistic endeavours of the membership did not have a consistent theme, but the organization engaged in a consistent discourse on how artists that learned Japanese and Western-style painting could also pursue sensibilities and characteristics unique to their Korean identity and heritage. The art association, Nokhyanghoe (Green Country Association), was established. The art association, Mugilhoe, tried to find a Korean style of Western art through the fusion of Western modernism and the Korean tradition, and held its inaugural exhibition.
1932	The calligraphy section was removed from the Joseon Art Exhibition. Instead, a new craft department was created.	
1933	Kang Changgyu, a Korean dry lacquer craftsman, won an award for the craft department at the 12th Joseon Art Exhibition.	An artist group, the White Ox Society, was formed. It was the predecessor of the Tokyo Art Association. An artist group, Cheongguhoe, based in Gyeongseong, was formed by Korean and Japanese oil painters.

		An art historian, Go Yooseop, served as Director of the Gaeseong Museum. An educational Women's Art Institute was established by Na Hyeseok, who is considered the first Western-type woman artist in Korea. The acceptance of prints by the national Joseon Art Exhibition starting in this year allowed for the improvement of the status of the art of printmaking.
1935	Gang Changwon graduated from the lacquerer department of Tokyo art university.	The SPA Yanghwa Research Institute held the SPA Drawing Exhibition at the Salon *de Platane*, located in Janggokcheonjeong (now Sogongdong), from 23 - 28 December.
1936	The Craftwork Office of the Yi Dynasty studio was closed.	White Savages Group, an artist group, was established by Kim Whanki and Gil Jinseop with Japanese painters. They deviated from the academic art trend centred on the spectators of the time and sought to work with a reckless tendency to embrace a new art style in Europe. The Kim Bokjin Art Institute was established.
1937	The Taechon Korean Lacquer Training Centre, an educational institute, was founded. The Goryeo Celadon Institute was established.	An art association, the Free Artist Association, was established. Kim Hwangi and Yu Yeongguk released pure abstract works and Munhaksoo and Lee Jungseop produced works with a tendency towards surrealism. Han Hongtaek graduated from the applied arts department of Tokyo design specialized school.
1938	The Central Testing Laboratory opened the craft division. The division developed sources for the craft industry in Korea. The institute also attempted to develop trial manufactured goods in collaboration with the Industrial Training Centre, which was orientated towards personnel training.	Jesil Museum changed its name to the Yi Royal Family Museum at the Changgyeonggung Palace in Seoul. The Gansong Museum was established by Jeong Hyeongpil. The Museum collected and preserved artefacts and antique artworks, and it also promoted structured research into Korean antique art through its support for the Korean Journal of Art History, the first research journal on antique art. The first western style art book, *wonsaekhwajip*, printed in colour, was

		published in Korea; the book was published by Oh Jiho and Kim Jugyeong in October. As a document, the book shows the progression of impressionist art theory as well as examples of how impressionism influenced the Korean art establishment. The Hanseong Publishing Company published 1000 copies in Korean, with Chinese characters, and 200 copies in Japanese. The art book was 120 pages long, and included 10 paintings per artist as well as essay notes entitled, *Theory of Pure Painting*, by Oh Jiho, and Aesthetics and Art, by Kim Jugyeong.
1939		The Peninsular Chonghu Art exhibition was continued until 1944. Byun Gwansik held a private exhibition in Gaesung. Lee Wooyong held a private exhibition.
1940	Kim Jaeseok graduated from the craft design department of Tokyo International Art School.	Han Hongtaek joined the Yuhan Corporation and drew various designs for pharmaceutical products.
1941	The art association, Gyeongseong misulga hyeopoe (Gyeongseong Artists Association), was established and it encouraged pro-Japanese activism among artists during the war. Members of the art group divided into the following divisions: oriental painting, western painting, sculpture, craft, and design.	The art association, Sin misulga hyeopoe (New Artists Association), and the art exhibition, Sin misulga hyeopoe jeon (Exhibition of the New Artists Association), were established.
1942		The Joseon namhwa yeonmaeng (Society of Namhwa Painters) was formed by 40 Korean artists.
1943		The female painter, Park Raehyun, was awarded the Governor's Prize at the Chosun Art Exhibition.
1945	The headquarters for the Construction of Korean Art were established on 18 August and dissolved in November. The organization was one of the five divisions of the Central Council of Korean Culture Construction, which included literature, art, music, film and theatre. The Headquarters was the largest art organization after independence, comprising a total of	The Gyeongju National Museum was opened. The Korean Artists Association was established under the leadership of Goh Huidong after the Headquarters for the Construction of Korean Art. Criticizing the political activism of the Headquarters for the Construction of Korean Art, the Korean Artists Association avowed political neutrality. The association

	186 artists in six different divisions: Eastern Art, Western Art, Sculpture, Crafts, Children's Art and advertisement art. The first activities of the Headquarters for the Construction of Korean Art after its establishment included the creation of banners, portraits and national flags for the welcoming parade to celebrate the arrival of the Allied Forces. The art association Joseon san-eob misulga hyeopoe (Joseon Industrial Artist Association) was formed on 27 December. The organization's primary activities included exhibitions of artwork; research on advertising crafts, exhibitions and industrial design; educational lectures and round-table discussions; the promotion of the new nation; and the introduction of overseas industrial art to Korea. Youngnam Technical High School was established in Deagu.	planned the establishment of art schools, the publication of books on art history, the holding of exhibitions, and the publication of art magazines. The Tongyeong Culture Association was formed on 15 September by young artists in Tongyeong. The Korean Visual Art Alliance was established and was aligned with a socialist ideology. The name of the alliance was changed to Puromimaeng shortly after its establishment, before being changed again to the Korean Art Alliance. The alliance promoted proletarian art and advertized its work on the streets and in factories; it also criticized the beliefs and lack of principles of the Headquarters for the Construction of Korean Art, the largest art organization at the time. However, it lacked influence in the art community, and as a result the alliance was ineffectual and was disbanded in 1948. The Dangu Art Academy and Gyeongju Art Association were established.
1946	The Joseon Craftsmen Association was formed in March. Its membership comprized craftsmen that were former members of the Joseon Artists Association as well as new members who were non-affiliated designers and artisans. The association consisted of lacquerware, metalworking, ceramics, embroidery, dyeing, carpentry, and *hwagak* (horn inlay) departments. The Korean Artists Alliance formed in February under the leadership of Kim Jugyeong, Lee Inseong, and Oh Jiho, who had recently left the Korean Artists Association. Additionally, numerous members of the Korean Art Alliance also joined the organization. The governing body was the Central Executive Committee, which oversaw seven departments: Painting, Art Critique, Children's Art, Art Education, Performing Arts, Sculpture and Crafts. The inaugural exhibition was held at the Hwasin Gallery, from 24 - 31 June. The Joseon Crafts Art exhibition was	The Joseon Culture Organizations Federation was formed on 24 February. The alliance represented a total of 25 cultural organizations established after independence including the Korean Writers Federation, the Joseon Theater Federation, the Joseon Music Federation, the Joseon Film Federation, and the Joseon Art Federation. The Korean Art Alliance was created as a result of a merger between the socialist Joseon Artists Alliance and the politically moderate Joseon Visual Art Alliance. As an alliance of multiple organizations, the Korean Art Alliance was an influential faction within the art community of the 1940s, raising public awareness about art and issuing statements on political events before disbanding in 1948. The Art department was established at Seoul National University. The Gyeongju Arts School was established.

	held at Deoksugung Palace by the Joseon Industrial Artist Association; it was their first craft group exhibition. The Joseon Commercial Artist Association was organized in March. The inaugural exhibition was held at the Donghwa Department Store Gallery, from 20 – 25 May. The Chanwon Craft Institute was established.	A solo exhibition of Lim Seokjae's photography was opened at the Gallery of Donghwa Department Store (now the Shinsegae Department Store). The Joseon University of Arts was planned by Bae Unseong. He began preparing to establish the school on 27 December, and he submitted his plans to the US military government and received official approval to establish the Joseon Arts Institute. The Independent Art Association Exhibition was established in opposition to the Academism and bureaucratic management of the Japanese colonial officials. This organization was formed in the 1930s with a declaration that it would establish a new era of art.
1947		The Seongbukdong Painting Institute, an art research institute, was founded by Western-style oil painter Lee Kwaedae.
1949		The National Art Exhibition, a government-hosted exhibition, was held 30 times from 1949 - 1981.
1950		Lee Kwaedae co-founded the Namsan City Art Institute with Lee Haeseong to continue his pedagogical method. The 1950s Art Association was established
1951	The Lacquerware Inlaid with Mother-of-Pearl Educational Centre was established. An exhibition, *Export Craft*, was held in Busan.	The Military Artists Prop Exhibition of the Ministry of Defense was held in March at the Bureau of Public Information in Daegu.
1953		Kim Chongyung won a prize at the Monument for Politicians exhibition held in London. This event was evaluated to have created a tendency to escape from the naturalistic realism style of sculpture.
1954	The Korea Formative Art Research Institute was established with the aim of revitalizing Korean crafts and developing print art. Yoo Kangyeol was in charge of dyeing and printing, and Jeong Kyu was in charge of ceramics.	The National Academy of Arts, Republic of Korea was established in July under the Cultural Protection Act enacted in August 1952.

1955		The Korean Artists Association was formed.
1956	The Lacquerware Inlaid with Mother-of-Pearl Educational Centre changed its name to the Lacquerware Inlaid with Mother-of-Pearl Training Centre. The curriculum consisted of varnishing with lacquer, nacre practice, drawing, design, precise description, planning and drafting. Kim Bongryong taught line inlay; Shim Bugil taught cutting inlay; An Yongho and Kang Changkyu taught lacquer; Jang Yoonseong taught drawing; and Yoo Kangryul taught design and drafting.	Park Raehyun and Kim Kichang presented a new style of oriental painting that embraced Cubism. The Declaration of the Anti-National Art Exhibition refers to the boycott of the fifth Ministry of Culture sponsored Korea National Art Exhibition. The Korean Art Critics Association was an organization founded by art critics. The Oriental Calligraphy Institute was established.
1957	The Copyright Act, enacted as Act No. 432 on 28 January, was established to protect the authors of academic or artistic works.	The Korean Information Service Gallery was established in Sogongdong. Baegyanghoe, the White Poplar Association of Eastern Painters, was established.
1958	The craft department opened at Hongik University.	The Korea Woodblock Printing Association was formed in January. The group held its inaugural exhibition at the Central Public Information Service from 18 - 24 March. Mokwoohoe (Mokwoohoe Fine Artist Association) was established. The Korean Modern Art exhibition was held in New York. The White Ox Society opened its first exhibition.
1959	The Joseon Industrial Artist Association was renamed the Korean Industrial Artist Association; it continues to exist to the present day. Hang Chongnye entered the pottery department at Ehwa Woman's University.	The Korean Association of Art Critics was established. The Existential Artists Association was established on 22 April.
1961		Kim Changryul, Jang Seongsoon, Jung Changsub and Jo Yongik were invited to the second Paris Biennale. The Korean Fine Arts Association was

		established. Jang Woosung left his Seoul National University professorship and began working as a painter. In January, a tour of Southeast Asia was held by Baegyanghoe (White Poplar Association of Eastern Painters group); it was the first overseas exhibition held by a Korean private art organization. The Engagement Associates, L'engagement, was an artist group organized by diverse Western-style oil painters. Its inaugural exhibition was held at the Korean National Library Gallery from 23 – 29 September.
1962	The affiliation of the Lacquerware Inlaid with Mother-of-Pearl Training Centre changed to Gyeongsangnamdo from Choongmoo (now Tongyoungsi) when the training centre expanded to become the Choongmoosi Craft Institute.	Kang Hwanseop went overseas after signing a contract with the Fantasy Gallery in Washington, D.C. to sell his works.
1964	A crafts design department was newly established at Hongik University.	The quarterly magazine, *Art*, was established.
1965	The Korea Craft Design Institute was established. The Seoul government held the exhibition, Cottage Craft Works.	The Korea Art Critic Association was started. Kim Whanki, the chairman of the Korean Art Association, served as the Korean commissioner for the 8th Sao Paulo Biennale and was the first Korean to be selected as a judge for the international Biennale.
1966	The Korea Industry and Commercial Art exhibition was established. A new beginning of metal craft in Korea in the first solo exhibition based on the practical work of the Korean traditional craftsmen Kim Kiryeon in Hessen Sontra, Germany.	
1967	An exhibition, *Dong-a Crafts*, was established.	An architectural magazine, *Space,* was published for the first time. Sinjeon dongin (New Exhibition Group)

		was formed by alumni of Hongik University; in its departure from Informel, the group engaged in experimental work such as installations and happenings. An art show, The Young Artists Coalition Exhibition, was held at the Korean Information Service Gallery from 11 - 17 December.
1968		Hyeondae gongganhoe (Modern Space Club) was formed by seven alumni of Seoul National University.
1969		The Korean Avant Garde Association was established; it was dissolved in 1975. Focusing on painters, sculptors and art critics in their thirties, they published the association magazine, *AG,* for the first time to introduce new trends in foreign countries and explore the logic of avant-garde aesthetics.
1970	In May, the Korea Packaging Design Centre was established under the Ministry of Commerce and Industry.	
1971	The Lacquerware Inlaid with Mother-of-Pearl Training Centre changed its name again to the Choongmoosi Integral Craftwork Centre. Jewellery design became part of the curriculum at Kookmin University.	The Space and Time Group was a small artist group with avant-garde tendencies that showed three-dimensional works and performances from 1971 - 1981.
1972	The Modern Korean Art Exhibition, *for the Past Sixty Years*, was held at the National Museum of Modern and Contemporary Art (27 June - 26 July). The exhibition was the first to focus on Korean modern art, and is considered the foundation upon which The Museum established its own collection. Artists such as Kim Eunho, Kim Gyeongseung and Do Sangbong, and art historians such as Lee Gyeongseong and Choi Sunwoo planned the exhibition together.	The Ecole de Seoul was an artist group founded by Park Seobo and others. The Korean Information Service Gallery was originally a facility where a diverse range of exhibitions including art, crafts and photography could be held for free, but changes in the Korean Information Service's policy led the building to be used only for the promotion of government policies starting in April. The Culture and Arts Promotion Act was enacted to improve the environmental conditions of art and to promote national culture by supporting projects and activities for the promotion of culture and

		the arts.
1973	Organized by the Cultural Heritage Management Bureau, the Human Cultural Heritage Crafts Exhibition was held at the Relics Exhibition Hall of Changdeokgung Palace. The Korean Crafts Council was founded in July.	A branch of The National Museum of Modern and Contemporary Art, Deoksugung opened; this branch of the National Museum absorbed the role of the Korean Information Service Gallery. Kim Whanki held a solo exhibition at the Poindexter Gallery in New York.
1974	The Industrial Design Packaging Promotion Act was enacted.	The Baeksong Gallery opened.
1975		The Ecole de Seoul, an artist group, held its first exhibition at the National Museum of Modern and Contemporary Art of Korea from 30 July - 5 August. The Dongsanbang Gallery opened.
1976	The monthly magazine, *Design*, was published.	For the Ecole de Seoul's second exhibition, they adopted a new system, which was used for the first time in Korea, where an independent commissioner selected artists.
1977	A posthumous exhibition of *a Geonchil craftsman Gan Changwon* was held at the Shinsegae Museum of Art in December.	Video artist, Baek Namjun, participated in *Kassel Document*, Germany, and was the first Korean to do so.
1979		The Kwanhoon Gallery opened. In Jang Woosung's oriental painting, *The Polluted Zone*, a crane dying due to pollution as a result of the selfish development of man was expressed.
1981	The Korea Textile Design Association was established. The Seoul Gallery held the Seoul Contemporary Ceramics Competition.	An art organization, Tara, was established by Kim Gwansu, Oh Jaewon and Lee Hun. The group drew press attention by distinguishing itself from the mainstream painterly art community through personal emotionally based experimentation, rather than promoting any aesthetic ideology or methodology. The group held its inaugural exhibition at the Dongduk Art Gallery. The Korean Art Critic Conference was established and a journal, *Art journal*, was published for the first time.

1982	American metalworker, Jack Da Silva was invited as a visiting professor from the USA to Kookmin University for two years.	The Korean Fine Arts Association was established. The Kukje Gallery opened.
1983	Ahwon Gongbang, a metal craft & jewellery shop and Gallery, was opened. British Jewellery maker, Stephen Bort was invited as a visiting professor to Kookmin University and Seoul National University from the UK.	The Gana Art Gallery was established. An exhibition, *New Generation of Water*, was led by an art organization, Nanjido.
1984		The Total Museum of Contemporary Art was established in Jangheung and registered as a private art museum in 1987.
1985		Baek Namjun and No Eun were invited to the Hamburg Peace Biennale. The Korean People's Artists Association was established.
1986	The contemporary jewellery exhibition, *American Jewelry Now*, was held at Walker Hill Art Museum. The Korean-American Metalworking Workshop was held.	The National Museum of Contemporary Art moved to Gwacheon. An artist group, Logos and Pathos, was formed by alumni of Seoul National University who were all in their 30s. Lee Yil, a subsequent president of the Korean Art Critics Association, established the Journal of *Art Criticism*.
1988	A monthly magazine, *Crafts*, was published for the first time in March. A monthly magazine, *Ceramics*, was published for the first time in June. The metal craft department was separated from the craft department at Hongik University.	The Korean Academy of Arts Act enacted. Baek Namjun created the 1988 Olympic Project, *Hand in Hand*. *Minjung Art* (Labour Art) was exhibited at the New York Artists Space Gallery. The Hakgojae Gallery was opened.
1989		The Kumho Gallery opened.
1991	The Korea Textile Design Association was organized.	The Museum and Art Museum Promotion Act was enacted to strengthen support for museums and art galleries to promote their establishment. The Total Museum of Contemporary Art established the annual Total Art Award,

		and solo exhibitions were held to feature the work of the award-winning artists. The museum moved to a newly constructed building in Pyeongchangdong in 1992.
1992		Yuk Geunbyung participated in Kassel Document, Germany, as the second Korean to do so.
1994	The annual Seoul Living Design Fair started. The Local Cultural Centre Promotion Act was enacted to contribute to the promotion of balanced local culture by revitalizing the functions and roles of local cultural centres. A craft gallery, Craft House, was opened.	An exhibition, *Oh! Tomb Murals in Goguryeo*, was held from 1993 - 1994.
1995		Gwangju Biennale was started. Jeon Soocheon was the first exhibition artist of the Venice Biennale. The Korean Pavilion was opened at the Venice Biennale.
1996	The Industrial Design Promotion Act was enacted. A Monthly magazine, *Pottery*, was published for the first time in April.	
1999	The Korea Ceramic Foundation was established. The first Cheongju Craft Biennale was held. The Korea Society of Basic Design Art was established in July.	Neo-look, a website that announces exhibitions and events related to visual culture, was created.
2000	The Korean Craft Foundation was founded in April. Gallery O was established for local and international contemporary jewellery by jewellery artist, Oh Miwha.	The Ssamzie Space (a non-profit art and multicultural complex) opened with the support of Ssamzie Co. Ltd. The art and multicultural complex is located near Hongik University, and was an expansion of the Ssamzie Art Project, which supported the work of artists at the old headquarters of Ssamzie, which were remodeled into a studio.
2001	The Korea Craft Design Association was held in December.	

2002	The Seoul Design Festival was started. The Art Freemarket, *Hongdaeap*, was opened on Saturdays from March to October.	Hallym Museum moved to Seoul from Daejeon and was renamed Dealim Contemporary Museum. The Association of Korea Exhibition Industry was established. The Korea International Art Fair is an international art exhibition organized by the Galleries Association of Korea. Park Sookeun Museum was established.
2003	The annual fair, Jewelry Fair Korea, was started.	
2004	The Chiwoo Craft Museum was established in May. An exhibition, *Plastic, Plastic, Plastic*, was held by studio jewellers. The World Jewellery Museum was founded in May by Lee Kangwon, a diplomat's wife, whose jewellery collection embodies 40 years of travelling around the world.	The 20th General Conference & 21st General Assembly of the International Council of Museums were held in Seoul. The Samsung Museum of Art, Leeum, was established by the Samsung Foundation of Culture.
2005		Kimhyunjoo Gallery opened in January.
2006	The Journal of *Basic Design & Art* was established for the first time. The Craft Trend Fair was started annually. Contemporary Art Jewelry Gallery, Baum, was established in September in Heyri by Yi Junggyu. The metal craft exhibition, *Metal Element – Beyond*, was held at Gallery Gac.	An exhibition, *100 years of Korean Art (Part 2),* was held at the National Museum of Modern and Contemporary Art.
2008	Modern Imperial Crafts and Culture Association was established in February.	
2009	Craft and Arts Education Association was established in December. Lifetime Education and Crafts Association was established in December.	The Korean Art Critics Association created the Korean Art Critics Association Award. Through this platform, the association continues to support artists and art writers.
2010	The Korean Craft Foundation was renamed the Korean Craft & Arts Design Foundation.	An exhibition, *Collection, Talk about art museum*, was held at the National Museum of Modern and Contemporary Art.

2012	Kang Mina was selected as the winner at the Bavarian Crafts Council Prize in Germany.	
2013	A contemporary jewellery exhibition, *Ornament and Illusion - Spectrum of contemporary jewelry*, was held at the National Museum of Modern and Contemporary Art. Vogoze Gallery was established especially for contemporary jewellery exhibitions. Lim Sooyeon was selected as the winner of an award given by the contemporary art jewellery organization, Art Jewelry Form, in the USA. The Women's Craft Start-up Exhibition was held.	An exhibition, *Opulence: Treasures of Korean Traditional Craft*, was held at the Samsung Museum of Art.
2014	The Byeokbong Korea Jewellery Museum was opened. Dongdaemun Design Plaza was opened in Seoul and held art events including exhibitions, fashion shows, art product launch shows, forums and conferences. The Chiwoo Craft Museum was renamed Yoolizzy Craft Museum. An exhibition, *Picasso to Jeff Koons: The artist as jeweler*, was held. Kwon Seulgi was named the winner at the Art Jewelry Form in the United States.	Chang Ucchin Museum of Art opened in Yangju in April. This Museum was selected as one of the Great Eight New Art Museums by the BBC in 2014. Museum Piknic was established.
2016	The Korea Up-cycling[81] Centre was established in Deagu. Kim Kyeok and Koh Heeseung were selected as finalists for the Loewe Foundation Craft Prize.	

[81] The term upcycling was first used by German engineer Reiner Pilz in 1994 in an interview with a furniture and architecture media outlet, but discussions about its concept and design method began in the 2000s.
Newspaper *Yeongnamilbo*, ‘Green Startup Support… The nation's first KUP center in Daegu’, <https://www.yeongnam.com/web/view.php?key=20160629.010170743490001> [accessed 29 June 2016].

2017	The Seoul Women's Craft Centre, The Arium, was opened to support women's craft startups.	An exhibition, *Reenacting History: Collective Actions and Everyday Gestures*, was held.
2018		Lee Bul's exhibition, *Crashing*, was held at the Hayward Gallery, London.
2019	The Swiss Contemporary Jewellery Design exhibition, *The Jewelry's Play*, organized by the Museum of Contemporary Art Lausanne, Switzerland, was exhibited at the Dongdaemun Design Plaza Gallery.	Artist Suh Doho exhibited his installation, *Home Within Home Within Home Within Home Within Home (2013)*. Not only does the diaphanous tent-like structure represent all of the places that he has lived, it is also within the memorialising space of the National Museum of Modern and Contemporary Art Museum.
2020	A contemporary jewellery exhibition, *Korean Contemporary Jewelry Chronicle 100 Brooches*, was held. Jung Junwon was selected for the Friedrich Becker Prize.	

As shown in the table above, jewellery in nineteenth and early twentieth-century Korea was officially classified as part of the field of 'metalwork'. In 1908, government schools, Hanseong Craftwork Manufactory, teaching traditional crafts recognized and were organized according to six specialized subject categories: dyeing, pottery, metalwork, carpentry, applied chemistry, and civil engineering.

During the Japanese colonial period, the Japanese imperialists began to interfere in the internal affairs; the situation became impossible for the subjective efflorescence.[82]

Through the Craftwork Office of the Yi Dynasty and the Joseon Art Exhibition, craft was structured in a form similar to that of the contemporary era, freed from the Japanese colonial period system.

In 1906, the 'handcraft' course was a new subject in the public schools;[83] it was promulgated by the Joseon Education Ordinance, but it was closer to technical education than modern art education. As indicated by the names of the painters

[82] During this period, craft in which the Japanese style was adopted through a form of government-led public offering was encouraged. Despite the crisis regarding the existence of a national culture, it did not contribute much to the development of modernity and the creativity of Korean crafts.
[83] The use of textbooks in art education began in 1907.

and potters, in East Asia, hand technology was degraded as a heavenly spirit that had nothing to do with intellectual behaviour. However, as the concept of art connected with new knowledge, artists also began to work actively on the social level. In the 1920s, private art education institutions, including the Towel Art Research Association (1923) and the Goryeo Art Association (1923), as well as various other art organizations were formed. After the 1930s, painters who had studied Western painting in Japan and Europe and returned to Korea formed various groups and engaged in active activities. Meanwhile, craft was considered an industrial technology, as it was placed at the centre of industrial promotion. Even after 1945, Korean crafts did not deviate from creating a new modern state; rather traditional techniques were reproduced and passed on within the Joseon dynasty's heritage.

Until the 1960s, jewellery design continued to be in the metal craft category (Chapter 1.2). In the 1960s, jewellery and academic jewellery of monetary value, such as gemstones, gold, silver, etc., became established. The publication of a magazine, Crafts in 1958, provided an opportunity for academic artisans to be introduced to the general public. The Korean educational process was based more on results until the 1980s. So, the emphasis on the effect of the techniques in craftwork became more important and this change in focus altered the atmosphere, and thus there began to be more respect for the creative ideas generated from the creative process. In the mid-1980s, the jewellery category became independent; this made people aware of the importance of the metal jewellery department and jewellery exhibitions began to take place in galleries that were treated as pure art. Contemporary jewellery was introduced by metalworking artists who had returned after studying abroad. Especially artistic contemporary jewellery was introduced in the 1990s and jewellery department become more independent.

Jewellery once belonged to the trend of making miniatures or souvenirs using traditional crafts with government support. For example, through national events such as the 1986 Asian Games in Seoul, the 1988 Olympics in Seoul, the 1993 Expo in Dae-jeon, and the 2002 World cup in Korea & Japan, Korea used a sizable portion of its budget for the development of crafts to try to develop culturally unique and inexpensive products to interest the visitors rather than

showing the development process of the artist and craftsman (Chapter 1.2, Korean contemporary jewellery in the historical context of craft).

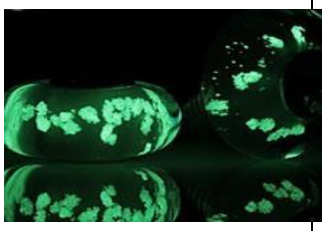
An exhibition that included conceptual jewellery was Ornament and Illusion-Spectrum of contemporary jewellery, which was held in 2013. This exhibition was hosted by Kookmin University and most of the participants were professors and jewellery artists who had studied abroad.

Appendix 2: Summary of available contemporary high-visibility materials

Considering that keeping safe is a fundamental element of people's wellbeing, safety equipment is rarely worn in Korea due to the stereotypical design of safety devices. Wearing highly visible materials is necessary to develop a more predictable design for road safety in the dark.

The following table summarises my investigation into the available contemporary high-visibility materials. These are arranged in four categories: UV Fluorescent, Bioluminescent, Photochromic, and Electronic Power (portable) luminescence.

No	Category	Name	Company name Country Web site
	Image	Specification	
UV Fluorescent			
1	UV fluorescent, ecofriendly film tape	RTape® GlowEfx Phosphorescent	RTape Corp.6 Plainfied NJ, USA. Url: http://www.rtape.com
		Phosphorescent PVC with a semi-permanent repositionable modified acrylic adhesive system. GlowEfx emits a visually dramatic, green or yellow glow, immediately after all light is extinguished. It glows brightest during the first 60 minutes, and then fades to remain lightly visible for several hours in total darkness. It was designed for CPSIA compliance. It is lead-free, eco-friendly and child-safe and printable with non-aqueous based inks such as thermal transfer, eco-solvents, solvents, and UV screen inks. It can be computer cut, steel rule die cut, thermal die cut, embossed and domed. It can be applied to flat, smooth surfaces, such as sign blanks and painted drywall. Modified permanent pressure sensitive acrylic adhesive. It is immediately visible in dark conditions during power failures. It has extended glow life, and	

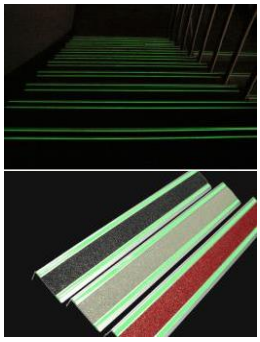
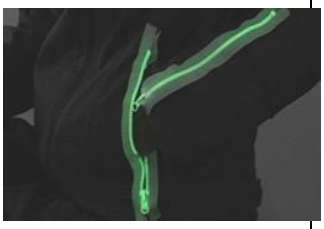
		is visible for up to an hour.	
2	UV Fluorescent beads	Pandora Murano fluorescent glass beads.	AliExpress An online retail service based in China Url: https://www.aliexpress.com/item/32845134277.html
		Pandora glow dark glass beads; these are colourful glass beads that glow in the dark.	
3	UV Fluorescent pebbles	COREglow™ PEBBLES	COREglow™ Qingdao, China Url:

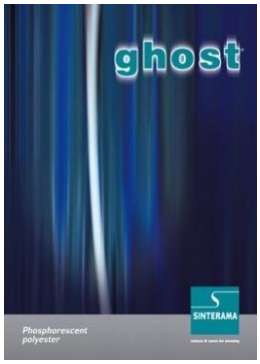
		COREglow™ Pebbles provide glow-in-the-dark edging for landscaping needs. The product keeps the glow gravel radiant for many hours. The phosphorescence given off by this product is not harmful, and provides safety of passage when no light source is available. It can be used as a guide when travelling by foot or vehicle. Brightness: The material is more than 10 times brighter than traditional ZnS (zinc sulphide) luminous material; With only 10-20 minutes of exposure to daylight or lamplight, this product can maintain its afterglow in the dark for about 10-12 hours. All of the products are non-radioactive, non-toxic and environmentally friendly. The COREglow™ products require no electricity and thus no wires, no power supply and no batteries. This saves natural resources and is another eco-friendly benefit.	http://www.core6systems.com/coreglow

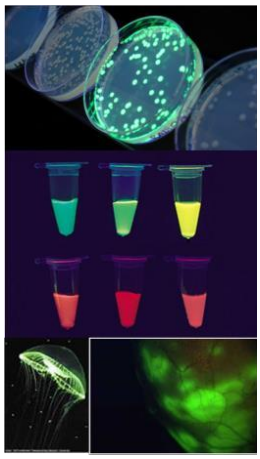
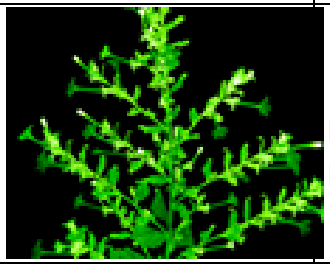
4	UV Fluorescent Pigments	Speedball® Phosphorescent Fabric Screen Printing Inks- Glo 'N' Dark Fabric Screen Printing Kit	Speedball® North Carolina, USA Url: http://www.speedballart.com
		The ink glows in the dark. It can be used for screen-printing on cotton, polyester, blends, linen, rayon, and other synthetic fibres (not nylon), or on paper and cardboard. For use on cotton, polyester, blends, linen, ray and other synthetic fibres (not nylon). Also works suitably on paper and cardboard. It can be washed when properly heat-set. It is non- flammable, contains no solvents and has no offensive smell; it is non-toxic.	
5	UV Fluorescent Pigment	Long-lasting phosphorescent pigments	
		Add energy to phase-change materials such as phosphors, and they glow in the dark. The challenge for scientists has been to produce long-lasting phosphorescence in specific hues. It can be mixed to provide tints and hues that glow for up to 24 hours. The UGARF/UPR technology is environmentally safe, and contains no sulphur, radioactive materials, lead or other hazardous substances. An international, non-exclusive licence for the UGARF/UPR phosphors was granted to Performance Indicator LLC, Lowell, Mass., a company focused on indicator chemicals for military and anti-counterfeiting use. Using an inorganic, non-toxic and highly efficient material in the presence of any light source with a UV component, the photo luminescent material will absorb and slowly release light. The technology can create a broad palette of daytime colours, and	Bambu Way Massachusetts, USA Url: http://www.performanceindicator.com

		the same or different night-time emissive colours, providing high intensity and a long duration glow. Other industrial applications include: signage, paints, colour- coded electrical wiring, textiles and printing ink. The phosphors can be mixed with polymers or resins without substantially changing the matrix.	
6	UV Fluorescent-Cosmetic	Glow-in-the-dark body paint	The Glow Company Doncaster, UK Url: https://www.glow.co.uk/
		Fluorescent body paint is used to highlight dance routines or musicians and, in some cases, animals. People driving their cars will also be able to see those with fluorescent body paint better, which could avoid a potentially fatal accident.	
7	UV Fluorescent Cosmetics	Fluorescent Neon Luminous Nail Art Polish varnish Glow in Dark	Born Pretty An online retail service based in China Url: http://www.bornpretty store.com
	 	Needs previous exposure under light. Various colours can be applied to the same nail to create special effects. 2 - 3 layers and a topcoat are needed for better results in terms of illuminated effects.	

8	UV Fluorescent Cosmetics	Fluorescent Neon Luminous Nail Art Polish Glow In Dark Varnish	Born Pretty An online retail service based in China Url: http://www.bornpretty store.com
		Needs previous exposure to light. Various colours can be applied to the same nail to create special effects. 2 - 3 layers and a topcoat are needed for the best results in terms of illuminated effects.	
9	Micro-prismatic reflective films and fabrics	EN 17353 Microprismatic Reflective Film	Reflomax Hwaseong-si, Korea Url: https://www.reflomax.com/
		Reflective sheeting materials certified manufacturer of a range of micro-prismatic retro-reflective materials for roadway safety.	
10	UV Fluorescent printable luminescent film, acryl	400C08 Phosphorescent Film	Innotech Seoul, Korea Url: https://www.innotechkorea.com/index.html
		Phosphorescent Film for Making Emergency Exit Markings photo luminescent material. Photo luminescent vinyl has been designed to produce safety and emergency exit signage, and for making photo luminescent egress path marking systems for buildings, as required the by IBC (International building code)/IFC (International fire code) 2009. It can be used on residential houses, for marking steps, handrails, stair landings, egress paths, obstacles and exit doors of enclosed stairwells. It has an extended glowing time of more than 10 hours.	

11	UV Fluorescent film	Lumi non-slip	Shintec Busan, Korea Url: http://www.shin-tec.com/
		A photo luminescent material is applied that emits light by absorbing the additional power without the need for daylight. The top and sides of the nonslip are installed in a corner on the stairs for pedestrians. In addition to the basic nonslip function, it can be used for unexpected situations such as: earthquakes, fires, and power failures and when it gets dark to allow people to still be able to evacuate a building.	
12	UV Fluorescent Zip	Opti P Lucence	Coats Uxbridge UK Url: http://www.coatsindustrial.com/en
		Opti P Lucence has been designed to deliver a glow-in-the-dark effect with all of the zip's components: i.e. the teeth, slider, puller and textile tape. It is white in normal light but the glow effect of the zip has a green appearance. The zips are charged in sunlight (UV) or in artificial light (to a lesser degree), after which when viewed in darkness they emit a luminous glow.	
13	UV Fluorescent card	Aroma & glow in the dark card	Perfect Cards Lower Silesian Voivodeship, Poland Url: https://www.perfect-cards.com/
		The aroma & glow-in-the-dark credit card can emit light in the dark. It is a card that appeals to the visual, tactile and sensory organs of users, such as the olfactory system. The coating also has a fragrant material on the surface of the luminous card. The sustainability of the smell is about 6-12 months, but the phosphorescence is semi-permanent.	

Photochromic luminescence			
14	Photochromic Fabric	Photo-chromic Chameleon fabric	Fibre2fashion Ahmedabad India Url: https://www.fibre2fashion.com/
		Photochromic fibers change colour with light or temperature. When the microcapsule pigments are attached to a fiber, the fiber itself changes in response to changes in the environment by adjusting the temperature and humidity. The raw material of acrylate fiber is similar to acrylic, but the chemical molecular structure is different. Acrylate fiber is highly hygroscopic. It is 3.5 times more absorbent than cotton when it absorbs moisture such as water vapour.	
15	Phosphores-cent polyester	GHOST polyester	Sinterama S.P.A. Sandigliano, Hungary Url: www.sinterama.com
		GHOST is charged by a wide spectrum of visible light and by ultra-violet light whilst it discharges itself in the dark emitting a visible light.	
16	Phosphorescent patterns	Glowing in Stella McCartney Sportswear	
	 	Stella McCartney's glow-in-the-dark range for Adidas. When a person is running in an urban environment, they can feel safe. People can see the wearer approaching as they stand out, especially in winter when it gets dark earlier.	

Bioluminescence			
17	Fluorescent Bioluminescence	BioGlow: Fluorescent street tree	Starlight Avatar Missouri, USA Url: http://bioglow.us/
		Self-luminous plant BioGlow has been developed to make it possible for plants to replace streetlights. Sea bacteria that cause the bioluminescence phenomenon in chloroplasts are inserted into light-emitting bacteria. The brightness is amplified by emitting green and blue, and red or yellow light.	
18	Fluorescent Bioluminescence	Algae In BioSphere	BioGlow Bioluminescence Utrecht, The Netherlands Url: https://bioglow.eu/shop/en/
		Bioluminescent algae can grow in sea water and need light. The algae glow has an internal biological clock, which is based on the light-dark rhythm of the past days. Bioluminescence generally starts about 1 hour after sunset.	
19	Fluorescent-Bioluminescence	Fluorescent proteins	Genelux Co. California, USA Url: http://genelux.com/ And Takafa Bio Shiga, Japan https://www.takarabio.com/
		Genelux scientists have incorporated Ruc-GFP, a luminescent fusion protein, into the Genelux platform technology (GL-ONC1) to enable non-invasive cancer diagnosis, staging and monitoring. This particular protein is a combination of two proteins: one bioluminescent protein derived from glowing sea pansies, and one fluorescent protein from jellyfish. The GFP protein allows scientists to visualize tumours with simple optical imaging equipment.	
20	Bioluminescent fungi	Ornamental plants	Planta Moscow, Russia Url: https://planta.bio/
		Fungal bioluminescence genes have been developed for self-luminous plants.	

Reflective products			
21	Reflective clothing	ISHU scarf	Ishu London, UK Url: https://theishu.com/
		The ISHU scarf is the brainchild of Dutch-born fashion entrepreneur Saif Siddiqui and has been designed to give people their right to privacy back.	
22	Reflective clothing	Reflective Safety Scarves	Europa Sports Kingston upon Hull, UK Url: http://www.europasports.co.uk
		The reflective safety scarves can keep people safe and warm at night.	
23	Reflective clothing and products	Dashed	Seen Breda, Netherlands Url: http://www.mariesschets.nl/
		Light-reflective thread has been interwoven into this range of fabrics by Marlies Schets so that they illuminate for night time wear. Marlies Schets created the material for a line of accessories called Seen, as part of a graduation project for the Design Academy in Eindhoven. In February 2015 the design studio Marlies Schets and label SEEN were launched. A scarf, backpack and bike lock have been designed to have the same light reflective properties as typical high-visibility clothing by night, but to remain undetectable during the day.	

24	Reflective bags	Notabag Reflective	
		The Reflective Notabag is an award-winning German brand and represents the same-named product that was introduced in December 2012 through the Kickstarter crowd-funding platform. The backpack is made from water-resistant material and has high visibility reflective details.	Notabag Frankfurt, Germany Url: https://www.notabag.com/
25	Reflective cyclist‘s clothing	ZAP TECH	
		ZAP TECH has transformed the darkness from something people avoid to something they feel confident with due to its reflectivity for visibility. The brand was founded by David Hollands and Carol Prantner-Hollands was an endurance athlete, while Prantner worked in the fashion industry and won the Eurobike design awards in the cycling industry for 2015.	Sugoi Vancouver, Canada Url: http://www.sugoi.com

Electronic power (portable) luminescence			
26	Electronic power (portable)-DIY	LED Sports Balls	Active Dark British Columbia, Canada Url: https://activedark.com/
		LED Glowing Soccer Balls, LED lit Footballs and Light Up Glowing LED Basketballs can be played with after the sun goes down. The batteries can be replaced.	
27	Electronic power (portable)- wire & panel	Surelight	Surelight Sheffield, UK Url: https://www.surelight.com/
		Electroluminescent wire, often abbreviated to EL wire, is a thin copper wire coated in a phosphor, which glows when an alternating current is applied to it. This low energy wire lighting gives off a 360 degree light, and is powered by either batteries or the mains. EL Wire is flexible and available in various grades and colours. Surelight's EL Wire can be used in a variety of applications: architecture and design, entertainment, automotive lighting, safety and emergency lighting, toys, clothing, costume design, signage, and retail displays.	
28	Wearable material- textile	Lumijella	Se-yang Textile Deagu, Korea Url: http://www.se-yang.com/index.php
		Combined with LED and jacquard fabric this product was developed to apply the light-emitting fibre of folded and Optical Fibre Implant Machine technology. It is a fluorescent material that can be used at night and during the day for clothing. Lumijella generates silver bright light at the edge of the optical fibre through incoming light. The high visibility and multilateral toughness is comparable to reflective tape and it also possible to use it as a product for accessories. It maximises the visibility of movement. It can also be used to create a desired pattern and patterns can be created with processing technology to enhance the optical fibers, thus creating more luminous technology. It is suitable mainly for safety supplies, such as: IT fusion products, outdoor clothing and riders' supplies.	

The above table gives examples of the commercialization of high-visibility materials that are used for various purposes.

The first finding in the material survey helped me to find a store that provided small quantities of the materials I needed to test. I could not get professional cooperation when I met with the field managers of the Korean fluorescent materials company Reflomax (No. 10 in the above table) and Se-Yang Textiles (NO. 29), respectively. This is because they cooperate in professional testing only when mass production is planned. For this reason, I tested only products produced by small-volume vendors.

I collected sufficient information on the test pieces for this thesis. Moreover, there is a UV Fluorescent DIY resin that is used as an artwork material. UK industrial designer and jeweller, Mat Brown, shared with the Reddit community his ingenious idea for a set of resin inlaid chestnut shelves. Starting with a cracked piece of chestnut wood, he mixed standard resin with some mysterious glow-in-the-dark powder that he had bought on eBay, which he used to fill in the gaps. And the chestnut shelves, voilà, became instant glowing furniture.

The second finding was that almost of all high-visibility materials are not suitable to wear directly to the skin.[84]

However, product list No. 7, 8, and 9 are luminous cosmetics (UV Fluorescent-Cosmetic), which have the advantage of applying for the skin. Nevertheless, some pedestrians who do not wear makeup are not suited to wearing high-visibility safety jewellery using luminous cosmetics. However, safety jewellery is considered sufficient for future design, after improving the awareness of wearing safety devices. This is because it can be safely worn on the skin[85] in particular

[84] http://blog.shinium.eu/

[85] Rice paper was used for safe wearing next to the skin (Figure 13), but the long-lasting effect was disappointing because it did not stick to the skin for 5 hours. Therefore, it is also necessary to experiment with fluorescent cosmetics that have been recognized for safety next to the skin for use in future research. Moreover, dry medical patches that do not require adhesives are attractive materials for future experiments. The idea came from the skin of the Gecko lizard's feet. As there are hair-like cilia in the soles of the feet it is possible to crawl across the ceiling without an adhesive. A patch that is adhered to the skin has been developed with no need for an adhesive, to mimic the back of a gecko's leg. The surface structure has curved fine protrusions on the patch-bonding surface instead of an acrylate adhesive with adjusted micrometers. Thus, it can also be attached to rough skin and it is also possible to adhere the patch to any curves of the body.

situations and with various design improvements and it is suitable in terms of the psychological stability factor (Chapter 3.1.1).

Moreover, the third significant finding is that high-visibility materials are used as privacy protection instead of illuminating people in the dark. The ISHU scarf, which uses reflective clothing, was designed to give people their right to privacy back, which is a different purpose compared to other luminous products. The scarf can be used as a reflector, or a safety concept, or so as not to be photographed by paparazzi for personal privacy.

From the above table, when we consider reusing everyday materials and environmentally friendly materials as much as possible, bioluminescence is considered the most suitable for future research. As I mentioned in chapter 5.3, however, ethical issues remain.

The third finding is that almost of all of the high-visibility materials contain chemical ingredients and I used non-radioactive, non-toxic and environmentally friendly fluorescent materials in my tested artefacts. It is necessary to develop more environmentally friendly environmental materials such as the high visual composition from mushroom fungi.

Kyunghyang Shinmun, 'Development of adhesive-free medical patches', <http://news.khan.co.kr/kh_news/khan_art_view.html?artid=201109152144095> [accessed 15 September 2015].

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