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Problem placement in fashion design practice: Reflections and recommendations for fashion design education in an era of complexity

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Abstract

This paper identifies the desired design outcomes and problem domains of experienced Johannesburg fashion designers, to provide recommendations for fashion design practice and education. Traditional fashion design education often emphasises aesthetics and technical construction before strategically deciding on where the design effort needs to be focused within complex integrated systems. However, within the context of the fourth industrial revolution (4IR), complex integrated systemic thinking is becoming increasingly important. As such, this paper provides an overview of the design outcomes of practising fashion designers and explores the correlation between the problems they manage and Buchanan's (1998) seminal proposition of problem framing and placement domains. Based on a master's study whereby a multiple-case study was conducted to observe, compare, and describe the communal design activities that experienced Johannesburg fashion designers manage using activity theory to analyse the complex nature of design, found that the biggest challenge faced by experienced fashion designers is their inability to define the complexity of the design problem. Against this backdrop and as the fashion industry moves into the fourth industrial revolution this paper identifies the design outcomes and problem domains that have to be considered as part of designers' practices that may be used to inform fashion education.

Keywords: Activity theory, fashion design education, fashion designers practice, problem placement

Introduction

The act of designing is fundamentally about problem solving. As design evolved from craft into professional practices and academic disciplines, it became increasingly focused on finding ways to add value to people's lives through solving complex problems (Dorst, 2019, p. 118, Friedman, 2016, p. xxii). Different design disciplines developed to offer solutions through products, services, and systems that can be sold to a market (Press & Cooper, 2003, p. 70, Dorst, 2011, p. 522). Regardless of the discipline, open-complex problems in design lie in the need "to conceive and plan what does not yet exist ..., before the final result is known" (Buchanan, 1992, p. 18).

The question that arises is what are the problem domains that experienced fashion designers manage? Relevant publications often used in fashion education by authors such as Elizabeth Bye (2010), Sue Jenkyn Jones (2011), Janice Greenberg Ellinwood (2011), Kathryn McKelvey and Janine Munslow (2012), Steven Faerm (2017), Sorger and Udale (2017) and Dieffenbacher (2020) suggest that fashion design is mainly concerned with garment aesthetics (the visual elements and principles of design and textile selection), and garment construction (pattern drafting, draping, and sewing). These publications place emphasis on the design processes and methods, creating the perception that fashion designers manage two-dimensional design problems that are situated within the parameters of communicating aesthetic appeal and construction methods of a product.

A focus on the process of design is not unique to fashion design texts, descriptive work about design, in general, have historically focused on analysing and describing the design process and methods (Tan, 2012, p.24, Dorst, 2008, p. 5, Lawson, 2005, p. 33). Although understanding the design process and methods are essential in education, other aspects of design such as solving problems at different levels in practice need further exploration (Black, 2010, p. 6, Dorst, 2008, p. 5, Cross, 2006, p. 100, Press & Cooper, 2003, p. 127). Fashion studies have predominantly focused on topics regarding the social, cultural, economic, and historical nature of fashion in neglect of fashion as an applied field of design (Morley 2013, pp. 12-13, Lavelle, 2013, p. 1). The lack of design-specific research in fashion has led to a vague understanding of experienced fashion designers' creative practice and the complexity of the design problems they manage. As the fashion industry moves into the fourth industrial revolution this paper reflects on what problems fashion designers are faced with, to better understand how fashion education needs to adapt.

This paper is based on the findings of a master's study that considered the holistic design activity of selected experienced fashion designers in Johannesburg through activity theory to describe their communal creative practice. One of the key findings of the study was that solving design problems is at the core of fashion design activity and practice. A recommendation of the study for further research, identified that more emphasis needs to be placed on exploring where design problems emerge and how experienced designers approach problems. As we move into the fourth industrial revolution it is necessary to reflect on the problems managed by expert designers, as business sustainability becomes increasingly reliant on the designer's ability to adapt through strategic thinking. Therefore, this paper relates fashion designers' design outcomes, to the problem domains situated within Buchanan's (1998) strategic modes of thinking.

Due to the complexity of design activity, activity theory provides a suitable framework to collect and analyse data as a basis for further reflection of design problems that emerge in practice. In this paper, we reflect on the findings of a master's study by firstly discussing design reasoning as proposed by Dorst (2019; 2011), secondly, reflect on the multidimensional design problems in fashion design through the dimensions of activity theory and thirdly, correlate design problems experienced by fashion designers with Buchanan's (1998) problem placement domains to identify the implications for fashion design education.

Design reasoning and problem framing

The necessity of understanding fashion design problem domains

"In its evolution from craft to sophisticated professional practice and academic discipline, design has had to find novel ways to deal with the ever-increasing complexity of the problems

it needed to address" (Dorst, 2019, p. 118). In his article *Design beyond Design,* Dorst (2019) suggests that the best way to manage complex design problems is to start by considering the desired outcome. A basic human reasoning process considers the elements the world is made up of (the *what* of the design problem) and the connections between these elements (the *how* of the design problem) to realise the desired outcome (Dorst, 2019, p. 119).

Dorst (2011) explains that problem-solving reasoning patterns emerge according to what is known and unknown. The reasoning pattern of deduction can be applied when the *what* (products or services) and the *how* (working principles) aspects are known and can be tested in different contexts. Induction is inherently a creative process when the *what* and the *desired outcome* is known requiring the development of the working principles to achieve the desired outcome. Abduction-1 reasoning is required when the desired outcome is known as well as the *how* placing the design effort on *what* needs to be developed. Abduction-2 or design abduction requires the designer to start with the only known factor to solve the design problem (the desired outcome) requiring the designer to develop the working principles as well as the product or service.

If the best way to manage complex design problems is to understand the desired outcome, this begs the question, what is the desired outcome of fashion designs? When reviewing some of the most recent publications used in fashion education, very few insights into the outcomes of professional fashion designers are offered. Dieffenbacher (2020) explores the diverse strategies and thinking behind students' design collections. This publication opens education up to more flexible, adaptive, and individual design processes, but the research is based on students not practising designers, and like the work of McKelvey and Munslow (2012) focuses on design process and methods. Faerm (2017) offers insight into the fundamentals of fashion design processes, design influences, and developing good aesthetics through fabric selection, including a focus on the user through customer profiles, but the depth lies in the process and methods of design, not the design outcome. We see the same focus in Sorger and Udale's (2017) publication explaining the fashion design process. These texts have been vital in fashion design education to clarify known principles of how the fashion design process works but they do not explore the complex and multidimensional outcomes of practising fashion designers.

An overview of multidimensional design problems

There is some evidence in literature that there is a need to identify what constitutes multidimensional design problems. In fashion marketing Posner (2015) suggests that fashion design should have multidimensional outcomes to create a strategy for product profitability. Designers should create well-constructed collections that not only consider aesthetics, construction, and fit but also add value to the customer to differentiate strategically it from similar products offered by competitors. Posner (2015, pp. 42-43) based these suggested outcomes on Theodore Levitt's total product concept model. Levitt (1983) proposed that consumers purchase more than just a core product. They are motivated by everything in the product that offers them value. The total product concept that was developed from Levitt's work includes four outcomes:

1. **The generic or core product:** the basic product, such as a jacket or dress.
2. **The actual or expected product:** the expected design specifications, styling, and design details as well as price and quality.
3. **The total product:** everything the customer receives, the added value such as branding, emotional and intangible benefits.
4. **The potential product:** what the product could offer in the future.

If we consider the previous observations in this paper, that fashion design education is predominantly concerned with garment aesthetics and construction it appears that students only design at the first two levels of Levitt's total product concept model, the core and actual product. This is one approach from a marketing perspective on the different outcomes that need to be incorporated into a design problem, but it does not sufficiently deal with the complexity of the fashion design outcome. It does, however, highlight that design problems are multidimensional and that more research needs to be done to explore the problem domains within these dimensions.

Press and Cooper (2016, pp. 35-37) support this idea from a design perspective. They claim that organisations use design to increase their competitive advantage, placing focus on the need for design to be strategic to increase profitability. According to Press and Cooper (2016:, pp. 35-37, 64) design should dictate how products are manufactured, retailed, visualised, and communicated for sales. All of these factors contribute to the total product experience, and the value the product adds to give it a competitive advantage *if* approached strategically design contributes to the economic success of industries and companies (Press & Cooper, 2016, p. 40). These are typically problems of strategy that emerged in the latter half of the twentieth century and are important within the context of business. Buchanan (2019, p. 16), however, suggests that design has the potential to add value by integrating human experience forming the nexus where all disciplines of design can add value to the desired outcome. We suggest that to progress the idea of strategy (action) into human interaction (thought) that considers why designers do what they do, one first needs to identify what the activities of practising fashion designers are.

Activity theory as a suitable framework for studying the fashion design problem

Dorst (2008, p. 5) stated that to describe something as complex as design you need a framework that can describe the object of the activity (the design outcome), the actor, the context as well as the activities within the design process. In response to Dorst and Kuutti (2011, p. 5) identified activity theory as a suitable framework to describe design. Activity theory originated in psychology, where it was used as a cultural-historical theory to describe activity, but it has since developed into a multidisciplinary framework and has gained acceptance in Design Research (Engeström, 1999, p. 19; Kuutti, 2011, p. 5). The activity theory model identifies multiple perspectives on an activity related to its subject, tool, object, community, division of labour, and rules to provide a comprehensive description of real-world practices (Anthony, 2012, p. 338; Nardi, 1997, p. 8). It is important to note that the objective of the activity is at the centre of activity theory, and when relating this to this paper it means that the design outcome is at the heart of the design activity highlighting the need for designers to identify and solve interrelated problems in different domains using tools to achieve the desired outcome.

The components of the activity system can be applied to fashion design, to observe and describe the activity of practising fashion designers. Although the original study that the paper is based on described each of the activity system components, this paper will only focus on the findings related to the object, the design outcome, and problem domains. Figure 4 shows how the Activity system components were adapted to fashion design activity.
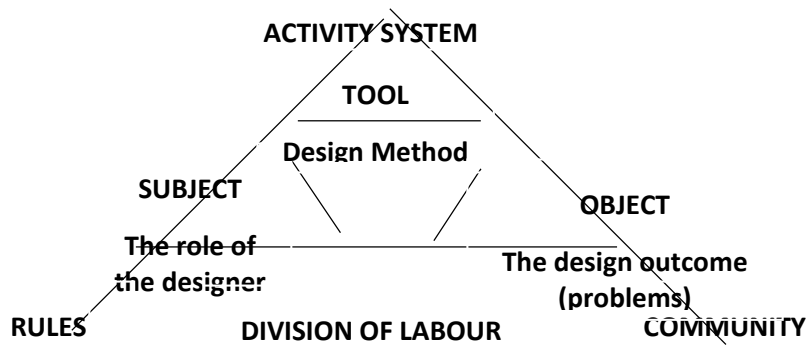
ACTIVITY SYSTEM

TOOL

Design Method

SUBJECT

The role of
the designer

OBJECT

The design outcome
(problems)

RULES   DIVISION OF LABOUR   COMMUNITY

Figure 4: An adapted fashion activity system model, 2021 (Figure adapted by the author)

Research methodology

This paper reflects on the design outcomes and domains of design problems that experienced Johannesburg fashion designers are faced with daily to provide further recommendations for fashion design practice and education. To identify the design outcomes, the original study used a multiple-case study. Activity theory was used as a theoretical framework to collect and analyse the data. In this paper the findings of the multiple case study are reflected on and correlated with Buchanan's (1998, p. 13) design thinking matrix that identifies four orders of design used to interpret the problem domains that designers manage.
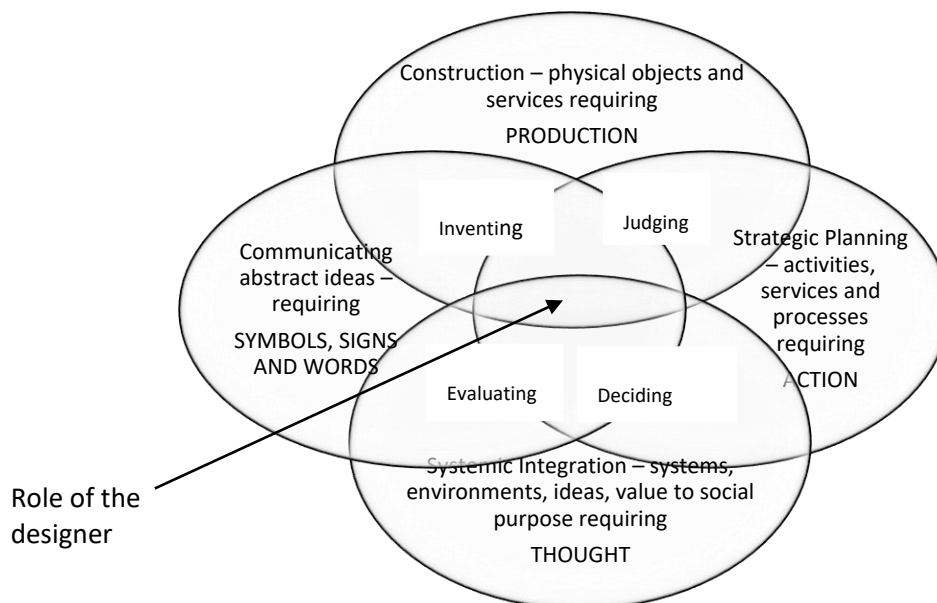

Figure 5: Problem placement areas (Adaption of Buchanan's (1998:13) four orders of design matrix)

Research approach and methodology

This paper adopts a qualitative approach to interpret and correlate the findings of a multiple-case study that was conducted to identify the design outcome and problem domains of selected fashion designers in Johannesburg through the lens of activity theory. A qualitative approach was taken to develop detailed descriptions of how the participants (subjects) involved interpreting their individual experiences of fashion design activity. Three cases were selected in the original study as the findings reached a point of saturation and redundancy and

sufficient similarities emerged for conclusions to be made. The professional fashion designers were selected for the case based on their expertise as defined by the following criteria:

- The designer must currently be practising;
- The designer must have been practising for eight or more years;
- The designer must own their own business such as a fashion label or studio;
- The designer must have exhibited on multiple platforms such as fashion weeks; and
- The designer must have received recognition for their work through awards and/or media publicity.

A multiple-case study method was used to identify similarities through replication of three cases to validate the findings (Yin, 2014, p. 57). Each of the three designer's activity system models, as outlined in activity theory was viewed as an individual case. The findings of each individual case were first coded and analysed and then compared in a cross-case analysis to identify similarities within the designers' activity systems. The findings that emerged from this analysis were collated and clustered together to describe the designer's design outcomes. These findings are compared to Buchanan's (1998) problem domains to identify the problem domains of the fashion designers. Observations of the designers and their teams working in their studios were conducted through field notes and video recordings. Semi-structured interviews were also used as a data collection method to observe and describe each individual case. The triangulation of data from multiple collection methods allowed for in-depth and credible findings to emerge (Yin, 2014, p. 17; Merriam, 2009, p. 40).
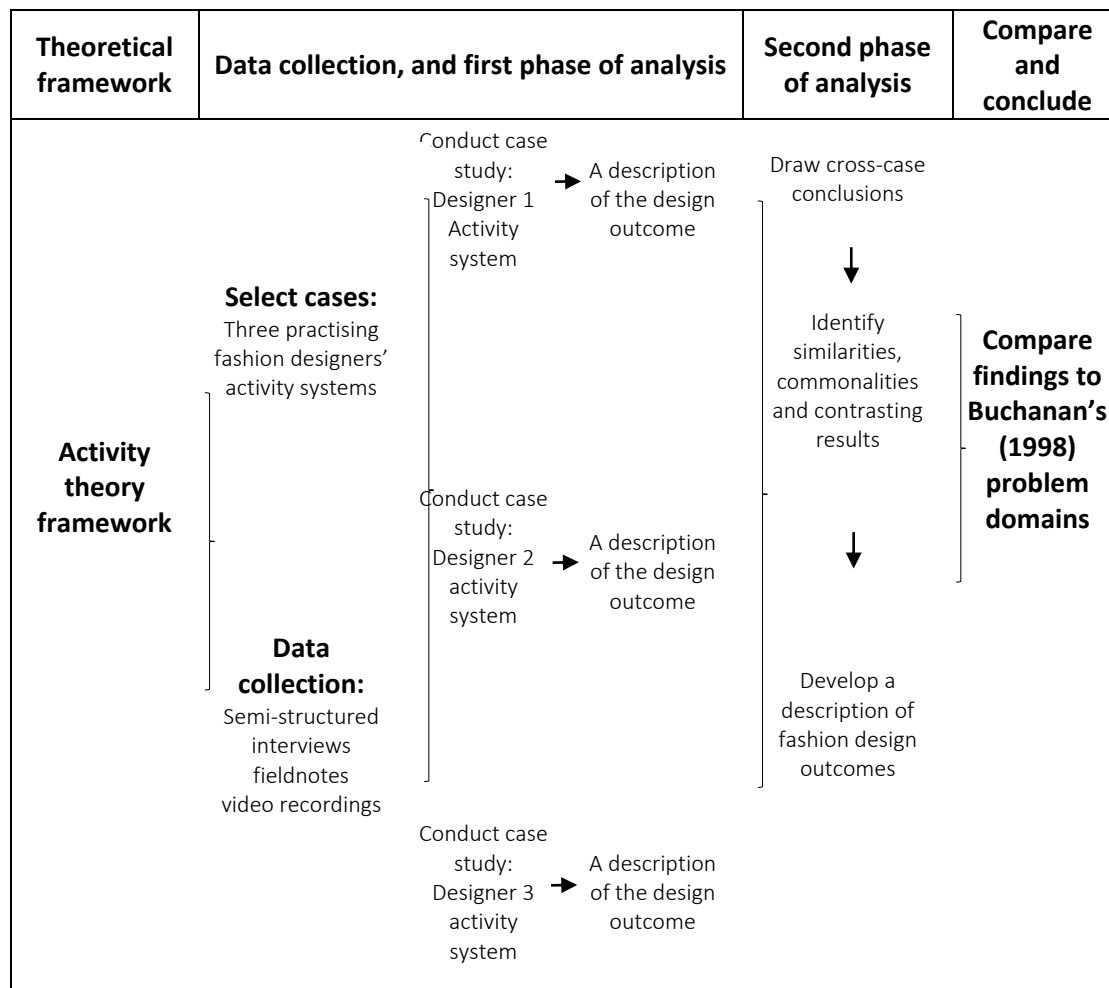

Figure 6: Multiple-case study method, 2021 (Figure adapted by the authors from Yin, 2014, p. 60)

Ethics

This paper is based on the finding of a master's study whereby permission to use the data was requested and granted by the departmental research committee within the Department of Fashion Design at the University of Johannesburg. Participation in the study was voluntary and consent was obtained from all participants through signed consent forms. An information letter was provided to all of the participants, to disclose the nature and the purpose of the research. The names of all participants are kept anonymous to keep their identities confidential. Furthermore, the interviews were transcribed verbatim to ensure that the data was accurately and truthfully disclosed.

Discussion of results

Fashion design outcomes

Fashion designers manage open-complex problems throughout the design process whereby each attempt to solve a problem changes the understanding of what the problem may actually be (the object and desired outcome). It is, therefore, necessary to review the interrelatedness of the outcomes that make up the complex design problem. This study reflects on the interrelated design outcomes of three fashion designers working on different types of design projects, namely commercial collections for an online shop and boutique, a runway collection for the South African Fashion Week, costumes for a theatre production, and bespoke designs for individual clients. This means that the data that emerged is relevant to a variety of design contexts. The participants in the study were concerned with five outcomes during all these projects, namely:

Aesthetic design. Aesthetic design refers to the distinct style and look that a designer is known for. Aesthetics are best described through the elements of design, colour, texture (fabric types), form (garment silhouette), and the shape of garment details.

Conceptual design. The design concept refers to the creative or strategic idea that informs the design of either an individual garment or a collection of garments. In this study, the design concepts were mainly emotionally and creatively motivated.

Functional design. Functional design considers how a garment services the wearer in relation to comfort, fit, and quality. The functionality of a garment refers to both how the garment is experienced by the wearer in terms of comfort, fit, and the practicality of garment details such as the pockets and openings, as well as the quality of the construction.

Profitable design. Profitable design is concerned with understanding consumers 'needs within a specific market category as well as their perceived value of a garment at a specific price point (the added benefits the consumer is receiving). Understanding the consumers' needs and expectations within the market category that the product is being designed for, is a strategic approach to increase profitability. This design outcome is also concerned with increasing sales by addressing as many consumers within the market category as possible by offering a variety of garments and garment styles. Lastly, this outcome is also concerned with promoting the products through various external communication strategies.

Responsible design. Responsible design is firstly concerned with sustainable design practices such as the reduction of waste during the manufacturing process and the sourcing of fabrics that have a low environmental impact both when it is produced and discarded. Secondly, this outcome is concerned with social responsibility and addressing social dilemmas.

It is important to note that these outcomes are interrelated and form part of a holistic and complex design problem. Profitability encompasses the design problem as the main objective of the designer, while also providing the strategic direction that informs the other design outcomes. The design concept can be informed by any of the other outcomes, runway collections often have a creative concept based on an idea, theme, or trend but the concept can also refer to the strategy behind a collection (this is not necessarily a runway collection). Aesthetics is the starting point or basis of a garment or collection and also strategically informs the design as each of the designer's brands has a distinct aesthetic that they are known for. The functionality of the garment can be related to aesthetics, as the fit of the garment directly correlates to the visual proportions of the body. The quality, fit, serviceability, and practicality of a garment directly motivate the consumer's purchasing decision that again relates to the strategy for increasing profitability. It is thus apparent that the design outcomes are interrelated and need to be considered holistically. Design problems are often described as being complex, this is evident if you consider multidimensional and interrelated outcomes that all form part of one design problem.

Fashion design problem domains

As the fashion industry moves into the fourth industrial revolution, we need to recognise the problems that designers are faced with, to understand how fashion design education can adapt to prepare students for the substantive challenges in an evolving professional practice. In particular, we need to understand the different design outcomes and how they correlate to the different design problem domains. Buchanan (1998, p. 13) argues that there are four main domains or four orders of design where problem definition and solution need to be considered simultaneously as solutions actioned in one domain may impact all other domains. These domains presented by Buchanan (1998:13) have been linked to fashion design outcomes as follows:

Symbolic and visual communication. The inventing of signs, symbols, and images are used as a representation for communicating information, ideas, and arguments. In particular, communicating the design idea forms part of the design process and promoting the design outcome of brand development. Some examples of these activities include sketching, draping, and computer-aided design (CAD) modelling as part of the design process and runway shows, social media, look books, and magazine adverts as part of promoting their brand identity to name a few. Within this domain of design, designers are required to interact with communication designers, journalists, and organisers of fashion events.

Construction of material objects. By judging physical products, the correct materials, and skills required to construct garment ranges that meet the physical, social, psychological, and cultural needs of their current and potential customers. Within this domain of design, designers interact with customer feedback, wholesalers, and valued teams consisting of pattern makers, technical designers, and manufacturers.

Strategic planning of activities and organisational services. Deciding on the most efficient action to reach specific objectives including meeting the needs of consumers within a specific market category, improving garment quality, manufacturing, and the consideration of how to improve their business and services to contribute to making the human experience more meaningful and satisfying.

Systemic integration of complex systems for living, working, learning, and playing. Evaluating the parts that make up complex systems and environments, such as the lived experiences of human beings that consider, reaching new understanding and social purpose regarding

appropriate activity such as sustainable design and design aimed at solving social dilemmas as well as products requiring collaboration and interaction with other disciplines.

Buchanan (1998) highlights that it is important to note that these four domains of thought, action, products, and signs are interrelated and cannot be separated as problem framing in one domain will impact all other domains that have developed within contemporary society. The practices of fashion designers can be considered through these problem domains as they are necessary to run a business and to maintain a brand. These problem domains reflect the typical supply chain of a fashion system including symbolic and visual communication, design and construction, and strategy that is informed by action to meet customer needs. Within the context of the twenty-first century and 4IR, the domain of systemic integration presents the designer with the increasing challenges that need to navigate between the concerns of human-centred design, the inclusion of diverse participants, user experience design, and the negotiation of different values held by diverse participants to establish a middle ground to achieve what is possible requiring thought (Buchanan 2019:19).

Conclusion

As the fashion industry moves into the fourth industrial revolution, it is important to understand the complex problems that designers are faced with and to reflect on these problems within fashion education to ensure that students are adequately prepared to meet the challenges this new era presents. As more practical and technical skills become mechanised, the role of the designer as a strategist and thinker becomes increasingly important. As highlighted in the findings, the ability to design strategically for commercial success is informed by the different design outcomes and problem domains that make up the complex design problem. As such, this paper recommends that more emphasis should be placed on the different design outcomes and problem domains that designers manage.

The design outcomes and problem domains within education

A recommendation that has emerged from this study, is that the identified design outcomes and problem domains can be used to inform design theory, practice, and education. Traditional fashion design education often emphasises aesthetics and technical construction before strategically deciding on where the design effort needs to be focused within complex integrated systems. In the review of popular texts used in fashion education, it was evident that these texts, although vital to understand the fashion design process and method, do not explore the complex and multidimensional outcomes of practising fashion designers beyond aesthetics and functions. This has led to design problems within education that lack a strategic focus within a complex and integrated system. Furthermore, there is a need for theory that can underpin and inform the problems given in design modules and briefs, to ensure that they have the necessary strategic and systemic focus.

The nodes of problem placement in this paper can be used by educators to help identify suitable design theories that can be used to inform design briefs, such as human-centred design and experience design. For example, design thinking can be applied as an approach to involve -consumers' perspectives and understand their lived experience, product expectations, and how they interact with garments both as part of functional design and to integrate their social purpose and values. Sustainable design practices (such as upcycling, recycling, zero-waste design, and products with a circular lifecycle) and design for the common good (designs that improve the social, economic, and environmental condition of a consumer), can be applied to address consumers social purpose and values as part of responsible design

and systemic integration. This is to name just a few examples, demonstrating how educators can use the problem outcomes and domains to identify suitable theoretical and methodological approaches that can underpin design briefs.

This study found that the biggest challenge faced by experienced fashion designers is their inability to define the complexity of the design problem. The contribution of this paper is to identify the design outcomes and problem domains that forms part of experienced fashion designers strategic thinking. As the fashion industry moves into the fourth industrial revolution the role of the designer as a strategist and thinker becomes increasingly important. As such this paper recommends that more emphasis should be placed in practice and education on the different design outcomes and problem domains that fashion designers manage to foster the strategic thinking that will allow fashion designers to adapt to any context of complexity.

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