

FUNCTIONAL FASHION DESIGN: TRANSFORMING PROCESSES TO IMPROVE OUTCOMES

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Functional fashion is an area of design where clothing and accessories result from a process of designing that is dictated by the user's specific requirements: functionality, wearability and desirability.

Moving beyond the mainstream fashion industry, driven by seasonal collections, to a user-centred functional "design thinking" approach, a number of fashion designers are tapping into specific user groups to concentrate on a more customised clothing design framework. With the user at the centre of functional clothing design activities, wearable products are designed, tested and manufactured to address detailed wearer needs and preferences. Consideration is given to details such as physical abilities, body shapes and sensory capacity. This user-centred process works towards fulfilling consumer needs that are often overlooked by ready-to-wear fashion – which is essentially a product of the designer's creative endeavours, informed by mass-market design assumptions such as standardised sizing and trends where consumer satisfaction is primarily confirmed by the rate of purchase.

THE FUNCTIONAL CLOTHING DESIGN PROCESS

The functional clothing design process – as initially outlined by American apparel design professor Susan Watkins in *Clothing: The Portable Environment*¹, and revisited in her *Functional Clothing Design: From Sportswear to Spacesuits*² – originated in a demand for clothing to meet a specific need. Watkins developed her problem-solving design process to help students engage in apparel design. Watkins places substantial emphasis on user needs; this requires the designer to have a full understanding of the user; their environment and their activity before beginning the design process.³

Once the creative problem is identified and defined, a design solution is thoroughly explored through many areas of possible investigation. Literature searches to find out more about the scope of the problem, as well as observations and interviews involving clients/users in real-life environments, help identify user preferences and tolerances. Existing clothing designs are reviewed through market surveys. The data collected from these varied assessments becomes design criteria. Garment specification priorities are set – and sometimes discovered – through the ranking of design criteria. Prototype garments (toiles) are developed and wear-tested to assess whether they meet the established criteria. Throughout the development process, the user remains key in providing feedback which implements change, refining the design.

Apparel design educators Jane Lamb and M Jo Kallal have developed a model for assessing user needs and wants which emphasises the development of creative thinking. Functional, expressive and aesthetic (FEA) user needs and wants are assessed to inform the identification of the creative problem and design criteria. "We realized that we wanted a general framework that could be applied to the design of any type of apparel, including garments intended for people whose needs are not routinely met in the marketplace and therefore have been considered special."⁴

At the core of this model is the intended target customer (user). Clarification is sought through research into user needs and wants within the context of the intended environment and activity. Culture envelops the target customer

in Lamb and Kallal's FEA Consumer Needs Model: "Culture influences what users consider as acceptable options for resolving various design problems."⁵ Designers must be aware of cultural implications when developing a user profile, demonstrating an understanding of the customer's needs regarding clothing.

The FEA model establishes the requirements and desires of the target customer as design criteria, and these are identified through research into functional, expressive and aesthetic factors. Functional considerations relate to utility, such as protection required for the use-situation, thermal and tactile comfort, overall fit and ease of movement. Expressive considerations require the designer to be aware of the message the garment is communicating about the wearer: Aesthetics deals with the 'beauty' of the garment, a factor which is consistent with mainstream fashion design processes and includes consideration of design elements such as silhouette, texture, colour and pattern. Lamb and Kallal's model places an additional focus on aesthetics; meeting customer-specific differences through addressing body and garment relationships, the designer considers the user's specific body shape, physical abilities and sensory interactions with apparel products.⁶

Lamb and Kallal point out that their FEA model can be applied to existing design process models – specifically, those developed by Hanks, Belliston and Edwards (1977) and Koberg and Bagnall (1981). Combining features of these existing models, Lamb and Kallal describe a stepped design process, beginning with problem identification, preliminary ideas, design refinement, prototype development and evaluation of the new garment, and ending with implementation. This design process model has affinities with the FEA model, as it too may return at any stage to refine prior steps – they rarely proceed in a linear manner. Applying the FEA model at the problem identification stage, the designer defines the FEA criteria for the target consumer in the context of the problem situation. Then later during the toile evaluation process, each prototype is judged on its success in meeting the functional, expressive and aesthetic needs specified for the garment.⁷

When the functionality or performance of the garment or accessory is at the forefront of the design process, clothing design may readily cross over into the domains of medicine, protective wear and performance sports. Adjustments can be made through enhancing body shape and providing support and contouring, which help address the issue of wearer vanity as well as performance, enabling and therefore improving the quality of life for many elderly, infant and disabled users.⁸

EMERGING FUNCTIONAL FASHION DESIGNERS

In recent years, a number of emerging fashion designers have been making positive contributions through taking up the challenge of tackling functional clothing problems. Seeking to solve complex or less common wear issues, these contemporary designers often work with clients who live differently, think differently and consume differently – they may be individuals who are differently abled and/or differently shaped. Historically, these fashion consumers have repeatedly reported that it is a struggle to source clothing and accessories to fit their specific body shapes, physical abilities and sensory capacities; this inability to access appropriate apparel frequently impacts on their daily life.⁹

Lucy Jones, a recent graduate of the Parsons School of Design, The New School, New York, credits her introduction to solution-based garment design to one of her lecturers, who challenged her to "design to change the world." Jones was inspired by the needs of a disabled relative, and began interacting with a number of potential fashion consumers who use wheelchairs.¹⁰ Through user-centred research methodologies including focus groups and interviews, she identified that the anatomical needs of this potential target market were as important to them as aesthetic considerations and emotional comfort. Jones set about designing a collection specifically for self-propelled, seated, disabled people in collaboration with a fit model (user). She called her graduate collection "Seated Design." Jones' modular pieced garments won her the prestigious Parsons Womenswear Designer of the Year Award in 2015. Since graduating, Jones has continued to build her career as a functional fashion designer, working towards "marrying style and function in the realm of mainstream fashion."¹¹

Tokyo-based fashion designer Takafumia Tsuruta recognised a need for clothing that is both fashionable and functional. His mission statement is to create fashion that everyone can enjoy – both the wearer and those viewing his garments.¹² For example, his Braille-inspired garments incorporate varied sizes of polka dots as pattern, using the Braille tactile writing system to communicate to both the wearers and onlookers. Readers of Braille are able to touch the garments and enjoy the slogans, whereas sighted viewers can ponder the subversive, large-scale, strategically grouped polka dot messages from a distance. Tsuruta debuted his label Tenbo (Feel Stylish) during Mercedes-Benz Fashion Week, Tokyo, 2015. Tenbo has been described as a quirky label with designs that are trendy and easy to wear for both disabled and able-bodied consumers.¹³ While Tsuruta clearly has fun with scale, pattern and colour, his label has purposeful design features such as oversized knee pockets for wheelchair users to store their phones. Many of his garments are reversible, enabling the wearer to reflect their current mood through fashion. Tsuruta incorporates his clients in his design process, often specialising in made-to-measure alongside his more mainstream off-the-rack garments.¹⁴

FUNCTIONAL DESIGN QUALIFICATIONS

The Open Style Lab (OSL) based at the Massachusetts Institute of Technology (MIT) is an international design centre which specialises in delivering research-based educational experiences, one of which is offered as part of the Parsons School of Design MFA Design and Technology programme. Founded in 2013, the OSL provides the opportunity for its learners to engage in design-for-all through inclusive design thinking methods. Each ten-week course utilises an interdisciplinary approach involving working in teams to develop accessible clothing for a user with a disability, such as multiple sclerosis, muscular dystrophy, neurological problems, or for a wheelchair user. Each collaborative team comprises three postgraduate students studying either design, engineering or occupational therapy. Lecturers, mentors and judges from academia and industry help the student teams to connect with clients and manufacturers while they are working to develop a functioning, wearable solution with a purposeful aesthetic.¹⁵

One focus of this design challenge is the requirement for the teams to incorporate emerging assistive technologies and healthcare solutions within their design process. Once a team is formed (through an application process), they are introduced to their client and asked to collaboratively evaluate the client's needs. After thorough analysis of these specific needs has been completed, design opportunities are identified. A research question is formulated with guidance from academic and industry mentors. Fabrication and construction of prototype design iterations are explored, followed by user testing. All the stages of the design process involve the client, both inside the OSL facilities and in real-world situations. A public showcase of the final wearable solutions is judged as a competition at the completion of the course.¹⁶

Through education, the OSL is working to increase awareness of the importance of making style accessible to people of all abilities, by encouraging emerging designers to use multi-disciplinary, innovative design thinking practices alongside a user. Within this teaching environment, student designers are encouraged to consider not only how their design outcome meets the fashion needs of people with a certain disability, but also to assess the potential of moving beyond this niche market to a larger market.¹⁷

FUNCTION MEETS FASHION

The New York-based fashion label ADAY prides itself on investing in technically advanced activewear fabrications. Their multi-disciplinary design team aims to merge the two worlds of fashion and function. Other contemporary fashion labels' experience of borrowing high-tech textiles (originally intended for extreme sports) for ready-to-wear and haute couture collections inspired ADAY to design and develop an apparel range using fabrications that can perform as activewear, but that also mimic the natural qualities of their favourite classic fabrics, such as silk. ADAY produces fashionable clothing incorporating the (albeit hidden) active properties of technologically advanced fabrics and construction methods, enhanced stretch and bonded seams, skilfully panelled fitted garments, and leggings

incorporating hidden pockets to carry a phone and bankcards. These collections are described as beautiful as well as useful. Garments in the ADAY range claim to blend the wear comfort of extreme sportswear with the look of leather and silk.¹⁸

As ADAY strives to produce versatile fashion that will survive the test of time, their collections are season-less, with a sustainability focus. The house uses small production runs with short cycles, thus giving the design team the ability to act on feedback from wearers quickly, enabling them to constantly refine, improve and update their products. Through the ADAY website, users are also invited to get involved in the design process; as "wear testers" they can give feedback on wearables ADAY is currently working on.¹⁹

There can be no question that aesthetically pleasing design is an integral part of success in the fashion industry.²⁰ In the traditional fashion design process, the designer knows best and users' or consumers' needs and desires are not considered as worthy of serious investigation, as target market segments are predetermined. However, fashion designers and educators who are engaging in innovative functional design thinking practices are likely to experience a more inclusive relationship with consumers. This provides opportunities to broaden the scope of wearer groups beyond those that they may interact with as part of the traditional fashion design system and to produce apparel and other wearables that meet the functional, expressive and aesthetic needs of consumers. The mainstream fashion industry could learn much from such user-centred design approaches in the light of its expressed desire to act more inclusively and ethically.

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