

Cross-Cultural Innovative Ski Wear Design from the Perspective of Cultural Symbol Translation

Lihui Ren, Chen Yang, Zhuguo Zhou

How to cite: Ren L, Yang C, Zhou Z. Cross-Cultural Innovative Ski Wear Design from the Perspective of Cultural Symbol Translation. Textile & Leather Review. 2024; 7:1346-1359.

<https://doi.org/10.31881/TLR.2024.161>

How to link: <https://doi.org/10.31881/TLR.2024.161>

Published: 19 November 2024



Cross-Cultural Innovative Ski Wear Design from the Perspective of Cultural Symbol Translation

Lihui REN¹, Chen YANG^{2*}, Zhuguo ZHOU¹

¹Guangdong Polytechnic, No. 20, Lanshi 2nd Road, Chancheng District, Foshan City, Guangdong Province, 528041, Foshan City, China

²Jiangxi Institute of Fashion Technology, Jiangxi Centre for Modern Apparel Engineering and Technology, No. 108, Lihu Middle Avenue, Xiangtang Economic Development Zone, 330201, Nanchang City, China

*comradeyang@qq.com

Article

<https://doi.org/10.31881/TLR.2024.161>

Received 20 October 2024; Accepted 13 November 2024; Published 19 November 2024

ABSTRACT

This article delves into the application of Morris' semiotics in innovative clothing design, specifically focusing on constructing a model for the translation and regeneration of cultural symbols in ski wear. By meticulously examining the semantics, syntactics, and pragmatics of cultural symbols, it derives essential styling elements, structural components, and functional attributes for the design. Notably, the study also highlights the gap in research regarding the fusion of local elements into foreign-introduced products, such as ski wear. By exploring the current research status and development trends of cultural symbol theory within the context of innovative ski wear design, this study not only expands the scope of ideas for personalized innovative design of ski wear products but also discusses the potential for extending these conclusions to other types of clothing, thereby contributing to a broader understanding of innovative design practices across the apparel industry.

KEYWORDS

cultural symbols, translation conversion, ski wear design

INTRODUCTION

Modern ski wear not only needs to meet the basic functions such as warmth, waterproofness, breathable and safety, but also requires to constantly innovate in the design and appearance to meet the growing needs of consumers. By studying the current situation and development trend of innovative ski service design, a design concept based on user needs and cultural symbol translation is proposed. The aim is to integrate user needs with local cultural symbols, providing new ideas and methods for ski wear design, thereby enhancing its market competitiveness.

The cultural symbol is a complex concept, which includes not only material cultural symbols, such as artefacts, architecture, and clothing, but also non-material cultural symbols like language, customs, and values. They convey their underlying cultural meanings through symbols, metaphors, images, and other forms, possessing strong local significance.

The application of semiotics to clothing-related research was first introduced by Roland Barthes [1]. Starting from the linguistic expressions in fashion magazines, he explored the significations of clothing symbols, laying the theoretical foundation for subsequent research on clothing semiotics. Kumatia also applied semiotics to the field of clothing. He proposed interpreting the cultural characteristics of each nation's headdress through three aspects: figurative, abstract, and image motif [2].

Originating in cold regions, warmth retention was the primary consideration. With the popularization of the concept of a strong sports nation, the wearing scope is no longer limited to sports venues, and the visual requirements in ski wear design have increased [3]. Consequently, from its initial focus on warmth and protection to the pursuit of fashion and individuality, and now to the trends of environmental protection and technological intelligence, innovative design of ski wear has become an important branch in the field of sportswear design.

Research on innovative ski wear design has received increasing attention. Renowned sports and fashion brands have also begun to venture into the innovative design of ski wear, covering various aspects including design, structure, materials and so on [4].

In terms of design element integration, many designers have transformed the heavy and monotonous image by boldly attempting to incorporate fashion elements into ski wear. Bright colour combinations, unique pattern designs, and popular cut styles allow ski wear to emit a fashionable charm while maintaining functionality [5]. Li-Ning has also launched multiple innovative designs of ski wear, combining elements such as red and yellow, which are highly valued in Chinese culture, with fashionable elements. These designs have been warmly welcomed by consumers, as shown in Figure 1.



Figure 1. Fashion design of ski clothes [6]

In terms of structural design, Goldwin from Japan has incorporated the loose structure of traditional kimono into areas such as the shoulders, elbows, and knees, maintaining sufficient ease to ensure

flexibility during movement. At the same time, attention to details such as adding ventilation openings under the arms, and optimizing the neckline and cuff designs, ensures that wearers can enjoy a comfortable experience while skiing, as shown in Figure 2.



Figure 2. Detailed design of the ski suit [7]

Ski wear also reflects the technological competition among various countries. Considering the particularity of skiing, the materials used in ski wear typically possess characteristics such as air permeability and water resistance [8]. A classic example is Rossignol's DEPART men's and women's ski jackets, which are crafted from double-layer nylon with a DWR (Durable Water Repellent) coating, achieving a waterproof rating of up to 20,000 mm. The incorporation of breathable zippers further enhances the garment's moisture permeability, ensuring a comfortable experience for the wearer during skiing. Bogner's Sport ski wear series features DWR treatment on the fabric surface and full seam taping, making the ski wear not only resistant to the effects of snow and ice during sports but also capable of withstanding extreme weather conditions like heavy wind, rain, or intermittent storms, thereby broadening the versatility of the clothing.

The introduction of smart heating technology allows ski wear to automatically adjust its internal temperature based on the ambient temperature and the wearer's needs, maintaining a comfortable wearing experience [9]. Some emerging technologies, such as Augmented Reality and Virtual Reality, have also been applied in the design of ski wear, endowing it with more intelligent functions. For example, Anta Sports launched a new ski wear series in 2019, adopting high-tech materials and design concepts aimed at enhancing athletes' comfort and performance during competitions [10].

Overall, the research and development of innovative designs in ski wear exhibit trends of both internationalization and localization. In the future, the innovative design of ski wear will increasingly focus on aspects such as ergonomics, intelligence, sustainability and other aspects.

SEMIOTICS INVOLVEMENT IN SKI WEAR PRODUCT DESIGN RESEARCH

Charles William Morris divided semiotics into three branches: semantics, syntactic, and pragmatics, studying symbols from the dimensions of meaning, form, and use, respectively. His theory laid the foundation for modern semiotics. Designers actively employ the concepts of signifier and signified to interpret cultural symbols, helping to uncover the relationships between the intrinsic meaning and extrinsic representation of products [11].

The reason for introducing Morris' semiotic theory into the innovative design of ski wear is twofold. Firstly, as an imported product, the overall design of ski wear is relatively weak, with few local cultural elements. Secondly, beyond aesthetics and basic needs, clothing serves as a means of self-expression for the wearer. Clothing design is a unity of form and content. By introducing Charles Morris' semiotic theory and interpreting cultural symbols from the dimensions of semantics, syntactic, and pragmatics, designers can explore new design approaches and methods throughout the design process of ski wear, providing guidance and reference for innovative clothing design.

As a carrier of culture and contemporary civilization, incorporating semiotic thought and methods into the innovative design of ski wear, driven by demand, expands the application scenarios of ski wear and opens up diversified clothing types [12]. Firstly, from the semantic dimension, the design is analyzed by studying the representation of cultural symbols behind ski wear and the cultural, artistic, and social values they reflect, interpreting both explicit and implicit semantics based on the semiotic concepts of signifier and signified. Secondly, from the syntactic dimension, design elements are selected by analyzing the morphology and composition of elements, extracting symbolic forms, and endowing them with product cognitive value, transforming them into product forms that can be perceived, accepted, and understood. Finally, from the pragmatic dimension, the application scenarios of cultural and creative products are considered, analyzing product pain points from the perspective of audience reception and perceiving cultural connotations from symbol consumption. The research model is depicted in Figure 3.

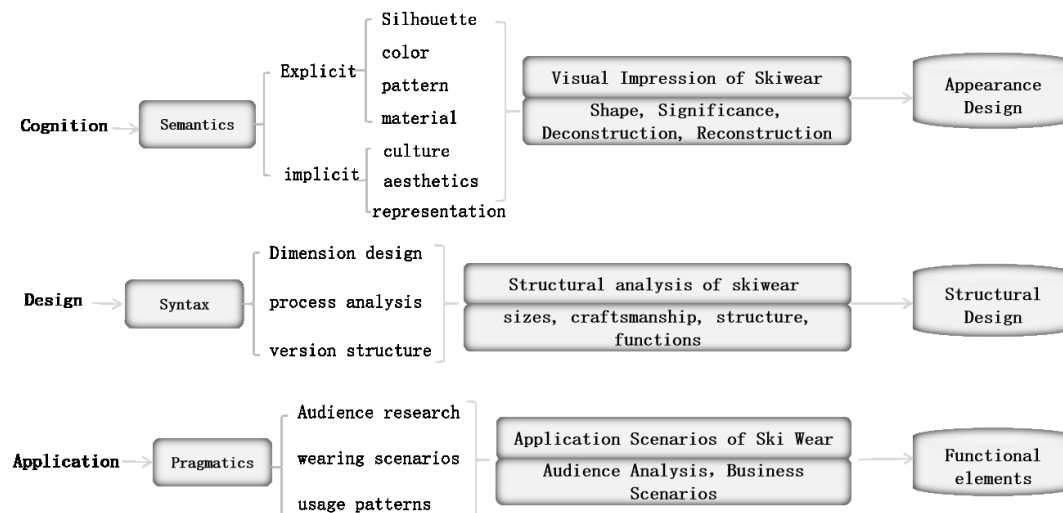


Figure 3. Research model of ski suit

ANALYSIS OF THE APPLICATION OF CULTURAL SYMBOLS IN INNOVATIVE SKI WEAR DESIGN

This model can be directly applied to the design and production process of ski wear, enhancing the cultural value and recognition of products through symbolic thought and methods. At the same time, by deeply exploring the cultural symbols behind ski wear, brands can construct unique cultural narratives and brand images, thereby enhancing brand competitiveness. The pragmatic dimension analysis in the model helps enterprises identify the needs of different audience groups, enabling precise market segmentation and positioning. The symbolic thought and methods provide new ideas for innovative ski wear design, assisting enterprises in continuously launching new products that meet market demands.

Principles for Ski wear Design from a Cross-Cultural perspective

Cultural Compatibility Principle. Firstly, the design should respect and embody the uniqueness of different cultures while avoiding cultural conflicts. Designers can gain insights into the needs and aesthetics of users from diverse cultural backgrounds, thereby reflecting respect and inclusivity for multiculturalism in their designs.

Symbolic Principle. Cultural symbols are the key to conveying cultural information. In the innovative design of ski wear, the reasonable use of cultural symbols can enrich the cultural connotation of the design. For example, representative cultural elements can be integrated into the patterns, colours, and other aspects of the clothing.

Combination of Practicality and Aesthetics Principle. The design of ski wear should consider both practicality and aesthetic demands. Based on meeting practical requirements such as warmth and waterproofing, the aesthetic value of ski wear can be enhanced through innovative designs in fabric, structure, colour and other designs.

Technology Update Principle. With advancements in technology, the application of new materials and processes provides more possibilities for the design of ski wear. Designers should keep abreast of industry technological developments and apply the latest technological achievements to their designs, thereby improving the performance and user experience of ski wear.

User Participation Principle. Emphasize the user participation in the design process, guiding the design through user feedback and demands. Designers can understand user needs through research, user testing, and other means, thereby reflecting user expectations and demands in their designs.

Semantic Analysis of Ski Wear Styling

Interpreting the cultural connotations of ski wear involves studying the representation of cultural symbols and the cultural, artistic, and social values they reflect. The semantic dimension includes the signifier and the signified, or the explicit and implicit semantics of cultural symbols. By understanding the form and meaning of cultural symbols, designers can extract cultural features and transform cultural symbols through deconstruction and reconstruction methods, thereby determining the styling of the product [14].

As functional winter clothing, ski wear generally has a larger silhouette. By selecting images from Eastern and Western fashion shows and deconstructing and reconstructing them, the silhouette of ski wear can be presented in a flattened manner. In the extraction process, design details are retained to ensure that the core meaning characteristics of cultural symbols are not lost. Based on current trends, typical elements are analyzed, including three-dimensional pocket designs that enhance the expansion of the silhouette and enrich the layered look of the overall outfit; long ribbons that enhance the sense of movement in the clothing; and the use of accessories such as masks, hats, and scarves to form a "face-covering" functional style. Finally, simplifying and summarizing the features, three types—A-shape, H-shape, and O-shape—are extracted, as shown in Figure 4.



Figure 4. Profile semantics

Originating from cyberpunk culture, the functional or "utility" style of clothing emerged in a setting where technological advancements led to a deteriorating environment. To adapt to this new environment, clothing became more functional [15]. Colours were matched with the industrial and mechanical aesthetic, with a primary focus on dark tones for visual effects.

Analyzing colour trends, we can use a colour extraction app like "Color" to decompose and extract colours, performing an initial colour transformation. By pairing these colours with varying shades of grey, we can enhance the richness of the colour palette, as shown in Figure 5.

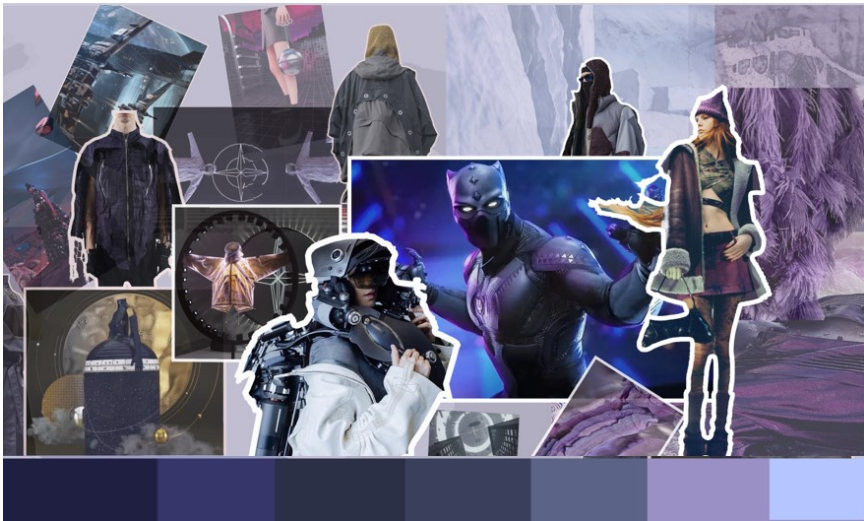
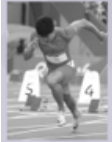


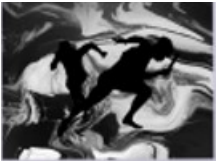







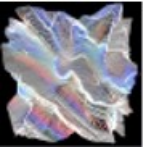




Figure 5. Refining the colour

From an aesthetic perspective, pattern design, rooted in nature and human culture, conveys the designer's emotional experiences and spiritual aspirations. As a representative of sportswear, Ski wear is associated with keywords such as speed, power, and competition. The inspiration is drawn from images of Su Bingtian breaking records and scenes of cheetahs running, which, after artistic processing, align well with the functional or "utility" style. Select traditional Chinese silhouettes to process these images and integrate future elements like sound waves and curves from the meta-universe and virtual worlds, a new set of images is formed, as shown in Table 1.

Table 1. For pattern semantics

keyword	Inspiration picture art processing process			The final pattern
velocity				
				
physical strength				
coming				

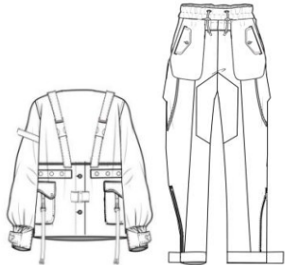





When designing ski wear, two key factors to consider for the materials are warmth and mobility. In competitive settings, the fabric choice for ski jumping suits significantly impacts aerodynamic performance during the flight phase. This requires a comprehensive consideration of factors such as lift, drag, and lift-to-drag ratio for the overall system of the athlete and their skis. For instance, the Jinpai research and development team developed a polyester fabric for branded ski underwear. Given the application scenarios of ski wear, the fabric must possess functions such as moisture absorption, perspiration, quick drying, warmth retention, and good stretch performance. These elements need to be further explored and verified through experiments.

Structural design of ski wear from a Syntactic Perspective

Syntactics studies the constituent relationships between various elements of a product, encompassing both internal structure and external expression. The interpretation from a syntactic dimension includes overall layout, internal structure, and related cultural relationships. Firstly, the spatial position, layout, and proportion of the product are determined. Secondly, the structural relationships of the product's local details are established. When dealing with product series, it is even more important to investigate the structural relationships among each product within the series. The syntactic perspective focuses on analyzing the target audience of the product, extracting symbolic elements that conform to the audience's body type, and endowing the product with cognitive value. Narrative and scenic symbolic elements can be incorporated into the product form to enhance the audience's cultural identification and emotional experience.

Modern ski wear typically appears in set forms. Taking displays in sports retail stores like Decathlon as an example, ski suits, hats, masks, neck warmers, and gloves often appear as a series. In structural design, they are divided into three forms: upper and lower, inner and outer, primary and secondary, as shown in Table 2.

Table 2. Structural design of ski clothes

	Convention	Variation
up-down structure		
Internal and external structure		
Primary and secondary structure		

To ensure that ski wear meets the requirements of sports applications, designers must conduct a thorough analysis of the user's characteristics before encoding cultural elements. Only then can they proceed with the encoding process. In terms of craftsmanship, a combination of technological tools and handicraft techniques is employed. This involves pairing knitted sweaters as inner layers with digital prints on outer layers, utilizing processes such as embossing, embroidery, and waterproofing. This approach not only aligns with current fashion trends but also carries on traditional craftsmanship, as outlined in Figure 6.

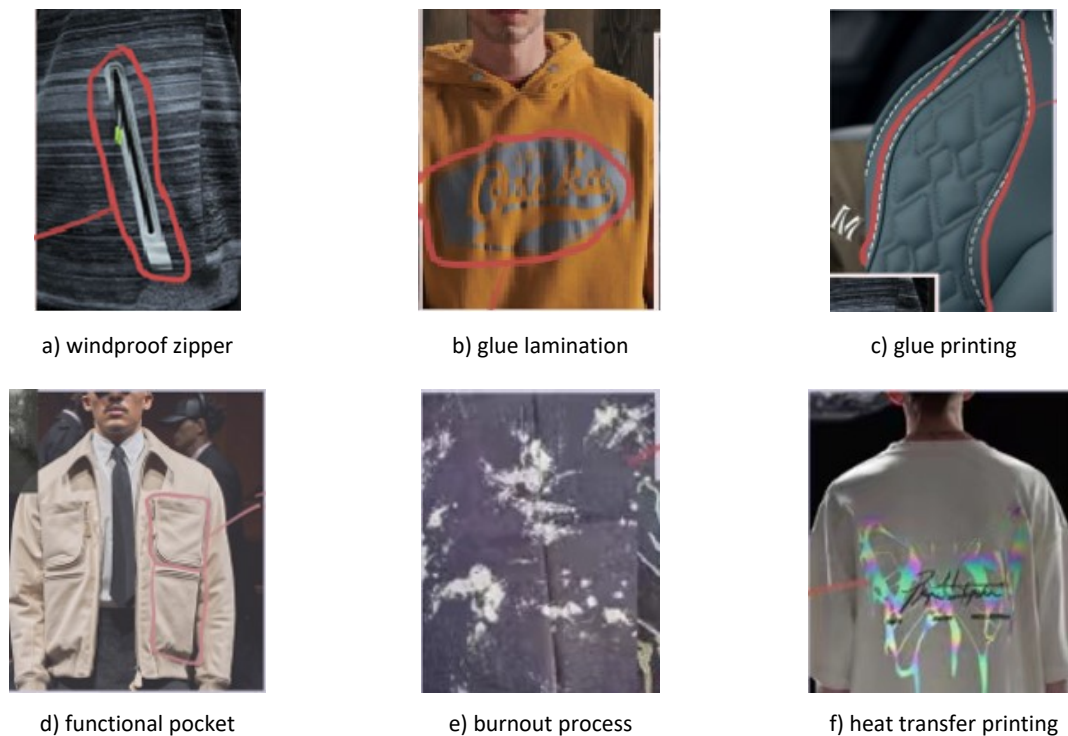


Figure 6. Refining of process symbols

Pragmatics defining functional elements of Ski wear

Pragmatics refers to the study of the relationship between products and users, encompassing how products are used and their role in daily life. The interpretation from a pragmatic dimension includes social environment, usage methods, and usage contexts, involving the user's thought patterns and usage backgrounds. It necessitates considering whether the design elements of the product align with the user's habits and usage environment.

User demand analysis is a crucial preliminary step in the cultural symbol translation within innovative ski wear design. At this stage, it is first necessary to clarify the individualized needs of users, including requirements for the warmth, waterproofing, comfort, and aesthetics of ski wear. By collecting and analyzing information from market surveys, user research, and competitor products, an understanding of users' expectations regarding the functionality and aesthetics of ski wear can be gained. Additionally, it is essential to delve into the cultural background, consumption habits, and aesthetic concepts of the target user group to provide more precise guidance for the translation of cultural symbols.

Design oriented towards user needs. Based on the user demand analysis mentioned in the previous section, a design towards user needs can be formulated. This involves integrating users' actual needs and expectations into the design process of ski wear and achieving the translation of cultural symbols through innovative design techniques and craftsmanship technologies. For example, for the Chinese market, attempts can be made to incorporate traditional Chinese cultural elements (such as cloud

patterns, and dragon patterns) into the design of ski wear to satisfy users' aesthetic and emotional connection needs.

Diversified innovative technologies. Utilizing advanced innovative technologies, such as 3D printing and virtual reality, can provide more translation methods for cultural symbols. For instance, through 3D printing technology, specific cultural symbols can be rendered on the surface of ski wear, enhancing its uniqueness and recognizability. Virtual reality technology, on the other hand, can simulate different cultural scenarios, helping designers better integrate cultural symbols with ski wear.

Design process considering user experience. User experience plays a vital role in the design process. Therefore, during the translation of cultural symbols, constant attention must be paid to the user's experiential feelings to satisfy their physiological, psychological, and emotional needs. For example, in response to deficiencies identified in user experience, the effectiveness of cultural symbol translation can be continuously optimized through feedback and iterative design.

The translation and application of cultural symbols in innovative ski wear design need to be thoroughly explored from a user demand perspective. By clarifying users' actual needs and usage scenarios, more targeted design solutions can be formulated to achieve effective translation and application of cultural symbols in ski wear, as shown in Figure 7.



Figure 7. Innovative design practice of ski clothes

CONCLUSION

This article constructs a model for the translation and regeneration of symbols in ski wear based on Morris' semiotics. It begins by interpreting the development history of ski wear and tracing the cultural inheritance of clothing. Subsequently, it decodes the cultural connotations behind ski wear from three dimensions: semantics, syntactic, and pragmatics. The design process of ski wear is then guided by incorporating design methodologies, with cultural symbols being decoded through semantic extraction of styling elements, syntactic dissection of structural elements, and pragmatic definition of functional elements. By exploring the theoretical foundation of cultural symbols and the current research

status and development trends of innovative ski wear design both domestically and internationally, it is found that the application of cultural symbols is of great significance in enhancing the personalization and ethnic characteristics of ski wear. During the collection and organization of cultural symbols, it was discovered that cultural symbols from different regions possess unique charm and stylistic features, which provide important inspiration for the innovative design of ski wear.

Author Contributions

Conceptualization – Ren L., Yang C., and Zhou Z.; methodology – Ren L. and Yang C.; formal analysis – Ren L., Yang C., and Zhou Z.; investigation – Ren L.; resources – Zhou Z.; writing-original draft preparation – Yang C. and Ren L.; writing-review and editing – Ren L.; visualization – Yang C.; supervision – Yang C. All authors have read and agreed to the published version of the manuscript.

Conflicts of Interest

The authors declare no conflict of interest.

Funding

This paper was funded by the Guangdong Province Higher Vocational Education Teaching Quality and Teaching Reform Project, grant number 2023JG346.

REFERENCES

- [1] Barthes R. The fashion system. Los Angeles: University of California Press; 1990.
- [2] Amivi Kumatia K. The symbolic meaning of clothing regalia of chiefs in Anlo State in the Volta Region of Ghana. University of Cape Coast; 2018.
- [3] Häkkinen J, Colley A. Designing for Interaction in Outdoor Winter Sports. In: Scott McCrickard D, Jones M, Stelter TL, editors. HCI Outdoors: Theory, Design, Methods and Applications. 2020. p. 263-274. https://doi.org/10.1007/978-3-030-45289-6_14
- [4] Gupta D. Design and engineering of functional clothing. Indian Journal of Fibre & Textile Research. 2011; 36:327-335.
- [5] Herrmann C, Juraschek M, Burggräf P, Kara S. Urban production: State of the art and future trends for urban factories. CIRP Annals. 2020; 69(2):764-787. <https://doi.org/10.1016/j.cirp.2020.05.003>
- [6] Morgan A. The best ski jackets of 2024 reviewed by a ski expert. The telegraph; 2024. Available from: <https://www.telegraph.co.uk/recommended/leisure/best-ski-jackets/>
- [7] Lee B. Goldwin's Fall Line Has Minimalist Techwear for Skiers, Runners & More. Field Mag; 2023. Available from: <https://www.fieldmag.com/articles/goldwin-fall-winter-2023-collection>

-
- [8] Sharma P, Singh D, Dave V, editors. *Fundamentals of Nano-Textile Science*. CRC Press; 2022.
- [9] Saidi A, Gauvin C, Ladhari S, Nguyen-Tri P. Advanced functional materials for intelligent thermoregulation in personal protective equipment. *Polymers*. 2021; 13(21):3711.
<https://doi.org/10.3390/polym13213711>
- [10] Çetin K, Bayburtlu I. Functional Materials As An Innovative Approach To Sportswear Design. *Design, Art, Industry*. 2023; 10:032-044.
<http://www.daijournal.ru/index.php/DAI/article/view/115>
- [11] Phare D. *Exploring representation: A semiotic approach to understanding the image as a carrier of design meaning in a collective design context [thesis]*. University of Newcastle; 2016.
- [12] Usenyuk-Kravchuk S, Garin N, Trofimenko A, Kukanov D. Arctic design: revisiting traditional fur clothing within the daily routine of reindeer nomads. *Heliyon*. 2020; 6(2).
<https://doi.org/10.1016/j.heliyon.2020.e03355>
- [13] Denning A. *Skiing into modernity: a cultural and environmental history*. University of California Press; 2014.
- [14] Qiu X, Zhong M, Lin Y, Li Y, Zhang Q, Xu F, Wang MI. Application and Research of Hakka Building Codes in Cultural and Creative Product Design. *Innovation on Design and Culture*. 2023; 2(1):8-14.
<https://doi.org/10.35745/idc2023v02.01.0002>
- [15] Tekcan E. *Dressing the possible futures: The body and dress in social science fiction narratives*. 2023.