# The Case of Fish Skin: A Historical Material Assimilated as an Innovative Sustainable Material for Fashion

Elisa Palomino and Katrín María Káradóttir

#### **Abstract**

The use of fish skin to create articles of clothing is an ancient tradition in Arctic societies located along rivers and coasts, and there is evidence of fish skin leather production in Scandinavia, Alaska, Hokkaido, Japan, Northeast China, and Siberia. This chapter is a study of northern indigenous fish skin heritage and builds connections among anthropology, ethnography, and material culture to address current global issues of fashion sustainability. It critically examines the historical application of the fish-skin craft and investigates the relationship of Arctic indigenous people with fish and the environment, fish skin fashion in the Arctic, the importance of women and fish skin art, the disappearance of the craft. Another topic is how the use of fish skin by aboriginal Arctic people has recently been assimilated as an innovative sustainable material for fashion because of its low environmental impact. Fish skins are sourced from the food industry, using waste, applying the principle of circular economy. The case study of the fashion designer John Galliano's use of fish leather for garments in his Autumn/Winter 2002 collection is presented, situating the use of fish leather within the context of the luxury industry. The skins were sourced at Atlantic Leather, the world's biggest fish skin tannery, based in Iceland, and the authors describe the contemporary use of fish skin in the fashion industry. The research proposes the sustainable development of fish skin as an innovative raw material for the fashion industry in order to encourage more sustainable fashion practices. A qualitative methodology has been employed for its relevance in studying evolving processes. An arts-based inquiry was chosen to create new knowledge conceived by those who actively participate in its making. Methodologically, the approach was practice-led. Emphasis was placed on 'hands on interaction' with the fish skin and processes.

# Keywords

Artic – indigenous peoples of the Arctic – fish skin craft – traditional knowledge – food industry by-product – waste – fashion – haute couture – sustainable materials – John Galliano

#### 1 Introduction: Historical Context

The use of fish skin to create articles of clothing is an ancient tradition shared by Arctic societies along rivers and coasts. The area covers the communities in the northern worlds to their complete circumpolar extent, from Iceland to the Sami region in Scandinavia – Sweden, Norway, and Finland – through the Russian Far East, Northeast China, the traditional Ainu islands of Hokkaido in Japan and Sakhalin in Russia, to the North American Arctic in the east. The natural resources available locally influenced the traditional Arctic lifestyle and economic activity. Even the location of settlements was determined by fishing. Arctic people

settled by the seashore, gulfs, and river mouths where fish were abundant, near lagoons, and in the middle of the islands close to the spawning rivers.<sup>1</sup>

Before synthetic fibres were invented, people clothed themselves with local natural materials available in their surroundings.<sup>2</sup> People in the coastal regions sourced their materials from animals that were necessary for their survival, such as salmon, and they used their skins as a clothing material.<sup>3</sup> With the abundance of fish in the Arctic rivers and with the indigenous peoples' close affinity to the land and its resources, it followed naturally for fish skin to become widely used as a 'fabric' in the construction of garments.<sup>4</sup> According to the anthropologist Sergei Shirokogoroff, the adaptation to the local conditions and needs of a hunting-gatherer mode of life is done using the materials found-at-hand, in the most economical way.<sup>5</sup> Until the first decades of the twentieth century, Arctic people lived mainly by fishing and hunting. Despite the commercial contacts that gave them access to cotton and silk fabrics, the use of animal skins, in this case fish skin, was still used until very recently.<sup>6</sup>

Clothing in cold areas must above all meet the basic needs of humans, protecting them from snow, frost, wind, and rain. Fish skin meets these requirements, for it is light, solid, durable, and waterproof, while retaining the heat which is essential in harsh Arctic climatic conditions. Coats made of fish skins were used as everyday indoor garments for both women and men. For the outdoor activities, several coats were worn at once, and, in very cold weather, they were worn over furs, as protection against wind and moisture.

# 2 Disappearance of the Craft

There are several reasons for the disappearance of the fish skin craft. Overfishing and water pollution have caused fish stocks to drop, and many Arctic aboriginals have turned to farming and tourism to make a living. Sustainable practices were applied in salmon fishing by Arctic communities for thousands of years but discarding this principle in modern times has led to the excessive depletion and near extinction of these species.

Salmon has been of great importance to the local economies and to the aboriginal cultures of Native North Atlantic in the USA and Canada, Northeast China, Japan, and Russia, but national governments similarly mistreated the local populations by, among other things, limiting or restricting their access to traditional fishing trying to force them to adopt non-traditional ways of life such farming through assimilation.<sup>10</sup>

The shortage of raw materials and better access to modern materials like cotton and silk have also challenged the preservation of the fish skin craft. Moreover, recently, women, who

<sup>&</sup>lt;sup>1</sup> SPb-Ainu Project Group, Ainu Collections of Peter the Great museum of Anthropology and Ethnography Russian Academy of Sciences Catalogue (Tokyo: Shofukan Hokkaido Kikanshi-insta tsusho, 1998).

<sup>&</sup>lt;sup>2</sup> Jiao Feng, 'Keeping the Legend of the Fish Skin Tribe Alive.' *China Today*. 59, no. 12 (2010), accessed 16 October 2018 from: http://www.chinatoday.com.cn/ctenglish/se/txt/201202/02/content\_423289.htm

<sup>&</sup>lt;sup>3</sup> Gudmund Hatt, *Arctic Skin Clothing in Eurasia and America: An Ethnographic Study* (Wisconsin: University of Wisconsin Press, 1969).

<sup>&</sup>lt;sup>4</sup> William Fitzhugh, *Inua: Spirit World of the Bering Sea Eskimo* (Washington D.C: Smithsonian Institution Press, 1982).

<sup>&</sup>lt;sup>5</sup> Sergei Shirokogoroff, *Psychomental Complex of the Tungus* (London: Kegan Paul, Trench, Trubner & Co., 1935).

<sup>&</sup>lt;sup>6</sup> Daria Cevoli and Elena Glebova, *Esthétiques de l'Amour* (Paris: Flamarion, 2015).

<sup>&</sup>lt;sup>7</sup> Ibid.

<sup>&</sup>lt;sup>8</sup> Ibid. .

<sup>&</sup>lt;sup>9</sup> Lin Qi, 'Look Who's Tipping the Scales in Favour of Skinny Suits,' *China Daily* (2007), accessed 16 October 2018 from: http://www.chinadaily.com.cn/cndy/2007-07/10/content 5422759.htm.

<sup>&</sup>lt;sup>10</sup> Judith Roche and Meg McHutchison, *First Fish, First People: Salmon Tales of the North Pacific Rim* (Washington: University of Washington Press, 1998).

were responsible for the production of garments, had other priorities and had to substitute fish skin with less time-consuming materials available in the stores that possessed "the same" qualities. In this way, traditional knowledge rapidly lost its importance. <sup>11</sup>According to Shirokogoroff, if a natural resource is reduced, the skills and technology connected to it may be lost. <sup>12</sup> This is seen in contemporary fashion practices as well, where new cheaper materials are incorporated, and older garments and processes disappear.

The use of alternative materials such as fish skin (Illustration 1), has the potential not only to serve our material needs but also reduce resource consumption of over-consumed materials such conventional leather and could lead to more locally sensitive production, more regional sourced materials, more local jobs ,and healthier and socially robust environments. <sup>13</sup>

#### ILLUSTRATION 1. Salmon Fish Skins at Atlantic Leather Tannery © 2018, Nathalie Malric

### 3 Arctic Indigenous People: Their Relationship with Fish and the Environment

The relationship with fish plays an important role in maintaining the identities of Artic indigenous people and creating important ties with their environment. In Arctic indigenous cultures, people have fished sustainably for thousands of years. They employed fishing practices that simultaneously harvested and maintained fish populations. They took just what they needed to spend the winter, making sure they did not waste anything. In respect for the fish, they used every bit of it: the head, the insides, the bones and the skin. <sup>14</sup> From indigenous peoples, we learn that there is a way to honour the killed animal by making something beautiful of its skin.

Fish, the "daily bread" of the Arctic ethnic groups, also takes a fundamental place in the spirituality of these peoples, and their ancient myths emphasise how life comes from water. <sup>15</sup> In the animist thought of the Arctic, humans appear only as a typology of being amongst others. There is no concept of hierarchy amongst species, human and animal. People and nature constitute one single whole. From this awareness of a unity of essence between beings, flows the respectful relations of humans with nature. <sup>16</sup>

Unfortunately, the Arctic is undergoing dramatic climate changes, threatening indigenous peoples, impacting their food security and traditional knowledge systems as they rely on fishing activities for their physical, cultural and spiritual well-being. Nowadays, the dominant, rational, mechanistic worldview positions humans as separate from and in control of nature and animals. This thinking had led to an overstepping of nature's limits.<sup>17</sup>

According to Edwina Ehrman, Curator of Textiles and Fashion at the V&A, everything we wear is fashioned from the raw materials found in the world around us, but we are less in touch with "real" nature than ever before. We need to think more deeply about the relationship between fashion and nature, since fashion's demands threaten the environment and endanger flora, fauna and human communities. <sup>18</sup> If fashion is to contribute to our

<sup>&</sup>lt;sup>11</sup> Torunn Klokkernes, *Skin Processing Technology in Eurasian Reindeer Cultures*. PhD Dissertation. (Denmark: Langelands Museum, 2007).

<sup>&</sup>lt;sup>12</sup> Shirokogoroff, Psychomental Complex of the Tungus.

<sup>&</sup>lt;sup>13</sup> Kate Fletcher, Sustainable Fashion and Textiles; Design Journeys. 2nd ed. (London: Earthscan, 2014).

<sup>&</sup>lt;sup>14</sup> Pat Hickman, *Innerskins/Outerskins: Gut and Fish Skin* (San Francisco: The San Francisco Craft and Folk-Art Museum, 1987).

<sup>&</sup>lt;sup>15</sup>Cevoli and Glebova, *Esthétiques de l'Amour*.

<sup>16</sup> Ibid.

<sup>&</sup>lt;sup>17</sup> Dilys Williams, Ten Years of Centre of Sustainable Fashion (London: CSF, 2018).

<sup>&</sup>lt;sup>18</sup> Edwina Ehrman, Fashioned from Nature (London: Victoria & Albert Museum, 2018).

happiness, we need to find ways in which we can harmonise with nature through fashion, bypassing the need to take more from nature.<sup>19</sup>

#### 4 Fish Skin as an Innovative Sustainable Material for Fashion

It is of vital importance to understand how fashion, which can be such a magnificent manifestation of being human, has deviated from the fundamental human goal of thriving to biodiversity loss and ecosystem degradation. We need to examine the production and processing of raw materials in the fashion business and to address the effect they have on the environment and the earth's flora and fauna.<sup>20</sup>

The use of fish skin by aboriginal Arctic people has recently been assimilated as an innovative sustainable material for fashion due to its low environmental impact. Fish skins are sourced from the food industry, using waste and applying the principle of circular economy. None of the fish used to make this alternative leather are farmed for their hides (Illustration 2). They require no extra land, water, fertilisers, or pesticides to produce them and they have low environmental impact, unlike conventional leather. <sup>21</sup> The processing of fish skin leather avoids throwing the fish skins into the ocean and can significantly reduce marine pollution and sustainably protect marine ecosystems in order to achieve healthy and productive oceans.

# ILLUSTRATION 2. Salmon fish skins through the tanning process at Atlantic Leather tannery © 2018, Nathalie Malric

In luxury fashion, innovation, new materials, and traceability are critical. A traceability system, defined by ISO (9001:2015), records and follows the trail as products, parts, materials, and services come from suppliers and are processed and ultimately distributed as final products and services. Many luxury brands are waking up to possibilities in material innovation and sustainability. The innovation consist on researching which raw materials could be used that are sustainable and biodegradable.

According to Kate Fletcher, the fashion sustainability scholar, a strategy of materials diversity aims to temper the fibres market dominance so that alternative, more resource-efficient and culturally responsive fibres can flourish. <sup>22</sup> This strategy of materials diversity involves replacing some of the dominant or high-impact materials such cow leather with alternatives such as low-chemical vegetable tanned fish leather (Illustration3).

#### ILLUSTRATION 3. Bark tree vegetable tanned fish skin © 2018, Nathalie Malric

# 5 The Importance of Women and Fish Skin in the Arctic

For centuries, skin processing in Arctic cultures has been an important craft and economic activity related to the women's sphere. Knowledge is passed down through generations, mainly through the female side of the family. These women represent their community, are strong tradition bearers of knowledge of traditional fish-skin tanning technology and are artists in their field.<sup>23</sup> In the past, almost anyone could acquire fish. Women, children, and the

<sup>&</sup>lt;sup>19</sup> Williams, Ten Years of Centre of Sustainable Fashion.

<sup>&</sup>lt;sup>20</sup> Ehrman, Fashioned from Nature.

<sup>&</sup>lt;sup>21</sup> Bel Jacobs, 'The Future of Leather is Plant-Based,' *HowNow Magazine*, 22 June 2018, accessed 19 September 2019, https://www.hownowmagazine.com/innovation/2018/6/22/the-future-of-leather-is-plant-based).

<sup>&</sup>lt;sup>22</sup> Kate Fletcher, Sustainable Fashion and Textiles; Design Journeys. 2nd ed. (London: Earthscan, 2014).

<sup>&</sup>lt;sup>23</sup> Klokkernes, Skin Processing Technology in Eurasian Reindeer Cultures.

elderly were all capable of setting nets to harvest fish from the sea and rivers.<sup>24</sup> Fish skin garments gave women the freedom to provide themselves the raw material and making the garments by themselves. In contrast, when making garments out of other animal hides, women did all the construction while the responsibility of the male hunters was to provide the raw materials.

The transformation of animal skin into clothing was the result of a process of both secular and spiritual know-how. Women were said to be in a sacred contact with the fish while making fish skin garments. Women seamstresses were the catalysts for this "magic" of daily life that they had learned to master from an early age, from time-held traditions. <sup>25</sup> According to Daria Cevoli, Curator in charge of Asian Collections at the Musée du Quai Branly, Paris, the woman who cuts the fish and scrapes it (Illustration 4), enters into a close relationship with the material in a long, physical process. In this work of preparation and sewing of clothing using the fish skin, the thoughts, the fears, and the hopes of the women and the entire community of humans are present. This invisible magic is crafted onto the fish skin adorning it with colours, shapes and motifs (Illustration 5). <sup>26</sup>

#### ILLUSTRATION 4. Softening the fish skin with the jaw of a moose © 2018, Nathalie Malric

Likewise, in contemporary fashion by cultivating an emotional and experiential connection between person and object, we can disrupt our dependency on consumption of new goods to construct meaning and our sense of self.<sup>27</sup> In haute couture, the treasured *petites mains* (tiny hands), are women artisans who labour in local Parisian workshops, that have changed little in a century, doing the elaborate handwork that transforms a designer's dress into a sumptuous showpiece of luxury. The *petites mains* are part of a community of artisans making the magic of the couture come true season after season.

ILLUSTRATION 5. Gilyak woman marriage coat from the lower Amur river region, near Vladivostok made of 60 pacific salmons. V&A Museum. Ca 1900 © 2019, Elisa Palomino

#### **6** Fish Skin Fashion in the Arctic

Fashion is a universal human passion that finds strong expression in native cultures. <sup>28</sup> The Arctic fish skin clothing is a feast of high fashion, combining economy and harmony of materials and textures. Seamstresses prepare and assemble skins of different species, with ancestral know-how. Garment construction is done according to the fish skin shape, every skin is fitted to the next like a puzzle where nothing gets wasted. Long ago, these ancestral artisans mastered the contemporary concept of zero waste in cutting, an alternative pattern making technique where the pattern pieces are fit together so that no fabric is wasted during the cutting phase. Each item of fish skin clothing is prepared to exalt the surface rendering of the scales, the flexibility of the texture, the play of colours and lights, conscious of working on formerly living creature. The end result could be light and fluid like silk, heavy and fluffy like fur, or translucent and hard like a carapace. <sup>29</sup>

<sup>27</sup> Jonathan Chapman, *Emotionally Durable Design: Objects, Experiences and Empathy*.(London: Earthscan, 2005).

<sup>&</sup>lt;sup>24</sup> Fran Reed, 'Part Two,' *Arctic Clothing of North America -Alaska, Canada, Greenland* (Montreal: McGill Queens University press, 2000).

<sup>&</sup>lt;sup>25</sup> Cevoli and Glebova, *Esthétiques de l'Amour*.

<sup>&</sup>lt;sup>26</sup> Ibid.

<sup>&</sup>lt;sup>28</sup> William Fitzhugh and Valerie Chaussonnet, *Anthropology of the North Pacific Rim*.(Washington: Smithsonian Institution Press, 1994).

<sup>&</sup>lt;sup>29</sup> Cevoli and Glebova, *Esthétiques de l'Amour*.

Traditional fish skin clothing was designed as a protection against the weather, but also as a symbolic barrier. Clothes were adorned with protective patterns, especially on the back, acting as a protective shield against the evil spirits, thought to arrive from behind without being seen. For Arctic indigenous peoples, the motifs and ornaments, like the art of arranging them, would have the purpose to please spirits.

Cevoli recognises that the fish skin designer/seamstress is therefore endowed with a powerful skill. She uses her knowledge in the sense of a balance between visible and invisible realities for the well-being of those around her. In this sense, a good seamstress is always perceived as a woman with a special talent, particularly recognised and put forward in these societies. The use of embroidery could even help the dead person find, alone in the absence of a shaman, the path to the world of the dead. <sup>30</sup>

In the world of haute couture fashion, not only the creativity and innovation of the fashion designer is key to the development of a collection, but the capability of an echelon of *petites mains* behind the designer. Like the Arctic fish skin craftspeople, Paris couture houses are part of a tight community of traditional artisans who are responsible for the production of the seasonal collections. Unfortunately, these incredibly skilled women are slowly losing their rank and status amongst Parisian fashion houses as well as their artisanal methods. Their noble craftsmanship and their respect for tradition is dying against cheaper materials and newer processes.

Likewise, the fish skin handcraft is in danger of extinction. Handmade traditional fish skin clothing has become, in many Arctic societies, special occasion attire. As market goods have replaced traditional fish skin clothing, the skills needed to create these remarkable items have diminished. The making process of this traditional handcraft is so complicated that it is difficult to accomplish without specialized training and this will hinder the inheritance of the craft to a certain extent.

# 7 Case study: The Use of Fish Skin by John Galliano

This research draws on one of the author's (Palomino) previous industry experience as a fashion designer working in the luxury industry for John Galliano. For the prêt-à-porter Autumn/Winter 2002 collection, we designed fish leather garments and accessories. We used salmon, perch, and cod skins sourced at Atlantic Leather, the world's biggest fish skin tannery, based in Iceland, situating the use of fish leather within the context of the luxury industry.

In 2002, Galliano had reached the status in LVMH for a substantial budget for actual research travel, as opposed to imaginary travel through library sources, visiting China, Japan, India and Russia, creating more ambitious collections, stimulated by the colours, shapes and textures that he saw.<sup>31</sup>

His Autumn/Winter2002 collection was inspired by a family of Inuit travelling back in time to a 1950s Christian Dior's catwalk. The notion of nomadic tribes, gathering garments like mementos, pervades this collection. Galliano combined 1950s silhouettes with eclectic materials such fish skin, bleached denim, knits brocades, and patchworks. A diversity of techniques was employed on top of this materials - plissé, embroidery, and hand-painting.

Financial support from the LVMH group for Galliano's collections provided him with the creative freedom to experiment with materials and volumes. The Galliano brand was a laboratory to explore new ideas which were subsequently revisited at Christian Dior prêt-à-porter and haute couture collections.

30 Ibid

<sup>&</sup>lt;sup>31</sup> Claire Wilcox, John Galliano: Unseen (London: Thames & Hudson, 2017).

Once the season theme was shared by John with the members of his team, the starting point for the creation process was the fabric selection. Both at Galliano and Christian Dior, John used the most sophisticated fabrics and the rarest materials. During the 2001 winter season, the Icelandic Atlantic Leather tannery, showed his exotic fish leather for the first time at Premiere Vision fabric fair.

Atlantic Leather, located on the north coast of Iceland, has processed fish leather since 1994, based on the ancient-Icelandic tradition of making shoes from the skins of catfish (Illustration 6). The tannery supports local economies by sourcing from sustainably managed Nordic fish farming. The manufacturing of fish skin leather works with three aspects of sustainability: the economic benefit of creating value from waste, the social benefit of reconciling sustainability with fashionably exotic fish skin, and the environmental benefit of producing skins without damaging biodiversity or endangering animals.

#### ILLUSTRATION 6. Atlantic leather fish skin tannery © 2018, Nathalie Malric

Galliano's fabric buyer's role was to inspire John with her fabric choice every season, a difficult task since he had access and had already used the most beautiful and sophisticated fabrics available in the market. That season, Marie Cecile Genin, the fabric buyer at John Galliano's studio managed to excite John with the choice of fish skin as a new material, which fitted perfectly with the Inuit theme, and the exotic but humble skins were used in skirts, trousers and bags across the collection (Illustration 7). Later, the fish skins were enhanced through traditional hand embroideries done by the treasured *petites mains*, artisans from the historical embroidery workshops of Lesage and Lemarié.

Similarly, to the garments made by the fish skin artisans, Galliano's outfits offered the clients a unique work of art, where empathy and engagement was encouraged.<sup>32</sup>

ILLUSTRATION 7. John Galliano's prêt-à-porter Autumn/Winter 2002 collection. Atlantic Salmon skin jacket©2002, Patrice Stable

# 8 Conclusion

In this chapter we have shown how contemporary fashion can incorporate alternative raw materials such fish leather. We hope that our research contributes to the emerging field of sustainable fashion design and encourages the fashion business to make better decisions regarding new materials. It aims to develop new knowledge and practices to bring sustainability changes in fashion.

We conclude that the use of alternative materials, such fish skin, has the potential not only to serve our material needs but also reduce the use of over-consumed materials, such conventional leather, and could lead to more locally sensitive productions. With the correct use of fish skin in the fashion industry, the rise of fish skin as a new by-product raw material for fashion could contribute to the sustainable development and future growth of the aquaculture and fashion industries.

We have also identified the historical fish skin context and its connection to contemporary fashion haute couture practices.

<sup>32</sup> Alison Gwilt, 'Generating Sustainable Fashion: Opportunities, Innovation and the Creative Fashion Designer,' *Fashion & Well-being? Conference proceedings 2009* (London: London Centre for Learning and Teaching in Art and Design, University of the Arts London, 2009).

We conclude that it is possible to introduce new designs into fish-skin craft. Innovations can provide bigger visibility to this craft which will disappear unless there are new interventions that support it.

#### Acknowledgments

Professor Dilys Williams, Director Centre for Sustainable Fashion at London College of Fashion, and Simon Thorogood, Senior Research Fellow Digital Anthropology Lab at London College of Fashion, provided overall guidance for this research. The research has been funded by the EU Horizon 2020-MSCA-RISE-2018. Research and Innovation Staff Exchange Marie Sklodowska Curie GRANT NUMBER 823943: FishSkin: Developing Fish Skin as a Sustainable Raw Material for the Fashion Industry. The AHRC L Doc London Doctoral Design Centre Award. The Fulbright UK US scholar award. My deepest gratitude goes to William Fitzhugh, director of the Arctic Studies Center at the National Museum of Natural History, Smithsonian Institution and his team: Aron Crowel, Stephen Loring, John Cloud and Nancy Shorey. In addition, this research could not have been completed without support from the Nordic Culture Fund, OPSTART, the Society of Dyers and Colourists, the FRPAC, Foundation for Research and Promotion of Ainu Culture, The Japan Foundation Endowment Committee, and The Great Britain Sasakawa Foundation.

# **Bibliography**

Cevoli, Daria, and Elena Glebova. Esthétiques de l'Amour. Paris: Flamarion, 2015.

Chapman, Jonathan. *Emotionally Durable Design: Objects, Experiences and Empathy*. London: Earthscan, 2005.

Ehrman, Edwina. Fashioned from Nature. London: Victoria & Albert Museum, 2018.

Feng, Jiao. '*Keeping the Legend of the Fish Skin Tribe Alive*.' China Today 59, no. 12 2010. Accessed 16 October 2018 from: http://www.chinatoday.com.cn/ctenglish/se/txt/2012-02/02/content\_423289.htm

Fitzhugh, William. *Inua: Spirit World of the Bering Sea Eskimo*. Washington D.C: Smithsonian Institution Press, 1982.

Fitzhugh, William., and Valerie Chaussonnet. *Anthropology of the North Pacific Rim.* Washington: Smithsonian Institution Press, 1994.

Fletcher, Kate. *Sustainable Fashion and Textiles: Design Journeys*. 2nd ed. London: Earthscan, 2014.

Gwilt, Alison. 'Generating Sustainable Fashion: Opportunities, Innovation and the Creative Fashion Designer.' *Fashion & Well-being?: Conference Proceedings 2009*, edited by Rouse, Elizabeth. London: London Centre for Learning and Teaching in Art and Design, University of the Arts London, 2009.

Hatt, Gudmund. *Arctic Skin Clothing in Eurasia and America: An Ethnographic Study*. Wisconsin: University of Wisconsin Press, 1969.

#### THE CASE OF FISH SKIN

Hickman, Pat. *Innerskins/Outerskins: Gut and Fish Skin*. San Francisco: The San Francisco Craft and Folk-Art Museum, 1987.

Jacobs, Bel. 'The Future of Leather is Plant-Based.' *HowNow Magazine*, 22 June 2018. Accessed 19 September 2019. https://www.hownowmagazine.com/innovation/2018/6/22/the-future-of-leather-is-plant-based

Klokkernes, Torunn. *Skin Processing Technology in Eurasian Reindeer Cultures*. PhD Dissertation. The Royal Danish Academy of Fine Arts The School of Conservation. Denmark: Langelands Museum, 2007.

Qi, Lin. 'Look Who's Tipping the Scales in Favour of Skinny Suits.' *China Daily*, 10 July 2007. Accessed 16 October 2018 from: http://www.chinadaily.com.cn/cndy/2007-07/10/content 5422759.htm.

Reed, Fran. 'Part Two.' In *Arctic Clothing of North America -Alaska, Canada, Greenland*, edited by J.C. H. King, Birgit Pauksztat and Robert Storrie. Montreal: McGill Queens University press, 2000.

Roche, J., and Meg McHutchison. First Fish, First People: Salmon Tales of the North Pacific Rim. Washington: University of Washington Press, 1998.

Shirokogoroff, Sergei. *Psychomental Complex of the Tungus*. London: Kegan Paul, Trench, Trubner & Co. London,1935.

SPb-Ainu Project Group. Ainu Collections of Peter the Great Museum of Anthropology and Ethnography Russian Academy of Sciences Catalogue. Tokyo: Shofukan Hokkaido Kikanshiinsta tsusho, 1998.

Wilcox, Claire. John Galliano: Unseen. London: Thames & Hudson, 2017.

Williams, Dilys. Ten Years of Centre of Sustainable Fashion. London: CSF, 2018.