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Exploring Taxonomies of Heritage and Innovation for Sustainable Textiles

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Abstract

Innovation and heritage both attract much attention when we consider sustainable futures for design, and for every exciting new development in greener technologies, we might point to a heritage skill that could help achieve more sustainable innovation of making practices. In textile craft, some traditional abilities do already play a critical role in innovative development, while others might be continued either for cultural or political reasons, or as able contributors to market visibility within the broader movement away from globalized and mass-produced offerings. In most cases, the choice of retaining certain heritage practices while innovating others with regard to processes, products, materials, design, or stakeholders does not tend to be particularly systematic, but this paper proposes the use of a taxonomy of heritage and innovation features for textiles, with the aim to explore how effective a tool this might constitute for culturally, environmentally and economically sustainable textile production of the future. The research used in-depth interviews and observation of fabric makers in various cultures of Thailand and Scotland as its empirical basis for a sample taxonomy, clarifying through content analysis. The difference between traditional processes and innovative elements of fabric production in these very different cultures of making. In order to make such a taxonomy user friendly and universal, symbols were considered and established to classify relevant traits of the entire fabric production processes that may be considered traditional or innovative. Using a concise and clear model of sign design has the capacity for easy communication across stakeholders from artisan to design communities and offers the prospect of observing its use and the product outcomes that will come from it. In the first instance, the researcher, herself a Thai textile designer currently residing in Scotland, has explored the taxonomy in her own weave practice and will offer reflections on the outcomes of experimenting with combining traditional and innovative traits in a systematic manner. A preliminary discussion on the benefits and possible applications of this approach will be offered, with further analysis being expected as a result of feedback from the GFC conference community. The paper promotes symbols both as an analytical tool and as a powerful artistic communication device of traits of traditional crafts, intangible cultural heritage and innovation around these industries. The purpose of this paper then is both

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to analyse heritage elements and innovative aspects of making and to explore how these can be a systematic and conscious source of sustainable development. It clarifies in terms of initiation; markers, materials, and technique throughout the outcome; fabric, and the processes related to the aesthetic and the transition of cultural value crafts. The research thus seeks to contribute to the reconciliation of the twin trajectories of heritage and innovation as we seek to define preferred futures for a design that answers to cultural, marketing, economic, political and environmental concerns.

Keywords: sustainable design, Intangible cultural heritage, innovation, taxonomy, preferred futures.

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Introduction

Traditional textile craft is one significant cultural heritage that illustrates how the culture is shaped (Nugraha 2012). It is part of a symbolic ritual that describes the history, culture, and traditional values. It also represents both aspects of old and new of historical to contemporary (Smith, 1999); heritage and innovation. The intangible knowledge of skills presents through the piece of fabric was considered as the value of cultural heritage, which affects society and the economy (2003 Convention for the Safeguarding of the Intangible Cultural Heritage, 2011). Thus, it reflects identity, politics, behaviours, and cultural practices that are different in various groups around the world (Logan, Nic Craith, and Kockel 2016). However, some traditional skills change or fade with the times, yet instead of new technology innovation also keeps heritage developed and extended. Hence, this study focuses on the two main concepts of heritage and innovation through the case studies in Scotland and Thailand.

This paper is derived from a PhD project that has three aims: A) understand the concept of heritage and innovation in different cultures of Thailand and Scotland, according to the diverse perspectives on the concepts in different areas. B) investigate current making practices of weaving craft under the theme of heritage and innovation. C) explicate and extend the heritage of weaving crafts and its innovation through practice.

Innovation is a change of new things and developments, which could relate to materials (Gordon et al., 2019) or problem-solving methods (Herkema, 2003). It can connect to tradition and transform and develop it into a contemporary proposition, but we might ask is it also capable of sustaining traditional values? If it was, how might we measure whether heritage has successfully been connected to innovation?

It is in this context that this paper focuses on aspects of exploring current practices of weaving crafts with regards to specific markers of textile production processes in order to investigate how heritage and innovation are connected, touching upon weaving designers' perspectives of what successful textile craft is.

In addition, the paper reports on attempts to find universal symbols to describe a taxonomy for woven fabric markers around heritage and innovation; such a system is perceived to be potentially useful for makers, designers, marketeers and users of fabrics wishing to be informed about innovation and heritage aspects of fabrics. Photographic messages here are trialed to convey specific meanings to viewers irrespective of background, as they may be seen to be more universal than other types of communication (Nakamura and Zeng-Treitler, 2012). Therefore, the taxonomy of pictographs will be discussed in this paper as taxonomy is used as an attribute model that encourages things to be comprehensive and concise (Bailey, Martin and Anderson, 2005).

Methodology

The methodological approach of the research reported in this paper is qualitative and practice based. This section highlights the method of data collection and practical exploration aimed at achieving the objectives of

- Observing textile production processes of Scotland and Thailand
- Creating a taxonomy of fabric processes from the case studies of Thailand and Scotland.
- Recognising measures of success related to crafts in terms of heritage and innovation
- Creating user awareness and recognition of traditional and innovative processes

The triangulation method was applied as a method in this research in order to seek deep understanding from multiple methods (Steinke, 2004). This paper is based on in-depth interviews, observations, and practice in Scotland and Thailand to investigate the identity of textile production processes in terms of materials and techniques, heritage and innovation. It serves the fundamental of understanding of similarities and differences in materials, equipment and technique that lead to the various cultural practices and identifiers.

The questions were provided in advance, as semi-structured interviews with open and closed questions, to achieve the research aims and objectives (Wengraf, 2001). Alongside in-depth interviews, observation was conducted at interview sites and weave designers' working areas to record design practices, tools, and reactions. The face-to-face interview was conducted by beginning with tertiary conversation as an ice-breaking stage to allow participants to relax. Simple questions would also be operated in this phase to survey their background and passions. Next, the questions would be more direct in gathering the participants' perspectives regarding the research project. Video, photographs and audio were recorded during the interviews to observe, analyse and keep an accurate account of conversations.

The practice was carried out as learning by doing with self-reflection, with the researcher herself being a weave designer with over 15 years' experience. Gibbs' reflective cycle offered the structure of reflection for the researcher's experience and also provides the analysis base for different experiences in Scotland and Thailand.

This research starts with research on tartan, traditionally recognised as it is by use in a kilt as the traditional dress in Scotland (Trevor-Roper, 2008). Therefore, the Scottish participants were selected from weave designers who related someway to tartan, with two working as designers in textile factories and one being an independent weave designer. In addition, Lochcarron, a well known traditional Tartan producer in the Scottish Borders, was selected for observation in order to understand the identity, materials, heritage value, strengths and weaknesses of current textile processes in this heritage field. Seeking this perspective of how

tartans are currently produced to worldwide acclaim serves as a measurement of success of heritage craft production in the 21st century.

Simple criteria were set for participant selection. Firstly, a textile background of over fifteen years, secondly, a broad working experience, and thirdly a passion about textile design and weaving especially. These standards were settled to match some of the designers in Thailand although a Thai maker in a weaving village was sought as an additional key informant in Thailand because there is much woven production in this traditional village setting.

In Thailand, the observation took place in Chiyaphum province, Northeastern Thailand, and Bangkok. The observation was held at a textile factory in Bangkok based on the participant working place. Whilst fieldwork was conducted at the weaving village in Chiyaphum.

Following data collection, result were analysed and utilised in two phases; referring first to symbols design and then to reflective practice.

With regard to the data from observation, certain production process details were transferred into the design of symbols aimed at being universally understood. The designs were developed and provided as a set of cards and as clothes labels in order to create users' awareness of fabric production processes, which may offer traditional skills, techniques, and a story of the textile's origin. They may serve also as a store of traditional tacit knowledge which is often lost since it is not normally recorded (Nugraha 2012); therefore, these cards and labels will offer opportunities for textiles knowledge for many stakeholders. The disassembly part of cards also creates a possible challenge to our way of thinking of sustainable production. These visual symbols will be easy to use and set in the taxonomies toward the research project theme. They have been inspired by 'The Sustainable Design Cards' by Ræbild and Hasling (2018) and the 'Sewing Box for the Future' by Ballie et al. (2021). In addition, the label is a significant information source that serves consumers who lack awareness about the products (Kaner, 2021); therefore, the label will be another information tool in this research.

The practical phase begins with investigating the weaving loom and the design structure by the ScotWeave software to understand the design system and equipment used in Scotland. It also is an opportunity to reflect on and point out the various roots that may affect the production result and concept of different cultures by comparing to the author's experience. Gibbs' reflective model will be adopted to analyse the situation and feelings regarding the situation that matter during an experiment and evaluate the resulting outcome (Gibbs, 2013). This part will discover the variables that may affect heritage value and innovation intervention by experimenting traditional Thai technique, Ikat, on the Dobby loom in Scotland. Besides, it may spot where the fabric value exists. Exploring and learning from multiple factors of tools, materials, and techniques are adopted as learning by doing.

The following section will analysis the findings and reflect on the design prototype.

Result and Discussion

The data gathering was operated in two different periods of time. The first period was carried out from July 2021 to December 2021 in Scotland, and December 2021 to January 2022 in Thailand. The interviewees came from different backgrounds; however, all of them achieved the criteria that were set. The content analysis was considered as a method that focuses on the context and seeks the genuine meaning of interview answers by separating the transcription into the group of text and interpretation (Krippendorff, 2004).

An important topic discussed in this interview is identity, innovation in textiles, and how textiles are successful. Formulating codes and separating them into categories were used to clarify overall data and seek accurate meaning.

In Scotland, the finding provides that the successful measurement of tartan is the presentation way as its marketing. Its story is the primary factor that narrative legend builds people's perception worldwide. With respect to the Scottish designer

"I think we've got a great story here. I never intended to get into sales. But I just get quite excited about products. I just used to get really enthusiastic about some of the designs and the story behind them. And it's always, it's always had a base of Scottish heritage....So I think the heritage is really important. I think Scotland is a nation, we're very small, but well, quite well known in the world". (Hinnigan, personal interview, July 2021).

While the other weave designer, Cally Booker, focuses more on sustainability play more critical role in future success, and good marketing makes Scottish textile; tartan successful as the story may change or rewind. Even though she disagrees that tartan is a national fabric as tweed also represents Scottish woven; but they all admit that tartans are Scottish fabric recognised throughout the world.

Meanwhile Thai traditional fabrics do not have any story for their presentation. Not all participants can answer questions about authentic Thai as they come from a very mixed culture. There is no authentic identity in Thailand. As Mr Yensudchai stated that

"The origin of the Thai way is mixed culture; we have no authentic Thai. We cannot answer this". (Yensudchai, personal interview, December 2021).

With the support of Ms Rujinarong mentioned that

"I think we don't have the real Thai, but we have sub- culture. The subculture is importance in Thailand". (Rujinarong, personal interview, December 2021).

It shows that Thai culture embraces different cultures; therefore, there is some confusion about the traditional fabrics and techniques in different areas and other countries and a less uniform message about what constitutes Thai textiles. However, Thainess can show in delicate patterns and vivid colours (Yensudchai, personal interview, December 2021). Weave structures and techniques could distinguish the areas and display the way of life that shows passed-on skills. Moreover, some specific patterns also represent distinct areas in Thailand that could identify the regions. Yet, the pattern is still not main essential as having know-how skill is the most significant of the weaving identity (Rujinarong, personal interview, December 2021).

A mind map was applied to visualise relevant patterns and take all of the answers into account (Figure 1). As it is an external mirror of thinking that allows the author to review overall data and think in a radiant way (Buzan and Buzan, 1994). Figure 1 illustrates the relationship between all answers and compares Scotland and Thailand. In this case, the main factor that made textile/crafts successful is the intangible heritage value, skills, and story that links to identity.

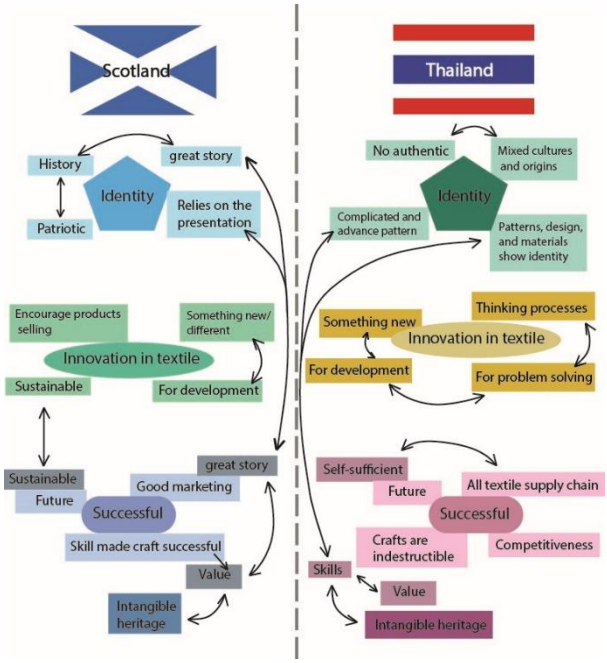

Figure1 Mind mapping

The other factor that was brought up in the discussion is good weave quality and quality of materials but while the primary material used in Scotland is wool, silk is the material that could be seen to represent Thailand.

In Thailand, there is utilisitation of both cotton and silk. Nevertheless, our research points to silk being the main material, with only a small village harvesting cotton. Thai Num Choke Textile Co., Ltd., where is a weaving factory that also produces natural yarns, needs to import 100% cotton for the factory (Pongsarojanavit, personal interview, January 2022), while there are many silk suppliers in the country. Even 80-90% of Thai silk thread is produced domestically, yet some are not traditional Thai silkworms (Rujinarong, personal interview, December 2021). Thai traditional silk requires a longer preparation process as it needs to wash out sericin before use (Jamnonbun; personal interview January 2022). Too many silkworms will also die during the boiling for filament unwarp process; therefore, some places use another silkworm breed as it takes a shorter preparation time. Thence, different breeds of silkworm were adopted in various areas of Thailand, with Eri silk, used in some silk companies and villages, seen assure sustainable. Additionally, as the Eri silk grows faster and does not require the boiling of live pupas as one side of the cocoon is open, the moth can go out of its cocoon before the boiling process (Charungkiattikul and Joneurairatana, 2021).

Scottish wool has a comparatively scratchy texture which is why the main supply of material hails from New Zealand and Australia, where woollens are softer (Booker, personal interview, July 2021; Penny, personal interview, August 2021). All Scottish informants emphasized that the main wool used in Scotland is not Scottish wool, but it is still classified as a Scottish product as it is woven in Scotland. Thence, they concentrated on the quality of materials and product outcome. This study in both Thailand and Scotland lead to the conclusion that quality of materials is more essential than its original source. As a result, the source of materials should not be classified as an essential factor in constructing fabric identity.

The primary material that is used in the country also illustrates the weather and geography as it carries suitable attributes for the area. The typical weather in Scotland can be cold and wet, and wool is used to keep the body warm and waterproof. Sheep were also suitable for being raised in this kind of climate. Whilst silk was primarily used in Thailand when fabric that releases sweat and humidity is required, making it perfect for tropical countries.

These different materials also have had an impact on the weaving tool, with a bigger shuttle being used for the wool than for the fine thread of silk.

During the practical research in Scotland, it was found that the weaving tools such as shuttles and looms are dissimilar to what the researcher was used to in Thailand. This led to an investigation of exploring traditional Thai patterns on the Dobby loom in Scotland to ascertain what effect equipment has on other factors.

Here the Ikat pattern was traditionally prepared in Thailand, but the result is similar to Thai heritage even though it was woven on a Scottish loom (Figure 2). Therefore, the experiment demonstrates that distinct machines can still provide similar results but that weaving techniques and materials could identify where the fabric is from.

Figure 2 Traditional Ikat pattern in dobby loom

Next, the materials were scrutinised as to the processes involved in getting them woven. During the observation in the weaving village in Thailand, the author learned about sericulture processes, providing detailed knowledge on where Thai silk thread come from. Data was also collected in Scotland. Based on this data, symbols were created to visualize the production systems of wool and silk (Figure 3 and Figure 4). The symbol design is divided into the three sections of input, production processing and outcome, to demonstrate the whole process from the early source of filament through processes and the product outcome. The design illustrated all possible ways of tradition and innovation. The entire process depicts slightly similar steps, except for the primary input, which is material, but even so, some of the processes are different to suit the respective material's attributes. The input can relate to the different processes and some equipment. In this case, after spinning, processes are broadly similar, if not identical, in Thailand and Scotland and as such the author here classified them as the same.

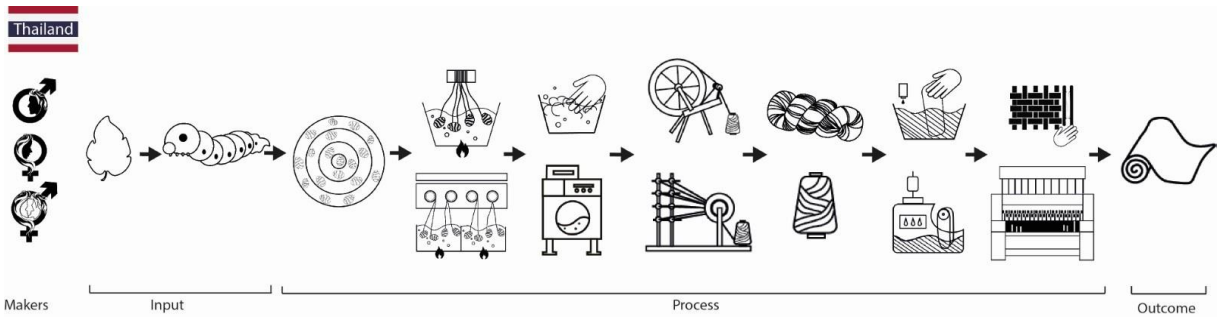

Figure 3 Fabric production processes in Thailand

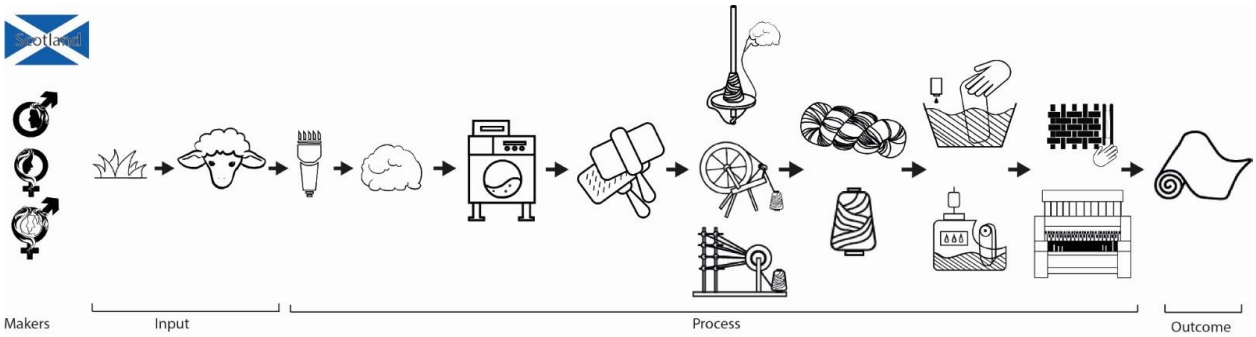

Figure 4 Fabric production processes in Scotland

The idea behind using symbols to illustrate key processes of a heritage textile was to detail points of possible innovation (and of keeping of traditions), and these could be used in several ways: Cards with such symbols might be used to educate makers or users on fabric properties and origins, but also inspire ways of thinking about innovation and heritage. Just like Don Norman (2016) elucidates that 'the fork in the road' as a possible future for design' could be the path between ' a craft and practice' and 'a mode of thinking'., these cards seek to encourage makers to explore both forks, so preserve traditional skills of making while also pushing craft stakeholders and new generations of designers to think about ways to innovate practice. This fulfills the objective of creating a taxonomy of fabric processes in heritage textiles that encourages preservation and innovation.

To indicate what side of this intersection objects lean towards, further symbols will be trialed so that consumers can quickly ascertain what kind of textile the maker created.

Figure 5 Heritage symbol

Early prototypes include a Heritage symbol (Figure 5) that adopts a hand holding up a heritage symbol in order to suggest that traditional skills here are safeguarded and passed on from generation to generation. The design points out as essential that heritage relies on people and their actions. The central symbolism is referenced from a part of the World Heritage emblem (UNESCO World Heritage Centre 1992-2022) that refers to the "result of human skill". The "H" letter was added to enforce that the symbol represents the word "Heritage".

Figure 6 Innovation symbol

The prototype for the Innovation symbol (Figure6) contains a lightbulb, often used to represent a novel or bright idea, and it was selected as part of innovation as something new (Gordon et al., 2019). The design is combined with a human head shape to emphasise the dimension of human and intentional ideas for development.

Figure 7 Heritage and Innovation symbol

Finally, the Heritage and innovation symbol (Figure7) was developed by combining the main elements of the heritage and innovation symbols (Figure5 and Fugure6) in order to convey where traditional processes, skills, or objects ay have already been adjusted to include innovation.

These designs will be applied as elements in the deck of cards to challenge designers and makers or other stakeholders to identify any production processes within the taxonomy as being aligned with heritage, with innovation, or with an already updated tradition. It offers an opportunity to think deeply yet playfully about what constitutes tradition and innovation, and how adapting or distinctly adjusting some processes can lead to experiments and different fabric outcomes.

Symbols are often considered as a communication tool. They can convey concepts internationally and across languages. Some symbols and graphics convey direct and indirect meaning. However, the people's perspectives may differ depending on intended purpose and background and symbols are rarely universally understood. Thence, the author agrees with the idea of the learning tool, the sustainable design cards, that offer circular thinking and may lead to some future potential (Ræbild and Hasling, 2018) as they show both

symbols and written context. The following development, therefore, is bringing the symbols to the cards. The heritage, innovation, and the combination group would classify the production process. The card design will consist of two sides (Figure8); the picture and written information to educate weavers, designers, and external stakeholders in navigating heritage and innovation in order to arrive at clear interpretations. By leaving some blank space on each card, designers and makers are invited to classify some processes themselves. The basic premise of cards encourages the picking and arranging of process cards in very individual ways as a way of promoting thinking about different process combinations to affect outcomes that are unique yet well mapped as to their traditional and innovative characteristics.

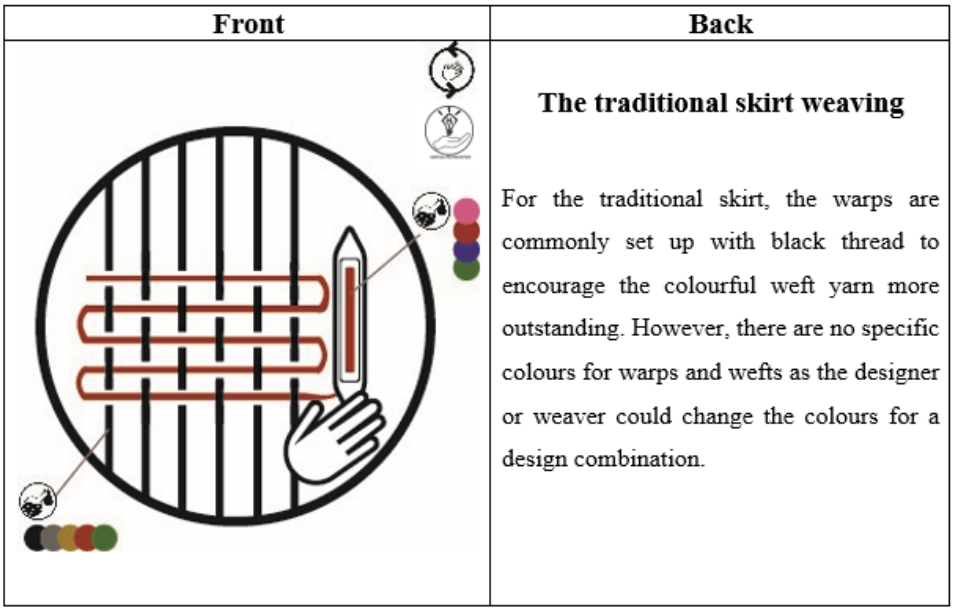

Figure 8 card sample

Aside from cards, the heritage and innovation symbols might be developed into cloth labels and tags (Figure 9) as a tool to communicate origins to users. This would focus on adding production stories and value to fabrics and clothes. This part underpins the users' curiosity about the labels to raise awareness and consciousness of what users will use or buy in the future.

Figure 9 cloth labels and tags prototype

Conclusions

This article has demonstrated the data from qualitative research through practice that leads to a way of thinking. In this study, the author has created potential tools that utilise symbols and graphics to identify taxonomies of heritage and innovation. A resulting set of cards could offer opportunities for makers, designers, and design students to gamify as well as document working with traditional ideas while seeking new experiments and innovation around textile futures. The cards might encourage thinking out of the box of what is possible in working with heritage in a responsible manner. Moreover, it also creates user awareness to realise the fabric route value that may reflect stakeholders behaviour towards sustainable use of fabrics in the future.

Limitation and future direction/Further research

The data collection was taken during the covid-19 pandemic and government restrictions in Scotalnd and Thailand affected the sampling strategies. Similarly, field visit plans had to be changed many times during lockdowns, making online interviews the chosen primary method of interviews here, with all its advantages and drawbacks.

To progress this line of research, exploratory focus groups will be conducted and user trials will be held to access and study the stakeholders' opinions on the usefulness of the symbols. In a first step, a large cohort of international master's degree students (design) at Heriot-Watt University will be chosen as participants, giving somewhat global perspectives on how well the designs illustrate the taxonomies. The participant will be asked to interact, comment and critique the symbol designs on cards and labels. The researcher intends to analyse suggestions and feedback to develop further design iterations. Additionally, feedback from the GFC conference will be much valued in order to consider the development of final designs.

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