



Weaving with Rush: *Exploring Craft-Design Collaborations in Revitalizing a Local Craft*

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It is possible to create a synergy between industrial designers and artisan groups to stimulate the development and preservation of a local craft in a sustainable and commercially viable way. This study aims to explore how designers may collaborate with artisans to unearth new opportunities for a local craft and how designers can make contributions to the artisan community. Rush-weaving is a traditional local handcraft practiced by generations of Taiwanese artisans using indigenous materials to make functional and decorative items. To research the possibilities of a craft-design collaboration, a monitored project was conducted, where local rush weavers and design students worked together to create new product concepts. As a result of the collaboration, seven design concepts were proposed to expand this traditional craft into contemporary markets. Drawing from the collaborative experience, this study proposes a craft-design collaboration process to form the basis of an approach for local craft development and sustainability. Knowledge gained through this activity suggests that the concept of craft product design is embodied by combining what is desirable in craft with what is possible through design. This study reveals that designers can play a catalytic role in facilitating the propagation of local craft knowledge into other industries. This can cultivate the local craft industry and empower artisans to further their own innovations. This paper highlights the value of the alliance between craft and design as a mutual learning mechanism, where both sides can exchange knowledge and enhance their professional capabilities.

Keywords – Industrial Design, Local Craft, Rush-Weaving, Design Practice.

Relevance to Design Practice – This study explores a craft-design collaboration process that could reinvent a local craft industry. The findings gained from this study serve as a valuable reference for local craft development and design practice.

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Introduction

This study focuses on how designers can collaborate with local craftspeople to expand the market potential of a local craft. It also explores the types of contributions that designers can make to artisan communities. Local craft is a reflection of the relationship between humans and their environment within their historical, cultural, and social contexts. Pre-industrial artisans were skilled craftspeople who used locally available materials to create products and generate income. As similar products manufactured with alternative or new materials were introduced to the market the demand for traditional craftsmanship sharply declined. Mechanization and mass production led to a shift in the production system from customized artisanship to large-scale generic production. To compete with mass produced products, artisans generally must sell their individually handmade work at lower prices. Greenhalgh (2003, p. 6) indicates that crafts straddle between the art and design economies and often get the worst of both worlds. The artists naturally make a living by selling their handmade objects at a profitable margin, and the designers make a living by designing objects that go into mass-production. Considering that their craft products lack the prestige of art or the reproducibility of product design, craftspeople often have to resort to selling their unique works at mass production prices. Meanwhile, traditional crafts, involving practices rooted in local knowledge and accumulated over time, are part of our cultural heritage and should be preserved and revitalized. Designers are

called upon to bridge the gap between idea and practice, and to link artistic and creative elements with practical and realizable outcomes (Dodgson, Gann, & Salter, 2005). Accordingly, organizations like the United Nations Educational, Scientific and Cultural Organization (UNESCO), the World Crafts Council (WCC), and Aid to Artisans (ATA) have made efforts to bring traditional crafts into mainstream life. Such efforts include engaging designers to work with artisan groups to develop new product lines for new markets.

From the perspective of promoting regional competitiveness through cultural industry, developing products based on cultural heritage and local resources can invigorate local economic development (Santagata, 2002). A growing niche market for unique and authentic products has emerged from the homogeneous globalization-driven market (McIntyre, 2010). Products reflecting local identity or highlighting cultural value offer a form of

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differentiation in an increasingly converging market (Lin, 2007; Moalosi, Popovic, & Hickling-Hudson, 2007). For this reason, culturally connected local crafts are in a particularly strong position to respond to this trend. Imbuing products with authentic characteristics by adapting features from local crafts could be a strategy to develop products which reflect differentiation and self-expression. Such products may fill a unique niche and build identity in the global market (Dillon, 2008). When local cultural assets receive attention, areas experiencing economic downturn, or industry sectors where local crafts are neglected, have promising prospects for economic revival. In Asia, the concept of 'One Village One Product (OVOP)' movements, originating in Japan and promoted in numerous Asian countries, encourages local residents to manufacture distinctive products to aid in their regional economic development through collaboration with experts in relevant fields, thereby adding value to locally available resources (Rana, 2008). Inspired by the OVOP movement, a division of the Taiwanese government, the Small and Medium Enterprise Administration, has launched Taiwan's 'One Town One Product (OTOP)' program to promote distinctive local products. It has also organized the Taiwan OTOP Design Award since 2007. The objectives are to encourage alliances between craftspeople and designers, to bring public awareness to regionally specialized industries, and to apply respective design aesthetics. The agency is also tasked with the mission of advocating for local cultures in different parts of Taiwan. Many award-winning products have been successfully commercialized, suggesting that it is possible for designers to assist local artisan communities to develop their techniques, to create a new level of aesthetic quality, and to become familiarized with market opportunities. Case studies described in the book "Designers Meet Artisans", indicate that designers can help revive local craft industries by linking tradition with modernity, thereby assisting in meeting the demands of modern society (UNESCO, 2005, pp. 92-106).

The evidence mentioned above indicates that design is a broadly effective method for revitalizing local crafts and stimulating economic development (Bell & Jayne, 2003; Sunley, Pinch, Reimer, & Macmillen, 2008). In light of the role that design can play in regional development and social change, designers should embrace their social responsibility and understand what impact they can have on local communities or craft industries. To address the design challenges present in local craft reinvention, this paper is practice-led and aims to capture knowledge related to this design issue by conducting a design case study. This involved designers collaborating with local rush weavers to create new products based on this craft. Cross (2001) coins the

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term "designerly ways of knowing" to point out the uniqueness of design knowledge, and he argues that part of design knowledge is inherent in the activity of designing, gained by engaging in and reflecting on activities through the design process. The exploration of knowledge through practice allows practitioners to elicit reflection on their working processes and gain new knowledge (Schön, 1983, pp. 76-104). Design outcomes created through the working process can serve as answers to design inquiry and also serve as sources for design topics (Biggs, 2002; Mäkelä, 2007). Therefore, conducting case study research allows us to obtain the experiential knowledge to further new design practice.

Literature Review

Emerging Markets for Craft Products

As consumption and production continue to evolve, we are moving towards a "symbolic economy", which serves consumers segmented into diverse and symbolically demanding lifestyle groups (Lash & Urry, 1994, pp. 111-142). Consumers are viewed as different groups pursuing various goals, better served with more differentiated and higher quality products. Accordingly consumer demand has shifted from products which compete with each other solely on the basis of price and availability to products which compete through their individuality, design value and aesthetic appeal. This shift has steered the production system to focus on small batches of high quality products that target niche markets (Creative and Cultural Skills, 2009). The growing demands within niche markets strengthen opportunities for small-scale enterprises to supply increasingly fragmented markets. Market opportunities for craft industries are emerging based on this trend in consumption diversification and the traditional economic weaknesses of craft industries are becoming strengths (Campbell, 2005; Chartrand, 1989). The material and tactile qualities of the crafts are being welcomed in the modern market and are able to appeal across numerous markets (Kälviäinen, 2000). Traditional crafts have been adapted to create products ranging from fashion accessories to home décor, as well as other product categories. According to the Crafts Council in the UK, since 1998 the crafts have been identified as an industrial sector with the highest growth potential (Schwarz & Yair, 2010, p. 100). This evidence suggests that the craft industry may contribute to the redefining and shaping of a new economic model.

The Dynamics of Craft Practices

As stated above, the emerging craft markets suggest that the potential for traditional crafts to be considered careers in the modern world is promising. However, there is a long way to go and several issues need to be addressed before it becomes possible for craftsmanship to become a viable career option nowadays. Ratnam (2011, pp. 97-102) places emphasis on the recognition of multiple modes of production, on the modernization of artisans, and on the blurring of lines between craft and design. Craft practices are not static, but are capable of continuous evolution, transformation and adaption to modern society. The existence of multiple modes

of production produces a hybrid production system, which celebrates craftsmanship and the human touch as well as the performance of machines. Industrial production and modern technologies may provide opportunities for craft practitioners to create unique crafted objects while being able, at the same time, to produce sufficient quantities of product to achieve sustainable models of practice. Craft practitioners have seen an increasingly positive alliance between crafts and technology (Harris, 2012; Yair & Schwarz, 2011). Modern methods of production such as casting, laser cutting, and rapid prototyping have been adapted to craft processes in an effort to foster new ways of developing and refining one-off or small batch work. For example, silversmith Riedelbauch (2004) focuses on the integration of digital technologies with traditional art-making and craft processes. Craftspeople have searched for new ways in which to develop their work in order to remain at the forefront of their discipline, and to be able to compete with, or take advantage of, new technological developments and mass-customization (Niedderer, 2009). The flexibility and affordability of production technologies aligned with craft sensibilities could provide craftspeople with appropriate and cost-effective ways to create products, thereby permitting multiple modes of production whilst maintaining particular aesthetic and tactile qualities. Incorporating a wide range of production methods provides craft practitioners with production know-how alongside the craft-making skills that they already possess. In turn, this helps them operate across an expanded range of design and entrepreneurial territories (Woolley, 2011). The ability of designers to elucidate modern techniques for local artisans can create many potential opportunities. Designers can galvanize local artisans to exploit production techniques through collaboration, and thus enable them to cope with the processes and consequences of industrialization (UNESCO 2005, p. 11).

The interplay between craft and machine produced work can be traced back to Charles and Ray Eames. Their furniture designs are modern and humanistic, validating the pre-industrial, the personal and the handmade as well as the industrial, the uniform and the mass-produced (Kirkham, 1998). The hybridization of craft and industry has been appreciated by manufactures and considered as a valuable strategy for developing products which reflect the tactile and emotive qualities inherent in craft, which in turn, aims to increase competitiveness (Yair, Press, & Tomes, 2001). Integrating craftsmanship with contemporary production systems can imbue products with the sensory qualities of hand crafted items, providing a unique identity and selling point in the marketplace. For example, the Ercol factory combines the latest technology with time-honored craftsmanship to create a range of unique pieces¹. Another example of this concept in practice can be seen in IKEA's appealing collection of home accessories where the design outcomes were steered by designers and Indian embroidery artisans (Judah, 2009 March 14). These cases provide examples of processes that are profitable and involve interchanges between craft and design. The hybrid relationship between craft production and mass production can be explored from a cross fertilization perspective, following the evolution of production systems from craft to conventional mass production

and then to flexible design and production (Cusumano, 1992, pp. 453-458). This shift in production systems suggests the potential development of new craft practices and career opportunities for craftspeople. Greenhalgh (2003, p. 3) argues that craftspeople who are employed by companies produce batch-run products and therefore this indicates a new region of craft practice and a promising prospect for infusing craft into everyday life.

Blurring Lines between Craft and Design

The availability of flexible manufacturing techniques and the changes in the consumption patterns of post-industrial society suggest that craft and design are becoming more closely related (Shiner, 2012). The lines between craft and design are blurring as craftspeople are able to produce beyond the limited scale of individual work, and designers are able to economically justify producing unique pieces (Kettley, 2005). This poses a new challenge for designers to re-interpret crafts based on contemporary aesthetic and functional needs and values to meet the evolving demands of target markets (Press & Cusworth, 1997). For designers, the crafts not only serve as vehicles for the design of new types of artifacts, but also provide novel prototypes that are practical. These new types of artifacts and novel prototypes, in their turn, open up new ways for society to engage with the beauty of crafts. Experiments and the achievements of such collaborative efforts have produced evidence in support of this transition (Lees-Maffei & Sandino, 2004). The exhibition 'Industry of One: Designer-makers in Britain 1981-2001' at the UK Crafts Council Gallery in 2001 demonstrated a form of practice combining the design and craft approach. McGuirk (2011, August 1), a design critic, argues that the rise of the designer-maker is post-industrial nostalgia for the pre-industrial. The designer-maker is a phenomenon of the post-industrial era, relying on a sophisticated social and market matrix and utilizing modern production technologies and flexible business strategies (Gale & Kaur, 2002, p. 49-55). Several products designed by design groups such as "Droog" from Holland and "mile"² from Japan indicate original and experimental ways for interplay to evolve between craft and design processes (de Rijk, 2010). Jongerius, a Dutch-based designer, specializes in using industrial processes to create hand-crafted objects, and in marketing the products to a broader audience. Her designs present a vision based on design, craft and technology (Jongerius, Schouwenberg, Rawsthorn, & Antonelli, 2010). The design project "Yii"³, conceived by the Taiwan Design Center and the Taiwan Craft Research Institute, exemplifies the mutual aid between designers and craftspeople in Taiwan which has resulted in the translation of traditional Taiwanese crafts into the language of contemporary design. The resulting products are original and have an innate and recognizable value in the global market. Yii has grabbed the attention of a multitude of design enthusiasts and has received commercial orders, demonstrating the economic potential of designer-maker products. This type of practice does not forsake industrial production; on the contrary, new production technologies are actualized on the basis of the combined aesthetics of craft and industrial design.

The fusion of craft and design manifests a design praxis and model which in turn presents a promising strategy for product development. Hence, engaging designers to collaborate with craftspeople is not only helpful for the regeneration of traditional crafts, but it also allows designers to obtain new design experiences, which could broaden their design horizons. Providing designers with knowledge regarding traditional crafts is an effective approach to liberating their individual creative ability. Sennett (2008) suggests that craftwork establishes “a realm of skill and knowledge perhaps beyond human verbal capacities to explain” (p. 95). Competent craftsmanship involves building skills and knowledge, with reference to technique, material, and traditional aspects. Designers should recognize the potential of traditional crafts as a learning resource. Additionally, they should be able to appreciate the value of traditional crafts not only as a process or product, but also as a way of cultural practice that has its own respective function in society.

Co-creation as an Approach to the Development of Local Craft

Design innovation relies on reusing existing knowledge or recombining existing knowledge in new and innovative ways (Panno, 2007, p. 19). The existing knowledge of a craft is viewed as tacit, where specialized skills are embedded in a person or within a local community. Tacit knowledge is described as “we can know more than we can tell” (Polanyi, 1997, p. 136). The tacit knowledge possessed by the local artisans is acquired through extensive experience of working with materials and processes and it can primarily be acquired by practical and personal contact between master and apprentice. Specific techniques and craft styles may be passed generationally within families or a close knit community. Chuenrudeemol, Boonlaor, and Kongkanan (2012) proposes two models in retrieving local craftspeople’s knowledge to develop new products for the purpose of commercialization. These two models are the master/apprentice model and the co-creation model. Design practitioners attempting to develop local crafts should directly engage themselves in a local context by interacting and co-creating with the artisan community. In these situations collaborative innovation is recognized and several cases show how the designer and artisan group work together to develop

new products which have potential to reach out to new markets (Murray, 2010; Barker & Hall, 2009). Reubens (2010a) argues that designers and craftspeople can both benefit from the development of local craft. One of her projects (2010b), where designers worked with local bamboo artisans in India, demonstrates that the skill and knowledge set that each party brings to the innovation process is maximized through collaboration.

Co-creation by artisans and designers employs collective creativity as an approach to the development of local craft. This is in agreement with Sanders and Stappers’s argument (2008) that designers are invited to tackle the challenges which cannot be addressed by individuals alone. To achieve collective creativity, they emphasize the early phases, the “fuzzy front end”, before the traditional design process begins. The term “Fuzzy” refers to the intangible and ambiguous nature of this stage. Thus, all participants should work together in the very early stages to set a clear design strategy and define ideas for further development. In this stage, there are many divergent paths to explore, and the goal of exploration is to discover design problems, identify opportunities and determine a design approach. The fuzzy front end is followed by the design development process where the resulting ideas for products are developed into concepts, prototypes, and then refined into resulting products. The co-creation process proposed by Sanders and Stappers (2008, p. 6) can be adapted to the craft-design collaboration as illustrated in Figure 1. The process also functions as a learning mechanism, enabling artisans and designers to acquire knowledge and skills that are based on this shared experience. As the boundary between design and craft become blurred, design and craft practitioners are encouraged to learn from each other. The design-craft collaboration can be considered as a multidisciplinary collaboration, through which participants could gain other skills and knowledge, thus enriching their knowledge (Dykes, Rodgers, & Smyth, 2009, pp. 104-108). Based on this kind of collaboration process, the author and seven young designers (senior design students) collaborated with four local rush weavers. The aim was to develop a product design and obtain an understanding of the craft-design collaboration process in a real-world situation. The study was conducted for approximately nine months. As the leader of the collaborative team, the author was in charge of guiding the collaboration process.

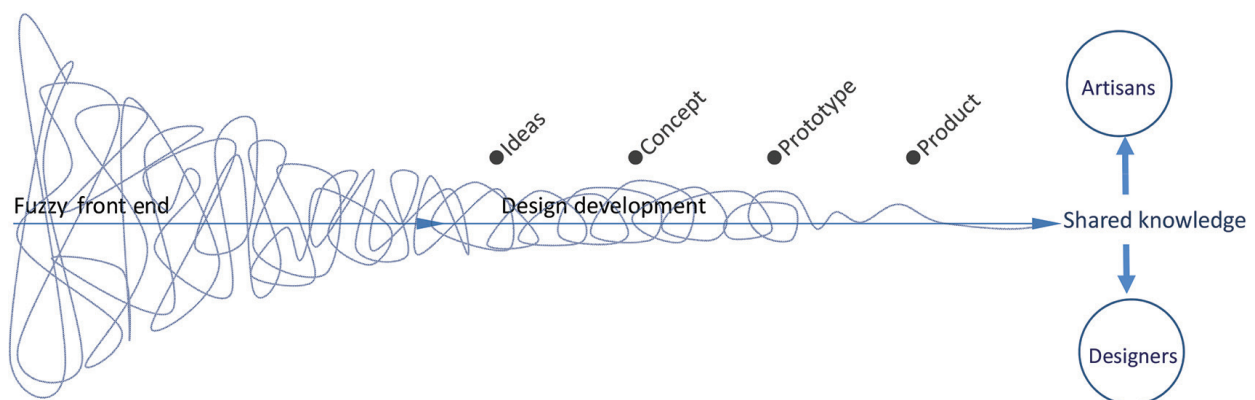


Figure1. Craft-design collaboration process adapted from co-creation process proposed by Sanders and Stappers (2008, p. 6).

Case Study

Rush Weaving in Yuan Li

Rush-weaving defines Yuan Li's century-old indigenous craft industry, which centers on weaving rush stalks to produce mats, hats, and handbags. The craft became popular towards the end of the Qing Dynasty and exports to Japan were made during the Japanese rule, reaching peak production when the Chinese government arrived in Taiwan. The rush-weaving industry once had power over the local economy, culture, and life. International exports of rush-woven hats and mats brought the local industry into its golden age. During this period, almost every household became involved in rush weaving and hence contributed to the prosperity of this local industry (Chang, 2002, pp. 213-251). However, the rush-weaving market eventually declined over time because of industrialization and the availability of diverse alternatives in a wide range of styles and designs at competitive prices, rendering this craft unsustainable. In Yuan Li, the craft of rush-weaving has been transferred through generations without formal teaching. Thus, rush weavers in Yuan Li are skilled, but confined to employing limited techniques to make mats, hats, and bags, which although popular in the past, are now less desirable due to the availability of machine-made, grass-woven products at much lower prices (Yang & Yeh, 2007; Lu, 2010, pp. 14-16). In response to the diminishing market of the original rush-weaving industry, the local artisan community has developed several new products with new utilitarian functions such as pen bags and tissue box covers. However, the diversity of alternative industrially produced goods at comparatively cheap prices has made the craft labor-intensive and low-wage, therefore positioning rush-weaving in an unfavorable economic condition. Given this situation, this handicraft fails to compete with modern industry in terms of productivity, and can no longer be competitive purely based on the merits of use. One option for craft regeneration involves finding alternative markets, where the craft will be appreciated for its value rather than solely for its practical function. This requires external designers to assist local artisans in the development of their products to meet market demands (Tung, 2011).

Drake (2003) emphasizes that locality and local craft provide a source of inspiration for design creativity. The raw material, that is, the triangular rush, is not only indigenously available but also possesses unique advantages. The rush is a green

material, derived from the cyperaceae perennial herb. The rush from Yuan Li is planted in paddy fields and can be harvested two or three times each year. Unlike the round-shaped rush from other areas, the triangular shaped rush, as shown in Figure 2, from Yuan Li possesses a tough fiber form and rush-woven products made in Yuan Li are quite durable. Based on these attributes, rush from Yuan Li is an exceptional material that is environmentally friendly. As environmentally sustainable products continue to prevail in the contemporary market, this type of ecological focus creates a niche market for products made of rush material. In addition, the triangular rush can be divided into thin strips to manufacture more delicate products allowing more complex and interesting weaving patterns when compared to items made from round-shaped rush grass. These factors have led to the high reputation of rush-woven products from Yuan Li. Yuan Li's rush-woven products are pleasant to the touch, with a texture which is vastly superior to other grass-woven products. Figure 3 shows Yuan Li's rush-woven items from the past to present and demonstrates this delicate touch and the enhanced weaving patterns.

Application of the Collaboration Process

Fuzzy Front End

In the front fuzzy end of the collaborative process there are many divergent activities that take place to identify any fundamental problems, to describe opportunities, and to determine potential designs. The word "craft" refers to artisanal production through the highly skilled use of simple tools with locally available raw materials. Being well versed in craft products and techniques, materials, and the local setting is essential for designers at this stage. They should be familiar with artisans and the craft in a local setting, and possess at least a fundamental knowledge of this skill, and of the local materials. For this study, the following activities took place:

- Getting to know the local setting: visiting the craft community, interviewing the community mobilizers and retailers.
- Getting to know the craft techniques and products: observing the craft production process, conducting a rush-weaving learning workshop, visiting the local (rush-woven) product retailers.



Figure 2. Triangular Rush.



Figure 3. Rush-woven items: mat, hat, bag, tissue box, and pen box.

- Getting to know the indigenous material (triangular rush): visiting the rush paddy fields, and understanding the flow of how this raw material is processed. Also conducting experiments involving various materials, including weaving rush grass with strips of different materials, combining rush-woven pieces with other materials, experimenting with rush grass to make various new forms, and so forth. Some aforementioned activities in the fuzzy front end are shown in Figure 4.

During the fuzzy front end stage, knowledge is transferred more in the master/apprentice mode. This assists the development of a partnership among artisans, designers and stakeholders. The acquired knowledge allows the participants to identify problems and opportunities. A major problem in the rush-weaving community is that the price of rush-woven items is disproportionate to the work effort. For example, a king-size rush-woven mat takes two rush weavers three weeks to finish and its retail price is only around \$US 500. This price is still not cost-competitive because the same sized machine-made rush mat may retail for less than \$70. As most rush weavers cannot sustain themselves economically in their traditional market, the number of skilled craftspeople is declining. All rush weavers in the community are above fifty years of age. This indicates that there is a missing link in transferring the knowledge from generation to generation and therefore this indigenous knowledge may be lost forever. In terms of craft practice, developing multiple modes of production (as previously mentioned) may alleviate this predicament and help maintain the traditional craft as a career option in the modern world. Modern production techniques and modularized components could provide artisans with a wider range of methods to streamline the production process. Rush-weaving practitioners may consider producing semi-customized rush-woven items by combining traditional rush-weaving components together with other materials made by modern techniques. The production of semi-customized products could reduce the time and production effort required. The triangular rush from Yuan Li is abundant and has advantageous properties which are absent in rush from other areas. Alternative techniques are worth exploring to maximize the value of this eco-friendly raw material. Thus, alternative production processes to maximize the use of the raw material were explored through the collaboration.

Opportunities for the rush-weaving industry could reside in the material characteristics of the material as perceived by the user. This includes tactile pleasure from the natural feel of soft rush, and the admirable craftsmanship. Given the nice qualities of rush weaving, the craft does not need to be limited to the original market of hats and mats, but can be applied to other types of products thereby accessing new markets. According to a survey conducted by Hnатов (2009, pp. 4-5), the key market for handcraft producers is the home accessories market. In addition to home accessories, the market for fashion accessories has been growing. Thus, new products under these two markets can be developed to satisfy market demands. Flexible manufacturing techniques allow manufacturers to integrate the sensory quality of the rush-weaving craft into their products to enhance competitiveness. The possibilities of expanding rush weaving to other industries should be explored to create cross-fertilization opportunities for both the craft community and for other potential industries.

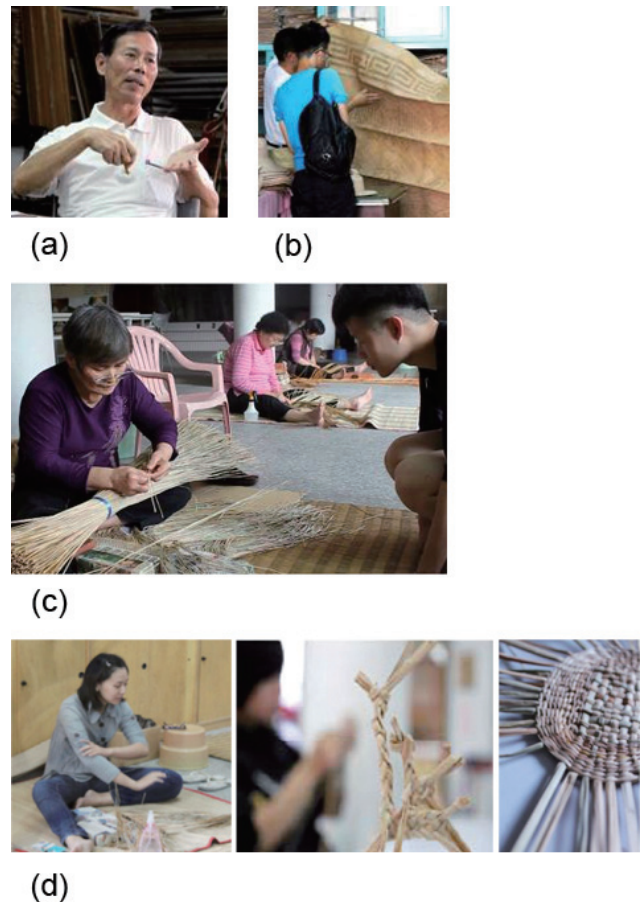


Figure 4a. Interviewing a community mobilizer; 4b. Getting to know the rush-woven products; 4c. Observing craft production; 4d. A rush-weaving learning workshop and students' works.

The Design Development Process

Based on the results from activities which took place at the fuzzy front end, the main concepts for the development process which emerged were to create new product lines and to explore appropriate production methods. There were two objectives in creating new products. The first was to gain access to the home décor and fashion accessory markets and second was to seek cross-fertilization opportunities. The development process was based on an iterative approach that combined sketching, discussing, prototyping and presenting. In sketching, the design team took the main responsibility for sketching concepts and describing ideas in visual form. By visually defining application ideas, the sketches served as an effective tool for communicating and discussing concepts with the artisans. Based on the result of the discussions, prototypes were made by both the artisans and the designers. The co-creating prototyping process enabled the artisans to understand the production methods and the design material, while designers obtained a better understanding of the craft and how to fuse modernity with the craft. After completing the first round of prototypes, a presentation was held to present

the results to the stakeholders, including the community mobilizers and local retailers. From this, it was possible to obtain their feedback. The focus of the first iteration was placed on the development of concepts and experimental prototypes. This promoted communication among artisans, designers, and stakeholders. These experiences and feedback were fed into the next iteration for progressive refinement towards a complete and feasible prototype. Throughout the process, different forms of visualization, as shown in Figure 5, were regarded as valuable tools to help the participants reach a mutual understanding, as well as in disseminating the design outcomes to others.

Design Outcomes of the Development Process

Creating new product lines for the craft community

To create new product lines for the craft community, home decor and personal accessory products were proposed, including a lamp, a radio and a stool for the home décor market, and a series of bracelets for the personal accessory market. There are two

approaches in making these items. One is to introduce appropriate manufacturing methods in the production process. Components made by casting or laser cutting, or alternatively products that are ready-made, can be easily outsourced or made available to the artisan community. These components were adapted to the rush-woven components to develop the lamp, radio, and bracelets, as listed in Table 1. These works were created in an attempt to illustrate the practicality of producing semi-customized products. The lamp design features light patterns which are formed by the rush weaving sequence as well as the apertures in the metal casing. The uniqueness of the radio resides in the art of rush-weaving by using the weaving pattern in different mesh densities for the speaker grill. A variety of bracelet designs were attained by combining a tube-shaped rush-weaving body with various types of materials.

The other approach used to make the items was to explore alternative techniques and produce rush products through experimentation. The aim of this approach was to maximize the use of this sustainable material and to further highlight and promote the distinctive features of Yuan Li's triangular rush. The

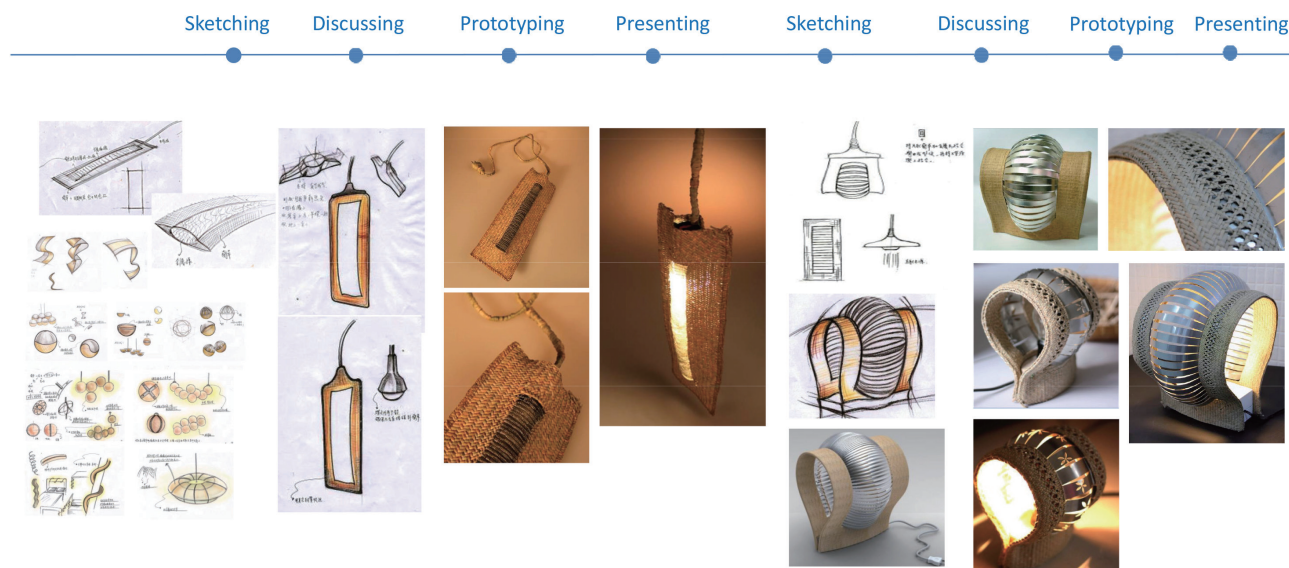
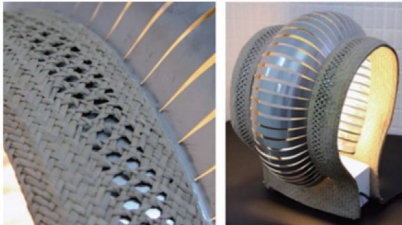




Figure 5. Different forms of visualization through the development process.

Table 1. The hybrid production methods for new rush-woven product concepts.

	Lamp	Radio	Bracelets
			
Rush weaving	Lamp shade border	Radio grill cloth	Tube shaped body
Outsourcing	Laser cutting (the metal part)	Vacuum cast components	Vacuum cast components
Ready made	Bulb and bulb holder	Radio components	

design of the “Triangular-Rush Stool”, as shown in Figure 6, presents two approaches for handling rush grass, including slicing and wrapping techniques, to make the stool top. The slicing technique involves fixing triangular rush bundles onto a wooden stool seat designed with a concave profile, then cutting the bundles to form the stool seat surface. As a result of this process, the triangular cross sections of the Yuan Li rush grass can be displayed, presenting a pleasant pattern as shown in Figure 7. The latter wrapping method was used for the perimeter sections of the concave wooden seat, producing natural tones and a contrast against the triangular rush.



Figure 6. Triangular-Rush Stool.



Figure 7. Patterns formed by Yuan Li’s triangular rush.

Creating products for cross-fertilization opportunities

To expand the application of the craft, we attempted to incorporate rush-weaving techniques into the consumer electronic industry, which is well developed in Taiwan. Rush-weaving could add an “eco chic” appeal to electronic products due to the use of

sustainable raw materials. Rush-woven elements could be fitted onto the electronic parts, such as a headset, a computer mouse, and an e-book reader that are normally used for extended time periods, as shown in figure 8. This would enable the users to experience the natural feel of soft rush, thereby enhancing the user’s experience. Today’s demand for green design provides a timely platform to apply rush designs to consumer electronic products. Subsequently, this strategy could lead to successful product differentiation and create a competitive advantage.

Shared Experience and Knowledge

The collaborative team functioned as a mutual learning mechanism, where both sides exchanged knowledge to enhance their professional capability. The artisans benefited through the gradual transmission of design knowledge during the collaboration. The project challenged the community in a constructive way and the results of the collaboration have received attention from designers. It has also paved the way to explore new market opportunities for the artisan community. The rush weavers and stakeholders mentioned several ways in which they were able to absorb design knowledge during the collaboration. They were able to observe the potential in the lighting and personal accessory markets and they have adopted these ideas to create new lighting and accessory products. For example, Figure 9 shows a pendant lamp, combining rush-woven pieces and thin wood plates, which was created by the artisan community after this collaboration. In addition, the alternative techniques used in the stool have been adopted to develop commercial products such as home accessories and stationery. For the designers, they were able to actually explore product design theories incorporating the craftsmen’s existing knowledge. This collaboration allowed them to obtain knowledge from the partner relationships, indigenous wisdom, and knowledge of local materials, which could broaden their design horizons. After the collaboration, one member of the design team remained in the artisan community as an intern to learn the skills firsthand. The fusion of craft and design manifests as a design praxis and model which presents a promising strategy for future product development. Providing designers or design students with knowledge regarding traditional crafts is an effective approach to liberating their individual creative ability.



Figure 8. A headset, a computer mouse, and an e-book reader proposed in this study (left to right).



Figure 9. A pendant lamp created by the artisan community.

Discussion

This practice-led research is a process of inquiry for exploring craft-design collaboration and for exploring the possibilities of craft production as a contemporary economic activity based on traditional skills and resources. Experiential learning and knowledge gained through collaboration is a significant element in the professional development of practitioners (Szabó & Négyesi, 2005), with knowledge being gained, combined and newly applied through working with artisans and designers. Through this study, a craft-design collaboration process is proposed to address local craft regeneration. A design approach to reinventing craft products is to combine “what is desirable in craft” with “what is possible through design”. Through the collaboration, design practitioners facilitated knowledge creation and knowledge transfer between the craft industry and other industries. The following section discusses this further.

A Craft-design Collaboration Process

Based on this study, a collaboration process for developing local craft products is illustrated in Figure 10. Working in a craft community, and understanding the local setting, skills, products and materials are the main activities in the fuzzy front end of the collaboration process. This understanding helps designers obtain

essential information enabling them to identify fundamental problems and opportunities. In the development process, a major gap identified between the artisans and designers is that the artisans find it somewhat difficult to respond to the idea of creating new products because they are accustomed to applying their skills to traditional products. On the other hand, the designers may not possess sufficient knowledge in relation to the craft so ideas which they propose may be impracticable. In the development process, the iterative process of sketching, discussing, and prototyping helped bridge this gap. After working through the first iteration, the artisans and designers became increasingly engaged in the co-creation process. Moreover, the close proximity of the design school to the artisan community allowed face-to-face communication on a regular or as-needed basis. Face-to-face communication is the most effective method for obtaining tacit knowledge because this allows for multi-dimensional communication (Asheim, Coenen, & Vang, 2007).

In the design development stage, using visuals in the form of sketches and prototypes can facilitate communication and improve artisan-designer integration, thereby supporting the findings of Leonard-Barton’s research (1991). In particular, prototypes play a crucial role because the process of co-creating the prototype allows the artisans and designers to acquire knowledge from the other party. The finished prototypes can be perceived by the senses of sight and touch and can evoke a deeper appreciation in each individual of the challenges and opportunities represented in the new product. By co-creating prototypes, artisans were able to recognize new creative capabilities as they became aware of the design potentials in rush-weaving, while the designers could materialize design concepts through a better understanding of craft materials and techniques. At the presenting stage, the finished prototypes served as a vehicle to demonstrate the possibilities of rush-weaving to stakeholders. The demonstrations acted as a tool for disseminating the outcomes and soliciting opinions. Furthermore, the design outcomes enabled the craft to become more visible through displays at exhibitions and through participation in design competitions. The works designed in this case study have been displayed in exhibitions and have won several awards. In the case of the lamp, the work was given a “Good Design” award by the Taiwan Design Alliance and was selected for exhibition at the Taipei Flora Expo between 2010

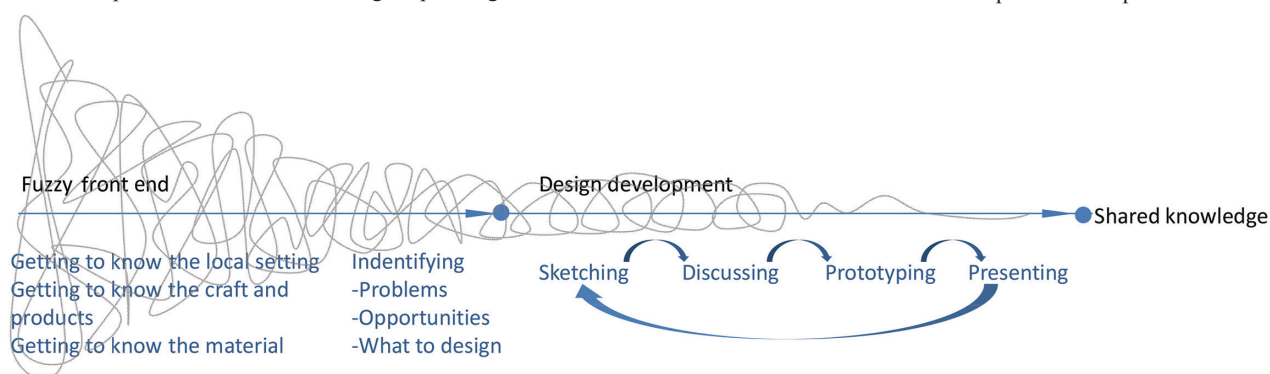


Figure 10. The craft-design collaboration process proposed by this study.

and 2011. The “Triangular-Rush Stool” won the Taiwan OTOP Design Award because the design brings new life to conventional products by incorporating distinguishable local features and novel ideas. With this type of marketing and the dissemination of information, the craft now may receive a proper level of attention from designers and relevant sectors, resulting in new opportunities for the artisan community. The proposed collaboration process has been adapted to facilitate annual workshops. This has attracted many professional designers and design students to join the collaboration and to learn rush-weaving skills so that they can create viable products. As more people pay attention to the craft, this assists the artisan community to reach the goal of sustainability, which they think of as ‘the art of longevity’.

Mapping ‘What is desirable in craft?’ and ‘What is possible through design?’

This practice-led research not only creates artifacts but also documents and interprets the artifacts as well as the process of making them. This method of creation allows practitioners to elicit reflection on their practice and to gain knowledge in action. The design approach to the development of craft products acquired from this practice makes it possible to map ‘what is desirable in the craft’ and ‘what is possible through design’. That is, design possibilities are unearthed based on the desirable characteristics of the craft. In this design case study, three desirable characteristics of rush-weaving were identified. These included the aesthetics and the delicate feel that can be experienced by the end users, pre-existing weaving techniques, and the eco-friendly raw material of triangular rush in the area. In light of these desirable characteristics, design concepts were explored to accentuate the characteristics of the craft, to revive pre-existing techniques, and to maximize the usage of this indigenous material. Figure 11 illustrates the embodiment of the mapping of ‘What is desirable in craft?’ and ‘What is possible through design?’.

Accentuate the characteristics of the rush-weaving craft

The value of the rush-weaving craft is mainly characterized by its admirable craftsmanship, natural features, and tactile stimulation. These identified strengths suggest that the value of the craft does not lie solely in its competitive utilitarian function, but also in its

relatedness to handwork, natural materials, and nostalgia. New craft products should highlight the perceived aesthetic value of the craftsmanship with which they are made, as well as the enjoyment to be derived from the tactile qualities of this natural material. This study shows that these desirable characteristics can imbue final products with authenticity and sensory feeling as demonstrated by the lamp, radio, and bracelets which were created during the study. As a result of considering the delicate touch and the natural aspects of rush-woven material, rush-weaving was adapted to product designs such as e-book reader, computer mouse, and headset for an enhanced user experience. The juxtaposition of traditional material and craft with high technology devices appears to be a market ripe for further exploration.

The revival of pre-existing techniques

Coupling pre-existing techniques with potential possibilities can result in a positive collaboration, which inspires artisans to value their skills and creations and to undertake further innovation. Based on existing techniques, the concept of the bracelet design stemmed from the weaving skills of producing tube-shaped bag handles. The weaving techniques used in producing a tissue-box cover were adapted to make the lampshade. By utilizing these existing techniques, rush-weavers are capable of creating various items with different weave patterns, weaving skills, or by combining different materials. Their ingenuity resulted in further product variations through exploiting a variety of familiar weaving techniques. Scott (1996, p. 308) notes that one of the factors involved in achieving successful cultural products is that producers must deliver products with consistent diversity. To facilitate product diversification, it is important to address the capability of the producers to continually generate new ideas for product design in response to a changing market. The reuse of existing techniques enhances the rush-weavers’ awareness that they have the capabilities needed to create new products.

Use local materials to maximum advantage and manifest location-specific identity

Each local craft has always had a distinctive local identity formed from the materials and the skills employed. In regard to Yuan Li’s rush-weaving craft, the triangular rush is unique to the locality and could be a competitive advantage. Due to insufficient



Figure 11. Mapping ‘What is desirable in craft?’ and ‘What is possible through design?’.

promotion, consumers seldom ascribe Yuan Li's high-quality rush-woven goods to the triangular rush, and these goods rarely demonstrate this distinctive feature by appearance alone. By deliberately highlighting this distinctive quality it will be possible to help consumers associate high-quality rush-woven products with the triangular rush from Yuan Li, thereby creating a regional identity. In terms of a marketing strategy, developing products that highlight the distinctive features of a craft helps these products create their own niche and helps to create their own unique selling position (USP) (Meethan, 2002). Recognizing the uniqueness of the triangular rush in Yuan Li, the study proposed the production of the Triangular-Rush Stool, which employed new techniques to produce the stool surface. This clearly displayed the triangular cross sections of the rush material, and therefore emphasized its specific Yuan Li origin. There is no universal solution to the challenge of creating unique selling positions, because uniqueness varies according to region. But by collaborating with artisans and being immersed in the context, designers in this case were able to unveil the authenticity of the local craft and highlight its regional identity through design. This work exemplifies novel ways to utilize local materials based on new perspectives, which could provide work for the less-skilled local labor force or even draw attention to new participants. To enhance the sustainability of community development and natural resources, additional appropriate and innovative ways to maximize the value of this eco-friendly material should be encouraged.

Knowledge Creation and Transfer through Design Intervention

Knowledge creation and knowledge transfer are sources of innovation, which is a key factor in the stimulation of local development (Bathelt, Malmberg, & Maskell, 2004, pp. 37-47). During the collaboration process, designers can act as connectors and facilitators to transfer ideas from one source to another. Designers can also propose new concepts based on previous experiences in various domains and create new opportunities for innovation. Findings from this collaboration indicate that a local craft industry can be targeted to import knowledge from other industries, or can become a source of knowledge for export to others as illustrated in Figure 12. To accomplish knowledge transfer between the local craft industry and other industries, it is crucial to exploit all accessible resources. In this study, this involved attempting to introduce the local craft industry to the modern manufacturing methods that are available to it in Taiwan, as well as expanding the application of rush-weaving to the consumer electronics industry.

To reduce the workload required to make a product, ways of combining rush-weaving with modern production methods were explored. The artisan community may consider combining rush-weaving with other materials such as wood, ceramics, metal, acrylics or plastic that can be produced by modern production methods. The manufacturing process using mixed materials is semi-customized, involving both handmade and mechanical efforts. With the help of multiple modes of production, artisans are not limited to finishing the end product completely by hand.

Thus, they can be more involved in the artistic and creative aspects of the craft, which in turn enhances their techniques and design capabilities. The selection of alternative materials and modern techniques provides artisans with multiple modes of production, but also increases the complexity of manufacturing. Thus, the use of alternative materials and production processes must match the socio-economic fabric and environment of the artisan community, so that their use can be adapted and further developed under local conditions (UNESCO, 2005, p. 139). In this regard, the sophisticated manufacturing capacity in Taiwan allows Yuan Li's rush-weaving community to easily find affordable local outsourcing solutions. In this way the production processes can remain in the control of the artisan community. Through the collaboration process, design practitioners can find possibilities for optimizing the local craft industry by exploring a knowledge base external to the local craft.

Furthermore, design functions as an interface to transfer ideas between previously disparate industries, leading to new partnerships and radical thinking. From the design perspective, introducing rush weaving to other industries may create opportunities for interdisciplinary alliances and to pioneer a new market territory for the craft. Considering the comfortable and eco-friendly aspects of rush-woven goods, these attributes of the craft have the potential to add value to the consumer electronics industry, which is a developed industry in Taiwan. A trend in the IT industry is to adapt eco-friendly materials based on customer specifications and green design trends. Facilitated by sophisticated technology, the idea of adapting green materials for IT-related products is feasible. Taiwanese companies like ASUS and Pegatron have demonstrated the application of bamboo, recognized as a green material, in electronic products⁴. Resulting works, including headset, e-book reader, and computer mouse, illustrate the possible applications of rush-weaving, and demonstrate their ability to attract the attention of relevant companies interested in new ventures. This not only increases the market presence of the craft, but also adds value to the quality and natural aspects of electronic consumer products.

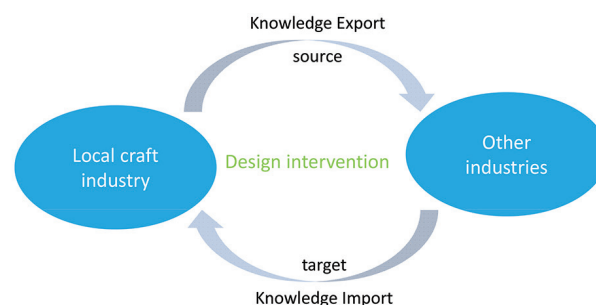


Figure 12. Knowledge transfer through design intervention.

Conclusion

The capabilities of design professionals have expanded and design skills are widely applied to various market segments. The issue of revitalizing local industry requires design knowledge. A designer's capabilities can become more socially effective and can

contribute to solving real challenges in today's society. Acting as catalysts of change, designers have the ability to help local craft industries by applying their knowledge to create new innovative business scenarios. Manzini (2009) argues that design schools and their students can be socially effective and can contribute towards problem-solving in real situations. Design faculties and their students therefore become social resources and should be encouraged to use their knowledge and experiences to address real-life problems. In this study we proposed a craft-design collaboration process which can be applied to related design practice, and we created design approaches to unearth new design possibilities by identifying desirable characteristics in one particular craft. Designers can play a catalytic role in facilitating knowledge creation and transfer, which can cultivate local craft industries. A chief objective of this collaborative project was to empower artisans to further their own innovations, and not confine them to partaking in passive replication. The experiences acquired from this collaboration could be used to inspire other artisans to become aware of their skills, materials, and techniques, and to use these resources to create innovative products. This collaboration was a learning experience for both teams. In addition to benefiting the local community, integrating traditional crafts and local materials into the design curricula effectively enriches the knowledge of designers by exposing them to traditional skills and materials in unfamiliar fields. Craft-design collaboration provides designers with an opportunity to learn how to utilize local materials based on the approaches used in crafting local products, and also provides them with an opportunity to broaden their design perspectives. We hope the knowledge and experiences obtained from this study can be applied by other practitioners as a stimulus for further research.

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Endnotes

1. Ercol furniture is created using traditional craft combined with modern manufacturing technology. http://www.ercol.com/mm5/merchant.mvc?Screen=CTGY&Store_Code=EOS&Category_Code=HER
2. Design team "mile" developed a speaker system "Something to touch" by using Wajima-technique to maximize the effect of the feature of Japanese lacquer. <http://mileproject.jp/stt/>

3. Yii - Crafts and Design From Taiwan. <http://yiidesign.com/>
4. ASUS bambooseries, <http://event.asus.com/notebook/bamboo/index2.html>. Pegatron's green materials and green manufacturing, <http://www.pegatroncorp.com/design/innovation.php>

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