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# APPLICATION OF NORMAN'S THREE LEVELS DESIGN-THEORY FOR ARTEFACT ANALYSIS OF CULTURAL RELATED DESIGN PROCESS

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Culture always associate with human activity which could give an identity. Any culture that associate with materials and objects is an aid to the creation of lasting identities. The culture will suffer loss and extinction due to less attention and preservation. In reality, designers seem less to care in injecting the cultural value in their creation and facing hardship in translating a culture object into a product. Designing a product with a cultural element could emphasis its sentimental and commercial value in the global market. Therefore, this paper aims at proposing a design process framework on how culture can be employed to generate and create product. The proposed framework explains how a culture object can inspire designers to create a product with the intervention of Norman's Three levels of Design theory. The Artefact Analysis and online survey are used to obtain the finding and creating a proof of concept that the proposed framework model capable to provide valuable references for designing a culture-inspired product. On the other hand, the local identity could be brought up globally through culture-inspired products.

**Keywords:** Cultural Element; Design Innovation; Design Model; Design Process; and Product Design

## 1. INTRODUCTION

Culture is pattern of living of groups in society which encompasses histories, beliefs, languages, arts and behaviours (Itualua-Abumere, 2013). Culture also represents someone's identities or local identities and it is important to be preserved so that the future generations know the culture which has been passing down by their ancestors. Designing a product with local culture features has become a critical matter especially when highlighting cultural value from the design aspect (Lin et al., 2017). Designing a product with culture characteristics could stimulate innovation and embrace creativity, aesthetics, function, and other connections for the living's needs. In the 70s and 80s, cultural-oriented products were highly preferred than the technology-oriented products and they are used to attract consumers in the fast-developing countries (Wang et al., 2013).

It is observed that many designers are lack of awareness to apply culture value in the design. According to Razali & Hands (2017), designing a product with culture value has been a challenging issue for most Malaysian local designers. In addition, many companies and designers in the present are more concerned about the technology, functions, and production. Hence the culture elements, history, traditions, and local identity are slowly fading and not being aggressively emphasised into the design. The researchers believe by preserving and promote and embedding local essence in the design can be considered as regional marketing channels, which provide an easy-to-communicate touchpoint for showcasing culture. Culture inspired product will be a key design evaluation point in the future as culture plays an important role in design field (Chiao et al., 2018). Hence, designers are encouraged and exhorted to foster and embed culture element and preference while designing (KunPyo, personal communication, July 30, 2019). Cultural inspired design or branding could catch one's eyes and stand out from other competitors when expressing their identity (Wang et al., 2013). In other words, designers play an important role in designing a product with a culture element and believing that could enhance the product value in the global market.

## 2. CULTURE INSPIRED DESIGN (CIP) PROCESS

Designing is the process of imagining and planning a creation, innovation, and invention with, strategies and design thinking approach. Design is no longer seen as just beautify the physical outlooks of the product. There is a broader understanding in the industry that design can influence the experience, impacts the perception of entire brand and end users' experiences. Meanwhile, a design process is a systematic approach or a framework for designers and experts involve to follow when designing

or developing better products. This is important as it helps to solve potential problems of the new products designed and helps to break down the complicated project into manageable sections. There are many stages in a design process which typically includes defining the problem, research, brainstorm and analyse, develop a solution, validate and improve. All these stages are used to ensure that all the products and creations created can be produced and sellable (Chicago Architecture Center, 2019). Researchers believe that the proposed design process must apply with cultural value while designing a product in order to bring the sentimental value which shows the closest to human preferences and experiences like consciousness, perception and life's lessons. It has been well supported by Matthew (2013) that culture and cultural value involved significant roles over almost all fundamental aspect of human condition as culture is like an individual which more or less consistent pattern of thought and action.

Culture element including ideas, values, norms and belief could be one of the inspiration or subject matter during designing. Culture can be revealed through the designed products and the process of designing is known as a "culture-making process" (Goncu Berk & DeLong, 2013). CIP design is a process of meshing creativity, culture and art into a modern product which the cultural value and aesthetic of the product could satisfy the end user (Luo & Dong, 2013). Hence, a CIP process is significant for designers and researchers while designing where a culture object can be translated into product efficiently. Thus, the researchers adapted the Three Levels of Design (3LD) theory proposed by Don Norman as artefact analysis tool into culture inspired design process framework.

## 3. THREE LEVELS OF DESIGN (3LD)

The researchers believe that the 3LD is helpful in extracting denotative and connotative values from a cultural object and this will apply into culture inspired design process framework. The denotative values of the object are the literal meaning and the physical characteristic found where the connotative values of the object are anything or words that related to emotional meaning and cultural implications that developed from human pattern of living.

Figure 1 shows the 3LD namely visceral design, behavioural design, and reflective design. Visceral design focuses on the first impression and physical appearance of the cultural object which includes form, colour, texture, and details. The behavioural design focuses on the functions and its usability where the reflective design is about focusing on the rationalisation and intellectualisation of the cultural object. This theory is

commonly applied in user experiences studies because the aspects or levels in the theory are highly interconnected and closely influenced to human's emotional system. In our point of view, product designers and researchers can impose this theory when translating an object into a product.

There are few existing successful researches used the 3LD such as Aftab and Rusli used 3LD to study the factors enabling long-lasting emotional relationship between products and user. The study used to investigate how discarded product can be adapted through emotional design. The outcome of the research concluded that visceral and behavioural elements of the product was causing the users to discard the product faster compared to emotional elements (Aftab & Rusli, 2017). On the other hand, a group of researchers (Lin et al., 2017) also did a on report regarding on "Cross-cultural Design Workshop for Stone Carving. The workshop provided the designers and participant a cross cultural model which has the element of 3LD as a valuable reference for designing a successful cultural product especially for stone carving.

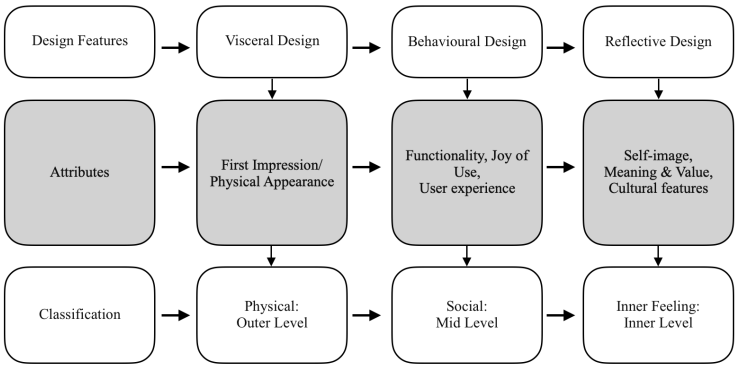


**Figure 1:** Three Levels of Design and Its classification

## 4. ENGAGEMENT OF CULTURE, USER, PROBLEM AND DESIGNER IN CULTURAL PRODUCT DESIGNING

Consumers consider many factors when purchasing a product including functions, cultural meanings, aesthetics values and also emotional aspects (Wang et al., 2013). Figure 2 illustrates that cultural, user's demand, designers' perceptions and interpretational are the principles for cultural product development. Culture and user are important factors to be considered by designers when designing a culture-product. Different places have different culture and people behaviour is shaped by the cultural values in a community. Cultural identity could be highlighted through design and it deals with users 'perception (Razali & Hands, 2017).

Designers need to understand users' experience and environment at the beginning to have the ability to transfer the cultural value context into an object. Users' role will need to be considered into the design process and communication problems can be reduced when the research methods are combined with visual probes (Goncu Berk & DeLong, 2013). Designers will need to identify the problem existed and culture features to be embedded into the product designing in order to improve the product identity and fulfil the users' experience.

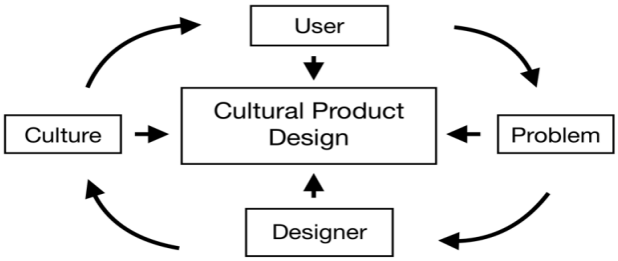


**Figure 2:** The Engagement of Culture, User, Problem and Designer in Cultural Product Designing

## 5. METHOD

Figure 3 illustrates the diagram of implementation of NTLD as Artefact Analysis tool in Research Methodology. A set of online survey is designed to identify designer's experience when designing cultural product. A total of 40 respondents who involved in the online survey are designers. Artefact Analysis is useful to explore the material culture and subject matter in terms of physical appearance, symbolic meaning of the object, and inner feelings that can impact the consumer belief. A Cultural object can be studied easily through NTLD with aid of Artefact Analysis as the list of standard questions enable designers or researchers to study a cultural object thoroughly. The result of Artefact Analysis will be used for developing keywords and characteristics of the proposed product. These keywords also enable to generate PDS before the further design development taking place.

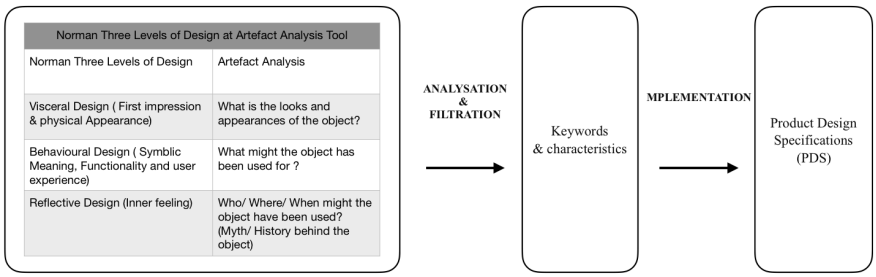


**Figure 3:** Norman Three Levels of Design as Artefact Analysis Tool in Research Methodology

## 6. FINDINGS

Figure 4 illustrates the finding of the survey which shows that majority of the respondents face hardship while designing with something cultural element (42.9%), follow the standard design process when designing (48.6%) and most of them would like to see a culture inspired design model with culture element's extraction as guideline (68.6%). Thus, authors propose a Culture-inspired Product (CIP) Design Process in this research.

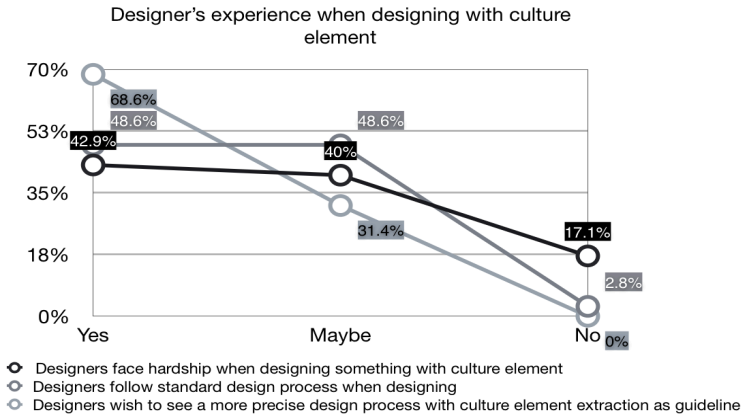


**Figure 4:** Designer's Experience when Designing with Cultural Element

## 7. IMPLICATION

### *7.1 CULTURAL INSPIRED PRODUCT (CIP) DESIGN PROCESS MODEL*

The design process is dynamic and vary from one project to another, but for this research, the researchers tend to follow a similar philosophy or framework develop by Norman known as Cultural Inspired Product (CIP) model as illustrated in Figure 5. This model is emphasis on the studying of culture objects and how it could enthuse and influence designers, and how they can interpret the design in step by step basics. Design isn't just about making things look appealing. It is about taking products from being usable to delightful and have some of local content values and beyond that to meaningful. Embedding cultural features into a product can highlight its sentimental and commercial value which at the same time can promote the uniqueness of the local culture globally. The design process model proposed uses NTLD as artefact analysis tool to extract keyword and characteristic of the cultural object for Product Design Specification (PDS). There are three major phases composed in this model which are the "Research", "Design" and "Testing".

Phase 1 is the “Research” phase which comprises of “Identification” and “Analysation”. The selection of subject matter of cultural objects is needed, in order to understand the semantic and semiotic meaning of the subject evaluation. The cultural object chosen will be analysed based on NTLD, then the keywords and related characteristics will be abstracted and added into design brief and specifications which acted as a design parameter.

Meanwhile, the 2nd phase is “Designing” stage which includes “Translation” and “Implementation” which focus on the development of cultural object features. The significant culture elements are stems from product brief and specification’s, and then it must be translated and transpired through sketches and drawings. This is vital process where the designers must know how to express the meaning of each cues from the keywords that leads to senses of purpose through creating, connections, memories and experiences. Later, mock-up and prototype are created in the next phrase to preview the adaption of culture element in product and acceptance of the end user. Finally, the last phrase is “Testing” and validation where the re-briefing or refining of the product will be carried out if the product does not comply to fulfil the requirement during the validation process.

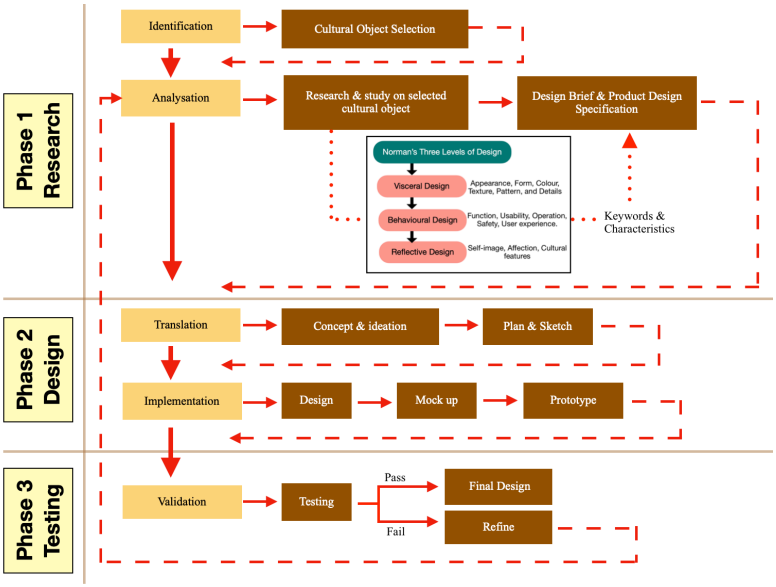


**Figure 5:** CIP Design Process Model

### *7.2 KEYWORDS AND CHARACTERISTIC EXTRACTION OF CULTURAL OBJECT THROUGH NTLD*

Typically, the designers design a product based on specifications and consumer preferences in order to fulfil the requirement of client or company’s needs. By having the image words, the researchers believes that the keywords can be translated as a

design motif and have some story behind it and must consists of symbolic meaning that associate with culture and belief .The implication of characteristic or image-words of the selected cultural object may help designers in styling and designing the product of the end users. For this research context, the connotative and denotative values of the cultural object are identified its semiotic and semantic meaning. It is a challenge for designers and researchers to synthesis the semiotic and semantic meaning of an object which may lead misinterpretation. By applying this theory, misinterpretation could be minimized, and armour shield or as known as “Terabai” in Iban dialect is chosen as subject matter of this research. Terabai is a wooden shield that carved from hardwood with tribal pattern drawn or craved on it which uses as protection shield during the war, hunting and show victory and status of the owner during the past. Terabai is custom-made and its height is about two-third of its owner.

Table 1 shows keywords and characteristic extraction of cultural object for PDS, Terabai is analysed based with all the design features in NTLD theory accordingly from the physical outlook (Visceral Design) to social usage (Behavioural Design) and the inner feeling (Reflective Design) with the aid of Artefact Analysis. The attributes and descriptions (image words) of the Terabai are listed and cluster according to the theme and this process required experiences and skills. The designated theme must including descriptors which represent common group of abstract meaning, functions, duties and must have some connection in reflecting to the idea and subject.

For this research, the image words are grouped into three main themes known as “Aesthetic”, “Material” and “Image”. The theme of “Aesthetic” included form and shape, colour, pattern and appearance of the chosen object. The second theme is “Material” and it comprises descriptors such as material utilisation, finishes, jointing system, and construction. The descriptors of “Image” theme consists of styling, trend and emotion. Once the theme is identified, the keywords of design characteristic are extracted for further develop process. The keywords must be self-explanatory to the theme, for example appearance which means of the physical looking of the object and shows reflection of the theme “Aesthetic”. The keywords of design characteristic are brainstormed and derived from the listed characteristics. The keywords obtained are listed in PDS and designers can create culture inspired modern product by embedding the characteristic of the cultural object.

**Table 1:** Keywords and Characteristic Extraction on Cultural Object for PDS

| Cultural Object : Armour Shield (Terabai) | Artefact Analysis | Norman's Three Level of Design | Theme | Design Characteristic | Product Design Specifications (PDS) |
|---|---|---|---|---|---|
|  | • What is the looks and appearance of the object?<br>• What is the shape, size, texture, pattern, colour, and weight of the object?<br>• Anything printed, stamped or written on it?<br>• What is the material of the object? | Visceral Design:<br>• Black, yellow, green colour<br>• 2 sharp end point.<br>• Mirror image,Tribal Pattern<br>• Tall, about human height<br>• Made of wood, no nail<br>• Natural finishing & dye & accessories like hairs / teeth. | **Aesthetic**<br>• Form and shape<br>• Colour<br>• Pattern<br>• Appearance<br>**Material**<br>• Material utilisation<br>• Finishes<br>• Jointing System<br>• Construction | • Black , yellow, green and red colours<br>• sharp edges<br>• pattern<br>• mirror image/ symmetry<br>• tall, available in many height<br>• Nailless, jointing system<br>• natural material<br>• Strong | • Black , yellow, green and red colours may consider into design<br>• with edges / Pattern<br>• Symmetry. mirror image<br>• Adjustable/Modular/ portable<br>• uses jointing system<br>• Less fragile<br>• Natural Material/Eco friendly<br>• Strong in appearance |
| | • What might the object has been used for?<br>• What is the function of the object ? | Behavioural Design:<br>• To protect life<br>• To show victory<br>• To show status | | | |
| | • Who might have used the object?<br>• Where might the object has been used ?<br>• When might the object has been used?<br>• What is the myth or history behind the object? | Reflective Design:<br>• Bravery<br>• Strong<br>• Masculine<br>• Protection<br>• Leadership | **Image**<br>• Styling<br>• Trend<br>• Emotion | | |

## 8. CONCLUSION

A perceived value of traditional culture through product interaction and usage before embarking a new creation is not new among designers. Nevertheless, the implementation and awareness are superficial and some of them may not fully understand how to engross culture into design. Designers must understand and know-how to translate and apply image words and cues of culture objects into a new product in order to create dynamic and intertemporal vitality. We believes, the integration of identity value into products can endorse and preserve culture, and it could also promote a local and national identity value in the global market.


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