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# Designing Product Gestalt:
# Semiotic and semantic influences of ablution development

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## Abstract
Product gestalt is a way of thought explaining how the designer's brain perceives design in its immediate development process and environment. Any endeavor to create product gestalt requires aesthetic, technical, including the chasm and fuzzy design approach. This paper thus attempts to provide a usable direction to researcher discuss fundamental demands on structuring a new concept with the design principles and monitoring used for concept resolution strategy. The organization of design gestalt is based on the correlated ablution sub-function with semantic and semiotic representation. It is a principle in exploring several concept developments with possible configurations of ablution prototypes.

Keywords: Product gestalt; design semantic; design thinking; ablution

## 1.0 Introduction
Product gestalt is an arrangement of parts that appear and function as a whole that is more than the sum of its parts (Monö, 1997). Anwar et al. (2016) described; a general understanding of parts arrangement as a whole (ablution gestalt) as part of the consideration when selecting the participants. A result from In-Vitro Design Protocol shows the element of the organization in all visible surfaces, it has responded to gestalt phenomenological and revealed the strategy used by designers in constructing the design structure. There is a different strategy for creating gestalts found in the total amount of form elements reflecting the ordering (low and high), which has to allow us to assess (meta-analysis) designers' intuition in the situation. A design specification through the intuition stage (creating craft gestalt) has demonstrated how a design decision in three different abstractions level related to function means analysis (Anwar et al., 2017). This result indicates the ingredient of product gestalt derived from messages that are encoded into the product by the designer (the sender), while these messages are carried by the physical product gestalt (the combination of form, color, texture, and structure). To resume, the product is the sign, it concerns how designers encode meaning into their products and how they communicate with the user.

Form and visual analysis include the three-dimensional description of the form, where the form factors, as the elementary concept of product gestalt can enable the designer to integrate the aesthetic, semantic, and ergonomic characteristics into product form. From here, this research is translating the operative approach to the creative design field with a requirement of some consideration of design semiotics and semantics. In general, design semiotics is the study of signs, addressing how designers and users make and share meaning utilizing artifacts (Mendoza-Collaoz, 2018) while semantics is the study of their meaning. It is an agreement with Morris (1938), who fragmented the process of product design may be inquired by three semiotic levels as shown in Fig. 1a known as the Pragmatic Level (why the product exists), Semantic Level (what people think about the product) and Syntactic Level (how it was made). As explained by Grilo (2017), these

iterations may work in a user-centered design (UCD) approach, in which strategic decisions and prototypes are refined and evaluated by user perception (Fig. 1b).
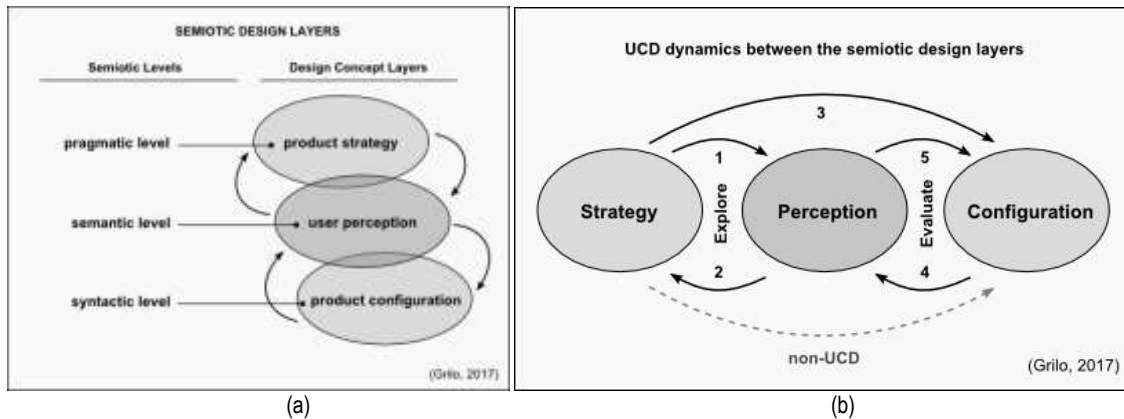


(a)                                                                      (b)

Fig. 1: (a) Semiotic design layers; (b) UCD dynamics between the semiotic design layers
*(Source: Grilo, 2017).*

## 2.0 Product gestalt and the principle of visual perception

Abidin, Sigurjonsson, Liem, and Keitsch (2008) defined, form-giving in design as a creative process to mold or shape a certain model into a unique condition or shape. The words "formgiving" or "form-giving" have been frequently employed by Scandinavians in design research practice as a forum for debate. Formgiving in engineering design refers to a particular stage of the design process. To be more explicit, ideation was translated into a realized design through or known as a solution-principle (Muller, 2001). On the other perspectives, form-giving understanding in design can help designers who involve in the work of either aesthetic design or structural design (Anwar et al., 2015; Misnan et al. 2022). Designers might identify form-giving with elegance, efficiency, robustness, and awareness thanks to it as an aesthetic component. In contrast, Form-giving features, especially in the form of the finished product, are more likely to be perceived by designers as elegant, efficient, and practical in modern design. The comparative research of form-giving by Abidin et al. (2008, p. 367) is based on two selected experts used as a symbolic reference to integrate the requirements of ID and ED, notably for shaping or materializing. The manipulation of a visual element extended the form evaluation through several stages. Abidin et al., (2008) were able to describe the transition of form development, beginning with geometric forms and ending with organic forms. Most important, they can find the right time to conclude any aesthetical form development. Anwar (2016); Vermol (2018); and Siran (2020) have also agreed that several of the models used by a designer to describe how products communicate with users were the transmission model of communication which was originally proposed by Shannon and Weaver (1949). Those messages are encoded into the product by the designer (the sender).
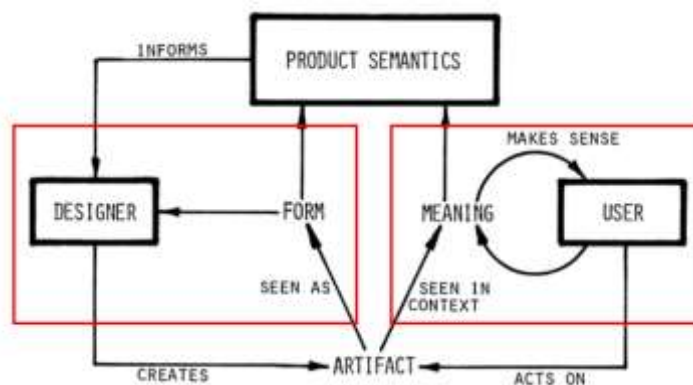


Fig. 2: Interaction of Designer-User-Artifacts with Product Semantics
*(Source: Krippendorff, 1989)*

For instance, Krippendorff (1989) provides a perspective on product semantics as part of studying to understand users' understanding of their practices of interfacing with designed things and provides strategies for designing products that can either afford or supportively intervene in that understanding. Vermol et al. (2020) and Hassan et al. (2022) agree these messages are carried by the shape of the physical product  (the combination of shape, color, texture, structure, etc.) and are ultimately decoded by the user (the recipient of the message). There are four types of semantic functions (describe, express, admonish, identify) in Monö's model as the basis for communicating meaning between artifacts and users. Since the aesthetic requirement of the form has become a crucial situation in the development of any product; Xenakis and Arnellos (2013) expanded the aesthetically oriented emotions that influence design participants to create, communicate, and use those design representations that bring them closer to their goals. Figure 2 shows the aesthetic interaction

by evaluating the interactive alternatives that help the user to reach the goal by constructing meanings that clarify the path (product semantics).

Since Vihma pioneered the "analysis of form" to distinguish and describe applicable variations of shape (product) and, Akner-Koler gift comprehensively the principle of visible evaluation and third-dimensional description of shape, the technique is significant to evaluate contrast parameters of comparable products which range with traditional engineering practices (Abidin, 2012). Warell (2001, p. 169) includes a principle of shape writing wherein he defines that shape factors, so-called 'shape factor' attributes to the feature or great of a thing. Warell has defined that designers are required to categorize the shape elements to relate shape factors to functionality, in a such maximum hierarchal degree of product or the bottom degree in shape features. From the design factor of view, permitting clothiers to combine the aesthetic, semantic, and ergonomic features into product shape is depend upon how they take into consideration the usage of shape elements while producing shape elements. Thorough and complete know-how among those designers primarily speaks to the primary layout properties. As for layout completeness, the shape feature delivered to outline the shape elements, because of the standard idea of product gestalt (Abidin, 2008; Anwar, 2016; Vermol, 2018; Siran, 2020).

## 3.0 Contextual inquiry: A case study of ablution principles in creating product gestalt

It is possible to analyze existing semiotic structures using the analytical method of semiology, however, it is less effective at simulating alternative signifying systems, or systems that change, transform, and self-interpret, or environments (Johari et al., 2022). It will argue that design and aesthetics are fundamentally the same phenomena, not in the sense that design is the study and application of aesthetic principles to practical objects or experiences, but rather in the sense that design is the organization of the counterfactual elements of artificial-designed environments. This research took place in a selective mosque at Klang Valley, where the general cultural performance of ablution (wudhu) is based on an architecture designed by chance. Raif et al. (2022) claimed none of these ablution designs can be considered a product as a whole (product gestalt).



Fig. 3: Ablution space design at mosque around Klang Valley

The observational research and interview with Imam were collected during Congregational prayer on Friday. These data were used to integrate the data gathered to identify current guidelines and understand the existing design characteristic, including the ergonomic perspective for ablution space. Based on case example studies shown in Figure 3, which is taken from several mosques (Klang Valley), shows how the existing architectural design of wudu space yielded to emphasized the importance of best practice while performing the ablution (wudu). The respondent in agreement with wudu space should be considered of all parts. An innovative design such as cleanliness, neatness, and comfort should be applied in every ablution space for wudu in a mosque. On the other views, the existing wudu space always faced the same problem. The water splash during ablution will later be caused by the ablution area being more undersized the safety and cleanliness. Either the mosque management has an agreement with the "need to change the existing architectural design to a more systematic way and suggested the form-follow-function need." In addition, the respondent suggested that a good design for the ablution space should be implemented so that self-purification can be done more properly. Safety officer Masjid Bandar Diraja Klang, "the good 'wudu' space must be well in terms of safety. The material of the 'wudu place must be durable, comfortable, and clean. Nowadays, the existing wudu space is just concerned with basic features without emphasis on other aspects. The comfortable while performing ablution should be preferred because it is a public facility that is used by everyone. Because of that, the comfortable, clean and safe should be needed design characteristic of ablution space."

Table 1. Usability body of knowledge and user experience of existing ablution design

| The Ablution Need | Design Issue | Proposed solution |
|---|---|---|
| How important of ablution facilities for users at a mosque? | Ablution facility is very important and should have in every mosque because it is a needed requirement before prayers. | Complete design product as a whole |
| What is your opinion on comfortable for users while performing ablution? | Wudu facilities should have seats for multiple users, especially for old people and the disabled. | Should have seat. Consider on distance and height of the pipe. |
| | The existing 'wudu space is not proper because the distance and height of the pipe can cause the water splash. | Should have handling and footrest |

| | Should have handling and a footrest for more ease to the user performing 'wudu'. | |
|---|---|---|
| What is your opinion on 'wudu facilities in mosques nowadays? | 'wudu' facilities still with basic features and no improvement towards more practical and systematic. The importance of 'wudu' facilities should be emphasized so that users can perform more proper on 'wudu' | To have improvement and be more practical with systematic |
| What is the characteristic needed to produce better ablution facilities? | The user needs are very important, especially for old people and disabled people. Body stability during 'wudu', avoiding water splash, and handling for cover stability body is an important thing that should have in 'wudu' facilities. | Importance on body stability and avoiding the water splash. |
| What are importance things that should have on 'wudu' facilities? | The material of the 'wudu' place must be durable, comfortable, and clean. The good 'wudu' space must be well in terms of safety | Consider on material that will be used for the ablution tub |

## 4.0 The relationship between semiotics and semantics in creating an ablution design concept

The essential message of gestalt in this research identifies the symbolic configuration of an element that unified as whole product architecture of the ablution concept. It required further investigation based on the early results due to the design properties cannot be derived from a simple summation of its parts. The identification is not to attempt what design should be or anything works for product development trying to be. There are a lot of studies has been done to discuss designers' abilities and to explain how they work, and they respond to a few common theme emerge. This explanation was detailed by Vermol (2018) on how user-designer play an important role in creating artifacts. Based on Figure 4 shows the interaction between the sub-mode of interpretation by designer, artifacts, and user (DAU). When the process of a man-made thing, the user-designer will involve three other modes known as motives, conditions, and goals (MCG). The sub-mode of MCG shows the existence of semiotics and semantics while the user-designer constructs and artifacts.
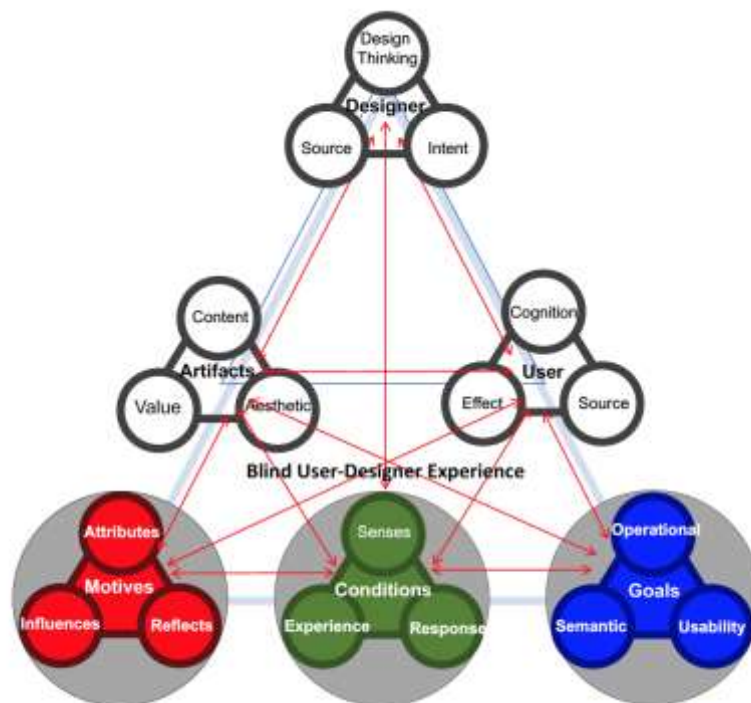


Fig. 4: Illustrates researcher model in the need of associating Blind User-Designer Experience for research through three (3) segregated colors representation reflecting through Engeström's model of activity system model in DAU
*(Source: Vermol, 2018)*

*4.1 Semiotic and semantic influencing intuitive gestalt*
Odgis (2021) explained, semantics and semiotics create a particular visual language, which, when strategically combined, creates a unified brand. In conceptualizing an ablution design, a system that uses visual components (form structure) to communicate is known as a design language. The signal (which in this case wudu experience) is perceived by the user's eyes and received by their brain, which interprets it and converts it into feelings, emotions, thoughts, and actions. It communicates meaning by using visions or symbols. The user that the design concept attempting to attract can recognize the patterns of these visual or form components. The established form structure derived from the arrangement and combination of experience forge a stronger ablution concept. the design anatomy and identity are strengthened to become memorable by using a consistent visual and spoken language system in ablution performance.

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The proposed design structure of the ablution concept as shown in Figure 3 can forge and improve design communication by using the understandable composition of design language. The form-giving was strengthened to become memorable by using a consistent visual, form, and design language system. There are many design variables at play for an ablution concept to succeed. Even if the form design and visuals on their own may be meaningless, composing the semiotics and semantics meaning of the wudu experience used properly, can help construct the ablution concept. It is important to take into account these ideas and include all suitable elements (wudu main principle consists of face, hand, head, and toe) of visual and semantic interpretation into a cohesive whole that can communicate in its distinctive intuitive gestalt. Anwar (2016); Vermol et al. (2018); Toyong et al. (2020) are agreeable with these intuitive gestalt judgments for coherent fragments, it is based on the activation of semantic object representations, which influenced designers' intuitive impressions of "X-Factors " even when the underlying object representations were unconscious.

*4.2 The experiment of user-designer anticipation based on product perceptual experience*
Prototyping is a development model in which a prototype is built, tested, and reworked until an acceptable prototype is achieved. It also creates a base to produce the final product gestalt. It works best in scenarios where the product requirements are not known in detail. It is common to see six and seven-point scales, but the seven scales is preferred because it provides a neutral midpoint (Martin and Hanington, 2012). This research, as shown in Figure 5 performed 'Function follows Form' during ideation and prototyping exercises, it provides a broader space to explore concepts of ablution through intuitive gestalt.
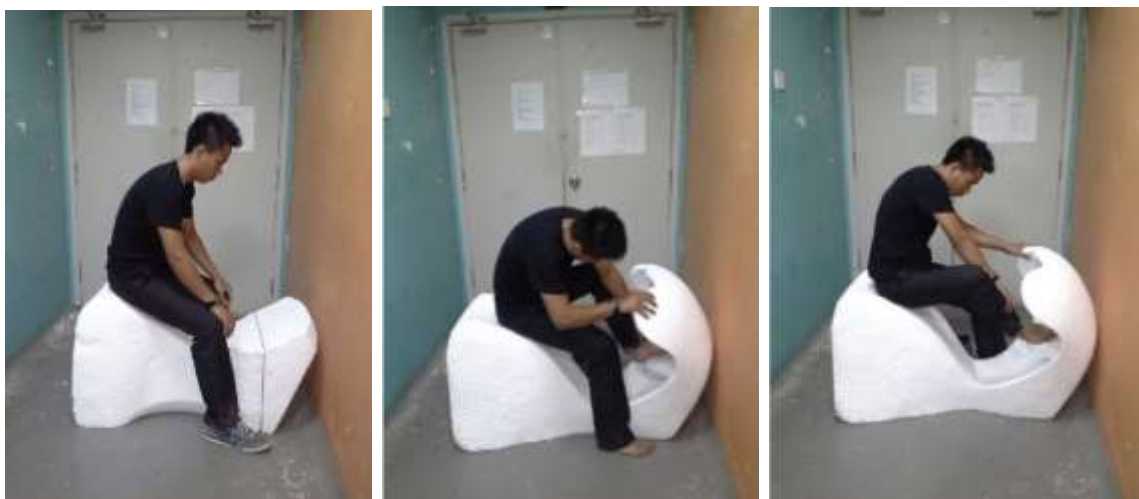

Fig. 5: Designer experiencing function follow form

The designer's intuitive response as referred to in Figure 6, the form evolution semiotically evolved by applying Jawi as a prominent form element. Jawi is a writing system used in several Southeast Asian languages, especially the Malays (by both the ruling class and the common people). The structure of the product gestalt morph is semantically influenced by Jawi as a dominant script to represent the design meaning of Islamisation and Malayisation. It is now applied in this prototype development that is attempting to start a design based on Malay-local identity. Many of The ablution product semantics are highly optimized for early development, resulting in aesthetic characteristics such as curvaceous, forms, symmetry, wholeness, and distinct body profiles. The Jawi's (alphabet) design personality is morphed into the ablution design structure (see Figure 6) by reflecting prominent semantics features of the jawi's lean (concave vs convex). Based on the experimental formgiving results, the numeric code representation is the best method for representing the main structure of the Jawi sub-word image influencing the semantics domain of the proposed design idea.


Fig. 6: Form evolution based on intuitive gestalt

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## 5.0 Prototypes analysis reflect normative user experience and perceptions

The use of Jawi's forms in ablution design styling might result in a form that has a broad appeal since designers frequently equate Islamic art creations with balance, elegance, and efficiency. Additionally, due to the high level of optimization inherent in natural forms, the employment of Jawi's forms is intrinsically consistent with functional needs. The nonhuman form (anthropomorphism), which bases its traits on human characteristics, can be used as a design reference in the ablution place of a design shape. When embodied agents are constructed for particular tasks and domains like user needs and production standards, they can be expanded upon to become a more specialized design. Designing embodied agents of ablution prototypes should take wudhu performance into serious consideration as a major design element. The process of casting human posture which is based on random sampling selected from any design during form evolution as shown in Figure 7 (a), (b), and (c) helps in developing the agent's design personality of three other modes mentioned before as motives, condition, and goals.
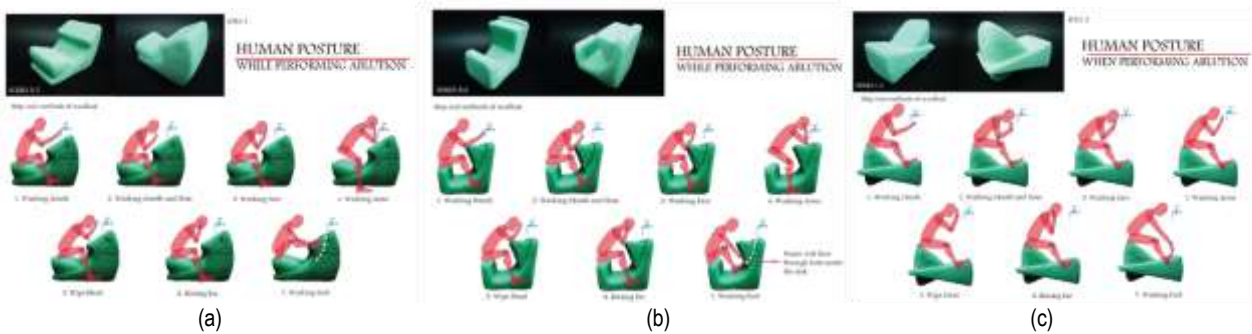


(a)        (b)        (c)

Fig. 7: Body storming of 4 example design prototype with (a) Ideation 1; (b) Ideation 2; (c) Ideation 3

There are many design variables while looking into human posture while performing ablution, at play for an ablution concept to succeed. Even if the form design and visuals on their own may be meaningless, composing the semiotics and semantics meaning of the wudu experience used properly, shows a complete ablution design as a whole. The ablution product gestalt forges and improves design communication by using an understandable composition of design semantics. The form-giving was strengthened to become memorable by using a consistent visual, form, and design language system. Taken into account these ideas and include all suitable wudu main principles (consisting of face, hand, head, and toe) of visual and semantic interpretation into a cohesive whole that can communicate in its distinctive intuitive gestalt.

## 6.0 The conclusion of conceptualizing ablution product gestalt



Fig. 8: Design semantics in ablution concept

It is important to highlight that one potential challenge to this interpretation is that participants may have intuitively discriminated coherent from incoherent fragments not by an unconsciously activated semantic object representation, but rather based on surface features like connectivity and closure (Hurtienne & Blessing, 2007). From this research, it can conclude during the form creation, the concern with the concreteness of aesthetical reasoning in the design process especially during the design phase, there is a convergence and divergence process involved by the user-designers. It involves three levels of form development: (1) the early phase (divergence), when the user-designer practically performs ablution practice while getting an idea; (2) the middle phase (semantics influence) when the user-designer considers the type of form meaning in which the orientation of the image elements embedded with design representation; and (3) the final phase (convergence), when user-designer make decisions that result in a using any sample of image developed to perform ablution. All of these stages are connected by a well-known intuitive process of product gestalt. The results in Figure 8 show that using linguistic interpretations as a means of analysis to investigate formgiving is significant. User-designer, the preferred qualitative measurement method

of developing the product prototype, semantically provides a sign behind the design component (red-line in Figure 8). In this case, semantics space reflected their differences in suggestive of associative meaning.

Based on the user-designer experience and perception, practicing body storming of prototype testing, despite having a good impact on aesthetics, these designs frequently have the possibility of performing ablution practices. Resulting in the loss of advantages over the ergonomics factors. In this context, it is necessary to have a deeper understanding of users' experiences and perspectives, particularly their feelings and preferred modes of interaction, to rethink ablution product design and better cater to end-user preferences. To achieve a complete design goal in the future, a serious ablution design must provide not only the core qualities of the functioning system but also the finest possible experience while also determining whether they have a good impact on user lives. Finally, the study demonstrates that semantics features can influence designing product gestalt. Having multiple concepts assessed against the same dimension, the semantics deferential between concept ideas can be mapped.

## Acknowledgements

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