

# Chapter 12

## Narrative—A Vehicle to Generate Product Form



Suresh Sethi 

**Abstract** The paper focuses on the aesthetic assessment and evaluation of the designed product forms. The emphasis was on whether narrative improved the expressive qualities and the unity of the designed artifacts. The story seems to be the condition that guarantees the unity of the object, and at the same time, gives the product form its structure by connecting and merging lines, colors, shapes, and volumes of the experience into a new form. This merging is what philosopher John Dewey called aesthetic experience. Aesthetic experience has a central focus, in which attention is upon intensity and unity of the object, where unity is a matter of coherence and completeness. The study results confirm that using narratives at the design process's conceptualization phase structured the perception and organized designers' own experience to generate the product form.

### 12.1 Introduction

Design involves feelings, and narration helps to instill meaning and emotion in design. Metaphors, analogies, and narratives are powerful tools that help to bring concepts to life. Designers create objects not only as a set of logical propositions but often as a pattern of experiences. Designers link unconnected links to create new designs. Visual experiences are based on the features of the visible world. These experiences are stored in the unconscious and are manifested through the ideas they generate. Designer's direct experiences and perceptions of the everyday environment play a crucial role in the generation of design ideas. Designers create new patterns and new relationships that once may have seemed obtuse, unrelated, or even inappropriate. Moreover, they do this by deliberately blurring the lines between fact and fiction. Narratives provide a way in which designers can explain what they do in an understandable and informal style.

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S. Sethi (✉)  
University of Illinois, Urbana Champaign, Champaign, IL, USA  
e-mail: [sethis1@illinois.edu](mailto:sethis1@illinois.edu)

“Design is metaphorical, just as language is metaphorical, the design is informed thought or emotion” [1]. Language organizes much of our experience. Language enables us to conceptualize, manipulate, and invent new forms [2]. “The typical form of framing experience (and our memory of it) is in narrative form” [3]. “Storytelling, after all, does nothing, except shuffle words, and yet through the arrangement of the words, new worlds are built filled with an imaginative wealth” [4]. The designer organizes and constructs the events’ excitement and emotion into the product form by framing experience as a narrative. Narratives bring the inert material, processes, and product form to life.

## 12.2 Aesthetic Assessment

This study assumes that the narrative helps the visualization process result in more desirable product forms. The product form visualized using narratives is preferred to the ones designed without narratives regarding aesthetic appearance to which unity—coherence and completeness—is essential. Here, aesthetics is the “essence” of the narrative or the “feel” of the object at first glance. Dewey also noted that “essence” could also mean the indispensable “gist” of a thing. All artistic expression moves toward the organization of meaning to capture the essence in this sense. According to Dewey, there are no standards for critical judgment, but there are criteria of judgment. These criteria are a means of discovering the aesthetic dimensions of product form [5]. When people look at objects, the objects are experienced sensually, objectified rationally, and realized as a synthesis. They use language to express their feelings, whether the object was pleasing or not. Dewey proposed that language provided a way of sorting out our thoughts about the world.

Research through design approach was adopted to investigate the value of the proposed design framework. This approach focuses on embodying emotion and personality in product appearance, as Don Norman put forward in 2004, and Ortiz et al. in 2008 [6, 7]. During the study, different sets of products were designed with the aim of visualizing the form with and without narratives. However, this paper focuses on the evaluation of these sets of stimuli.

## 12.3 Designing the Assessment Scale

The systematic aesthetic evaluation of the product form generated with narratives has several stages. The first step is to define what is to be measured. In this assessment, we are interested in what the object looks like, focusing on what the form of an object “appears or feels.” In this aesthetic assessment, besides evaluating the designed object (the logical outcome of the process), the research also intends to determine if narrative use creates a positive effect regarding the expressive qualities and the unity of the designed artifacts.

As the aesthetic point of the design is communicated through the precise use of language, we started investigating what terms and words designers use when defining a product aesthetics. The development of the product personality scale followed the general steps of the scale development proposed by Pascalle Govers. “Firstly, we formulated a definition of product personality and established its defining components. Then we determined the format measurement, and an initial item pool was generated. Next, this item pool was reviewed with respect to defining components of product personality and reduced to manageable number. A final stage in the development concerned the unequivocalness of the items” [8]. However, in this study, the main focus was not on the product’s personality but more on the unity of the product form and whether the linguistic approach can help assess the aesthetic appeal.

## 12.4 Format of Measurement

Designers more or less consciously strive to create a coherent unity of three factors—“instrumental,” “affective,” and “preference.” Each of the three applies to different functions and qualities of the artifact. Narratives facilitate the right kind of cues in the visualization of the product form and help in communication. Moreover, the narrative is the key to a coherent design or an integrated matrix within which one can sense the visualized form [9]. The “essence” or the “emotion” of the narrative is communicated with adjectives. Although researchers could use only one emotion on a practical level, we can capture the full construct of the aesthetic assessment of a product form [10]. Therefore, the three-factor model would be an appropriate way to assess the visualized form’s completeness and coherence of the visualized form to assess the narrative’s effectiveness to create the product form.

We decided to use adjective pairs representing two opposites (e.g., strong-weak) as “aesthetic impression may be defined as the sensation that results from the perception of attractiveness (or unattractiveness) in products” [11]. There are different theories regarding contrast, light and dark, and dominant and subordinate qualities in creating a product form. According to Kostellow (1947), “balance, not the symmetrical equalization of weight or median lines, but the dynamic distribution of it to achieve livingness; tension, the awareness of the drama of existing relationships in space between widely separated parts; integration of positive and negative volumes...; opposition, the forceful relationship of the heterogeneous elements in the design structure” [12] are all essential in the perception of the product form.

Johannes Itten, the famous instructor of the Bauhaus school, favored teaching students about contrast. “Light and dark, material and texture studies, form and color theory, rhythm, and expressive forms were discussed and presented in their contrasting effects. Finding and enumerating the various possibilities of contrast was the most exciting lesson because they realized that a whole new world was opening up. The students had to study the contrasts in three ways: to experience sensuously, to objectify rationally, and to realize as synthesis” [13]. For Itten, this opposition was one of the most expressive and vital means of design, as the gradation between the

poles of contrast contains life and serves as an emotional quality, that is, the essence of the product form.

## 12.5 Selection of Aesthetic Terms to Form the Concept Scale

The study's primary aim was to select aesthetic dimensions that show a particular pattern of relationships, to indicate a coherent unity of the three factors—instrumental, affective, and preference. Several steps (see Table 12.1) led to a shortlisting of the aesthetic dimensions. Table 12.2 depicts the final list of the nine pairs of opposites.

**Table 12.1** Steps of shortlisting aesthetic dimensions

Words listed to describe the aesthetics of product form	
Study 1: Industrial design students ( $n = 30$ ) list 20 words they use to describe designed artifacts	Simple, functional, innovative, aesthetic, modern, sustainable, unique, elegant, dynamic, ergonomic, minimal, fashion, durable, and smart were the only words repeated more than five times
Study 2: Literature search: Sibley's aesthetic concepts	Sibley's approach to aesthetics uncovers the richness and range of language applied to the everyday world. According to Sibley, aesthetic terms come in an almost endless variety and span a vast range of types and sub-types (Sibley, <i>Aesthetic Concepts</i> , 1959)
Mugge, Govers, and Schoormans's product personality scale (2009)	The original list of 1142 words was reduced to 78. From these 78 words, a manageable set of 20 words finalized, and the verbal description of the words developed
Ortiz Nicolas (2014)	Ortiz Nicolas came up with a set of twenty-five positive emotions, including ones that are highly preferred by designers: e.g., curiosity, joy, confidence, inspiration, fascination, and pride
Blijlevens et al. (2017) expert shortlisting	Blijlevens et al. found 86 words based on extensive literature research that include "clear, dynamic, varied, powerful, beautiful, distinctive, moved, and novel"
Study 3: Industrial design students ( $n = 57$ ) list five words from the experts 24 words	Two experts helped create a list of 24 words that were found most appropriate for the current research The shortlist was compiled by the experts reduced to five words. This list was discussed with the experts to get the final list of nine words relevant to the current research

**Table 12.2** List of nine pairs of opposites

Clean–Messy	Delicate–Rough	Desire–Disgust
Dynamic–Static	Elegant–Not elegant	Formal–Casual
Strong–Weak	Surprising–Boring	Varied–Monotonous

These dimensions were then used to describe the product form visualized with narratives. This study’s artifacts were from the pool of items collected from design practitioners during this fieldwork. We recruited thirty design students. The preference for recruiting only design students was their training in color, line, three-dimensional volume, spaces, and to notice or discern expressiveness and unity in an object. Each participant received a set of questions based on the adjective pairs for each aesthetic dimension—the set compiled for rating based on each of the nine dimensions for nine artifacts. The photograph and the narrative of each artifact are individually illustrated. Two experts selected these nine artifacts from the pool of 81 artifacts collected during the fieldwork—three versions of the questionnaire made in a randomized order. Before the participants got started, test procedures were explained, the narrative read aloud, and the artifact’s high-resolution color image was projected on the screen. Each participant completed the test individually and rated nine products based on each for the quality dimensions.

The study was set up to test the reliability of the aesthetic assessment scale. Most importantly, the main focus was on the role of narratives in generating the product form. The scale could be considered reliable if each stimulus’s dimensions were perceived consistently by the thirty participants, who assessed the nine dimensions allocated to each artifact collected during fieldwork. The mean scores of the product dimensions are depicted in Table 12.3. The results show high-reliability values for all nine stimuli. The alphas are all high (0.79–0.88), and the  $r_1$  values are all significant. These results indicate that the product dimensions profiles of all stimuli were perceived consistently by the participants.

**Table 12.3** Reliability of the scale calculated for each artifact variant ( $n = 30$ )

Artifacts from fieldwork	$\alpha$	$r_1$
Artifact 1	0.79	0.30
Artifact 2	0.84	0.36
Artifact 3	0.88	0.47
Artifact 4	0.84	0.38
Artifact 5	0.85	0.41
Artifact 6	0.79	0.30
Artifact 7	0.81	0.33
Artifact 8	0.87	0.42
Artifact 9	0.79	0.34

## 12.6 Concept Scale

The aesthetic assessment scale consists of adjectives that could be interpreted differently by each participant. It is also clear that these nine dimensions, which may not be present in all the products, influence the product form through their particular arrangement. One way to create a scale is to address these values would be to broadly group them into three sub-groups—instrumental, affective, and preference. These sub-groups are at a higher level of abstraction than piecemeal dimensions and therefore allow a holistic judgment.

**Instrumental**—utilitarian/functional—Is the design grasped as a general whole; is it complete and coherent? Is the representation of the narrative strong? Is the articulation of the visual sketch and drawings clean and formal? Do the instrumental components—formal, strong, clean—describe the quantitative, measurable aspects of the designed product form.

**Affective/Expressive**—emotional—Is the solution (the product form) elegant/delicate/dynamic/varied/surprising? What are its regional qualities, and how intense are they? According to Beardsley (1958), an aesthetic object has certain obvious and emphatic features—its dominant patterns or qualities—that stand out clearly and can be perceived without much effort. “The features which make something delicate or graceful are combined peculiarly and uniquely; the aesthetic quality depends upon exactly this individual or a unique combination of just these specific colors and shapes so that even a slight change might make all the difference” [14].

**Preference**—Is the product likely to be purchased? The deliberate choice of making a preference relies on understanding the design attributes of both instrumental and affective and of how the elements of color, material, volume, texture, patterns come together coherently to evoke the intended aesthetic experience. An ideal choice of object is both sufficient (functionally) and satisfying (emotionally/experientially).

All three qualities are considered when making a value judgment on design regarding its coherence. To what degree is the design coherent with the subject? Coherence is a matter of having elements connected appropriately, and an orderly accumulation of energy toward a climax should be present to an unusual degree [15]. The concept scale is depicted in Table 12.4.

## 12.7 Testing the Three-Factor Scale

The final step in scale development is testing the concept scale concerning validity and reliability. The aesthetic dimensions grouped around three factors, and the following questions needed an answer:

**Table 12.4** The three-factor aesthetic assessment scale

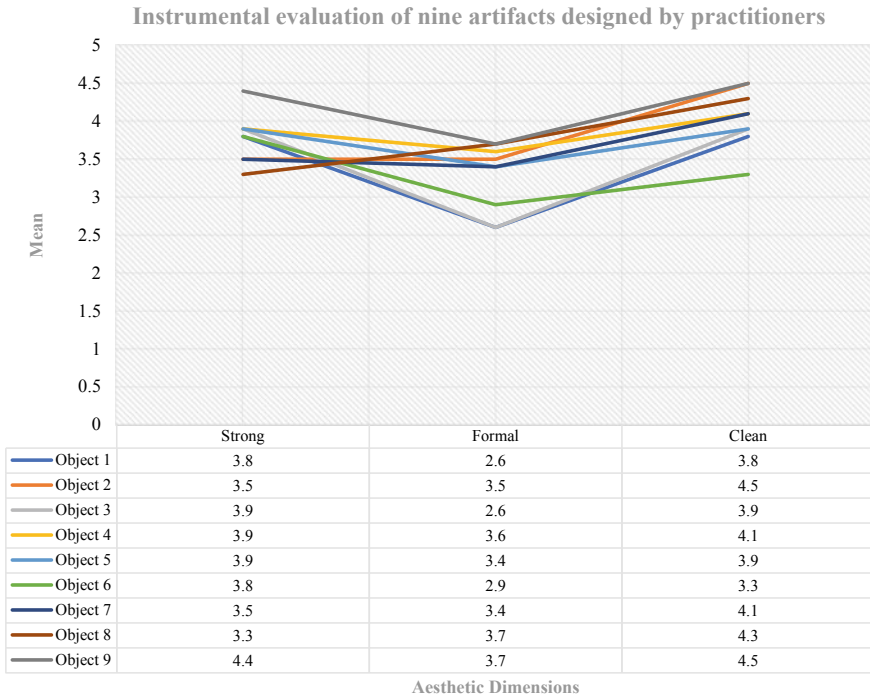
Three-factor model	Dimensions	Evaluation
Instrumental	<ul style="list-style-type: none"> <li>• Strong–weak</li> <li>• Clean–messy</li> <li>• Formal–casual</li> </ul>	<ul style="list-style-type: none"> <li>• How well does the narrative work in creating the product form?</li> <li>• Is the narrative clearly translated into visual form?</li> <li>• Is the output strong regarding visualized drawings and product form?</li> </ul>
Affective	<ul style="list-style-type: none"> <li>• Elegant–not elegant</li> <li>• Dynamic–static</li> <li>• Delicate–rough</li> <li>• Varied–monotonous</li> <li>• Surprising–boring</li> </ul>	<ul style="list-style-type: none"> <li>• Is the product form elegant/delicate/dynamic/varied/surprising?</li> <li>• A beautiful object has a specific dominant quality that we are likely to notice. Is such a quality present?</li> <li>• What are its regional qualities, and how intense are they? Are they balanced?</li> </ul>
Preference	<ul style="list-style-type: none"> <li>• Desire–disgust</li> </ul>	<ul style="list-style-type: none"> <li>• To what degree does the design cohere with the subject?</li> <li>• Is the design complete and coherent?</li> </ul>

**Is the narrative clearly translated into visual form? Is the visualized output strong and coherent?** Coherence is promoted by focus, balance, and equilibrium and the similarities between the parts of the design. If the narrative process was meaningful, there should be a degree of agreement between the participants about the instrumental dimensions of a particular artifact, even though they had rated the product independently. The outcome of the test (Fig. 12.1) gave strong support to the idea that participants found that the artifacts designed with narratives were meaningful.

**Is the product elegant? Do the participants prefer elegant products?** The Collins Dictionary defines the adjective “elegant” in the following way: “if one describes a person or a thing as elegant, they mean they are pleasing and graceful in appearance or style.” An elegant solution is one that has maximum effect for minimum means. Elegance is a unique pairing of two often contradictory qualities: extreme simplicity and surprising impact. The results (Fig. 12.2) showed how the participants found the artifacts elegant and strongly supported the idea that people prefer elegant products. The test outcome supports the general idea that design students found products created with narratives meaningful.

## 12.8 Experiment Design

The project in which workshop participants was asked to design cool boxes with and without narratives. The experiment followed a mixed method with three artifacts designed with narratives and three without narratives. Therefore, the participants



**Fig. 12.1** Mean ratings for “instrumental.” The results are for the dimensions of “strong,” “clean,” and “formal”

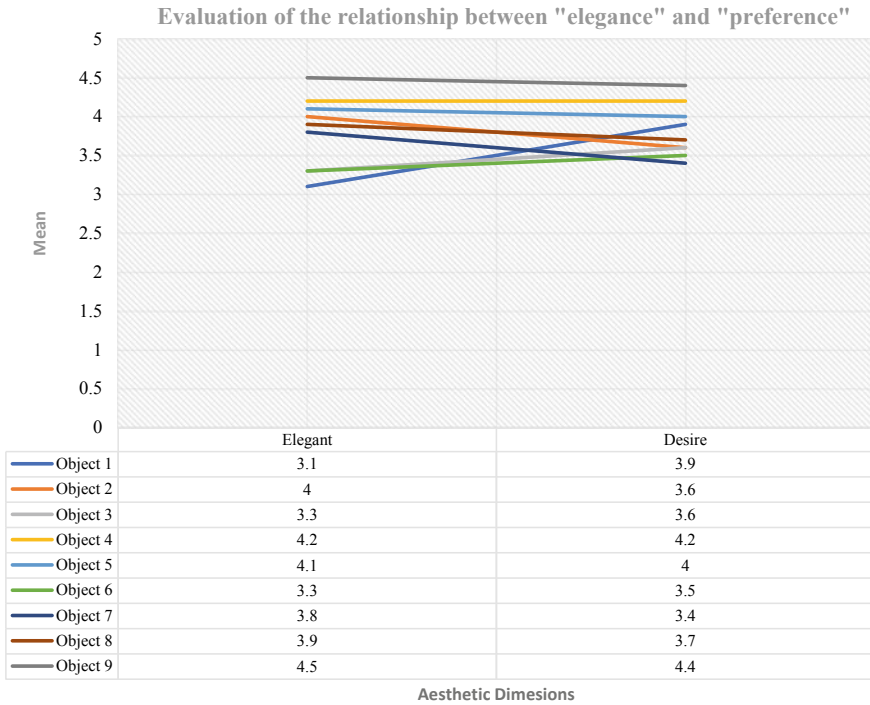
were split into two groups: first investigating the artifacts with narratives and the other the artifacts without narratives.

**Participants:** We recruited the same thirty design students who had taken part in the previous study. All students were from the industrial design program, twenty of them were women (67%), and ten were men (33%). The participants’ age ranged from 21 to 28 years, with an average of 23 years. Participation was part of their studio class.

**Questionnaire:** Each participant received a set of questions based on the adjective pairs for each dimension—the set compiled for rating based on each of the nine dimensions for six artifacts. The photograph and the narrative of each artifact are individually illustrated. Three versions of the questionnaire were in a randomized order.

**Procedure:** Before the participants got started, test procedures were explained, narratives were read aloud, and high-resolution color images of the artifacts were projected on the screen. Each participant completed the test individually and rated three products based on each of the quality dimensions. The artifacts with and without the narratives are illustrated in Fig. 12.3. The stimuli were presented on two sets of three





**Fig. 12.2** Evaluation of the relationship between “elegant” and “preference”

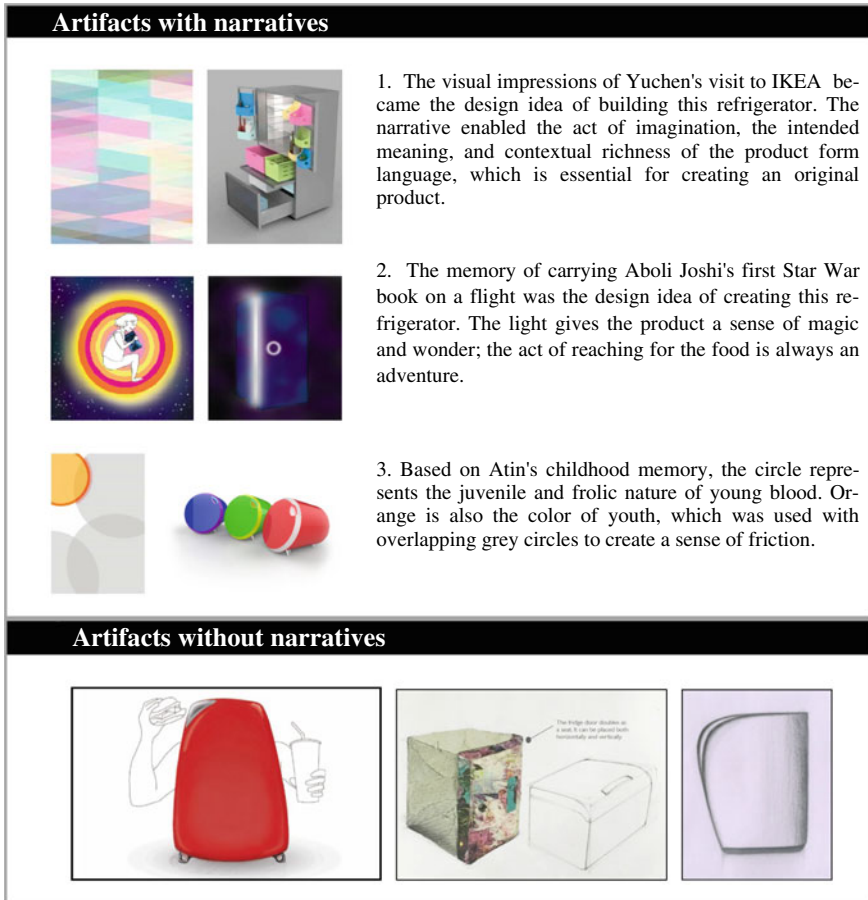
A4 sheets. The study conducted in a design studio setting and the rating items took participants 20 min to complete.

**Stimuli:** Color pictures of the artifacts were projected on the screen. A survey was created for rating based on each of the nine dimensions. Each participant in the two groups individually rated the three refrigerators from the aspect of the quality dimensions.

**Results of the Experiment:** The results of a one-way analysis of variance (ANOVA) [16] are summarized in Tables 12.5, 12.6 and 12.7.

The study results confirm that using narratives at the conceptualization phase of the design process structured the perception and organized designers’ own experiences to generate the product form. In design, words, images, and shapes—in combination or independently—are used to communicate the concepts and represent the understanding of the physical world of artifacts. These are the most common media that designers use to interpret and reformulate design concepts. Stories and lived experiences are fundamental building blocks of design.

For the students, every new design is a risk, as it brings the possibility of failure. When asked to describe their inquiry methods, they speak of experience, trial and error, and intuition. Using narratives gave them the freedom to pursue their own



**Fig. 12.3** Artifacts are designed with narratives and without narratives

**Table 12.5** Results for “instrumental” with and without narratives

Source	S.S.	df	M.S.	F
Between treatments	16.8056	1	16.8056	11.26606
Within treatments	265.5222	178	1.4957	
Total	282.3278	179		

The main effect of the narrative treatment (“instrumental”) was significant with  $F = 11.26$  and  $p < 0.05$

**Table 12.6** Results for “affective” with and without narratives

Source	S.S.	df	M.S.	<i>F</i>
Between treatments	9.72	1	9.72	5.92796
Within treatments	488.6267	298	1.6397	
Total	498.3467	299		

The main effect of the narrative treatment (“affective”) was significant with  $F = 5.92$  and  $p < 0.05$

**Table 12.7** Results for “preference” with and without narratives

Source	S.S.	df	M.S.	<i>F</i>
Between treatments	3.2667	1	3.2667	4.50396
Within treatments	42.0667	58	0.7253	
Total	45.3333	59		

The main effect of the narrative treatment (“preference”) was significant with  $F = 4.50$  and  $p < 0.05$

sense-making goals to formalize the form’s character and elements. The emergence of coherent information from a narrative became the guiding principle that created a meaningful and integrated form. The students found that the narrative was a very positive way for them to go about their work. Most students said it “was a new way to visualize” and “it gave us a tool to create and communicate clearly.” Narratives helped the participants in planning and navigating the process, as well as in decision making. They discovered that design was not set apart from daily life but sprang forth from our experiences’ visual impressions. All students expressed an interest in exploring this way of designing and further investigating the narrative approach. Most students also suggested using narratives again when developing their concepts as they felt it helped build their confidence. “Narratives give the designer a pair of wings to transcend limitation and do original work” [17].

## 12.9 Discussion

According to Ossi Naukkarinen (2010), the study has some inherent limitations, aesthetic judgment cannot be proven right or wrong by scientific methods, and aesthetic qualities cannot be directly measured. The method of both making and analyzing aesthetic judgment is a discussion. Naukkarinen believes that aesthetic issues have to be discussed to be defined, explaining that aesthetic judgments may vary with evaluators and that no scale exists for aesthetic judgments. The point of aesthetic judgments is to get others to agree rather than find the absolute truth [18].

Designers seek, express, confirm, and ascertain a sense of being through their creation. Design students take the category of a product form for granted—when

they have to design, say, a lamp—they look at all the “lamps” and design a “lamp”—the challenge is to make an ordinary object extraordinary. The use of narratives captures the essence of a designer’s experience, which helps conceptualize product form. Narratives forge links between function and emotions. The function and the use of the product are the elements we take for granted—we do not question, for example, why a lamp lights up. In contrast, when one encounters an exception to a given function and wants to grasp what is happening, they will always come up with a narrative that gives reasons. This narrative’s function is to find a story that makes a deviation from a canonical cultural pattern comprehensible. Narratives interpret form and what form means to them. It mediates between the object’s functional world and the expanded world of beliefs, desires, and hopes. It renders emotions comprehensible; it frames the experience and provides the means to construct the product form.

Most research on product personality has focused on consumer preferences and behavior, and products designed in a short period (e.g., three products were created during a 45-minute session; for details, see Govers, Hekkert, and Schoormans, 2004). These stimuli were used to test whether personality embodied in product appearance was recognized as such by the consumers. The Govers et al. research relied on designers’ skills to embody selected personalities in three products by using their approach, and thus it is not reported how designers created the stimuli. This raises important questions regarding stimuli creation for research on product appearance. How the designer interprets the emotion he or she embodies in the visualized form is also worth considering. To assess the stimuli, they should be complete and coherent—they should have the necessary information with which respondents can perceive the same meaning and references as those intended by designers. When we want to remember something, citing the work of Frederic Bartlett, Bruner quotes, “what most often comes first to mind is the charged ‘attitude’—that it was something... that was exciting. The effect is rather like a general thumbprint of the schema to be reconstructed. The recall is then a construction made largely by this attitude, and its general effect is that of a justification of the attitude” [19]. The designer’s capacity to render experience regarding narrative is an instrument for making meaning of the product form and is a reconstruction designed to justify.

These findings have clear implications for design education: teaching designers to use narratives as part of their concept generation, especially in the early stage of design when concepts are ambiguous, can produce new interpretations. “When designers are producing drawings entirely for their benefit instead of presenting information to others, this reflective process is almost the whole part of the drawing. It is these design drawings, sketches, scribbles, diagrams, and the like that most offer this conversational potential” [20]. Such drawings are done by the designer not to communicate with others but rather as part of the very thinking process enabling them to visualize product form. The process that starts with ambiguity and anxiety also makes the designer wonder, and when the solution is made visible, it is sheer surprise and astonishment for everyone.

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