

EXPRESSING PRODUCT CHARACTER: TEACHING DESIGN STUDENTS HOW TO EXPLOIT FORM'S PARAMETERS

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ABSTRACT

Defining products' aesthetic characteristics in terms of shape properties can represent a challenge for design students and sometimes for design professionals too. Outlining aesthetic features of products is indeed a relevant activity since it affects product understanding and meaning together with its underlying expressive character. It often happens that design students exclusively lean on their sensitivity to fulfil this task without having a critical core competence of form-giving. Moreover, during the educational activity within a Master Course in Product Design, a lack of commonly shared vocabulary to define products' aesthetic characteristics was noted by the team of researchers. A design exercise was therefore arranged that stemmed from a previous research about form-giving, form parameters, products' character.

The first activity consisted in the selection and definition of parameters that can be used for the description of objects' forms. Then, an educational activity was defined to let design students apply these notions to their work, basing on Active Learning approach. In the activity here presented, this skill is rehearsed through two steps. During the first phase students individually applied the parameters to very basic and abstract models. In the second phase, students were asked to shape a product that had to convey a given character, challenging them in applying abstract notions of form and surface parameters onto an actual product. This way, the connection between form-surface parameters and characters was highlighted.

The novelty of this case consists into the effort of building a straight connection between the abstract learning of formal concepts and the design oriented approach to the issue. Examples of results and feedbacks from students will be reported.

Keywords: Form generation, product character, form parameters

1 INTRODUCTION

Form-giving is a design activity that deals with formal features of products, and as a consequence with values and meanings to be transferred to people. It was indeed stated by different authors that the appearance of products is a major determinant in character attribution [1], [2], [3] that represents a way for people to understand products and to remember how to interact with them. As high-level and general description of a product, character attribution can occur at first glance in form of non-specific judgment; it relies also on functioning and mode of use, but appearance is the only aspect that can create an idea of the character just by a casual glance. [3] Products' character is strictly connected to products' values and qualities that have a relevant role in consumers' judgment making and purchase decision. It is a vehicle for meaning and values that products can transmit through the appropriate composition of their formal features. Products are therefore communicative objects which transmit a message through a language that is the Product Language, which bases on the properties of shape. It is Product Language the coding which must be handled to communicate an intended message to consumers. Products' character attribution by people is therefore a critical aspect to be controlled by designers since it can influence consumers' behaviour in term of acceptance or avoidance. [4]

Design students, as well as design professionals sometimes, often face this challenging aspect of product design which links products' formal features and characters to be conveyed. Authors intended to propose a specific exercise to train design students in overcoming this crux. The first set of exercises belongs to the culture of Basic Design teaching, while the second one refers to formal design

approach. The novelty of this case consists into the effort of building a straight connection between a more abstract learning of formal concepts with a more design oriented approach. That is to let students find out the link between basic knowledge (such as what “dynamic” may mean in formal issues) and its application to real design cases.

1.1 Aims

The aim of the authors was to enable first level master students to define products’ shape, materials and finishing with critical awareness. The educative goal was to provide students with the necessary knowledge, vocabulary and tools to face the attribution of chosen characters to industrial products, by setting formal and material parameters in a conscious way. The intended purpose was not to offer students predefined solutions, such as “...if you want to obtain a serious character then make a proportioned, stable composition, with few detail and non-contrasted colours...” since, even though a predefined formal setting might be effective within a specific product category [5], it is not relevant in a transversal way for different categories of products. On the contrary authors goal was to stimulate students first in critically observing the connection between products character and their formal features, and secondly in giving form to their designs considering this issue. The aim is therefore to improve students’ awareness and skill in setting formal features that define products’ character.

2 EDUCATIVE STRATEGY

2.1 Methodology

Due to the fact that authors goal was to promote critical thinking about the application of formal features of products, the strategy selected to be at the base of this educative activity was Active Learning. It has indeed been assessed that Active Learning and engaging students during the educative activity improves their ability in critical thinking and their deep understanding of the concepts to be learned [6], [7], [8]. In order to promote “thoughtful engagement on the part of the student” [8] authors decided to introduce the topic of formal parameters through a brief ordinary lecture and then to apply the concepts explained into a practical manually-involving exercise. In this way authors tried to find balance between inductive and deductive educational approach, that is considered a particularly relevant teaching mix in design discipline [9], [10]. The educative process went through individual exercises that were shared and confronted with all the students of the class in order to verify that personal intentions were effectively understood by other people. In some exercises students were also asked to evaluate the works of their classmates in terms of preference and of best application of the concepts explained, in order to stimulate critical observation and sense of competitiveness that usually increases inclination to effort and enjoyment during the activity. Authors consider the passage between individual work and comparison with others’ as an opportunity of critical and auto-critical in depth-analysis that contributes in students’ professional growth.

The educative activity here presented was composed of two phases:

- Phase 1 consisted in two days activity about form and surface parameters, that served to transfer fundamental knowledge to students to be trained through basic design exercise [11] [12]. This phase was structured to stimulate awareness of the concepts in an abstract and practical way, aiming at developing their visual sensitivity [13].
- Phase 2 consisted in two days activity about designing a product with intended character, in order to allow students to apply the parameters provided during the first phase on an industrial product, an hairdryer, to be aesthetically redesigned conveying a specific character.

2.2 Understanding of form parameters through basic design exercise (Phase 1)

The theoretical input for this task is the definition of a vocabulary of terms that describes the parameters of form and surface. Teachers selected the terms, choose a definition and descriptive images of the parameters and their variability. In particular, parameters selected for the form were: size, proportion, composition, outline, details and materials [14]; and for the surface were: colour, texture and finish.

During the class, parameters were introduced through images of products, architectures and natural elements that represented the extremes of the variability of the parameters. For example, the parameter "ratio" was defined as "a relationship between things or parts of things with respect to comparative magnitude, quantity, or degree" which can vary between being balanced/unbalanced or

harmonious/disharmonious. [14] The parameter was represented by the image (Figure 1A) and with some products, as for examples in Figure 1B. We reported here two armchairs, the Vanity Fair (1930) by Poltrona Frau and the Ron Arad's Big Easy, by Moroso (1991).

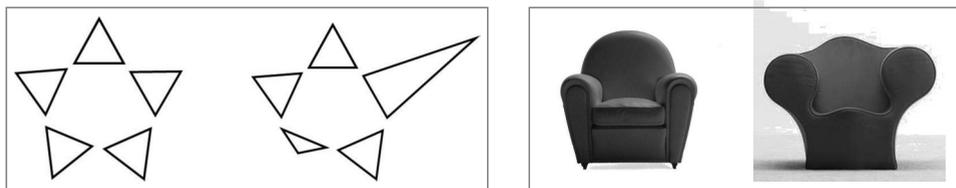


Figure 1. a, b Proportion parameter explanation: balanced/harmonious vs unbalanced/disharmonious

These drawings and armchairs illustrate the two extremes of the parameter “proportion”: balanced/harmonious (the example to the left of the pair), unbalanced/disharmonious (the example on the right). In the case of these two armchairs, also, it was pointed out to students how the different proportions express a different character that could be described as "serious and classic" in the first case, "funny and original" in the second. Once described the parameters, the following step was to put them into practice.

In order to test the parameters in an abstract way it was chosen to perform a Basic Design exercise with the use of clay. At first it was asked to make combinations of pellets - with a diameter of about 5-20 mm. This choice was made in order to avoid any possible influence deriving from individual hand-drawing skills. At the beginning it was asked to make compositions that represented a single variable of a single parameter of: *size*, *proportions* and *composition*, for example: size "small", proportion "balanced", composition "articulated" or "dynamic", etc.; Then, moving on to represent more than one parameter at once, students were given a trio of variables and developed a composition that represented them. The trio was given in secret. In this way, at the end of the exercise, students had to guess each other's represented variables, thereby giving immediate feedback to the effectiveness of their work. As an example two images (Figure 2 A, B) show the results that interpret - very effectively - three formal parameters, according to the adjectives given by teachers. In the first case, Figure 2A balanced (proportion), static and primitive (composition); in Figure 2B organic and dynamic (composition), disharmonious (proportion).

The second exercise was carried out on the parameters of form (details and outline) and on the parameters of surface (colour and texture), with the same approach of the previous exercise. However in this exercise it was allowed more freedom in the choice of the composing elements (which must have a basic composition of three primary solids). Figure 2 C shows an example. In this case the composition features were: consistent details and three-dimensional angular geometry.

At the end of each exercise it was made an overall assessment of the results and the best works were voted and discussed among the group in order to develop critical thinking and awareness.

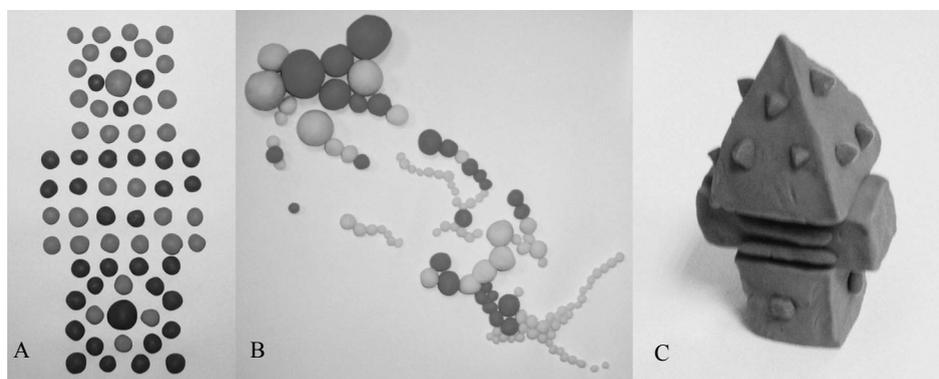


Figure 2. a, b, c Results from basic design exercises on form's parameters

2.3 Designing a product with intended character (Phase 2)

The role of products' character is not only that of mere aesthetic expression but also it helps people in understanding products and connected values. Janlert e Stolterman state that "People, as well as things, appear to have character--high-level attributes that help us understand and relate to them. A character is a coherent set of characteristics and attributes that apply to appearance [...] providing support for anticipation, interpretation and interaction." [3] Products' character depends on products' appearance [1], [2] that consists in shape, materials and finishing. In this perspective defining products' character is a matter of designing products' appearance by setting formal and materials' features differently on the base of the pursued meaning to be transmitted to people. [3] The second phase of the educative activity described in the paper, aims at improving the ability of students in implementing an intended character in their designs by consciously and appropriately setting formal and materials' parameters. Using a deductive approach authors asked students to apply the formal parameters understood in the first phase on a real design activity to obtain an intended result. Students were indeed asked to redesign a hairdryer in order to make it express a defined character starting from a moodboard prepared by authors and the set of parameters previously provided. Based on their research experience on other industrial products, authors selected the appropriate characters that would be useful to describe hairdryers. These characters were defined through moodboards were: performing, glamorous, feminine, futuristic, unconventional, easy, practical. Each student was given a moodboard that visually represented a character with its synonymous, made of images expressing concepts related to it. It then started an iterative process of designing and refining the formal and material features to evoke the desired character. Students were firstly asked to draw by hand their designs and to try different outlines focusing solely on shape parameters excluding materials and finishing, in order to assess their influence in creating the character. They were then asked to add suitable shading and representation of materials and finishing complementing the shape. (Figure 3)

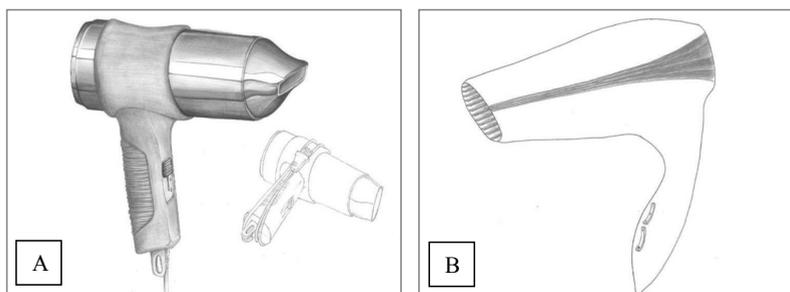


Figure 3. Examples of handmade drawings of hairdryers with character made by students.
A: practical character; B: feminine character

Authors stimulated students to think about how modifications in the outline, in details, in proportions etc. could change the character of the designed product, and about how colours, materials and finishing could highlight and underline it.

As a feedback to test the efficacy of the formal setting that each student gave to his/her design, a qualitative verification was set up within the class, in order to assess that the character each design conveyed corresponded to the intended one. The handmade drawings were displayed to the class and each student stated the character each design expressed, saying which formal or material elements determined it; the class had to reach a shared conclusion and endorse the conveyed character. This shared comparison was a moment of enjoyment that allowed students to understand what other people see and perceive when looking to their design. During the qualitative verification authors could notice that every design conveyed the intended character even though in some cases some characters had overlapping concepts and similar formal and material features. In particular futuristic and unconventional character, practical and easy, as well as feminine and glamorous, could end up with similar formal configurations due to some overlapping semantic elements. Nevertheless the possible misunderstanding was solved by working on details and by underlining typical formal features of the intended character. For example a glamorous hairdryer can stand out for its evident decoration, while a

feminine one can have softer geometries and details; a futuristic one can have unconventional details but still keeping an archetypical composition.

The full exercise (phase 1 and phase 2) was developed in parallel with a 3D NURBS CAD course hold by another professor, in which students learned how to represent their ideas in a 3D virtual space, introducing the formal and materials parameters step-by-step. The realistic rendering representation is a tool to represent effectively shape, materials and finishing of new designs (Figure 4 A, B).

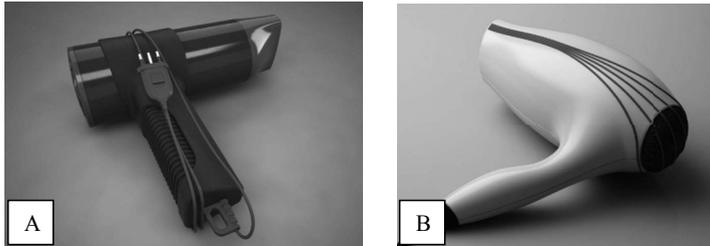


Figure 4. Examples of realistic renderings of hairdryers with character made by students. A: practical character; B: feminine character

Students were eventually asked to make a rendering of their hairdryer in order to see a realistic effect of shape, materials and finishing, highlighting intended character. Due to the personal ability in sketching and hand drawing, handmade drawings were in some cases less significant than the same product design represented with realistic rendering. The rendering view allowed fully perceiving the features conveying the intended character, underlining details, materials and finishing. Through this step students had also the occasion to realize how different can be the visualization, and thus the overall perception, of a handmade sketch and a 3D virtual model [15].

2.4 Students feedback

Authors submitted a questionnaire to the students taking part in the exercise; questions concerned the usefulness of the exercise, the relevance of the topic and the novelty for the students. A relevant result was that every student understood the importance of handling form parameters and their role in character definition.

Answers showed that most of them (7 out of 11) never dealt with the topic of intended character attribution to products and never faced the form-giving issue in such a detailed and structured way. Some of them (2 out of 11) just partially confronted with this issue during their educative career but never had a specific exercise able to highlight relevant features determining products' character. Regarding the Phase 1 and the Phase 2 of the exercise students reported a general positive appraisal in terms of usefulness, that was more marked for the Phase 2 (10 out of 11), the one regarding product's character attribution, than for the Phase 1 (7 out of 11). Moodboards were unanimously (11 out of 11) considered useful for the comprehension of the character to be conveyed with the new design of the hairdryer.

3 CONCLUSIONS

The educational activity on parameters of form enabled students to acquire critical knowledge that could later be implemented in a real product. They developed the skill of knowing how to change the form parameters in order to obtain different characters. Once these abstract concepts are experimented and critically acquired, designers are able to reapply them in any different context. Students experienced that the form is a powerful way to convey intended values and characters by modulating its parameters in an informed and critical way. The role of materials and finishing, in determining the character, was limited on purpose, in order to focus on reasoning about changing the shape.

From the educative point of view it must be noted that from the questionnaires it emerged that students had some difficulty in grasping the point of the Phase 1 of the exercise. This was a little of a surprise because during the exercises students were participating with interest and enthusiasm and they also seemed seriously impressed by the content of the activity. Probably, the gap between the work and the evaluation comes out when we asked if it was clear the purpose of those exercises in the whole

process. It evidently was not enough clear. Probably because it was more abstract and less connected to the praxis of designing a product and, in some cases, they probably did not understand the relevance of the basic Phase 1 in order to proceed with the more pragmatic Phase 2 of products' features definition to convey an intended character. As result from this experience, authors will consider how to link, even more, the two phases. One hint would be, probably, to start from the analysis of existing products describing their character and highlighting which formal parameters define such character. Then it could be useful to show that those parameters are defined by very basic elements (lines, shapes, colours, etc. and relationships among them.). In this way it should be clearer why it is useful to train the skills to master these basic elements abstractly, before applying them to the development of a character.

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