

MUSES IN DESIGN: A COMPARISON OF INSPIRATION TECHNIQUES IN PRODUCT FORM GIVING EDUCATION

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ABSTRACT

Defining a products' shape is one of the key challenges for design students in the overall product development process. The formal design of a product determines to a great extent the expressive character and appeal and influences the perception of the product and the appreciation by the consumer. But before a designer or student designer can actually start to give shape, he or she needs 'inspiration', a vague, mysterious, intangible and hard-to-define phase preliminary to the act of design or visualization of ideas.

This paper reports on a comparative study of the integration of inspirational tools and techniques in form-giving in the design curriculum and projects of the programs Product Development at the faculty of Design Sciences of the University of Antwerp (Belgium) and the program Industrial Design Engineering at the faculty of Engineering Technology of the University of Twente (The Netherlands). The focus of this paper is to get a better grip on the vagueness of those inspiration tools.

The comparative study indicates that there are different types of inspiration tools that will conform to different types of students. Some need a more rational way in getting inspiration, others benefit more from an intuitive approach so they can fully use their creativity. The study leads to a general input-form inspiration - translation – creation - output model where the inspiration techniques are categorized into three distinguished approaches: inspiration tools based on a more systematic approach, an intuitive approach and a contemplative approach. The model also shows different levels to translate the inspiration tools into new product form-giving ideas, based on regeneration (copying elements of the inspiration source), transformation (transforming the elements of the inspiration source into new forms) and interpretation (reinterpreting the inspiration source).

Both institutes integrate rational, intuitive and contemplative techniques in the curriculum, so students get familiar with different working methods. This will help students to get insight in their personal creativity process, and can serve to better diversify future design projects.

Keywords: Inspiration, Form-giving, Creativity, Rational inspiration, Intuitive inspiration, Contemplative inspiration

1 INTRODUCTION

Should the role of form-giving in product design still be argued, or is it a truism? Multiple authors [1, 2] conclude that the visual appearance of products plays a significant role in determining consumer response, and that good form evokes an aesthetic experience. The number and variation in related studies and the search for methods to initiate and facilitate the form generation process and to verify the outcomes [3] demonstrate the interest in the study of form-giving [4].

In most designs schools, the study of form is integrated and anchored in the educational program. Parallel with a general methodological approach that industrial design and design engineering educational programs initiate to develop products, design institutes also offer a variation of tools and methods to support the form-giving sub phases in the development process. A necessary prerequisite in form-giving is 'inspiration', a vague, mysterious, hard-to-define phase preliminary to the act of design or visualization of ideas. However the initial source of inspiration is often underexposed [5]. Goncalves claims that novice designers tend to stick to a limited array of external stimuli and ideation methods, which could ultimately result in a hindrance to design creativity. Therefore it is important to support

novice students in getting inspired in different ways and learning them to use those inspiration techniques effectively.

The importance of this knowledge of methods, tools and techniques that support the creative process is in line with the statement of neurobiologist D. Swaab, who states that creativity is the ability that someone has to connect (in his head) in a surprisingly and unexpected way old with new knowledge [6]. This paper aims to focus more on the inspirational sources in form-giving than on the generative creativity techniques in ideation and will show an overview of the different inspiration techniques used in the program Product Development at the faculty of Design Sciences of the University of Antwerp (Belgium) and the program Industrial Design Engineering at the faculty of Engineering Technology of the University of Twente (The Netherlands). Both institutes initiate their students a variety of form-giving tools and techniques, spread over different courses in their curriculum.

2 ANALYSIS OF THE ACTUAL STATUS

To get a grip on the matter of form inspiration, we inventoried all form-giving related design projects and exercises in our curricula and isolated the form inspiration tool or technique involved. Some exercises are very basic and straight forward, and focus on specific aspects of form like proportion, variation, orientation, order et cetera. Other courses emphasize form ideation techniques like serendipity or synesthesia, and the advanced design projects try to incorporate multiple layers in the form-giving process in order to obtain meaning of form. The analysis of the projects and exercises revealed a certain similarity in design approach. Between the initial design brief (input) and the final result, all designers go roughly through the same stages: a form inspiration phase, a translation phase [7] and finally a creation phase that leads to the final design result (output). This process can be summarized as the IFITCO model (figure 1).

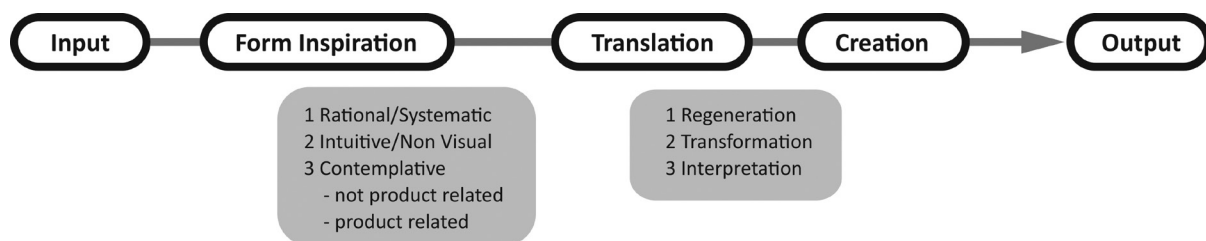


Figure 1. The IFITCO Model

3 SYNTHESIS - THE IFITCO MODEL

Undoubtedly ideation and (form) inspiration are often linked. Experienced designers think integral, in a way that 'idea' and 'form' arise simultaneously, and not consecutive. But to get more grip on the intangible notion of inspiration, we focus our comparative study on the second stage in the IFITCO model; in order to get insight in how designers cope with form inspiration. By inventorying, discussing and analyzing the form inspiration tools and techniques initiated in both our curricula, we concluded that all these tools can be allocated to one of following three approaches: a rational or systematic approach, an intuitive approach or a contemplative approach (figure 1) [8]. All the approaches will be explained and visualized with examples from both institutes in the next chapters.

3.1 Rational or Systematic inspiration tools and techniques

Multiple authors and researchers have reported on rational form-giving methods before [9-12]. What these methods have in common is that they divide the creation process into several stages (of transformation) and that they usually are geometrically based or defined.

The two systematic form-giving inspiration tools initiated in both the institutes, are similar. The first inspiration tool is the approach based on the principles of 'order and meaning in design' [12]: ordering and structuring basic volumes, and introducing basic notions of topology, typology and morphology. The second one is the two-step-generation method [4]. This step-by-step approach starts from geometric volumes. By simple manipulations and variations in surface orientation the method offers the possibility to generate a number of form alternatives (figure 2).

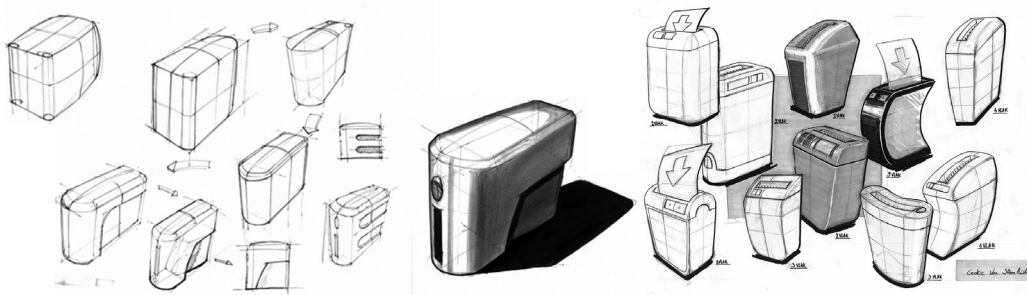


Figure 2. left: Two step manipulation method applied on a game console (Twente_Thomas Houwers); right: Two step manipulation method applied on a design for a paper shredder (Antwerp_Cedric van Steenkiste)

3.2 Intuitive inspiration tools and techniques

Although Goldschmidt and Sever [13] speculate that visual stimuli are possibly more effective than textual stimuli, non visual inspiration sources can also be useful to designers to build up their own stocks of form-finding techniques. Intuitive inspiration techniques let students discover their own personality, teaches them to follow their own intuition in creating novel product forms and gives them confidence in making decisions based on the inspiration source. Intuitive inspiration tools incorporated in the design projects of both institutes are: serendipity, silhouette drawing, synesthesia, music as form inspiration tool, taste as form inspiration tool etc. All these techniques use non visual stimuli to create new forms. The left picture of figure 3 shows us the serendipity technique, defining a product form based on a group of random sketched lines (Antwerp), the right picture shows us the integration of drawing black silhouettes to create new product forms from scratch (Twente).

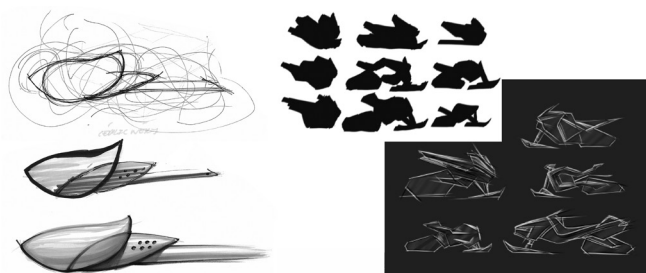


Figure 3. Left: gas lighter sketches using the serendipity form giving inspiration technique (Antwerp); Right: Snow scooter sketches using the silhouette form giving inspiration technique (Twente).

3.3 Contemplative inspiration tools and techniques

Research on the designer workplace [14] has shown that designers use existing images and photos (and other rich visual material), pasted in moodboards and collages as generative tools. The relevance of collecting visual material as inspiration tools for designers is extensively argued by multiple authors [14-16]. Design research has also demonstrated empirically that exposure to visual stimuli at the conceptual search phase in designing has a positive effect on idea generation in terms of the judged creativity of preliminary solutions [17, 18]. The definition of ‘contemplative approach’ was chosen because the production of these visual data is a carefully considered act in the design process.

Depending on the specific goals set by the design assignment, or the stage in the form-giving ideation process, students of both institutes compose moodboards and collages as generative tools in the process of form-giving. These moodboards can show abstract, not product related images like e.g. nature, textures, materials, spheres, or concrete, product or artefact related visuals like Form/style analyzing collages, brand analyzing collages or a set of images for a ghosting technique.

The nature of the collage or moodboard can lead to different design translations: abstract sources tend more to interpretation (an interpretation of the abstract visual stimuli), while e.g. a Form/style collage could more easily lead to regeneration (copying style characteristics of the visual stimuli) or transformation (translating the style characteristics of visual stimuli into new forms) in the design results [7]. Since moodboards and collages are most commonly used by designers, it was no surprise that we determined a large mutual equality in the integration of these techniques in the two design

programs. Figure 4 illustrates two visual input tools of the contemplative approach that the institutes have not in common. The scheme in Figure 5 summarizes all of the inspiration sources applied in the design curricula of Antwerp en Twente. Apart from the techniques initiated in our projects, there are undoubtedly various other form inspiration tools and methods (eg periodic table of forms [9]), but in this paper we limited ourselves to those that are offered in our curricula.

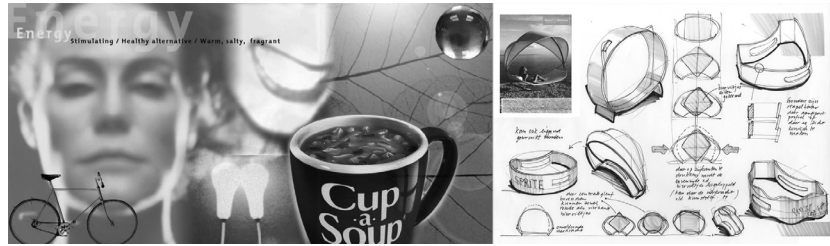


Figure 4 Left: Vision moodboard of abstract images (Twente); Right: Image based Serendipity (Antwerp)

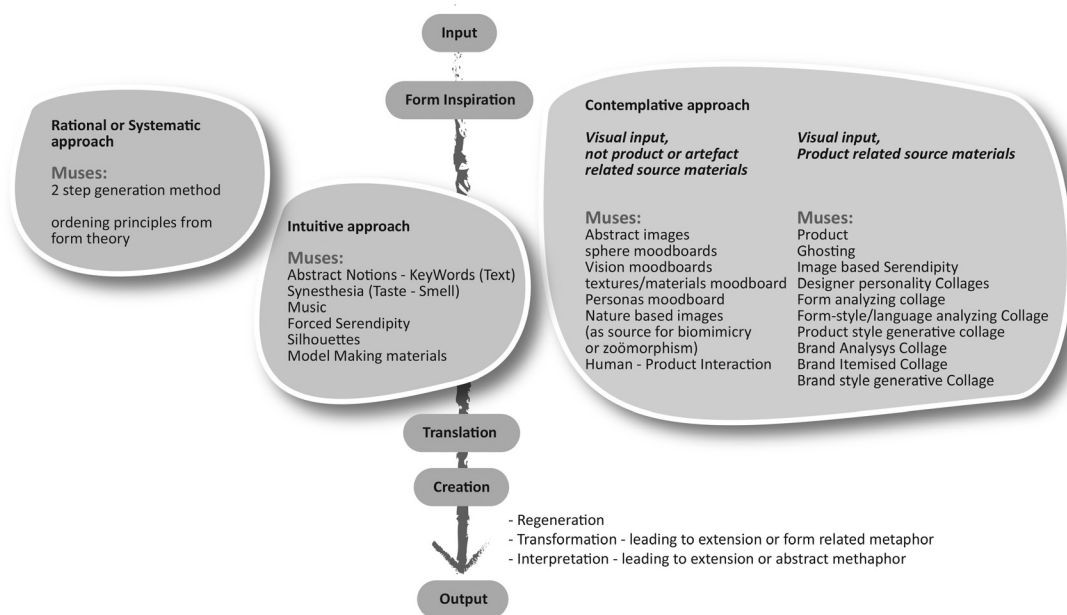


Figure 5. Survey of the inspiration tools and techniques initiated in the institutes

4 DIFFERENT TYPES OF STUDENTS

The survey in figure 5 visualizes up to 25 different inspiration techniques which are currently integrated in the design education of both programs. The comparison of the results shows that there are different types of inspiration tools that will conform to different types of students. Based on our teaching experience, one could say that the rational or systematic form generation or inspiration tools are easy to teach, easy to learn and easy to apply, thus well suited for novice design or engineer students. According to Dorst [19] novice designers do not have a lot of experience and benefit more from a structural approach. Well balanced in composition and proportion, the outcomes of these rational inspiration tools can have high aesthetic appeal and value, but most of the time the results are poorer in expression, emotion or underlying meaning.

Students with a preference for intuitive inspiration tools have more affinity with art and like to work in a less structured way. The design process of those students can be really chaotic while searching for different opportunities to define a product shape. Figure 6 Right illustrates the exploration and manipulation of a material to form the perfect design. The outcome of the intuitive tools is a process of trial and error and can be really innovatory and powerful, but can also be poorer in expression, emotion and underlying meaning. The uncertainty of the outcomes could be a disadvantage for students who like to work in a more structured way.

Students who are more common with creating a framework as starting point for the design of a product are more familiar with the contemplative method. Those students get inspired by defining a certain starting point to design their product (for example a collage with a specific style). While comparing and discussing the outcomes of different design assignments, it became clear that in most cases the contemplative method fits well for industrial design students. The outcomes are more reliable compared to the intuitive approach and this method seems to lead to more meaningful designs, because it is based on visual analyses of a collage which in most cases forms a story to discuss the design of the product. Figure 6 shows two results of a first year design assignment. Students were asked to design a lampshade in polypropylene sheet based on their own inspiration sources. The outcomes of this case show the difference in approach between students. The left student is using a contemplative approach as main inspiration source; the other student uses a more intuitive approach by exploring and experimenting with the sheet material.

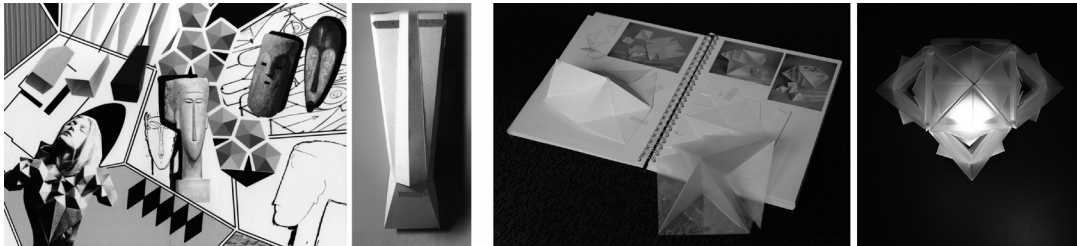


Figure 6. Left: Contemplative approach: Form-style analyzing collage as inspiration tool for a polypropylene lampshade design (Odille Grillet); Right: Intuitive approach: experimenting with polypropylene sheet material as inspiration for a lampshade design (Nick Janssens)

5 DISCUSSION

Using different inspiration sources does not guarantee successful products, nor does the application of form inspiration techniques automatically lead to aesthetic outcomes. It is not because a form shows expression or reflects a certain meaning, that the aesthetical qualities are perceived to be superior. By analyzing the design results of both institutes it became clear that the three different approaches lead to different outcomes. This was well illustrated by the design project of the polypropylene lampshade: different types of students use different approaches leading to different kinds of results. The rational inspiration sources tends more to the regeneration and transformation level, the intuitive approach in this design challenge tends to spatial ingenuity, while the contemplative approach leads to more profound designs that in most cases tell a certain story.

6 CONCLUSION

The joint analysis of the integrated inspiration tools and techniques in form-giving in the design projects and exercises gave us a good overview of which techniques are applied in the institutes of Twente and Antwerp. Both schools integrate a rational, intuitive and contemplative approach in the curriculum, so students get familiar with different working methods. This will help students to get insight in their personal creativity process, and can serve to better diversify future design projects.

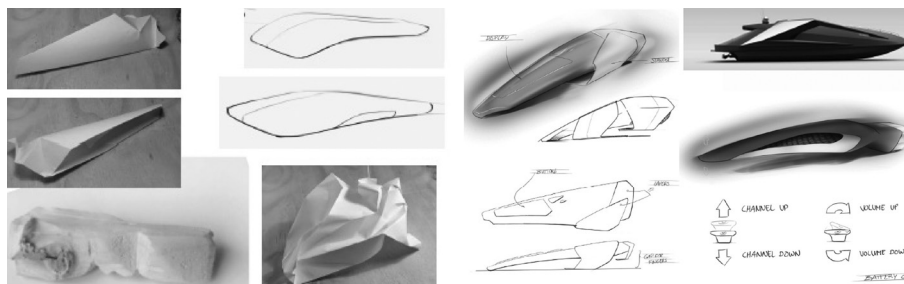


Figure 7. Design process of a remote control combining the rational, intuitive and contemplative approach (Ruben van den Hout)

Although we can't deny that in most cases students prefer one of the approaches above the others, falling back on their preferred inspiration technique may have a restrictive effect. The high potential

students however are able to integrate the systematic, intuitive and contemplative approaches (figure 7) and can easily diversify between the different techniques. The initiating and the control of a variety of form inspiration techniques from different approaches can provide a broadening effect and stimulate creativity in form-giving. The more different tools and techniques the designer masters, the more he or she can vary his/her designs.

Teaching experience taught us that the most appropriate students to study Design Engineering are rational students with an artistic touch and a focus on a contemplative approach, because they are able to consciously choose the best tool or technique and are able to switch between intuition and ratio.

In the future it would be interesting to test novice students at the start of their study, and to see whether the more extreme artistic or rationally oriented students evolve through their education to more complete design students mastering all three of the approaches.

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