

SHAKE IT OFF; RADICAL MEANING INNOVATION IN PRODUCT DESIGN

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ABSTRACT

This paper describes two techniques aimed at design-driven product innovation. Both techniques focus on providing a different, initially disruptive, perspective form which to approach a design assignment. As a result, sticky meanings and conventions are shaken loose, opening up avenues for considering new meanings that set the stage for design-driven product innovation.. Workshop results suggest that the techniques are effective in this respect; product solutions were original and out of the box and as such were ‘radical’ rather than ‘incremental’.

Keywords: *product design, creativity, product meaning, embodiment, disruptive images, design-driven innovation*

1. INTRODUCTION

Do you want to know how to write a song?

Songwriting is about counterpoint. Counterpoint is the key. Putting two disparate images beside each other and seeing which way the sparks fly.

Like letting a small child in the same room as... I don't know... A Mongolian psychopath or something. And just sitting back and seeing what happens.

Then you send in a clown, say on a tricycle. And again you wait, and you watch. And if that doesn't do it... You shoot the clown.

Nick Cave (2014), 20.000 Days on Earth

One of the main challenges of design innovation consists in going beyond the obvious so as to present something new in terms of meaning and experience. The ‘obvious’ here refers to the stereotype, the current solution that is in need of innovation. Verganti (2008) argues that design-driven innovations involve the uncovering of new meanings, rather than innovations that are merely incremental and which consist of minor improvements with respect to functioning and appearance. However, the solution that Verganti offers to establish a design-driven innovation agenda is solely business-process oriented and primarily dependent on the creative potential of the people involved (Verganti, 2009). From a design point of view, his analysis offers no design guidelines or starting points for a structured approach.

Of course, with respect to design, creative solution seeking methods like TRIZ (Altshuller, 1996) and the Vision in Product Design approach by Hekkert and Van Dijk (2011) have been developed, which seek to translate the design problem to a higher level of abstraction first, before arriving at a concrete product. This way, the solution space is not constrained by the prototype and meanings that have come to be associated with the product category. As an example, consider the case of redesigning an elevator. Common meanings associated with elevators could be described as *mechanical, formal,*

awkward, and *sterile*, meanings conveyed by appearance (formal, sterile), movement properties (mechanical), and social implications (awkward). However, when reframing the assignment to “design a means of transporting people from level X to level Y” rather than “design an elevator”, the solution space is enlarged and ‘sticky’ meanings may be shaken off (Eggink, 2011).

Another way to arrive at meaning-driven (rather than incremental) innovations departs from a similar notion, but starts out from a desired interaction quality. For instance, based on an analysis of elevator-properties one could start out a redesign driven by the notion that it should promote involvement rather than alienation amongst its users. Hence, here the crux not so much consists in seeking a higher level of abstraction that opens up new meanings, but rather in selecting a new, contrasting (i.e., counterintuitive) meaning in the first place. However, similar to how a linguistic concept designating a product (e.g., elevator) may immediately call forth a stereotype that blocks creative thinking, a linguistic concept designating an interaction quality may do the same. For instance, the word ‘involvement’ may call forth associations with rounded form features, or arms intertwined. When exploring the experiential basis of a desired interaction quality apart from a specific manifestation in a product, new conceptualizations may come to the fore, which promote radical innovations.

In this paper, we will elaborate on two types of design creativity exercises, which we have developed to encourage creative thinking and innovative meaning creation in the early stage of design processes. The exercises have been developed, applied and tested in workshops at the departments of Industrial Design Engineering at the University of Twente and Delft University of Technology in the Netherlands, and at EAFIT University in Medellin, Colombia. Both exercises share a focus on meaning exploration and are specifically targeted at design ideation and synthesis itself rather than facilitating communication (e.g., between designer and client) about a product’s design afterwards. For the latter purpose, mood boards and storyboards are frequently employed.

2. DISRUPTIVE IMAGES

The first technique we would like to illustrate is based on the application of ‘disruptive images’. The term ‘disruptive images’ expresses the idea that by combining and fusing different images (mostly of recognizable objects that are displayed ‘out of context’), the resulting display contains elements of surprise, stimulating the viewer to question conventions and to propose a new perspective on the subject at hand. The idea of combining subjects in this way is a form of alienation that is the basis for most creative problem solving techniques, and can be traced to the beat-poets and the Surrealists, who made this principle of combining unfamiliar things or mixing text fragments popular. The latter also applied this principle frequently to ‘designs’ (Wood & te Duits, 2007), like the “Aphrodisiac Telephone” by Salvador Dalí, consisting of a regular telephone body and a lobster mock-up as horn. Danto (1981) described that the result of this ‘displacement’ is that the characteristics of the separate subjects are projected onto each other. Within this projection the original objects are altered because the viewer interprets them differently. The disruptive images technique uses this principle to alter the existing perspective on the design problem, by means of visual collages.

2.1 WORKSHOP

The disruptive images presented here were created in a workshop setting. The workshop was developed in the context of an elective course in Industrial Design Engineering for 3rd and 4th year students. Within the half-day workshop itself, the students were invited to look at their subject from different perspectives and to search for images that correspond to different sub-themes of the design problem. For instance, students considered questions such as “What is wrong in the current situation?”, “What will an ideal situation look like”, and “How is this problem solved in other fields of interest?”. Following our example of the elevator, a student group explored the spatial and functional aspects of “a means of transporting people from level X to level Y” (Figure 1). In the first image the spaciousness is a statement on the research question “what is wrong in the current situation?”. The second images is reframing the elevator from an enclosed space into a ‘window to the world’. The third image is an exploration of the research question “How is this problem solved in other fields of interest?”, depicting the possibility to transform the elevator in a very active ‘means of transport’, inspired by a leisure sports field of interest.



Figure 1. Example of students’ work: disruptive images exploring the elevator theme [by Bob Giesberts, Mark Grob & Frank W. Kloppenburg].

Concluding the workshop, the groups had to present their design vision with a series of the images that they had generated, inspired by the visual essay (Arthur & Martin, 2009; Eggink & van der Bijl-Brouwer, 2012). An example of students’ work of such a series of images, forming an argument is shown in Figure 2.

Here, the assignment was to investigate the future of electric driving, considering the Dutch sports-car manufacturer Donkervoort. The visualized argument is, that developments in electronic driver assistance in combination with road safety and increased density, will put the driver in a stringent harness (left), leading to illusionary freedom (mid). The solution for a true sportive experience has to lie in substantially less car, instead of more car (right). In this way, the visualizations can support the evaluation of design ideas.



Figure 2. Example of students' work: three disruptive images, forming an argument [by Leendert Verduijn, Bernd Worm & Frank Scholder].

The presentation of the design vision in the form of disruptive images was also particularly suitable for discussion with the clients, especially if they represented a multidisciplinary audience. It showed that it was possible to visualize different solution directions at a very early stage, and the inherent absurdity of the images forced them to really concentrate on the idea. On the other hand, the fact that the 'absurd' ideas are visually expressed makes them 'thinkable'. As another example, consider Figure 3, related to the design of a train toilet and the common experience that the current solution makes this a disturbing experience. The visualized solution directions can be characterized as: offering a more 'natural' toilet environment (left), and offering extra services (right).



Figure 3. Example of students' work: visualizing different directions for design solutions [by Rick Fikkert, Evelien Ploos van Amstel & Marleen Germs].

After the development of the design visions, the students had to develop inspiring solutions and end up with a plausible design. It showed that the visualization of design visions helped to focus the design work and on the other hand stimulated the designers to strive for less obvious outcomes. This effect is also known from author-driven design practice, where the emphasis on the conceptual idea rather than on the functional product often leads to more visionary results (Eggink 2009). In our workshops, the visuals made the 'thinkable' also more acceptable, and a lot of student groups ended up with designs that were both plausible and out of the box. The students that created the images of figure 2, for instance, were inspired by the ultimate freedom of the displayed parkour runner to design a minimalistic vehicle as some sort of extension to the human body (Figure 4).

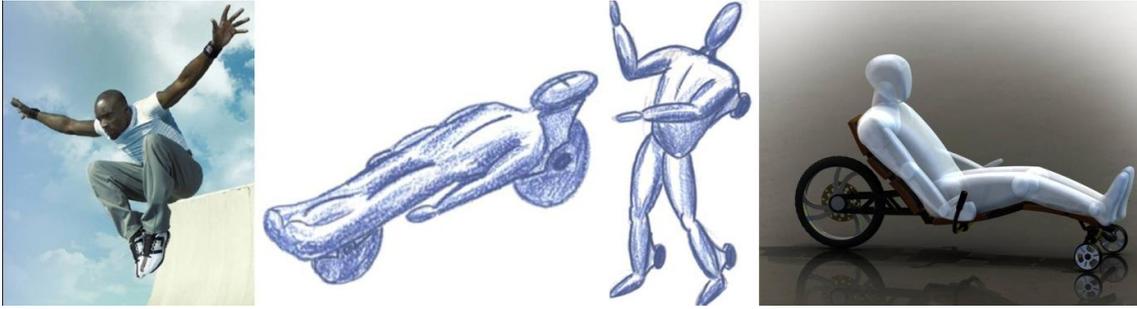


Figure 4. Design process, following the design vision shown in Figure 1 [by Leendert Verduijn, Bernd Worm & Frank Scholder].

In summary, the application of the disruptive images technique stimulated creativity in design solutions as evidenced by the, without exception, original and out-of-the-box product solutions. The disruptive images workshop technique seemed especially suitable for design problems on a higher level of abstraction, focusing on problems or activities, rather than products, as is becoming more common in human-centered design. Leblanc (2009) already showed that assignments that are based on problems and activities lead to higher innovation levels than assignments that are based on products. Thus the assignment “create a new stool” will result in less innovative designs than the assignment “design a playful means for sitting in a kindergarten environment”. Practicing the disruptive images technique with three cohorts of industrial design engineering students in subsequent design courses showed that the technique both enhanced the early stage communication of design goals and stimulated the implementation of creative design solutions.

3. EMBODIMENT IN INTERACTION

The second technique that we would like to illustrate is the ‘bodystorming’ technique. Central to this technique is the notion that many meanings are grounded in bodily (inter)actions (Lakoff & Johnson, 1980, 1999; Van Rompay & Ludden, 2015). For instance, in daily language use, we may talk of somebody ‘looking up’ or ‘looking down’ on other people in order to convey a sense of respect or awe (‘looking up’) or dominance or arrogance (‘looking down’). Such figurative meanings are grounded in embodied interactions in which we find that being higher in relation to other people or things in our environment brings a sense of power or control. For instance, it is much easier to survey our surroundings when positioned higher, and objects are easier to handle when on top of them. Such common bodily dynamics explain why we use the notion of being higher in order to convey a sense of dominance. It is in this sense that abstract, symbolic meanings are grounded in concrete, bodily actions.

From a designers’ point of view, such insights are interesting and inspiring, especially when considering that such meanings are usually difficult to translate to concrete product attributes, which may result in relying on stereotypical relations between a specific meaning (product quality) and design features. For instance, lacking insights in how to translate dominance to concrete product features, one may all too easily resort to usage of specific colours (black) and form features (angular), resulting in less than original designs.

The bodystorming technique was developed in order to go beyond such stereotypical relations by bringing design students in touch with the bodily basis of abstract product meanings. To this end, they had to re-enact situations in which they had experienced a specific quality (*dominance* in the example presented above; *involvement* in the workshop examples illustrated below) and pay particular attention to bodily dynamics. Thus whereas, in normal role-playing or acting-out exercises, focus usually is on conversational content, emotion expression or storyline, here focus is on bodily postures and actions, hence the term bodystorming.

3.1 WORKSHOP

The 4-hour workshop illustrated below centred on the notion of involvement and was structured as follows:

In the first phase students had to write down concrete situations in which they had experienced involvement with (an)other person(s). For instance:

I feel involved with my teammates when we form a close circle together and scream as loud as possible prior to playing a soccer game.

Next, students had to analyse bodily posture and actions by enacting the situations described (Figure 5).



Figure 5. Students enacting different situations of 'involvement' for analyses of bodily dynamics.

Following the identification of situations, the content has to be analyzed and described in visual-spatial terms (reflecting bodily posture and positioning) and related bodily dynamics such as applied force. For instance, based on the situation description before, the following bodily dynamics were discerned:

Bodily posture/ reaction:

'Open' towards teammates, 'closed' towards outside world.

Trying to be as 'near' to each other as possible.

Bodily 'force' (trying to make circle strong and resistant).

Following, students were instructed to lay down these properties in abstract collages as illustrated below (Figure 6). Although coming up with many different types of situation descriptions (all centring on involvement), the collages nonetheless display a high degree of correspondence, highlighting a common (bodily) basis. Across the collages, most notable was the stress on *interconnectedness* in the center of the displays and the presence of a *protective frame* surrounding these center elements.

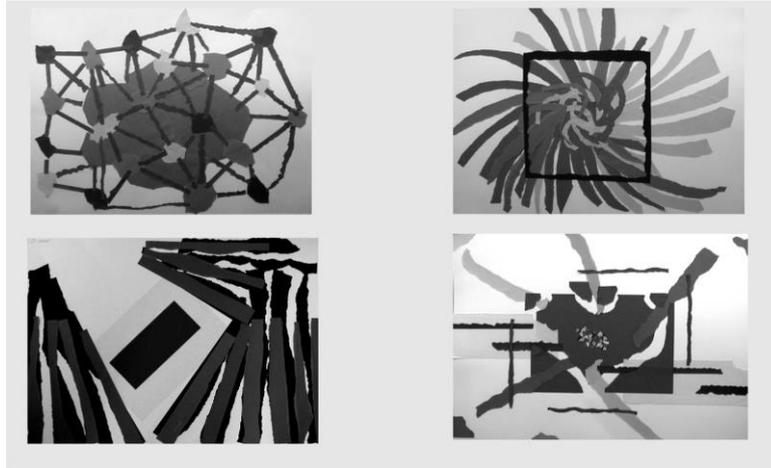


Figure 6. Abstract collages portraying involvement.

Only in the final stage did the students make the transition from the uncovered properties to a concrete product design. In this case, the design assignment involved a smoking object for the Dutch Railways with the following briefing:

In the Netherlands, smoking in all train stations is prohibited since the first of January, 2004, except within a distance of 1.5 meters of public smoking objects, officially referred to as 'smoking pillars', placed on the various platforms. Although successful in communicating the conditions under which smoking is allowed, the smoking objects have been subject to widespread criticism. Most notably their dull and distant character has been a source of dissatisfaction among smokers. Now suppose you are approached by the Dutch Railway Organization to design a new smoking object expressing involvement, instead of distance, towards smokers. How would you set about doing this?

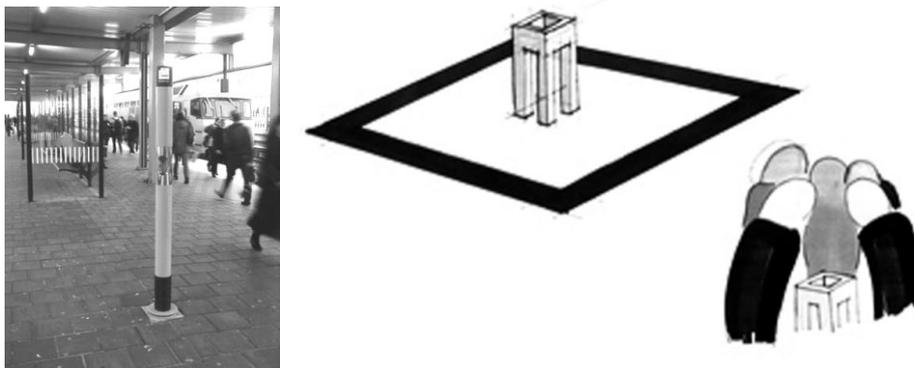


Figure 7. Current (left) and example (right) of redesigned smoking object1 [by Dennis Martina].

Figure 7 (right panel) portrays the product and the envisioned interaction promoting involvement amongst users based on the situation description and bodily dynamics described above. Again, most apparent was the finding that the design solutions were original and radical and hence did not incorporate stereotypical relations. Additionally,

students stated that the technique had granted them an understanding of an otherwise illusive concept, demonstrating the design relevance of the technique described.

4. DISCUSSION & CONCLUSION

The techniques described seek to provide a design-driven approach to innovation. Both techniques stress the generation of a different perspective form which to approach a design assignment whereby sticky meanings and conventions are shaken loose. Workshop results described in this paper suggest that the techniques are effective in this respect; product solutions were original and out-of-the-box and as such were 'radical' rather than 'incremental'. Obviously, the techniques should be applied outside of the workshop context in order to warrant more thorough evaluations. Nonetheless, we feel confident when arguing that the techniques described provide welcome additions to the palette of current brainstorming and creativity techniques.

Furthermore, the techniques described provide hands-on starting points for product design. Not only do these originate from cross-domain mappings as illustrated in the disruptive images technique, but also from awareness of the physical basis underlying abstract meanings. In the embodiment technique in particular, to be 'designed' meanings are traced to visual-spatial notions such as openness, support and connectivity. Such notions provide concrete points of departure for the consideration of product appearance and interaction.

In sum, creativity is about contrast and counterpoint and this is what these techniques are about: Approaching a design task from a different perspective, focusing on at first sight disruptive, yet at the same time design-focused, meanings which pave the way for design-driven innovation.

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