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Breaking the rules in interactive media design education

Oğuzhan Özcan¹, Asim Evren Yantaç¹, Mary Lou O’Neil²

¹Yildiz Technical University, Department of Interactive Media Design

²Kadir Has University, Department of American Culture and Literature

oguzhan@ozcan.info; eyantac@yildiz.edu.tr; loneil@khas.edu.tr

Abstract

In today’s interactive media design it is difficult for a designer to create aesthetic innovations and to break free from ordinariness. The most important factor limiting interactive media design aesthetics is that education seems to be more focused on following traditional rules of interaction design rather than innovative approaches. These rules limit creativity and often relegate design students to producing ordinary interface solutions. This is especially burdensome for us as teachers. In order to address this problem, we developed an education model inspired by Lars von Trier’s film *Five Obstructions*. We call this model ‘breaking the rules’. In the ‘breaking the rules’ approach students produce, within a range of probabilities, design problem solutions in cases of total or partial visual/auditory/tactile obstructions. The most important outputs of the model are (1) to make design student think/look outside of the ordinary, (2) to produce unusual solutions, (3) to maximise design solutions with sound.

Keywords: interactive media, design education, creativity, breaking rules, innovation

1 Introduction

Within the last fifteen years, interactive media design has become the most popular design area and is being applied in the area of web design, which can be accessed predominantly from fixed (desktop) or mobile (hand-held) communicator tools.

Moreover, thanks to developing technology in recent years, there also exist various new application platforms in interactive media design like the info-kiosk, the digital billboard and interactive TV. Even though they are not, as of yet, practical, neuro or bio feedback solutions also provide further clues as to other areas that can be explored with interactive media application.

Despite this abundance it is not easy for designers to create aesthetic novelties in interactive media design, to break free from ordinariness. This is often particularly the case for students of interactive media design who are just beginning their learning and careers. From the perspective of art and design education, we try to encourage students to explore new styles of aesthetic expression but too often students simply recreate what is familiar to all us. We believe that developing new educational approaches that encourage and even require students to ‘break the rules’ is fundamental to overcoming this problem. In this article, we explore answers to the problem of how to begin to stimulate more student creativity in interactive media design while at the same time preserving the design’s functionality.

2 Why breaking the rules?

In many interactions design programs in art schools, which have no course in usability, interactive media designs are not created using rigorous rules. In reality, it may be more accurate to call the works produced under such conditions interactive artwork rather than design. Nonetheless, these artworks are very useful in terms of creativity education because they demonstrate the potential that stems from providing a freer working environment.

To clarify what is meant by creativity in interactive media design education, we use the criteria of authenticity among other works in the field and being widely appreciated and used by the user group. For a more comprehensive identification, we use the “bringing something into being that is original (new, unusual, novel, unexpected) and also valuable (useful, good, adaptive, appropriate)” definition by Osche (Osche 1990).

Although interactive artwork can deliver a very satisfying artistic experience, this does not suffice in designing more functional interactive systems where information exchange risks are high, like *info-assistant, education, medical services, commerce and security*. In interactive design, while aesthetics are important and designers must learn to produce aesthetically pleasing designs, functionality remains paramount.

The reason behind the lack of teaching usability rules in art schools is that most art schools try to teach a more free thinking system under the name interactive design. These rules are normal for User Centered Design or User Driven Innovation design education. As opposed to design schools, art schools are afraid that rule based design will lead to cliché design. Therefore, after a web design is produced using the design rules, they look for a model that follows a more free format. This is similar to attempting to attain a more artful result by teaching the basic typographical rules and then breaking them. In this article we

discuss a model that will alleviate worries about creative education in art schools.

The educational approach of ‘breaking the rules’ takes its inspiration from Lars von Trier’s film *Five Obstructions* (Leth 2003). In the film, Lars von Trier asks his former teacher and mentor Jorgen Leth, to re-shoot his film titled *The Perfect Human*. Von Trier asked Leth to remake his film five times, each time providing him with a different obstruction. The obstructions were:

1. No scene could me more than twelve frames (films are usually 24 frames per second). He must answer the question posed in the original film.
2. The film must be shot in Cuba.
3. The film must be shot in “the worst place on earth”.
4. The film must be remade in animation.
5. Re-compose the film in a completely free form.

Jorgen Leth successfully shoots the film in a new format with the first four limitations. However, the fifth limitation turns out to be the most difficult for him. Leth found it very difficult to use his creativity in a situation where there were no limitations. In an interview, von Trier claimed that the most important lesson he learned from the experience was that creativity thrives on limitations.

Considering von Trier’s claim that creativity needs limitation we wondered if we could trigger the imaginations of our own interactive media design students if we placed limits on the design process.

Would various obstructions produce innovative results in interactive media design education? With this inspiration, we engaged students in a series of experiments to see if they could produce innovative ideas through breaking established design rules in interactive media design. The experiments do not strictly parallel von Trier’s limitations but were inspired by his approach and thus focus on restricting the uses at different times of vision, sound and touch components of interactive media. We did not seek to

recreate von Trier's experiment in its entirety but rather took inspiration from the ways that various obstructions could possibly produce innovation.

3 The method of breaking the rules

Interactive media consists of elements of sound, image and touch. Designers look for an ideal combination of function and aesthetics among these elements. In classes, we have focused primarily on creating according to user demands. However, interactive artistic applications were also produced by completely abandoning functional design.

In functional design education within the defined content, students generally produced interactive media designs or mock-up interactive tools for info-assistance, education, medical services, and commerce, entertainment or security areas.

Using the method we describe here we hoped for the production of innovative ideas by limiting elements of interactive media such as sound, image and/or touch. The limitations can be in the form of complete or partial visual/audio/tactile obstructions.

We base the main idea of 'breaking the rules' on the studies made for typographic design (Supon Design Group 1997) and believe that the first step toward pushing students to 'break the rules' took the form of denying them a detailed briefing or outline of the design problems they were asked to tackle. Instead, we began with classroom discussions where only minimal information was provided about the design problem and the obstruction that was to be applied. Our hope was to stimulate a wide-ranging discussion that would give them the widest possible environment in which to propose design ideas rather than limit them from the beginning with a detailed outline of the problem.

In these exercises using obstructions as introduced in Clause 2 the user requirement in the obstructed environment has been taken into

consideration rather than usability rules. Within a range of possibilities, these limitations can be in the form of complete or partial visual/audio/tactile obstructions.

In classes over several different periods students were provided disabling environment design assignments:

In the beginning students were informed about which obstruction would limit the interface and they were shown examples related to the given situation. They were not given specific design problems rather they were expected to discover this through class discussions. For example, in one assignment students were informed that the interface user could only use her fingers, hands or wrists in a limited way. One student created an interface for an individual whose hands are full.

In exercises where vision was obstructed, students searched for interface solutions using sound and vibration for situations where smoke, darkness or too much light obscured the screen.

The examples that were chosen for this article were selected based on the originality and viability of the design solution. The contribution of the solution to the design area was not discussed.

3.1. Exercises using complete or partial tactile obstruction

The exercises within this group are based upon limited interface usage. Students were asked to brainstorm about limited environments and to contemplate how an interface addressing these limitations could be created. The first step toward pushing students to 'break the rules' took the form of denying them a detailed briefing or outline of the design problems they were asked to tackle. Instead, we began with classroom discussions where only minimal information was provided about the design problem and the obstruction that was to be applied. Our hope was to stimulate a wide-ranging discussion that would give them the widest possible environment in which to

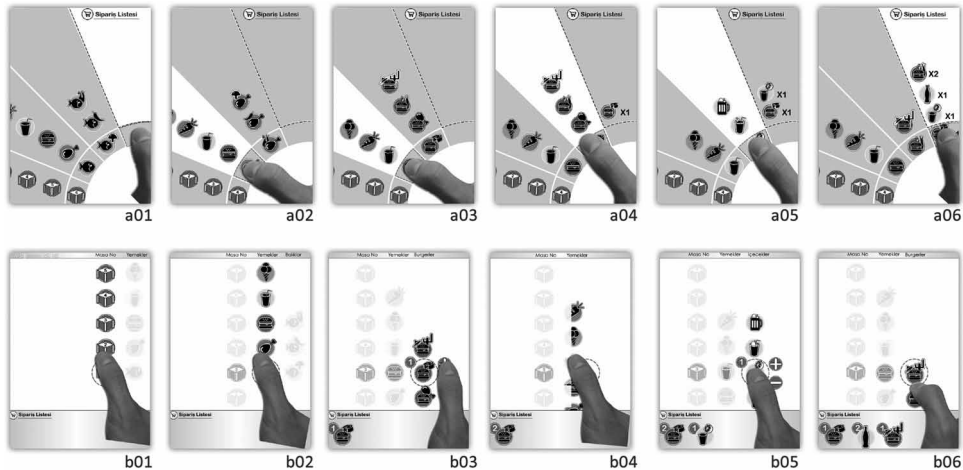


Figure 3.1.1. Order by one finger, designed by Turgay Öktem, 2007.

Purpose: This project was designed for the waiter who has to take orders with the thumb of the right hand because the left hand is full. The main idea behind the interface layout is based on finger use located on the left bottom corner. All interactions are by multi-touch drags and clicks.

Student's comment: I struggled at the beginning of the project to set up the design solution because I did web site creation before using the usual rules; but in this project, the condition of the user is unusual. I really had to rethink the usability rules depending on the limitation of the finger use. At the end of the day I tested myself to see if I used the rule for the interface consciously depending on different user requirements.

propose design ideas rather than limit them from the beginning with a detailed outline of the problem.

The students produced the following problem possibilities:

- a hostess holds his/her computer and writes orders with one hand while the other hand is full;
- a worker with dirty hands gets information about a production line from an info-kiosk by touching it with his/her elbows instead of fingers.

These cases compelled the student to create an interface design outside of his/her knowledge and experience comfort zone. For example, in an interface used by touching it with the elbows, the icons must be bigger and the layout must be designed so that while using the interface one's elbows the visual angle is not obscured.

In the case of a waiter/waitress who needs to hold a hand-held computer with one hand

and take orders with the thumb of the same hand, the search was for a practical interface design solution. In these cases, despite the limitations or perhaps as a result of them, students suggested unusual and clever interactive mechanisms for easy and effective uses of interfaces.

3.2. Exercises with complete or partial visual obstruction

The exercises discussed in this section involve creating an audio interface design using only limited visual capacity. These students were not provided with a specific situation related to a design problem but they were asked to find an interface where the visual senses were limited and voice became a guiding element rather than a mere complement. In this exercise design students attempted to develop ideas based on stereophonic surrounded audio interface.

Generally, exercises based on audio interface do not constitute a new type of exercise technique for design students in terms of

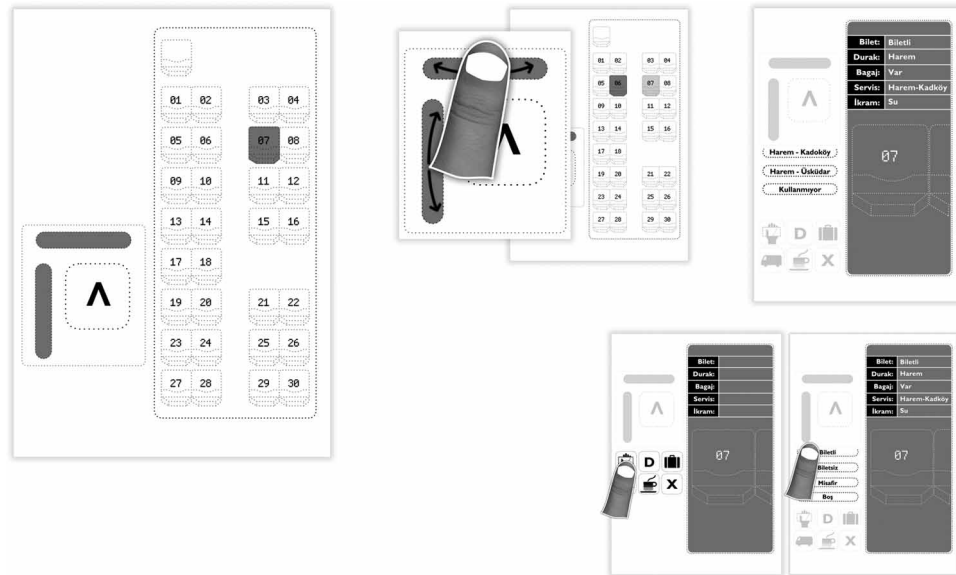


Figure 3.1.2. T-Order designed by Harun Yücesoy, 2005.

Purpose: The purpose of this project was to design an interface which is accessible for users with various disabilities caused by environmental conditions. A person may be in a situation that prevents him/her from using one of his/her hands.

Student's comment: I analysed the particular conditions of the targeted users, experienced ways of developing a navigation system and layout designs considering the specific/unique conditions and natural obstacles of the environment.

approach discussed here. However, when partial visual obstructions are given this then constitutes an unusual exercise for design students. In the brainstorming phase, the following types of visual effect environments were discussed:

1. Examination behind frosted glass;
2. Looking at visual elements in water.

In partially obstructed image exercises, students developed ideas like web accessibility designs for disabled people as an example of functional design. This exercise did not produce the kinds of novel designs expected. The students generally defined the users as temporarily disabled people or users in a disabling environment.

However, considering disabled people in disabling environment did make design students more aware of a different usage environment that they were not accustomed to.

In this case, students developed ideas aimed at entertainment rather than function. The students developed the following kind of computer games:

1. Object recognition and matching game for children:

In this game the user brings the cursor on top of the object, which is under the water and can not be identified clearly, then, the object makes a noise which helps the user to identify it. The user completes the game by matching the object under the water with the corresponding one among the options provided above the water.

2. Shopping behind frosted glass: In this exercise, a design was produced for choosing and buying books where you must look at the books from behind frosted glass. The user moves the cursor over the frosted glass and as it gets closer to the desired object, the noise and vibration of the mouse increase. When the

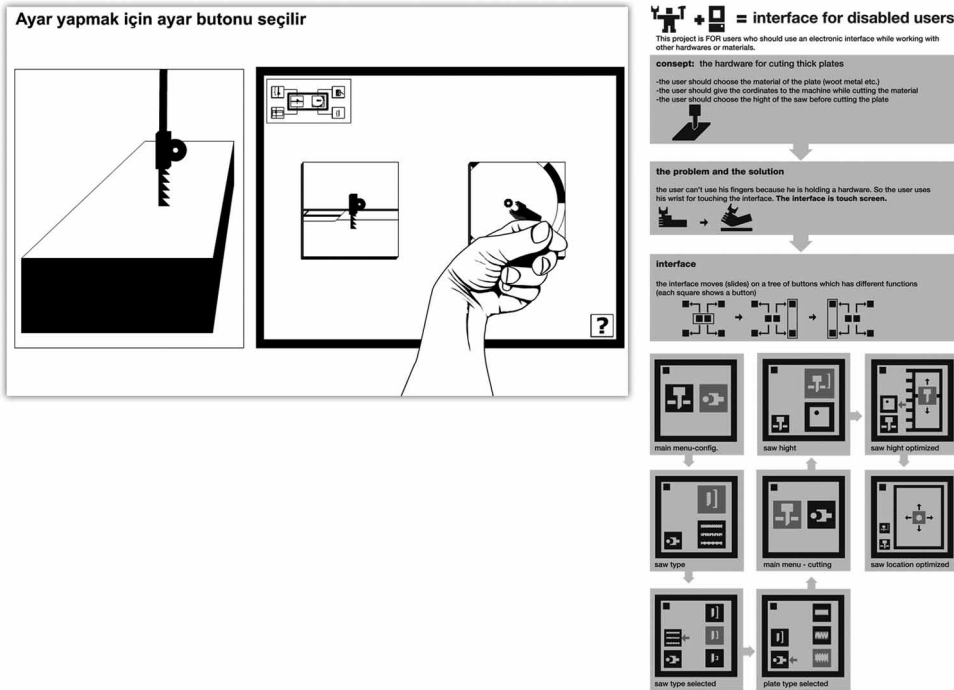


Figure 3.1.3. Touch by wrist designed by Özalp Eröz, 2006.
Purpose: This project aimed to create an interface for the worker who needs to look at an electronic manual but must touch the interface with his/her wrist because of dirty hands. The idea is to provide larger icons and a more flexible layout to enable easy use for the wrists. A minimalistic graphic style was employed for an easy look in such working conditions.
Student's comment: It was fun to play with the design of the interface considering an unusual interface use. I had a chance to compare a standard interface design problem with an extra ordinary use. This helped me deeply understand how a better interactive system should be designed under different conditions.

cursor hits the object, the object becomes clear so that the user can identify it. Then the user can grab the object by double clicking the cursor and the user carries it to a buying point hidden behind the frosted glass. Again the user finds the buying point with the help of noise and vibration. Design students recommend this project both as a game and a tool for partially visually-impaired users.

3. Navigation with audio: When design students were asked to find a way to reach data without an image, they produced design solutions based on audio navigation. This is usually an audio interface solution. However, some students suggested design

ideas involving sound navigation with visual interface.

All three of these exercises make it clear that in designs for disabling people in disabling environments, students generally used audio in interactive design despite the fact that they were not instructed to do so. When one considers how rarely, even when asked, students use sound in their designs in typical interactive design exercises, this exercise may prove useful.

3.3. Exercises with complete or partial sound obstruction
 The exercises in this section consisted of challenging the students to design when sound



Figure 3.2.1. Toys under the water, designed by Aybars Pulat, 2007.

Purpose: This is a game project for children in which there are 4 main objects and 4 complementary objects to be matched. Some objects are under water so that we cannot immediately identify them. Sound plays the biggest role in guiding the user to the correct answer.

Student's comment: The main idea of this project was to make us think about sound as an important element of the interface. This is why I hid some visible objects and used sound to express them. This practice made me realise that sound is an important media to help the user understand the interface subconsciously. Especially when there is too much visual media, the use of sound is useful.

is partially or completely removed. In all exercises developed using the ‘breaking the rules’ approach, this was the least successful in producing innovative designs. The main reason for this is that when sound is removed completely or partially there is no usage obstruction and an image can be produced alternatively with vocal expressions or in writing. This lack of a real obstruction, in effect, circumvented the ‘breaking the rules’ approach.

Yet, it is possible to envision partial audio obstruction as useful for creating a new kind of exercise. For example, a game can be designed aimed at audio recognition from an unidentifiable noise that is partially heard or filtered. However, when compared with the other obstructions experimented with, we found that the design solutions that resulted

were not substantially different from traditional interfaces.

4 Conclusion

In this article, we presented a different approach to stimulating creative design in interactive media design students. The ‘breaking the rules’ approach experimented with providing students with various limits and obstructions for the design process in the hope that they would begin to think outside of the limits of design—to break the rules. While there may be broader implications for this approach for design in general we believe this requires further exploration and thus have limited our comments here to the application in design education.

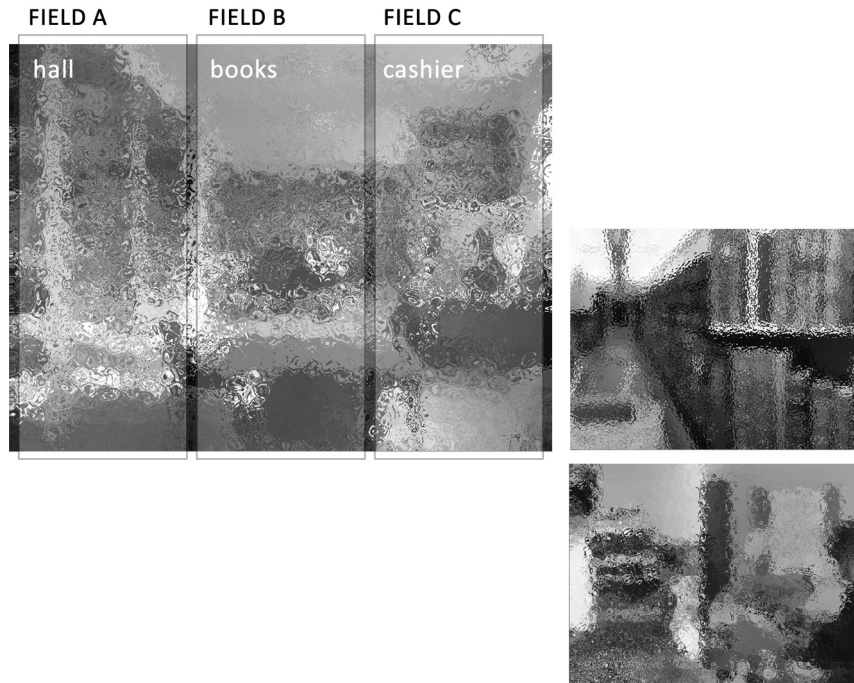


Figure 3.2.2. Glassy Interface, designed by Ahmet Börtüçene, 2005.

Purpose: The purpose of the study was to use sound in the interface in a more useful way. I used some filters to distort library images and guide the user to the right menu. There are three menus: “cashier”, “books”, and “hall”, which are presented by metaphorical sound icons when the user rolls the mouse over the related fields. This is a basic example of how auditory icons can be used. In a secondary study I did not use any images and tried to make the user solve a puzzle with the experience I gained from this study.

Student’s comment: I understood how to design metaphorical sounds to help navigation in an interface.

Using this approach, we obtained three clear results:

1. Students began to think/to look outside of the ordinary: When students were asked to make a design in accordance with an unusual obstruction, they were initially confused, even resistant. In the beginning, it was difficult for them to understand that they could not simply make designs according to the usual rules. However, they slowly understood the necessity of looking at and thinking differently about design problems. This also created an opportunity for them to be innovative and rule breaking in their designs.
2. Stimulating unusual solutions: Overcoming hurdles presented to them in order to use interfaces became a goal for design students. They tried to develop alternative mechanisms outside the classical interactive ones in order to circumvent the obstacles placed in their paths.
3. Efforts in design solutions with audio: Students employing classic approaches to web design often do not take audio into consideration in the process nor do they tend to enrich visual designs with audio effects. Yet, in order to solve design problems with partial visual obstructions, students began to see the necessity of adding high-quality sound into the design solution. These exercises provided design students with important experiences in working with sound helping to highlight an area that is often neglected.

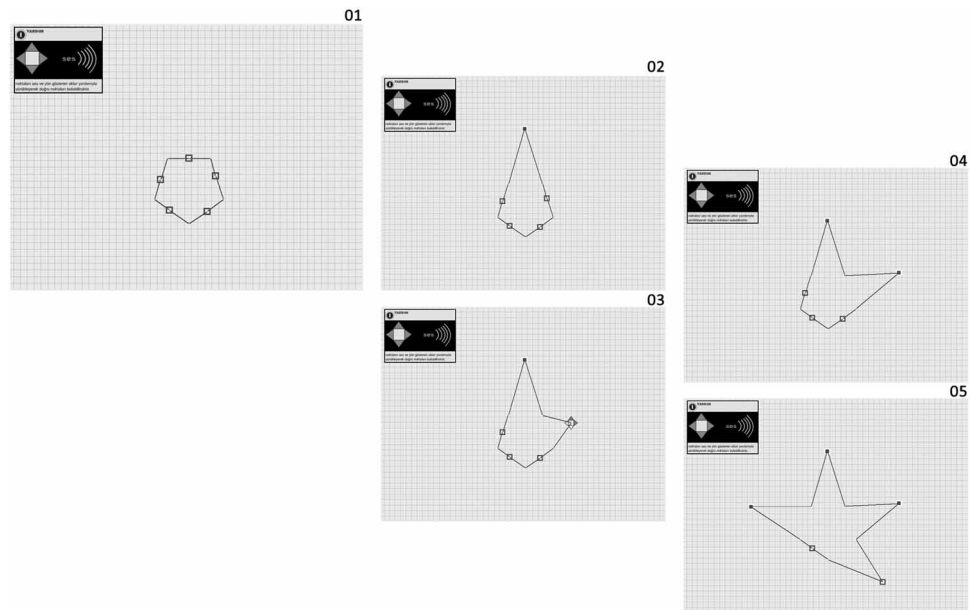


Figure 3.2.3. Sonar drawer, designed by Salih Akkemik, 2006.

Purpose: In this project, we worked on sound as an instructor for navigation. It is hard to find creative sound solutions for navigating the user in a 2D interface. So I tried to use a musical piece to express that the user is getting closer to the right place. There are 5 hidden dots on the screen, which the user attempts to find. When the user starts to drag one point and gets closer to the correct place, the number of instruments playing the loop increases, so in the end there is the whole band playing the music. In another study, I used sonar pulses.

Student's comment: These studies made me think of sound as a guiding element of the interface for navigation. And this conceptual study resulted with several different solutions for navigational sound without using metaphorical presentations.

Design students will always face unexpected problems in the course of creating designs and teachers need to make students aware of this and give them experience in developing solutions that overcome real world design problems. Moreover, students need thinking in ever increasingly creative ways and design education needs to employ innovative approaches to stimulate such creativity. We believe that the ‘breaking the rules’ approach is one way to create such an educational environment.

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Oğuzhan Özcan is currently a Professor of Interactive Media Design at Istanbul Yildiz Technical University. He is specialised in interactive design education and practice. Ozcan is supervising a number of research projects, publications and book contributions relating to interactivity and design art. He was

awarded a UNESCO Aschberg Residency in 2003. Ozcan also supervises several Turkish Companies for Interactive Media Design such as VESTEL Electronic Research Group, PARDUS, Operating System Development Group in National Science and Research Foundation of Turkey. His other publications can be accessed in <http://oguzhan.ozcan.info>.

Asim Evren Yantaç is currently working as a teaching fellow in the Interactive Media Design Program, Istanbul Yildiz Technical University. He finished his Masters degree in 2006 and is now a PhD candidate in the Art and Design Faculty at Yildiz Technical University. His research interests are sound for

interactive media design, visualisation of sound and interface design for tactical softwares. He is now working for a research project named *An interface design guideline for mobile info-assistant tools used under disabling environments* which is funded by the National Science and Research Foundation of Turkey. His other publications and artistic works can be accessed in <http://asmevren.siyah.net>

Mary Lou O'Neil is working as an assistant Professor at the Department of American Culture and Literature in Kadir Has University, Istanbul and she has concentrated on 'woman in literature'.