



A Collaborative Study on the Physical and Social Meaning of Doorbell: Problems and Solution Suggestions

Ozan Soyupak^{1*}, Humanur Bagli²

¹ Istanbul Technical University, Department of Industrial Design. 34437 Beyoğlu / İstanbul.

² Istanbul Technical University, Department of Industrial Design. 34437 Beyoğlu / İstanbul.

*Corresponding Author email: ozansoyupak@gmail.com

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Abstract

Doorbell is both a physical and social link between indoor and outdoor environment of people. Since its first usage, people benefit not only from its physical properties, but also from its social and emotional properties. In this study, current usage of the doorbell, further usage scenarios of it, the ways of sustaining its physical and social meaning while applying new technological developments to it will be discussed and handled as a design problem. Problem field is tried to be determined with the help of the design thinking approaches and methods. Detailed information about the determined problem has been collected and solution suggestions and alternatives tried to be improved. In every stage of the study like problem definition, detailing or suggestion, co-working constituted the main path of the study. In order to do that, workshops were made. So, problem has been analyzed in a more detailed way. In this study, current problem, user profiles, suggestions to the current problems of the doorbell are shared systematically. The data, gathered by this study, can form the research basis of a product development activity of a doorbell. Needs, applied solutions and suggestions of different user groups on mentioned subject has made this study valuable.

Key words

Design Thinking, Doorbell, Design Methods

1. INTRODUCTION

This study is carried out within the context of Design Thinking course as part of the ITU Industrial Design graduate program in 2015-2016 Fall Semester. The course has continued once in every week for 3 hours long. Theoretical part of the course has been handled shortly by the nature of design thinking and at the beginning of the term students were asked to define a problem and study subject on that problem by applying different design thinking methods and approaches. "A day in a life" method has been used for basing the problems on daily life and easing the problem definition stage. The study has been tried to be improved by weekly works done within and after the course hours. Thinking and practice stage which was very raw at the beginning, has begun to be matured by time. Inner and outer works of the course, such as workshops and literature reviews develops maturing process. At literature review stage, design thinking methods have been searched and the most suitable method to be applied to define and solve the problem have been focused on.

The researchers have found the preliminary data, gained by "a day in a life method", as insufficient to define the problem and afterwards he preferred to reveal the problem by co-working in order to achieve anonymous problem. By so, researchers would be able to focus on a problem which has broader social and cultural context and to focus on an object that works as a medium for cultural sustainability. In total, 3 workshops were done. First one was focused on problem definition with a broader context. At second and third ones problem zone tried to be examined in a more detailed way. At first workshop, a series of methods were applied one after another to create a harmony/composition, possible alternatives of

problems were gathered by co-working. Outcomes of the first workshop were shared in the lecture by the researcher, afterwards one of the alternatives were focused on, and at the same lecture second lecture were done by graduate students taking the same course. Most of the graduate students taking the course had an undergraduate degree in Industrial Design, for that reason more conscious critiques and feedbacks were given on methods, approaches and usage about the problem. Third workshop was done also in lecture time as the second one according to the feedbacks. Out of the alternative problems of first workshop, front door bell was chosen as the problem area by the researcher.

2. LITERATURE REVIEW

Design thinking uses methods as tools, which can be used by everybody like professional designer, manager, students etc. For design thinking it is important to put on other's shoes, to see other's eyes, to reveal their stories and to share their world [1]. Understanding their emotions, ideas, desires make the designer reach to their conscious and make it easier to emphasize.

Methods are the guides for avoiding unnecessary efforts and taking the right action instead of the wrong one. Method is defined by the Turkish Language Association (1974) as: "a regular path consciously followed or chosen to solve a problem, to result an experiment, to learn or to teach a subject". If we look at the design thinking with the help of this definition, we primarily come across its being a solution and idea development focused methodology. Design thinking is the approach of solving complex problems in a human centered way. It follows cooperative, team based, and interdisciplinary processes. Tim Brown [2] mentions about three basic stages of the design thinking. Inspiration; the stage in which experiencing the triggering problem or opportunity occur. Ideation is the stage in which ideas are developed and tested. Implementation is the stage in which the new thing is presented to the market. Products can pass these stages more than once and cycle of the stages can be completed more than once. Since every stage differs from each other, applied methods have been specified to the related stage. Methods used in practical part of this study, in other words in workshops, carries the properties of the first and second stages.

Curedale's [1] "Design Thinking Process and Methods Manual" is benefitted to choose the suitable methods to be applied. The author divides the methods into five subtopics. These are:

- Ice Breaking (IB): Team Building Exercises.
- Defining the Vision (DV): What we are looking for?
- Know People and Context (KPC): What is needed?
- Explore ideas (EI): How is this idea to start?
- Prototype and Iterate (PI): How can we make it better?

Below table summarizes the methods of the workshops (Table1). Methods are derived from various design thinking resources [3], [4], [5].

Table 1. Used methods during the workshops

Workshop 1	Workshop 2	Workshop 3
Milestone (IB)	5 WH (DV)	5WH (DV)
Add object (IB)	Focus Group Discussion (KPC)	Group Sketching (EI)
Grouping		
635 Method (EI)		

3. WORKSHOP SERIES

In this study, the researchers aimed at working in a collaborative manner, they preferred to work with a team in every stages of the process such as problem definition, framing it, etc. all. Duration of the study had been limited by the course term since this study was done within the context of the course. At the end of the 2015, September works to determine the problem was begun and the study process continued till the end of December and at the end of the December study has finished. Within the scope of the course, "a day in a life method", which was given as a submission by the lecturer, had been used to ease the determination of the problem. The results of the application of this method were mainly focused on the daily furniture used by the researcher himself. Mostly ergonomic problems of the furniture were obtained and reported by the application of the problems. At that point, the researchers noticed the challenge of generalization of the result and misleading candidates of the problems, thus he wanted to work collaboratively in determining the problem alternatives. For that reason, first workshop was organized.

3.1. Workshop 1

Undergraduate industrial design students of ITU made first workshop. 6 students were participated in the workshop and it took approximately 2 hours. Participants were in their 5th or upper terms, so it might be assumed that all participants had a designer approach by means of handling the problem and using methods. The researchers aimed at applying a composition of several methods for the first workshop. By usage of icebreaking methods, both warming up the environment and revealing the topics to talk about by participants was targeted. At first “Milestone” method was used. Participants were asked to mark 3 milestones of their life on the given time table by post-its. Moving to another city was one of the prominent answers. Establishing own business, marriage, earthquake, and family issues were other remarkable answers. Secondly, “Add Object” method was used. Every participant was asked to share their association about the 3 milestones, which were not written down by themselves. Because of having more answer related to moving, objects related to moving had been higher. Bus, car, luggage can be given as an example to this. Other answers were such as magnifiers, binoculars, first aid kit, orange, etc. al. Motivations behind writing these objects were argued together and their wide perspective on matching milestones and objects was revealed. For example, a participant, at first stage, had shared moving to Antalya as a milestone, another participant, at second stage, matched it with the orange, because of the city’s fame. In another example, ‘99 earthquake had been mentioned as a milestone, another participant matched the first aid kit with it. As seen in first example, milestone-object matches can be indirect and as seen in the second one can be direct. Third stage is grouping. Shared objects were tried to be grouped to set a meaningful unity or a story. “Bed, bell, pink shades”, “magnifier, microscope, binocular”, “luggage, bell, bus” were some examples of this grouping. Grouping was done more than once at that level. Grouping similar objects or gathering different objects to form a story were two different methods applied by the participants. Before passing to another level, participants were asked to take one of the problematic objects of their life and sit down their chair. For last, “635 Method” was used. Participants were asked to write down or sketch about the problematic objects that they choose to an A5 size paper. At the beginning of this level, participants were informed to share their ideas only by writing or sketching, never by talking (Figure1).



Figure 1: Workshop 1 (milestone & add object method)

After 5 minutes, every participant was asked to give his or her paper to the clockwise participant. Every participant continued to design process incrementally by using another A5 paper for their friend’s problem and after 5 minutes again transferred his / her paper to next friend. This action continued, till every participant had shared a solution on the every problem, 5 minutes long periods repeated for 6 times. 6 different problem fields were looked through and discussed. The researchers had chosen the doorbell as the problem field for the next stage. A doorbell’s qualifications like being used by almost everyone in their daily life, diversity of being used by different personas, being a passive object while used in an active action and its usage by at least two people, tangible and intangible problems related with the doorbell were some reasons for the researcher to work with this object (Figure2).



Figure 2. Workshop 1 (635 method & discussions)

After one week from the first workshop, a written feedback was asked from the participants, four of them had returned. According to the feedbacks, participants were seemed pleasant about the process and collaborative work; however they mentioned some unity problems of the process, especially between third and fourth level. In addition to that two of the participants shared their wishes to have had one or more levels to materialize their ideas.

3.2. Workshop 2

Second workshop was organized by 10 students taking Design Thinking graduate course at 26th November 2015. Before beginning to second workshop, process, outcomes, problem field, feedbacks of the first workshop were briefly mentioned to students and the lecturers and their opinions and critiques were taken. 5WH method was tried to be applied in this second workshop. One A4 sized paper was sliced into two on its short side, and 6 separate cells were defined on its long side. In every cell, within order, below questions and explanations was placed.

- Who? (is concerned, actor, group of people, responsible,...)
- What? (action, object, transaction,...)
- Where? (place, area affected by subject, step, ...)
- When? (timing, duration, time,...)
- How? (necessary means, methods, materials, procedures, ...)
- Why?

Every participant was given one of the above-mentioned form and asked to fulfill it within the context of a ringing doorbell. Every participant was asked to transfer their form to the next participant by folding their answer and for every cell this action was repeated. In every form, in every datum were collected independently. With the help of this work, asymmetric matching of the informations was aimed and possibility of dealing with the problem without applying standard approaches was questioned (Figure3).



Figure 3. Workshop 2, 5WH method

At the end of the work information about the actors of the ringing the bell action (the one ringing and the one being rung) and place, form, time, reason of the action were gotten. Since in every form was fulfilled with different person, there was no meaningful unity, there were even funny scenarios for some forms. After this work, a focus group discussion was made with the lecturer and the other students, their opinions on both workshops and chosen topic had discussed. At first, participants were mentioned to be able to share a case by fulfilling the form on their own. This revision need noted by the researcher and applied in third workshop. To prevent the disconnection seemed in grouping of the objects in first workshop, constituting personas and directing the workshop through these personas was advised. Another important issue from the discussion was, possible linkage between cultural and human centered values and doorbell. Putting on cards to door when someone could not find the host in bairams, two different door knockers for different genders in old houses, seeing the guest off to the out of the home and welcoming guests outside of the home were shared by participants as an example. Integration of doorbells with digital technologies has formed another field. Another important gain from discussion was participant's sharing their own experiences and problems related with the doorbell.

3.3. Workshop 3

Third workshop was made 17th December 2015 in approximately 20 minutes. Most of the participants were the participants of the second workshop and the number of them was 10. At first, revised version of the second workshop's form was asked to be fulfilled by the participants (Figure4). By approaching through the door and bell problem field, participants were asked to set a meaningful case by answering "who, with whom, where, when, why, how?" to find cultural and social values of the doorbell. They could answer the questions in one sentence if they wish. As a result, real and possible scenarios of our daily lives were revealed. So, qualities of doorbell, which make it a medium of social and cultural sustainability, are analyzed.



Figure 4. Workshop 3

At the end a short initial idea sketching was made. Participants were asked to create ideas and offer improvements especially on doorbells which are at outer surface of the apartments. Participants expressed themselves by words and sketches. Every data collected in all three workshops will be analyzed in a detailed way in the next part.

4. RESULTS OF WORKSHOPS

This Bell's being a problematic area as a result of the first workshop and asymmetric informations like users, aim of the usage, usage scenarios are tried to be visualized below (Figure5).

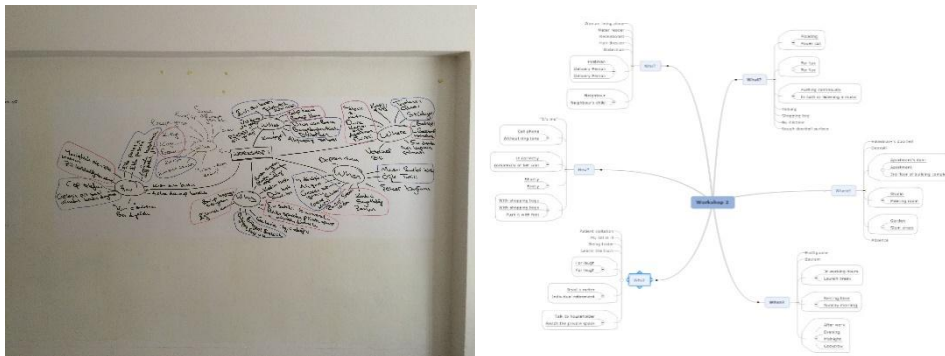


Figure 5. Results of 5WH Method in Workshop 2

Since every cell of the 5WH was completed by different people, gathered information could not form a case. As shown in the above, related answers are grouped. Although bell concept was mentioned to be handled in a broader perspective at the beginning of the study, study has been focused on the daily usage of the doorbell based on its intense usage on that field.

Number of the answers related with duration or timing is higher than others. Bell's ringing within working hours, in the evening and night, while resting are formed main grouping fields related with time. Reasons of ringing bell are seen as meter reading of electricity or water, or undesired guests like dealers or pollsters in some answers. Interface problems or problem of ringing the bell while your hands are full are the prominent answers given in "how" part. Deliveryman or neighbors are dominant answers in "who" part. Extensive usage of online marketing can be linked with the frequency of "deliveryman" as the answer. Bell's ringing while you are unavailable or fake ringing constitute another intense area.

In the focus group discussion, which was made immediately after the second workshop, participants shared experienced and potential problems of their own and talked about possible solutions on these problems. Below table summarizes this discussion. The person who interacts with bell, possible problems, and possible solutions are placed in different columns. In each rows, different scenarios are formed.

Table 2. Cases obtained focus group discussion in Workshop 2

Person	Problem	Solution
Deliveryman	Not being home	Deliveryman leaves note
Woman living alone	security	Does not fully write her name at the door
Guest visiting a family with a baby	Disturbing baby	Using whatsapp instead of the bell

At that stage, potential solutions to current problems of the doorbell are offered. To specify these;

- With the help of integration of digital places for touching or writing onto the front gate doorbell panel, leaving a note or signing can be done with the bell.
- Front gate doorbell panel can reflect the building's floor plan in order to provide information about the number and floor of the desired apartment.
- By using apps/ cellphones guests can be seen before they come.
- Nametags at the front gate doorbell panel can be digitalized and changed by the house owner from their home.
- Visual tags can be used instead of using names.
- Bells can be controlled by the foot pedal while someone can't use her/his hand.

5. DISCUSSION

One of the main results of this study is that doorbells go beyond being a simple product with only one function. It starts interaction and creates primary communication between at least two people. Communication methods are specific to the cultures and societies. In example, in workshops, most of the new doorbell offerings add doorbell note taking function. This is highly related with Turk's traditional bairam visits. Another important aspect focused on the workshops is that different user groups in our daily lives also use it frequently. Elderly people, kids, friends, neighbors, and deliveryman, meter readers are mentioned as the ones who ring the bell in workshops. In general we can divide the bell ringers into two groups as the ones we know and we don't know. According to the gathered data from workshops, in some cases, it seemed that the bell carries additional meaning to the user beyond its main function. In some cases, it seemed that digital interface causes some ergonomic and usage problems. Problems based on the digitalized versions, are offered to be solved by dominantly digital improvements, here occurs a contradiction. However, improving visuality and functionality of the bell can be easier by the mediums of the digital world. Another frequent wish on bell's functions is seemed as not functioning every time. In some cases, bells that provide interaction between private and public spaces, are wanted to prevent this interaction while someone is resting or does not want to be disturbed for some reasons. Another problematic area of the bell is related with its physical being and usage. There are several ideas on being able to use the bell while someone cannot use his/her hands. In that part, some prominent and dominant aspects of problems related with the doorbell are emphasized. To sum, doorbells should carry some properties, which meet general usage tendencies and cultural values of a society.

6. CONCLUSION

In this study, design thinking methods and approaches are applied from problem definition to product suggestions. In first workshop problem area has been defined, in the second one study area has been narrowed down, in third workshop data have been collected systematically and productively. As a result, required data for the design stage is gathered. With the help of the results of this study, user groups can be narrowed down and persona or personas can occur. With the help of these personas, existing problem areas and solution suggestions can be narrowed down, thus basis for potential designs can be prepared within the harmony of social rules and culture of the target group. All stages of this study, which involves research processes prior to design practice, are run as a group work with the help of some specific methods. It carries the quality of a sample process for collaborative working.

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