

Design Arguments – an examination of how designers argue for their designs

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ABSTRACT

To communicate a design can be seen as consisting of at least two aspects: presentation and argumentation. In our research we have taken on the task of studying how practicing interaction designers approach the challenge of presenting and arguing for their designs. We have chosen to label our object of study, or unit of analysis, a *design argument*. Based on three studies, we have developed a descriptive framework that can be used to describe, analyze, and compare design arguments. The paper ends with some discussions and reflections concerning the potential relevance, use, and implications of a framework of design arguments.

Author Keywords

HCI, interaction design, practice, design arguments.

ACM Classification Keywords

H5.m. Information interfaces and presentation (e.g., HCI): Miscellaneous.

INTRODUCTION

Interaction design is a professional practice that includes diverse activities and skills. So far, the dominant research on interaction design practice has been about the design process, artifacts and systems, methods and tools, and to some extent the designer's own competence. However, one overlooked aspect of interaction design practice is related to the activities that come into play when a designer has to communicate, explain and argue for his/her design to fellow designers, managers, clients or other stakeholders.

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Purpose and approach

Our research is based on the assumption that there is a need for a better understanding of what design arguments consist

of, and how they are designed and communicated. We believe that such an understanding would be useful in both teaching and practice. We have therefore set out to explore and study how practicing interaction designers present and argue for their designs (i.e. to get an understanding of praxis).

We have found very little research done on the topic within the HCI community. Therefore our basic approach has been explorative with the purpose of establishing a framework suitable for describing and analyzing design arguments. We developed a research process that consists of a set of activities, such as interviews and analytical exercises.

We decided early on not to search for what would make a good, effective, or convincing design argument. Instead, we wanted to develop a sense of what the core elements of design arguments are and their relationships.

In the next section we will briefly give the background and definitions necessary for this research. After that, we will present some findings and insights from our studies. As our contribution, we will present the overall framework. We will finish with some reflections concerning the potential relevance, use, and implications of a framework like this.

DESIGN ARGUMENTS—DEFINITION AND BACKGROUND

The *design argument* as an object of study can be understood in many ways. A design argument in this context is not an abstract or logical argument but the manifested design that constitutes a presentation, its materials, and its activities. We could have decided to define our object of study as “design presentations”, but we found “argument” to be a more appropriate term since it has a richer meaning and includes aspects of reasoning and conversation; both which are vital aspects of almost any design “presentation”. We also wanted to emphasize that a design argument is often something that happens as part of the design process and is not a final outcome with the only purpose to present something that is completed. Design arguments are seldom only about spreading information.

Design presentations are occasions when designers can share or sell ideas in order to convince others of the direction they are taking, to get feedback, and so on. The design presentation is a time when the strength of the design argument is tested, challenged, or validated.

There exist a lot of research regarding argumentation and presentation in general and the field is flooded with both theoretical treatises on communication, presentation and argumentation but even more so with “how-to” books and manuals. There has also been some work done closer to our purpose. For instance, the notion of *design rationale* is related but is focused on the whole design process and the way a process can be documented to become a representation of the rationale behind a certain design [3, 4].

Lately, there have been some interesting attempts in design research to establish knowledge about *design cases*, i.e., the final representation of a design that can be seen as the end result of the design process [1, 2]. This interest seems, at least for now, to be more focused on the gathering of examples and good cases and less on developing a conceptual framework.

Many companies in the field of interaction design have manuals or guidelines on how to present a design or how to make a design argument. We have studied several of these and been influenced by them in our work, even though they are often quite focused on achieving a coherent visual style and form and less on content and arguments.

EXPLORATIVE STUDIES

As a way to explore the overall nature of design arguments, we conducted three studies: an interview study, an exemplar analysis study, and a group study.

Interview study

We interviewed nine interaction designers that all had some experience with presenting designs. The level of experience ranged from a couple of years to 15 years. Among our interviewees, 4 out of 9 were male, and 4 out of 9 were practicing designers while the others were graduate students, many of whom had professional experience.

The basic idea with this study was to examine how the interviewees think about design arguments and how they approach the task of creating a design argument.

Even though we had no set definition of what constitutes a design argument, we developed a set of questions that reflected our initial assumptions. For instance, we assumed that we needed to look into what were the common tools, what designers see as the content of an argument, and what the context for the argument means.

The interviews included, among others, these questions:

- What tools do you use for your design presentations?
- What are advantages and disadvantages of chosen tools?
- What’s usually the purpose of your design presentations?

How do you show interaction in presentations? What is the content about? How do you choose good examples? Are there any elements that could influence your decision? What people are involved in the presentations? Who are the stakeholders and audience? How do you present your design ideas? What are your favorite types of presentations, contexts, and formats?

About tools. In response to the question of the most used tools, the interviewees mentioned paper sketches, post-it notes and whiteboard as physical tools. For digital tools, Photoshop, Balsamiq, Axure, Powerpoint, Photoshop, Expression Blend, Visual studio and Illustrator were given as answers.

About purpose. For the purpose of a design argument, the professional interviewees mentioned *selling ideas* to clients as the most common purpose. Answers from students were focused on *communicating thoughts* and *getting feedback* for future improvement.

About content. When it comes to content for design argumentation, different types of artifacts were used, for instance, infographics, use cases, scenarios, images, sketches, text, charts, and different fidelities of mockups.

About strategies. The interviewees talked about what they saw as different design argument strategies. When engaged with more *business oriented* arguments, they saw it as important to focus on vision, core and future roadmaps and not go into any details. When doing more *product oriented* arguments, they saw it as important to be more focused on the domain and to bring expertise to the table. When *presenting to clients*, presentations should be more focused on the design process and how the design team came up with the idea. If the audiences are mainly *designers*, then the presentation should be more specific with a focus on what’s the existing problem, what the design principles are, what could be potentially problems, and so on.

Through these interviews, we got some interesting, but not very surprising, results. However, the rich material helped us to develop our first tentative version of the framework. The interviews also helped us to create *personas* and *scenarios* that we later used to reflect on real world design argument situations.

Exemplar Analysis

For the exemplar analysis, we sought out around 15 design arguments. We realized that design arguments could be found in many different formats. Those that are fixed over time, and consists of prepared material that anyone can engage in, read or watch, at any time and pace, such as, written documents or slideshows, we defined as *static* arguments. We defined *dynamic* arguments as those that included a presentation or audience, that is, the argument is performed. Dynamic arguments can be captured by video or streamed. The dynamic arguments can not be fully prepared since they usually include interaction between presenter and audience. Our collection of design arguments included both

static and dynamic arguments. Each design argument was analyzed by one member of the research group. The analysis was at this stage not formalized. Instead, we saw this process as a way to gather more insights that could help us in the further developments of the tentative framework that we established during the interview study.

Based on the exemplar analyses and through group discussions, we identified a first set of possible core categories of design arguments. The categories were, at this stage: purpose, process stage, type of arguments, relationship presenter and audience, form of presentation elements, style, content, form of communication, and tools used to make the presentation, and elements within the presentation.

As we reviewed each design argument in relation to each of the core categories we tried to find as many variations of that category in the design argument. For instance, when it comes to the category 'purpose', we found in a TED Talk by Pranav Mistry of the MIT Media Lab, that the purposes "explain", "clarify", "inspire", and "demonstrate" were clearly identified. While in other arguments, the purpose could be "to sell", "to convince", or "to get feedback".

Additionally, we scored how important each identified aspect of each category was on a scale of 1 to 5 in a particular design argument. For example, in a design argument on developing smart-phones for low vision communities, our analysis of the *style category* led to the following aspects and ratings: visual - 5, text - 3, facts/numbers - 3, hi-fidelity - 4, lo-fidelity - 3.

We presented our breakdowns to each other and added every category and aspect we found to our framework. We learned, unsurprisingly, that our framework was not complete and was growing fast. Already at this stage the framework functioned as a tool for understanding a design argument in a more meaningful way. Occasionally, we found that one category would be better defined by splitting it into multiple categories. If we found elements within a design argument that didn't fit into our categories, we created new categories or aspects of a category. At the same time we continuously tried to condense and combine our elements when possible into fewer but more stable and universal categories.

Group analysis

After the development of the framework, still in a tentative mode, we decided to test if the framework made sense. We decided to collect some design arguments (in the form of videos and slide shows), and then to use the framework to profile them as a group exercise. All members in the team found two or three examples and profiled them first individually using the framework. After that, we took two sample cases that we in detail discussed and analyzed in the group. When profiling the two examples, we found it was quite difficult and different from doing it individually. We had to spend a lot of time and discussion on some of the

framework categories, such as "Argument," and "Purpose." We also found not surprisingly that some of the more "obvious" categories were fairly easy to distinguish and analyze, for instance, "Process Stage" and "Content." There were also difficulties related to the fact that we could only see the final presentations and materials. It was therefore hard to distinguish what tools were used to make the design arguments.

THE FRAMEWORK

The overall purpose of our studies was to develop a better understanding of design arguments in practice. Each of the studies became a rich source from which we further developed and refined aspects of descriptive dimensions by which a design argument could be analyzed.

During our three studies, we continued to examine and develop our framework. The framework started out as a simple list of aspects that we assumed would be possible to use when describing a design argument. The framework grew to become quite large, with a structure and with relationships between elements. In the later stages of the work, we spent a lot of time trying to reduce, refine, and condense the framework, since we did not want the framework to be overwhelming in complexity.

The framework (see Figure 1) depicts the major parts of the developed framework. After our analysis, we found that it is possible to distinguish between categories that are in the *control of the designer* who was responsible in preparing a design argument. We label these as "*chosen factors*" since the designer can choose the aspect within these categories. There are, however, other factors that are more or less given to the designer (such as, overall purpose, context, manager decisions, etc.), which we labeled "*given factors*".

Within each of the two parts, *given* and *chosen*, we tried to find the most important categories that can be used to describe a design argument (see Figure 1). These categories do not constitute a comprehensive list of possible factors, neither are they probably the best possible list. However, we do believe that with more work, more analysis, and more research in relation to other fields (such as communication theory, presentation techniques, etc) the choice of categories could and should be further developed.

How to use the model?

Having gone through our studies and developed the framework we are quite confident that the framework can serve several purposes. We distinguish between three main purposes: *descriptive*, *analytical* and *design*.

Descriptive purpose. The framework can be used as a tool that provides aspects, concepts and terms suitable for describing a design argument.

Analytical purpose. The framework can be used to do more detailed analysis of arguments with the purpose to compare, contrast and critique.

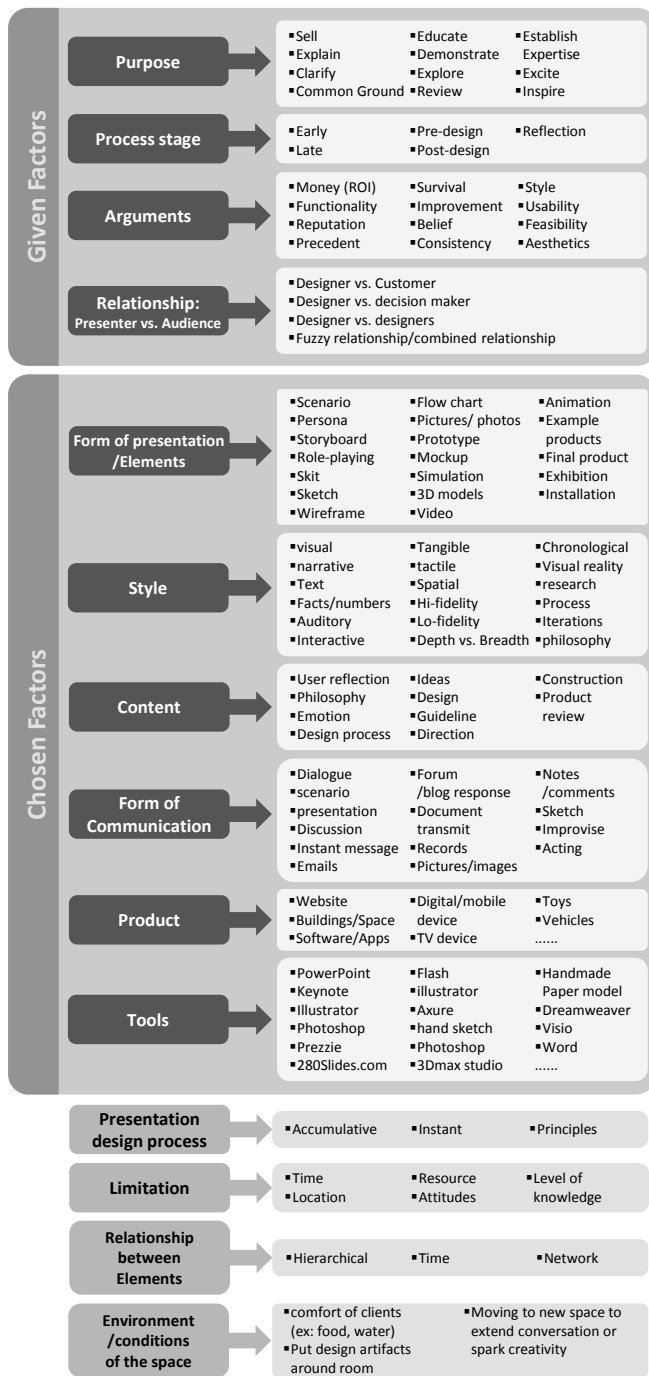


Figure 1. Framework for Design Argument Analysis

Design purpose. By analyzing the structure of their own design arguments, designers may get ideas of how to make their argument better, what to include, what to develop, etc.

These three purposes can also together serve an *educational purpose*. Students may use the framework as a tool to describe and analyze their own or others arguments, as a way to gain deeper insights of the nature of design arguments and how they can be designed.

We are fully aware that we are not able in this paper to explain the framework in any detail. However, the main purpose with this paper is to make the case that there is a need for this kind of research and that it can lead to results that can be highly usable for educational and practical purposes.

REFLECTIONS

During the research, we have constantly and critically examined the benefits or potential “dangers” of producing a framework like this. Are there possible negative outcomes of such analysis? Would we be normalizing design arguments by creating a framework of analysis? We have also struggled with issues related to the creation of any form of ontology or descriptive language. We will here not expand on these questions, just state that we are aware of the potential “mainstreaming” force of a framework like this, as well as the potential conservative role such a framework may have. However, we do see the need for some kind of descriptive and analytical language as crucial and believe that potential dangers can be handled.

CONCLUSION AND FUTURE RESEARCH

Our studies have convinced us that design arguments are possible to study and analyze. The studies have showed us that design arguments are complex entities that are far from easy to describe and analyze.

Our studies have also showed us that studying design arguments is a complex task that can be done in many different ways. But we have also found that it is possible to construct well-developed descriptions and explanations of particular design arguments, and that a conceptual framework of the kind we have presented here is a possible and productive way forward.

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