

Rhetorical Evaluation of User Interfaces

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ABSTRACT

This paper introduces an approach for evaluating user interfaces built on visual rhetoric and the rhetorical notion of function. A personal informatics mobile application has been selected to exemplify the application of this approach. Through the results of this example evaluation, this paper discusses the consequence of applying a rhetorical evaluation to a user interface. In this discussion, it is observed that inspecting the function performed by interface components takes into account experiences, communication, and meaning. In addition, it fosters reflection and criticism.

Author Keywords

Visual Rhetoric; Interface Evaluation; User Experience Design; Rhetorical Function; Reflection; Criticism

ACM Classification Keywords

H.5.2. Information interfaces and presentation: User Interfaces – *Graphical User Interfaces, Evaluation/Methodology, Theory and Methods.*

General Terms

Design, Theory

INTRODUCTION

Most of the products of user experience design come with a graphic user interface (GUI), and mobile applications are no exception. Other visually oriented products, such as an interactive fountain, do not include a GUI. However, both situations entail observable phenomena, which have certain effects on people. Hence, user interfaces fit with the type of artifacts of concern to visual rhetoric [3, 5]. Further, carrying out rhetorical evaluations [3, 5] helps us to understand how these artifacts relate to people's experiences and the generation of discourse. One form of conducting a rhetorical evaluation is through the inspection of the notion of *function* [3, 5], the action communicated by

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the visual artifact. This paper introduces an approach to evaluate the user experience by inspecting the function conveyed by a user interface. We selected a mobile application in order to provide an example of this type of rhetorical evaluation. Through this exercise, we observed that user interfaces, seen as visual artifacts [3, 5], challenge the original rhetorical formulation of function, and hence that of visual rhetorical evaluation. Thinking of interfaces as visual artifacts requires the evaluator to consider the forms of interaction with the system, in addition to the visual, audio, and physical components of the interface. Moreover, inspecting the function performed by certain interface components fosters reflection [8] and interaction criticism [1], which can be applied by both design practitioners and scholars.

VISUAL RHETORIC, FUNCTION, AND EVALUATION

Visual rhetoric is concerned with how visual elements from images, text, material objects, and any other symbolic form of representation are used to influence people's attitude, opinion, and beliefs [5]. Among the objects of study addressed by visual rhetoric are sketches, photographs, diagrams, infographics, motion pictures, architecture, and graphic user interfaces. Paying attention to visual artifacts is important because "[they] constitute a major part of the rhetorical environment, and to ignore them to focus only on verbal discourse means we understand only a miniscule portion of the symbols that affect us daily." [5]

The *function* of a visual artifact is the action that it communicates [5]. It is a personal interpretation of the physical data of the visual artifact [3]. In this sense, function is different from *purpose*, which involves an effect that is intended or desired by the creator of the visual artifact [5]. For instance, the purpose of a privacy screen filter for a travelling businessman's laptop is to prevent other people from seeing the content on the screen, whereas its function can be to provide a feeling of privacy.

We pay attention to the apparent function of a visual artifact in order to evaluate it. In this sense, we inquire whether the media, colors, form, and content actually accomplish such function [3, 5]. Nevertheless, "[I]f the [apparent] function is judged to be problematic in terms of its likely consequences, other functions may be suggested as more legitimate than the one communicated by the [visual artifact]." [3] Therefore, it is possible to inspect the function performed by a certain visual symbol or symbols

in the artifact, and then reflect on its legitimacy or soundness, determined largely by the implications and consequences of that function [3, 5]. We might want to assess “whether an artifact is congruent with a particular ethical system or whether it offers emancipatory potential” [5]. This notion of function requires the adoption of an *anti-intentionalist* stance: “[those] who adopt a rhetorical perspective on visual artifacts do not see the creator’s intention as determining the correct interpretation of a work.” [5] The effectiveness of a work is no longer expressed in terms of the change produced as result of being exposed to “the speech” of the rhetor. According to [5], “[T]he world produced by visual rhetoric is not always—or even often—clear, well organized, or rational, but is, instead, a world made up of *human experiences* that are messy, emotional, fragmented, silly, serious, and disorganized.” (Italics added) Thus, a rhetorical evaluation focused on function ponders human experiences, and contributes to the generation of rhetorical theory by acknowledging the role of visual artifacts in the world [5].

APPROACH

A Rhetorical Evaluation of User Interfaces

The ideas above suggest a possible connection between visual rhetoric and user experience design by means of a rhetorical evaluation focused on the notion of function. In this regard, the user interface (UI) corresponds to the visual artifact to be evaluated. The two criteria of evaluation are (1) the assessment of the apparent function, and (2) the inspection of the functions performed by certain visual symbols, which entails a further reflection upon their legitimacy or soundness. The latter involves looking at a UI’s visual, audio, and physical (if applicable) components, and taking into account their changes over time (Fig. 1).

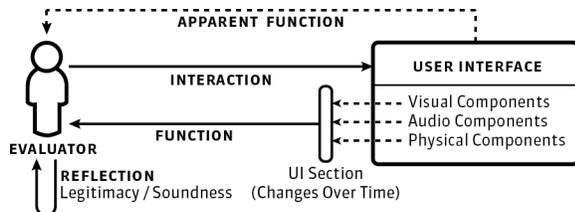


Figure 1. Schema of rhetorical evaluation for user interfaces.

The purpose of an interactive system is to help its users to accomplish certain goals. Although this purpose is expressed in an abstract sense, the designed interface represents a particular vision for that purpose. By knowing this, the evaluator can conjecture about the apparent function. Then, such a function needs to be assessed through observation of the UI components. Nevertheless, the components change in order to convey the current state of the system. This requires the evaluator to interact with the system. Further, it is during this interaction that the evaluator reflects on how certain components could convey certain meanings to the users. This action is related with the second criterion of the rhetorical evaluation. Different

levels of granularity might be considered in this regard. The evaluator should keep in mind that a rhetorical evaluation operates at a *discursive level*; it is conducted to understand the implications of a visual artifact for certain people. By paying attention to the components in their minimal form (i.e., at a fine-grained level), the evaluator might end up focusing on the components *per se* rather than inspecting a rhetorical function performed by components together.

Full: A Personal Informatics Mobile Application

Full (<http://thefullapp.com/>), a goal tracking application for iOS, is employed here in order to provide an example of the approach. The content of Full’s website conveys a concise but positive message with respect to goal tracking and the use of the application. It seems that Full’s effectiveness relies on its simplicity of use and interface. When used for the first time, Full shows a tutorial explaining how to use it: 1) Set a monthly count for a goal; 2) Make a short swipe to add or subtract to its running count (Fig. 2); 3) Make a long swipe to edit or delete it (Fig. 3); 4) Observe the historical dashboard in order to improve the next month. To start a formulation regarding the apparent function, the website content was taken into account, although not in the case of the tutorial. Then, some goals were set, and later modified.



Figure 2. a: result of making a short swipe to the right for the goal “Daily sketching.” b: result of making a short swipe in opposite direction.

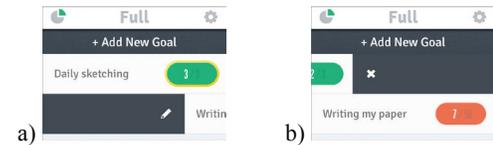


Figure 3. a: result of making a long swipe to the right for the goal “Writing my paper.” b: result of making a long swipe in the opposite direction for “Daily sketching.”

OUTCOME OF RHETORICAL EVALUATION

Below, the results of conducting the rhetorical evaluation are presented. The apparent function is described first, and then, the function derived from interacting with Full. In both cases, the evaluator was the same person.

Apparent function

Full’s apparent function is *to make goal tracking simpler*. The layout of the UI, the color palette, and the employed typography support this function. The negative space contributes to differentiate UI components, and to foreground information, either words (e.g., a goal name) or numerals (e.g., a goal count). Later, there are two noticeable color palettes in Full; one helps create visual hierarchies among the visual components, whereas the other is

employed for visual cues. Regarding typography, it is possible to note two typographic families; one employed for general texts and the other for numerals, both in two weights. The discrete ascenders and descenders help take advantage of the negative space for purposes of composition. Although some characters have prominent terminals (e.g., the letter “l”), the counters (i.e., the negative space in the characters) support the readability of text. Furthermore, chromatic contrast is employed for highlighting particular information (e.g., a goal count). Besides of the default sound for the keyboard, Full only employs two sounds; they can be heard when the user adds or subtracts to a goal count. These features help the user distinguish the different UI components and their purpose. They make the user focus on the accomplishment expressed by the goal count.

Function performed by UI components

To inspect the function performed by the UI components, the evaluator observed whether they, and through the interactions with Full, support or affect the notion of goal tracking. In this regard, the evaluation focused on a possible meaning or implication to the user. Since Full is a mobile application, it attempts to make goal tracking an activity capable of being performed at anytime or anyplace. Although it entails a minimal effort during the interaction time, Full employs gestures to reinforce the user’s personal commitment to goal tracking. This is the detected rhetorical function, and its corresponding reflection is presented below.

Interaction by gestures as embodied commitment

Because Full is a mobile application that doesn’t require accessing the Internet, the user can set a goal, modify it, and reflect upon it at any time and place. If the user is familiar with iOS, and she doesn’t have a physical impairment, interacting with Full doesn’t represent a major challenge. Unlike other applications (e.g., Facebook), Full doesn’t ask the user to tap on the screen in order to add or subtract to a count (e.g., *like* and *unlike*). Instead, Full asks the user to make short and long swipes to manage goal tracking. Full associates *moving forward* with making a swipe to the right. A short swipe *adds* to a goal count, whereas a long swipe allows the user to *edit* the goal. On the other hand, Full associates *moving backwards* with making a swipe to the left. A short swipe *subtracts* the goal count, whereas a long swipe *deletes* the goal. This simple finger movement, in combination with the display of little information, employment of a spacious layout, and application of chromatic coding on the content, reinforces the simplicity that Full attempts to convey. Full presents goal tracking as something simple and ubiquitous, and represented by means of a simple finger movement.

Nevertheless, making short and long swipes implies more than simplicity. It “embodies” a western interpretation of the world. The application conveys the idea of *moving*

forward and *moving backwards* through the movement of the user’s body. When the user makes a short swipe to the right, the application encourages the idea of *moving forward*. Additionally, Full reacts by changing its UI. The goal is displaced to the right and the symbol “+” appears next to the goal over a green background, which has a positive connotation in western cultures (Fig. 2.a). A cheerful sound points out the accomplishment of this task. Then, the goal returns to its original position. On the other hand, by moving her finger to the left, the user embodies a western schema associated with *moving backwards*. In this case, Full reacts by displacing the goal to the left side, showing the symbol “-”, and coloring the background next to the goal red; a color mostly associated with danger or alarm. However, Full still employs a sort of cheerful sound for this task before the goal returns to its original position. Altogether, the short finger movements and the UI response, including the cheerful sound for both cases, gives an account of goal tracking as something simple, fun, and prompted by means of the user’s body.

The actions of *editing* and *deleting* a goal (Fig 3.) have a similar interpretation. Nevertheless, for the user to make a long swipe entails more *body awareness* because her finger moves a longer distance. The sensation is noticeable when the user employs just one hand to hold the iPhone and interacts with Full by means of her thumb. It *feels like more effort* to make a long swipe than a short one. The application encourages personal reflection and decision-making: “*Why should I modify or delete this goal?*” Then, Full transforms the user’s awareness into something *visible*. It displaces the goal either to the right or left edge of the screen, changing the background to black (Fig. 3). Thus, Full conveys that editing or deleting a goal are at the same level of importance as “+ Add New Goal.” The user’s body is *integrated* with the design to aid her awareness about her decisions, regardless of the apparent function of simplicity.

DISCUSSION

Inspecting user interfaces has some implications not found in other types of objects, such as paintings or movies. Before inspecting the apparent function, the evaluator needs to learn about the system and its purpose. Also, she should know how to interact with the system, based on previous knowledge of the platform on which the system was developed. These factors establish some predispositions in the evaluator, but she cannot formulate an idea of the apparent function without them. By interacting later with the system, the evaluator validates this idea. Further, this interaction corresponds, to some extent, to a scenario-based evaluation of the system. Although the original approach in visual rhetoric for inspecting the apparent function emphasizes a formal analysis, the rhetorical evaluation of a user interface also ponders the forms of interaction, and how they relate to the visual, audio, or physical components. Because both the interaction and the components in the interface represent a particular vision [7]

of something general (i.e., its purpose), it is practically impossible to detach the formal qualities of the user interface with the designer's intention. Therefore, user interfaces, seen as visual artifacts, challenge the anti-intentionalist stance that grounds the rhetorical evaluation. In this sense, inspecting the apparent function is similar to other approaches, wherein the components and interactions are analyzed together as a means to comprehend their impact on the user at the moment of interacting with the system (e.g., [2] and [9]).

On the other hand, inspecting the function performed by certain components in the interface entails reflection, which is a relevant activity in design [8]. Although it seems that conducting this evaluation doesn't require information about the potential users, the predispositions previously mentioned allow the evaluators to take a personal stance before starting the inspection. In this regard, stressing the rhetorical aspect of this evaluation means pondering these predispositions in terms of possible experiences for the potential users. Yet, this evaluation focuses on the components in the interface. Interacting with the system is the principal means to reflect on the legitimacy or soundness of any formulation already made. The evaluator should carry out a scrupulous interaction as a means to comprehend the possible actions and their possible meanings conveyed by the components in the user interface. For instance, by paying attention to Full's interface components related to managing goals, the evaluator reflected upon the usage of *image schemas* [6] in a gesture-based interface with a *flat design* visual style, and how it reinforces certain meanings by which some people *shape* the world.

Putting together the considerations mentioned above offers a glimpse of the application of this approach. Bringing rhetorical evaluation to the realm of user experience design places the rhetorical evaluation between structural approaches (e.g., [2] and [9]) and hermeneutic approaches (e.g., [1] and [4]). Inspecting the apparent function seems closer to the structural approaches, whereas inspecting the function performed by the interface components is directed towards the hermeneutic approaches. In this regard, the evaluator's expertise on user experience design and rhetoric will influence the orientation of the approach. Nonetheless, the evaluator's expertise evolves over time, and as a result, the appropriation of the approach entails a dynamic process whereby the evaluator determines the relation of rhetoric with other approaches. The epistemological flexibility inherent in the rhetorical evaluation, applied to user experience design, admits different applications of the approach. For instance, the evaluation of Full can be applied as a reference to inform future design projects, as a personal activity with the purpose of improving the professional practice, or as a pedagogical instrument for engaging design students in an exercise of interaction criticism [1].

CONCLUSION

This paper introduces an approach for evaluating the user interface of an interactive system, whose basis comes from visual rhetoric, and follows an anti-intentionalist stance. By inspecting the notion of function, the action that a user interface communicates, the evaluator can ponder the implications of the system for its users. When a rhetorical evaluation is conducted for a user interface, the evaluator should pay attention to the forms of interaction with the system, in addition to visual, audio, and physical components of the interface. This extends the original notion of visual artifact in visual rhetoric, and challenges the anti-intentionalist stance in visual rhetoric [3, 5]. Nonetheless, inspecting the function performed by certain interface components fosters reflection [8] and interaction criticism [1]. Thus, the evaluator, either a designer or a scholar, can obtain a wider perspective regarding the design of interactive systems, one that takes into account experiences, communication, and meaning.

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