

Investigating the Effects of Font Styles on Perceived Visual Aesthetics of Website Interface Design

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Abstract. The purpose of this study is to compare the effects of the two font styles (serif and sans-serif) on the users' perception of visual aesthetics of website interface design. Two font types were tested in this study, namely: "Time News Roman" representing the "serif" style and "Calibri" representing the "sans-serif" style. They were chosen because they are two of the widely used font types on the web and because they are the default font types of many of the most popular word processing and web developing software. Analysis of results showed that font type has a statistically significant effect on perceived visual aesthetics. The designs with the Time New Roman font were perceived as having better visual aesthetics. However, this effect was only significant on the overall perception of visual aesthetics; it wasn't significant in each of the four facets of visual aesthetics tested in this study.

Keywords: font style, font type, perceived visual aesthetics, website interface design.

1 Introduction

Most of font types used in printing and on screen belong to two font styles: serif and sans-serif. A "serif" is a French term for a short decorative line (edge) at the start or finish of a stroke in a letter, and "sans-serif" is a French term meaning "without-serif". i.e. the serif style has edges that project from the main letter block, while the sans-serif style doesn't have these edges.

The effect of each style on readability and legibility is one concern of the field of document, screen and interface design, finding of related studies mostly agree that on printed papers the serif style gives better readability and legibility than the sans-serif style [1], while; on a computer screen this advantage of the serif types is reduced, and findings of several studies indicated that the sans-serif types have more readability and legibility [1, 3, 4 and 7]. This is due to the fact that on computer screens each character is displayed as dot-matrix (or pixels), which results on the character with the edges "serif" appears jagged. This effect increases with low resolution of the screen

and should be reduced with higher screen resolutions. As screen resolution increases this jagged effect should be eventually eliminated [1].

Other than the issues of readability and legibility, there is the issue of which font style would be more aesthetically appealing for the users and how it would affect the overall visual appeal and aesthetics of the interface. This issue is the concern of this study. The purpose of this study is to compare the effects of the two font styles (serif and sans-serif) on the overall perception of visual aesthetics of website interface design.

Two font types were tests in this study, namely: "Time News Roman" representing the "serif" style and "Calibri" representing the "sans-serif" style. They were chosen because they are two of the widely used font types on the web and because they are the default font types of many of the most popular word processing and web developing software.

2 Method

2.1 Design of the Experiment

An experiment was designed and conducted to test the effects of font type on participants' perceived visual aesthetics of website design.

A one- factor (font type) within subject design was utilized with two levels associated with the two font types to be tested (Times New Roman and Calibri). Two designs of a webpage were prepared to represent the two levels. Both designs have identical formats (colors, menus ...etc); the only difference is the font type used in each design; in one design the Times New Roman font type was used in all text in the webpage, in the other design the Calibri font type was used.

User perception of visual aesthetics was measured using the VisAWI (Visual Aesthetics of Website Inventory) questionnaire [6]. The instrument is based on four interrelated facets of perceived visual aesthetics of websites: simplicity, diversity, colorfulness, and craftsmanship. Simplicity comprises visual aesthetics aspects such as balance, unity, and clarity. The Diversity facet comprises visual complexity, dynamics, novelty, and creativity. The colorfulness facet represents aesthetic impressions perceived from the selection, placement, and combination of colors. Craftsmanship comprises the skilful and coherent integration of all relevant design dimensions. Each of the first two facets is presented by five items in the questionnaire, while each of the last two facets has four items.

The font type with its two levels (Times New Roman and Calibri) is the independent variable. Questionnaire scores represent the dependent variable. Fig. 1 shows screen shots of the two designs of the webpage. The webpage represents a homepage of a hypothetical website that talks about the ancient history of a certain region of North Africa.

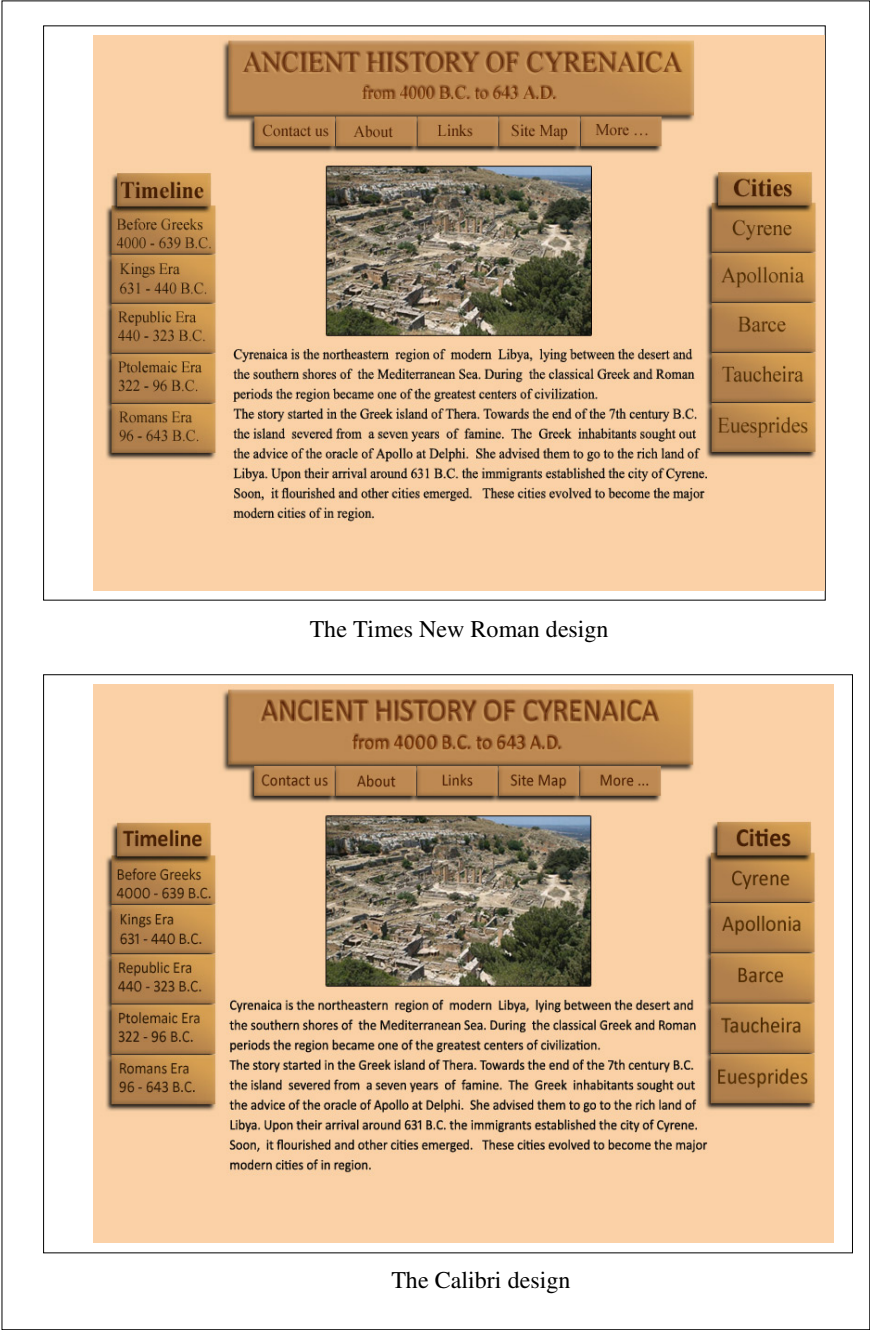


Fig. 1. Screen shot images of the two designs of the webpage

2.2 Participants

Participants were recruited online. Email invitations were sent to a total of 201 individuals with the choice of entering a lottery to win 100 US dollars. A total of 30 responses were received, from which 22 were valid responses. All invitations were sent to audience within the United States. Average age of participants with valid responses is 49.7 years with a standard deviation of 4.8 years. 10 were males and 12 were females.

3 Results

Images of screen shots of the two designs were presented to each participant one at a time with an on screen size of 800X600 pixels. The questionnaire was placed under each image. Each participant had to answer the questionnaire for each design using a seven-point Likert scale. Both images and questionnaire items were presented in random orders for each participant.

Table 1 summarizes average scores per each scale (aesthetic facet) and for the total score. The averages were presented per each design (Roman and Calibri). Cronbach's α was used to measure reliability of the questionnaire. All calculated values were larger than 0.86 for the different scales of the questionnaire, indicating an acceptable level of reliability.

It can be seen that with all scales and with the total, slightly higher average scores were recorded in the Roman design. However; results of the paired-t test, also given in Table 1, indicate that only with the average total score, statistically significant difference between the two designs was found (p -value = 0.038). The total average score for the Roman design (4.33) was significantly higher than the total average score for the Calibri design (4.16). Participants perceived the Roman design as having better visual aesthetics than the Calibri design.

It can also be noticed from the table that a close to significant difference was recorded with the craftsmanship scale (p -value = 0.055).

Highly significant differences were found among the different scales (p -values < 0.001), as results of analysis of variance among the average scores of the scales for each design in Table 2 show. With both designs, pair-wise comparisons were significant between all scales (p -values < 0.05) except the diversity scale and the color scale. The simplicity scale was given the highest average score in both designs (5.18 in the Roman and 4.98 in the Calibri) followed by craftsmanship with average scores of 4.59 and 4.29 for the Roman and The Calibri designs respectively, than diversity (3.89 in the Romans and 3.18 in the Calibri), and last colorfulness with average scores of 3.66 and 3.57 for Romans and Calibri respectively.

Both of the simplicity scale and craftsmanship scale are related to the classical dimension of visual aesthetics, while the diversity and colorfulness are considered to be representatives of the expressive dimension of visual aesthetics [5]. The higher average scores given to the simplicity scale and the craftsmanship scale indicate that participants perceived the two designs of the webpage as more classical than expressive.

Table 1. Average questionnaire scores and results of the paired-t test

Scale	Font Style	Average	Standard Deviation	T	P-value
Simplicity	Roman	5.18	1.21	1.50	0.147
	Calibri	4.98	1.16		
Diversity	Roman	3.89	1.21	0.63	0.267
	Calibri	3.18	1.37		
Colorfulness	Roman	3.66	1.57	0.66	0.259
	Calibri	3.57	1.55		
Craftsmanship	Roman	4.59	1.44	2.02	0.055
	Calibri	4.29	1.49		
Total	Roman	4.33	1.17	2.20	0.038
	Calibri	4.16	1.20		

Table 2. Results of analysis of variance for scales

Case	F	P-value
Roman	16.20	< 0.001
Calibri	12.27	< 0.001

4 Conclusions

The purpose of this study was to study the effects of the two font styles (serif and sans-serif) on the perception of visual aesthetics of website interface design. Two font types were tests in this study, namely: "Time News Roman" representing the "serif" style and "Calibri" representing the "sans-serif" style.

Analysis of results showed that font type has a statistically significant effect on perceived visual aesthetics. The designs with the Time New Roman font was perceived as having better visual aesthetics. However, this effect was only significant on the overall perception of visual aesthetics (the overall questionnaire score); it wasn't significant in each of the four parts of the questionnaire (representing the facets of visual aesthetics).

Regarding the visual aesthetics design of the webpage used in this study, results showed that participants perceived the design as more classical than expressive. It would be interesting to see if the above results (regarding font styles) would hold in cases of more aesthetically expressive designs.

Several previous studies have found evidences of possible effects of context of use (serious context vs. funny and pleasurable context) on perception of visual aesthetics of webpage design [2 and 8]. The context of use in the current study can be considered as a more serious one; would the outcomes of the test change in case of a more pleasurable context? This needs further experimental investigation.

Finally, it would be also interesting to see how using a mixture of different font styles and font types in the same webpage (compared to the single styles and types used in the current study) would affect perception of visual aesthetics of the page design.

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