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COMPARISONS OF ARIAL, HELVETICA, & UNIVERS' READABILITY

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ABSTRACT

Helvetica, Arial & Univers are well-known typefaces that are often used to represent the sans serif typeface classification. Though similar, the three typefaces are often objects of debate in terms of which is better. The research conducted by the author is held in hopes to compare each typeface in terms of readability. The research is done with several literature reviews regarding the typefaces, formal analysis of the alphabets of the typefaces, and also an experiment involving 70 participants that were all design students. As preliminary research, the author had highlighted several differences regarding the three typefaces. This research can be used as a reference to study the three typefaces in terms of readability and also as a reference to typeface readability analysis.

Keywords: *Readability*, *Typeface Design, Typography, Helvetica, Arial, Univers*

INTRODUCTION

Research Background

In graphic design, typography can be understood as an art that studies letters and its organization (Hananto, 2019, p. 196; Landa, 2011, p. 44). Typography itself can be found on most graphic design objects. This happens to shows the necessity of typography by being ubiquitous. That being said, typographers owe their craft from another's craft, typeface designers (Ruder, 1982, p. 7). Typeface designers design typefaces that typographers and graphic designers use on their designs. The vast and diverse selection of typefaces often confuse new designers that aren't able to distinguish characteristics of similar typefaces. One important characteristic of typefaces that had to be understood is readability and legibility.

Arial, Helvetica, and Univers are all categorized in the grotesque and neo-grotesque typeface. Both category are the earliest sans serif typefaces; with grotesque being the early iterations which are more 'imperfect' compared to the uniformed neo-grotesque (Carter, Meggs, Day, Maxa, & Sanders, 2015, p. 39). Arial and Univers are often compared to Helvetica. Univers and Helvetica are both designed on the same period and ideas, but Helvetica is often more popular than Univers due to more exposure of Helvetica on popular media and usages ("The Univers of Helvetica: A Tale of Two Typefaces," 2019). Arial is designed almost 25 years later after Helvetica and is believed to be designed as an attempt to imitate Helvetica (Strizver, n.d.). While comparisons of Univers and Helvetica, and Helvetica and Arial are common, often the debate on 'which one is better' derived from historical context and minor form considerations. A thorough study on form for all three typefaces was never found by the author to this date. This prompted the author to study the three typefaces on a visual form perspective. The study is not intended to determine which typefaces are better, but to see how each typeface differs. The study is also intended to test a methodology on how to analyze typefaces readability.

Defining Typeface's Readability

To define readability, we need to understand about legibility. In typography, legibility and readability are sometimes mixed up and sometimes thought of like the same things, however, this is not the case (Jury, 2006, pp. 82–85). Legibility is a term that refers to how a letter can be distinguished from other letters (Hananto,

2019, p. 200), such as the digit '0' with the letter 'o'. On the other hand, readability refers to how a letter is easy to be read (Strizver, 2006, p. 59; Tselentis, 2011, p. 122). A legible typeface will help make the text that uses the type more readable, however, this does not mean that readable texts require legible typefaces. Adjustments such as size, color, tracking/spacing will contribute to making a text readable. Here we can conclude that readable text is texts that are easy to read, legible typefaces are typefaces that have distinguishable letters.

The design of a typeface can be called legible compared to other letters on the typeface, but how about when we compare a typeface with another typeface? This prompts the author to use the term a typeface's readability (not legibility), in which the author studies the form of a typeface to see whether the type will be easy to read or not. A legible typeface is good when all the letters on the typeface are distinguishable, a readable typeface is good when the typeface can be read well.

The factors that influence readability and also legibility are the design or characteristics of the letter and typeface and how the letter and typefaces presented (Woods, Davis, & Scharff, 2005, p. 87). This brings another question, on what context will the typeface be tested to see it's readability? Some typefaces are easier to read on printed matter, while others perform better on the screen (Tselentis, 2011, p. 122). In this case, the author argues that the context of how the typeface will be tested is irrelevant as all three typefaces will be tested on a similar environment, therefore conditional effects of the production will be the same on all three typefaces. Therefore, the remaining variable to be studied is just the design of the typeface.

Massimo Vignelli, a celebrated modern designer, stated that typography is "about the white" (Hustwit, 2007), what he meant was that typography should focus on the areas outside of the letter itself, as the white 'shapes' the black. This notion of typography is also applicable to typeface design, in which most typefaces performances were determined by the white areas. Typefaces with too much black will be illegible once scaled-down, hence being unreadable. Typefaces with too much white will be invisible once scaled-down, hence being unreadable also. This idea underlines the method to analyze the three typefaces for this study.

METHODOLOGY

For this study, the author conducted three different steps. The first step is the measurement of the three typefaces, followed by an analysis of the measurement results. The second step is experimenting to see responses towards the three typefaces performances, the result of the experiment is then analyzed. The final step is to create a conclusion based on the analysis of the previous two steps.

The measurement of the three typefaces is conducted first by comparing the three typefaces. The three fonts used to represent the typefaces are Arial Regular, Helvetica LT Std Roman, and Univers LT Std 55 Roman. The measurement was done digitally using digital imaging software to set up and do the measurement. All typefaces were set on 48pt, while measurements were done using millimeter. All of the three typefaces were set on uppercase, and each is designated a color to help distinguish the typefaces. The three typefaces are then layered together to see the similarity or differences. After seeing notable differences in the visual form, the author then measures parts of the letter. Each letter had different parts and areas

measured, most of them have their width and counters measured. While the measurement is a quantitative method, several qualitative methods of the typeface are also taken into account for later analysis. Then, the analysis uses the triad-ing method, which compares three different objects to highlight similarities and differences in comparing (Martin & Hanington, 2012, p. 186). From the analysis, the author can conclude which typeface is better in terms of visual form based on the metrics used.

Figure 1. Layering and measuring the typefaces
Source: Author, 2020

The second step is to test the three typefaces. The three fonts were used in two different parameters, a 12/14.4pt and 10/12pt. For each parameter, a group of students was asked to determine which typeface performed best compared to the rest. There were a total of 70 students that are broken down into 15 groups. Each group is asked to present their choice that was later recorded. From the two scenarios, the author can conclude which typeface performed best on the respondents' feedback.

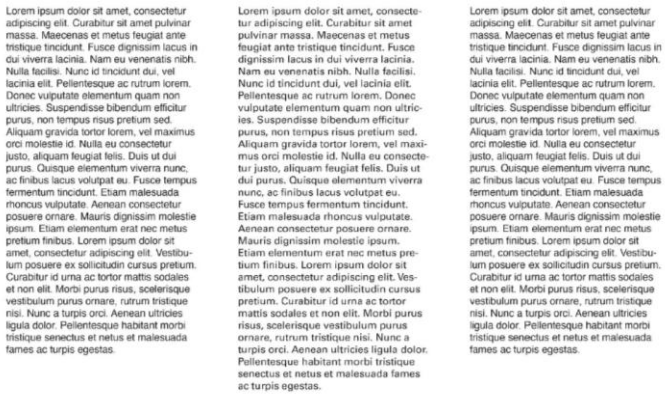

Figure 2. Example of the experiment, Helvetica is used on the column in the left, Univers on the center, and Arial on the right.
Source: Author, 2020

The two steps previously serve to gather data from different methods. The results from the two methods are then compared to provide a conclusion and also closing argument for the study.

DATA DESCRIPTION & DISCUSSIONS

Measurement

On doing the measurement, the author set all the letters and placed them side by side (Figure 1). By doing so, the author can detect whether there were noticeable differences that need measuring or not. Some letters from the three typefaces were

similar, such as in the letter 'I', but for some letters, such as 'K' the differences were quite significant.

After determining what letter needs to be measured, the author then measured each necessary part for analysis. The typeface that is ranked first receives three points, the second receives two points, and the last typeface receives one point. The points will be used to accumulate and rank the final typeface. Each letter result and description can be seen in Table 1.

Table 1. Measurement Analysis Results for Each Letter

Letters	Description	Arial	Helvetica	Univers
A	1. Univers had lower bars, hence creating a bigger closed counter area compared to the others. 2. Arial had bigger counter width to overall width ratio compared to Helvetica	2	1	3
B	1. Ranking based on counter width to overall width ratio	2	3	1
C	1. Univers had the biggest aperture 2. Arial had the biggest counter width to overall width ratio	2	1	3
D	All three typefaces had a similar design	N/A		
E	1. Ranking based on the difference between the longest bar and the shortest bar.	3	2	1
F	1. Ranking based on the difference between the longest bar and the shortest bar.	3	2	1
G	1. Helvetica had the biggest aperture 2. Univers had the biggest counter width to overall width ratio	1	3	2
H	All three typefaces had a similar design	N/A		
I	All three typefaces had a similar design	N/A		
J	All three typefaces had a similar design	N/A		
K	1. Ranking based on counter width to overall width ratio	2	1	3
L	All three typefaces had a similar design	N/A		
M	1. Ranking based on bottom counter width to overall width ratio	2	1	3
N	All three typefaces had a similar design	N/A		
O	1. Ranking based on counter width to overall width ratio	3	2	1
P	1. Ranking based on counter width to overall width ratio	3	2	1
Q	1. Ranking based on counter width to overall width ratio	2	3	1
R	1. Arial had a distinct diagonal stroke that helps it is legible, and in this case, readable 2. Helvetica had a bigger counter width to overall width ratio compared to Arial.	3	2	1
S	1. Univers had the widest aperture 2. Arial Had bigger counter width to overall width ratio compared to Helvetica	2	1	3
T	All three typefaces had a similar design	N/A		
U	All three typefaces had a similar design	N/A		
V	All three typefaces had a similar design	N/A		
W	1. Ranking based on bottom counter width to overall width ratio	3	1	2
X	All three typefaces had a similar design	N/A		
Y	All three typefaces had a similar design	N/A		
Z	All three typefaces had a similar design	N/A		

Source: Author, 2020

From Table 1, Arial earns a total of 35 points, while Helvetica earns 28 points and Univers 27 points. Based on the measurement, it can be concluded that Arial is a more readable typeface then Helvetica or Univers. The decision to rank each typeface was mostly by the ratio of letter width to the biggest visible counter's

width. In some cases, the result of the calculation may seem visually inaccurate as some letters had distinct features that may help them be more legible and also readable.

Experiment

The results of the experiment can be seen in Table 2.

Table 2. Experiment Results

Respondent Group	12/14.4pt	10/12pt
1	Helvetica	Helvetica
2	Univers	Arial
3	Univers	Univers
4	Arial	Helvetica
5	Arial	Arial
6	Arial	Helvetica
7	Univers	Univers
8	Helvetica	Helvetica
9	Univers	Univers
10	Helvetica	Helvetica
11	Univers	Univers
12	Helvetica	Helvetica
13	Univers	Univers
14	Univers	Univers
15	Arial	Arial

Source: Author, 2020

From the table we can see that for the first scenario (12/14.4pt), Univers had the most votes, 7 out of 15 or 46.67%, while Helvetica and Arial both shared 4 votes each. For the second scenario (10/12pt), Helvetica and Univers had 6 out of 15 votes or 40% each, while Arial only had 3 votes or 20%. When both tally are added, Univers lead with 13 out of 30, or 43.33%, Helvetica 10 out of 30, or 33.33%, and Arial 7 out of 30, or 23.33%.

While most respondents provide the same answer for the two different scenarios, some groups provided a different answer. This comes to show that for some of the respondents, some typeface performs differently on different sizes when compared.

Discussions

From the measurement, it can be seen that somewhat Arial is the superior typeface compared to Helvetica and Univers. However, from the experiments, respondents voted more on Univers and Helvetica compared to Arial. The result of the two data collecting method shows contradictory effects that actually can be attributed to some limitations of the research.

1. On the measurement, the author had only selected several metrics or indicators for deciding which typeface triumphs other; however, there are more metrics available to calculate in more detail.
2. In the experiments, the number of respondents could be increased to get more data. The diversity of the respondents may also be necessary to get better data, as the respondents of the study are mostly students, they may share similar preferences. The way data is collected can be more personal and individualistic, instead of grouping the students, each student can be asked to vote.

CONCLUSION

Arial, Helvetica, and Univers are designed differently by different designers in different contexts. Measurements made by the author concluded that Arial is more readable as it had better overall width to counter the width ratio on most of its letters. However, experiments where students are asked to pick which text is more readable, more students opted for Univers and Helvetica. These contradictory results support that, perhaps, the visual form of a letter may be perceived optically different. While calculations indicate one result, yet human perception shows a different result.

This raises new questions for further researches to get more data and to obtain a more solid conclusion. The number of letters to measure may also be increased, as this study only focuses on uppercases from each typeface. It should also be noted that the measuring method and parameters at this stage are still on trial, therefore a different measuring method may yield a different result. In this stage, the author's study concluded by stating that Arial may have better potential to be more readable compared to Helvetica and Univers. This, however, does not suggest that Arial is superior compared to the other typefaces. This research does not include visual unity between letters in a typeface, something that Helvetica and Univers may be better at.

In the end, the study meant to open new ideas on researching typefaces and typography. While further study may be necessary, the author believed that the results of this research can serve as a starting point for further researches.

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