

This excerpt (pp 12-14) of  
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## Is the Font Easy to Read? Anatomy and Legibility

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### Reading text type (12–16 px) is easier if the font has:

- A generous x-height
- Open apertures
- Prominent ascenders and descenders
- Slightly loose letter spacing
- Discernible terminals

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Text is meant to be read — and if it feels difficult to read, people won't want to. Readability (how easily text can be read) depends on how type is used on the screen. One factor of readability, and a great place to start, is choosing a legible font.

### But What Makes a Font Legible?

When we read, we don't see individual letters. We see (and read) the shapes of the words. These shapes are primarily created by two elements: the *strokes of the letters*, and the *spaces in and around the letters*. If we lose either of these elements, legibility is compromised.

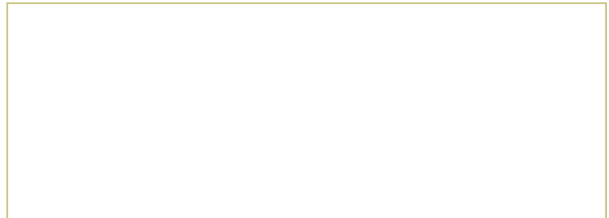
Did you ever try to read a poor photocopy of a photocopy of a photocopy? Experience tells us type becomes harder to read with each generation of copying.

Why? Sometimes, multiple-generation photocopies make the text lighter. Thinner strokes start to disappear, leaving only parts of letters and compromising the word shapes. Other times, multiple-generation photocopies make the strokes in the text thicker. The spaces in and around the letters start to disappear. Either way, when strokes or spaces get lost, the legibility of the font changes—and reading becomes more difficult.

Web typographers need to pay particular attention to the strokes and spaces in a font because of screen resolution. Macintosh screens are 72 ppi (pixels per inch), and Windows screens are 96 ppi. A font set at 12 px will appear approximately 1/6" tall on a Mac and less than 1/8" tall on a Windows screen. In either case, the screen will have (at most) 12 px by 12 px to render a letter. Thin strokes and small spaces in letterforms will start to disappear. And, as in the photocopy example, the text will be harder to read.

You'll often hear that "simple" fonts are better for the screen because of the resolution issues. That's a good rule of thumb. But it's not quite enough.

Helvetica is simpler and cleaner than Georgia. But Georgia is easier to read. Why?



Text set in Helvetica 12/18 (12 px text with a 18 px line height) is readable. But text set in Georgia 12/18 is more readable. Even though it looks slightly smaller than the Helvetica, and is a more complex font. Why? Georgia, designed by [typographer Matthew Carter](#), was designed for the screen. It has a healthy *x-height* without sacrificing the *ascenders* and *descenders*. It has open *apertures*, discernible *terminals* and slightly looser *letter spacing*.

▲  
Helvetica 12/18.  
Roll over text  
to see it set in  
Georgia 12/18.  
  
To see fonts at  
their true size,  
view at 100%

### Recommended Reading

[It's About Legibility](#)

by Allan Haley

[Georgia & Verdana:  
Typefaces designed for the  
screen \(finally\)](#)

by Daniel Will-Harris

## Comparing Georgia and Helvetica

Georgia. Roll over  
*appear* to see it in  
Helvetica.



**Descenders** [1] are the strokes of the letters that extend below the baseline. The **baseline** [2] is an invisible line the letters appear to sit on.

The descenders in Georgia and Helvetica are almost the same length [3], *but Georgia's serifs give the descenders more presence.*

**Serifs** [4] are little horizontal strokes, usually coming off the top and/or bottom of a **stem** [5] which is a vertical stroke in a letter. Georgia is a **serif** font (it has serifs), while Helvetica is a **sans serif** font (without serifs).



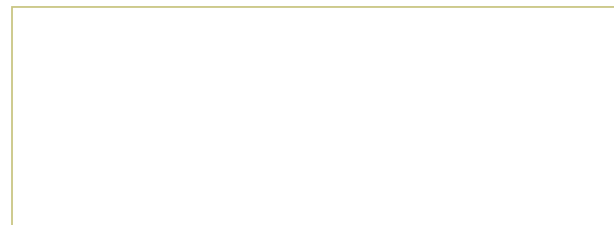
Georgia's larger **aperture** [10] and discernible **terminals** [11] help with legibility. Meanwhile, Helvetica's *e* and *a* look similar. So do *f* and *t*.

Web typographers need to pay particular attention to the strokes and spaces in a **font** because of screen resolution. Macintosh screens are 72 ppi (pixels per inch), and Windows screens are 96 ppi. A font set at 12 px will **appear** approximately 1/6" tall on a Mac

Helvetica 12/18 (when viewed at 100% size)

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Georgia 12/18 (when viewed at 100% size)

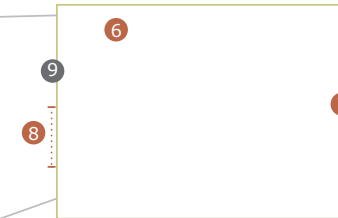


▲ Georgia 12/18. Roll-over to see it in Helvetica 12/18.

### Why compare Georgia and Helvetica?

It might seem odd I've chosen to compare Georgia to Helvetica (which is not a web-safe font). But Helvetica is famous for its simplicity and clarity, making it the perfect font to show "clean" and "simple" are not enough to guarantee legibility on the screen.

Georgia.  
Roll over *font*  
to see it in  
Helvetica.

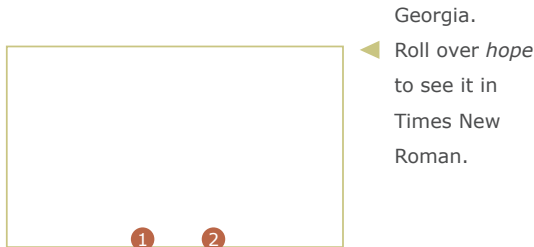


**Ascenders** [6] are the strokes of the letters that extend above the meanline. The **meanline** [7] is an invisible line at the top of the lowercase "x". The meanline marks the font's **x-height** [8], which is the height of the lowercase letters between the baseline and the meanline.

Georgia has larger ascenders than Helvetica [9]. The generous ascenders make Georgia more legible (notice how the *f* and *t* in Helvetica look almost alike). In order to compensate for the larger ascenders, Georgia's x-height is smaller. Unfortunately, this makes the text look smaller (even when set at the same size), but the larger ascenders are worth the sacrifice.

Overall, the letters in Georgia have more visual space around them. This space increases readability, because it helps keep letters in the text from blending together.

## Comparing Georgia and Times New Roman, Verdana and Arial



Times New Roman is a visually smaller font than Georgia. In this example, I've set Georgia at 63px and Times New Roman at 68px. Their x-heights appear equal at these sizes, allowing us to see the differences more clearly.

Times New Roman has a narrower **bowl** (round shapes in the lowercase letters) [1] than Georgia. A narrower bowl often results in smaller **counterforms** (the spaces within a letterform) [2]. *Smaller counterforms in text on the screen tend to get lost.*

Times New Roman also has thicker thick strokes and thinner thin strokes than Georgia. *The thin strokes have a tendency to get lost on the screen when the font is used for text. This, combined with the narrower bowl, makes the text look more like a series of vertical strokes.* The reader needs to work harder to read the word shapes in Times New Roman.



▲ Rollover to compare Georgia 12/18 to Times 12/18



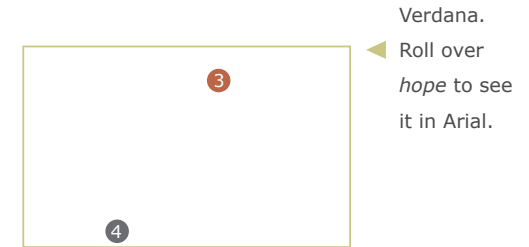
▲ Rollover to compare Verdana 12/18 to Arial 12/18

### Why these four fonts?

Georgia, Times New Roman, Verdana, and Arial are all web-safe fonts (extremely likely to be on most systems, across platforms).

Georgia and Verdana are superior fonts for legibility of text on the web. They were designed for the screen, and are easy to read. I use Georgia and Verdana in examples and lessons throughout this book—but *this does not mean they are the only acceptable fonts.*

**With the css @font-face element, fonts available to web typographers has increased.** Thus, an objective of this chapter is to show you *how to look at and think about the parts of letters—so you can identify other legible fonts for text on the web.*



Arial is a visually smaller font than Verdana. In these examples, I've set Verdana at 59px and Arial at 62px. Their x-heights appear equal at these sizes, allowing us to see the differences more clearly.

Arial and Verdana both have generous bowls (neither is particularly narrow), but Verdana's bowl is not as rounded. Verdana's **shoulders** [3] connect to the stems differently. Notice how the counterforms in Arial's *h* and *p* are rounded while Verdana's counterforms have a corner (extra space!). Verdana also has more space between the letters [4].

Verdana. Roll over *a*, *c*, and *e* to see them in Arial.



Verdana's *a*, *c*, and *e* all have a larger aperture, giving the letters even more visual space. All of these (space!) design decisions keep Verdana more legible at text sizes.