Sofie Beier

Type Tricks

User design

INTRODUCTION

Academic legibility research is often communicated in complex language and hidden in peer-reviewed journals unknown to most designers.

This book aims to translate these studies into an easily approachable format so that you do not have to struggle through dense reading before you identify the most relevant points.

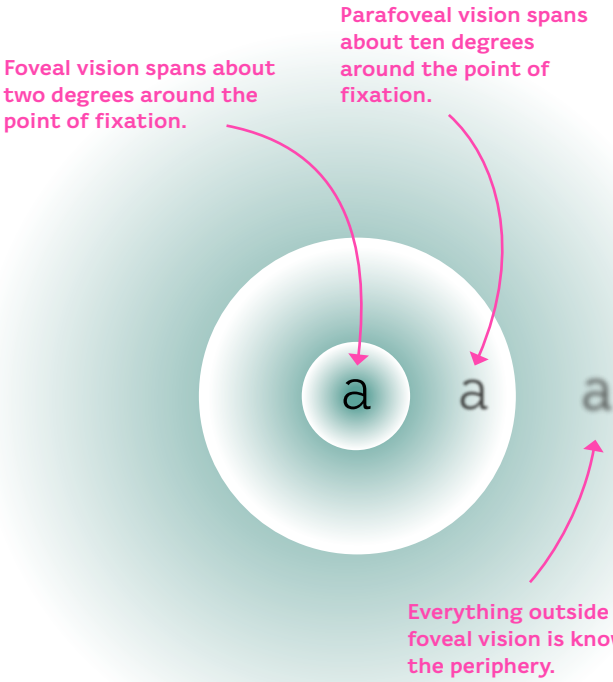
The mentioned research projects represent a selection of what is available at the time of writing. This book contains a snapshot of what we know now, and does not cover all there is to know about legibility research as we continue with new discoveries.

If you want to learn more, please navigate to the reference list at the back of the book.

Ways of reading

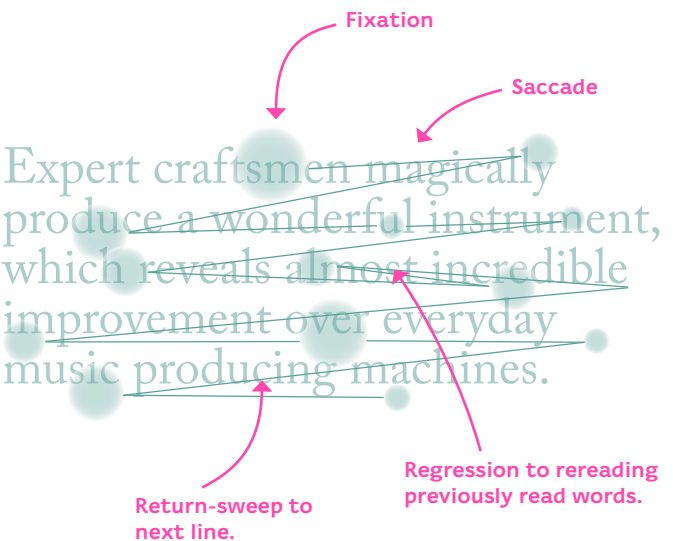
Location on the retina

The field of vision is divided into three main sections. The fovea is the sharp central vision around fixation. The further away from the fovea, the more difficult it is to identify objects. These are the parafoveal and peripheral areas of vision.



Attention

While reading, our eyes move along the lines of text in saccade motions. Between saccades, the eye focuses on the text in fixations. When identifying the optimal location to place the next fixation, reader attention is simultaneously on the text in fixation and on the text on the right side of the parafoveal and peripheral areas.



Simplification of characters

High-complexity letters with visual noise need more luminance contrast between the letter colour and the background than low-complexity letters.

The difference in visual brightness between symbol and background is known as luminance contrast.

Letters of simple shapes.

Letters of great complexity.

Easy to misread

The legibility of simple character designs over more complex character designs is only an advantage when there is minimal risk of misreading the characters.

Although the one-storey ‘a’ has a simpler skeleton than the two-storey ‘a’, the possibility of misreading it as the letter ‘o’, makes the two-storey ‘a’ more legible.

Searching a text set in light weight fonts

Lightweight font styles can potentially slow down the time it takes to identify a word when searching through a paragraph of text.

Nullam urna purus, dictum eu s… …t, met, tinci dunt eu felis. Proin nunc risus … …is ult rices vitae. Fusce ante metu… …haret.

Helvetica Neue Bold

Aliquam tempor malesuada co… …suere vallis elit id vehicula. Morbi conv… …em proin sagittis euismod fringilla. Nulla ut nisi g…vida arcu.

Helvetica Neue Roman

Integer eu nibh vulputate, cursus dolor ac, imperdiet quam. Morbi facilisis lectus sed orci suscipit ultrices. Donec vitae metus leo. Integer feugiat nisi posuere taciti sociosqu.

Helvetica Neue Light

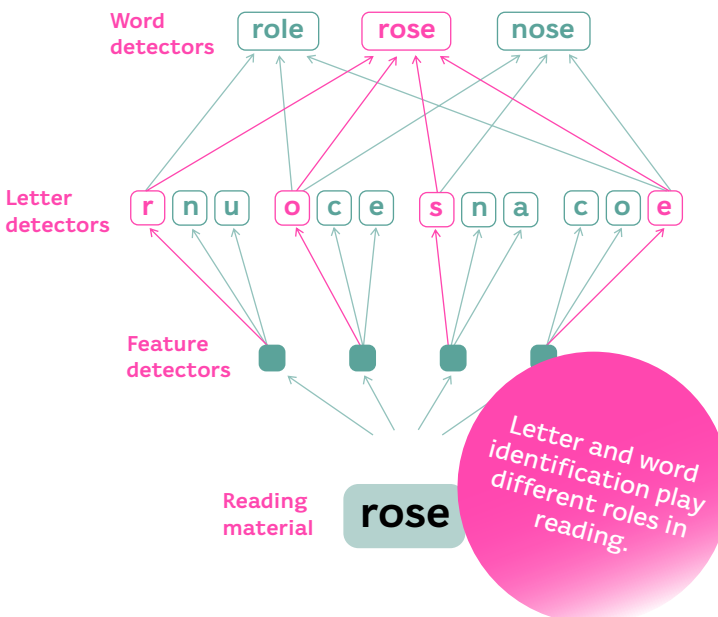
Phasellus turpis dolor, vehicula ut enim faucibus, fringilla jum malesuada arcu. Sed velit arcu, egestas a turpis non, sodales suscipit felis. Praesent pulvinar varius ligula libero molestie.

Helvetica Neue Ultra Light

These two weights make searching easier.

Models of word recognition

Most reading researchers agree that word recognition is a parallel process of bottom-up identification of letter features and whole letters, and top-down decoding of words. This means that for optimal reading, both letter identification and word decoding are important.



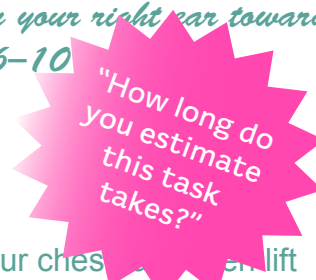
Words and complexity

While letter recognition solely draws on the bottom-up process of feature identification, word decoding can draw on both bottom- and top-down processing. This means that complex fonts can slow word recognition, but small differences in complexity between fonts do not necessarily make a difference.

Typeface impacts perceived difficulty

Many readers will think a task takes more time and will estimate a higher degree of difficulty if an assignment appears in a difficult-to-read typeface. They will estimate less time and less difficulty when the same assignment appears in an easy-to-read typeface.

Tuck your chin into your chest, and then lift your chin upward as far as possible. 6–10 repetitions. Lower your left ear towards your left shoulder and then your right ear towards your right shoulder. 6–10



Tuck your chin into your ches[illegible] lift your chin upward as far as possible. 6–10 repetitions. Lower your left ear towards your left shoulder and then your right ear towards your right shoulder. 6–10 repetitions.

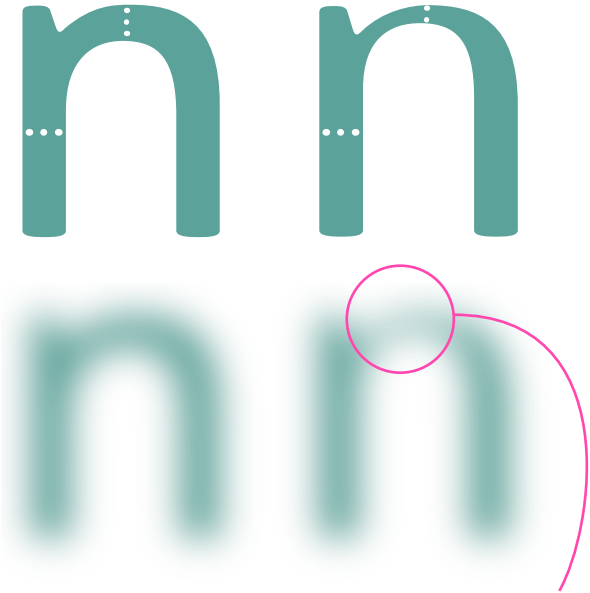
Difficulty makes you doubt

When asked a simple question they should know the answer, people are more likely to doubt their ability to answer the question when it appears in a difficult-to-process typeface style.

This suggests that difficult-to-read fonts impair reader performance when answering simple questions.

Stroke contrast

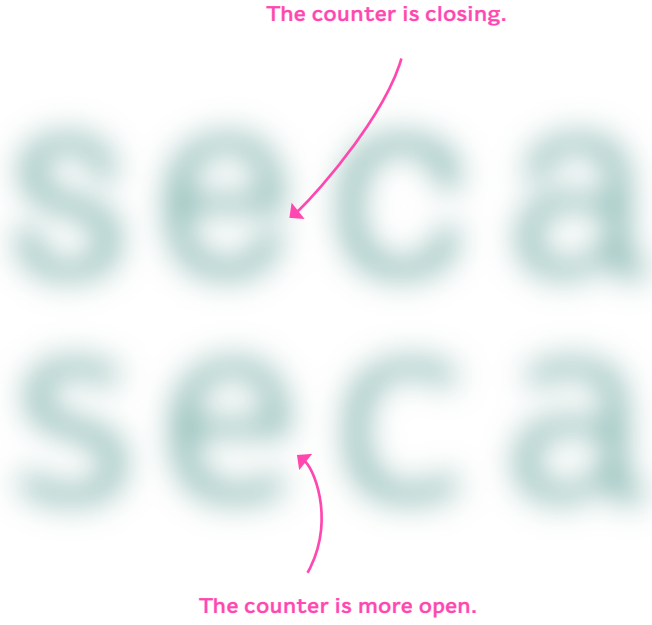
The narrow parts of high-stroke contrast fonts may perceptually disappear when viewed at a distance. This is because the perceptual system draws on low spatial frequency channels when viewing at a distance.



At low spatial frequencies, thin hairline strokes might disappear.

Opening counters using apertures

Open apertures likely improve recognizability when reading text at a distance.



Narrow letters

Narrow letters like 'i', 'j', and 't' are better recognised at a greater reading distance if they have slightly wider shapes.

i j t

i j t

Recognisability of narrow letters

Readers might mistake a narrow character for a wider character if it becomes too wide.

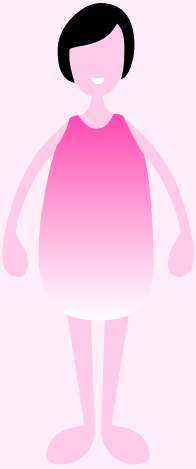
The optimal way of placing serifs on the letter 'i' is at the top of the stem.

Distance from the reader

The greater the vertical and horizontal distance from the reader's eye level, the larger the font size should be. A good rule of thumb is to add one cm to the x-height for each additional metre of distance.

Above 3 m from the ground and less than 6.5 m horizontal distance:
Letter height > 7.5 cm.

Between 1.8 m and 3 m from the ground and less than 4.5 m horizontal distance:
Letter height > 5 cm.

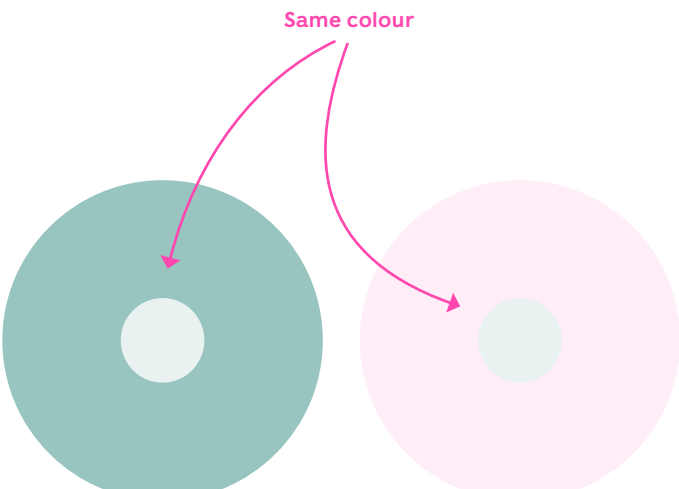


Less than 1.8 m from the ground and less than 1.8 m horizontal distance:
Letter height > 1.6 cm.

Avoid placing text less than one metre from the ground.

Perceptual changes of a colour

A colour does not look the same in all situations. The perceived hue and contrast will always depend on the other colours nearby.



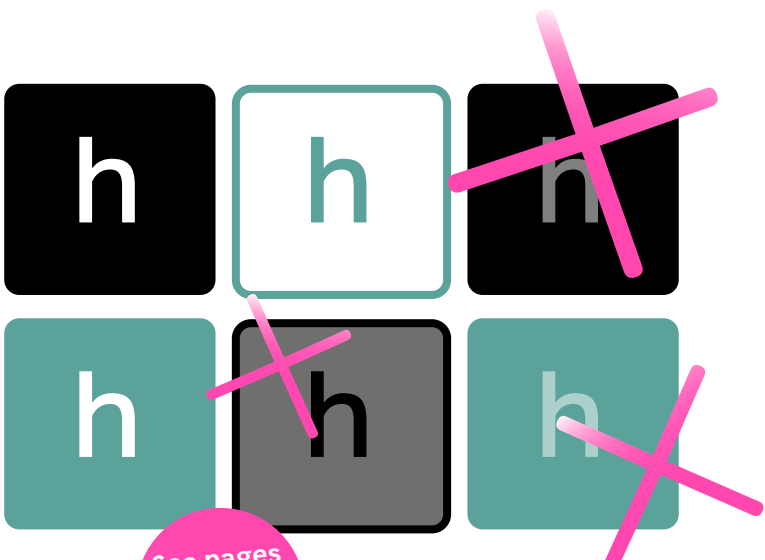
Difficulties with details

Sensitivity to higher spatial frequencies will decrease with age. Therefore, it will become increasingly difficult to see the delicate details of objects.

See pages 52, 81 and 113.

Difficulties with low contrast

Older readers will need a significantly brighter light than younger readers to perceive the same contrast. For older audiences, use as much luminance contrast as possible between the text and background.



See pages 91, 112, and 130.

Trouble with low luminance contrast

Some low-vision readers are more troubled by a reduced luminance contrast between the type and background than normal vision readers.

See pages 91, 102, and 130.

Type Tricks: User design
is a reference book and user manual.

This book disseminates the author's research into typeface legibility, offering tips on what to consider when designing for running text, skim-reading, expressive typefaces, reading from afar, micro-type, spatial graphics, and struggling readers (older age, low-vision, children, dyslexia).

The book provides readers – including designers and anyone interested in text design – with a quick, visual overview along with a comprehensive reference list.

Sofie Beier, the author of the Type Tricks series, is a designer and professor WSR at the Royal Danish Academy.

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