

The background is a blurred image of a library or study area with bookshelves. In the foreground, a stack of books is on a wooden desk, with the top book open. Floating around the books are various white, hand-drawn style icons and symbols, including a plus sign, a zero, a question mark, a magnifying glass, a pencil, a hand holding a pen, and various letters and numbers.

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Chapter 6: Reading is Unnatural

Humans and Languages

- Humans have an innate ability to communicate through language.



A close-up photograph of a person's hands holding an open book. The book is held open, showing two pages of text. The person is wearing a dark blue shirt. The background is dark and out of focus. The text "But reading is NOT" is overlaid on the left side of the image in a white, serif font.

But reading is
NOT

- Toddlers can learn whatever language they are exposed to with no systematic training.
- However, learning to read requires systematic instruction and a lot of practice. It doesn't come naturally to anyone.
- This is because writing and reading did not exist until a few thousand years ago.
- It only became prevalent only four or five centuries ago—long after the human brain had evolved into its modern state.



Learning to read is training our visual system

In order to learn to read, our visual system must be trained to recognize textual patterns.

Our brain intuitively understands lines, curves, and forms as fundamental visual elements.

Morphemes—like “farm,” “tax,” “-ed,” and “-ing”—are patterns of characters in alphabetic scripts.

Understanding patterns, letters, numbers.

How we read

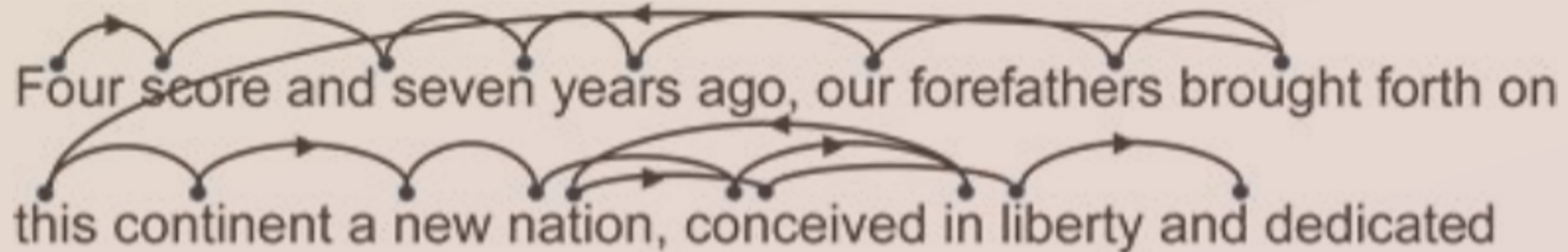
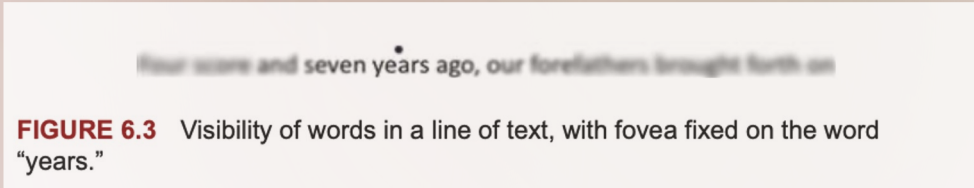


FIGURE 6.2 Saccadic eye movements during reading jump between important words.

How we read:

- Our visual system is more sensitive to characters in the reading direction around the fixation point because it has been trained to read.
- Right for European scripts. Characters left of the focus point have usually been read.



Four score and seven years ago, our forefathers brought forth an

FIGURE 6.3 Visibility of words in a line of text, with fovea fixed on the word “years.”

Is reading Feature-Driven and Context-Driven?

- Feature Driven: Referred to as the “bottom up” or “Context Free”.
- It first recognizes basic features such as lines, edges, angles, etc.)
- It then proceeds to process morphemes such as “ing”, words and phrases.

Is reading Feature-Driven and Context-Driven?

- Context Driven: Top-down approach.
- It works by recognizing high-level patterns like words and phrases.
- It then proceeds to determine what the components of the high-level patterns must be.

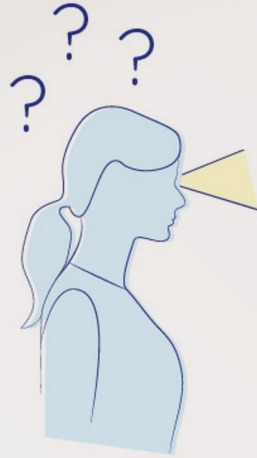
Example 1

The rain in Spain falls
manly in the the plain

FIGURE 6.4 Top-down recognition of the expression can inhibit seeing the actual text.

Example 2

(B) Twinkle, twinkle, little star, how I wonder what you are.

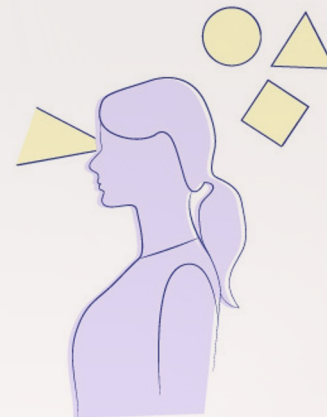


What am I seeing?

Top-up processing:
using models, ideas, and expectations to interpret sensory information

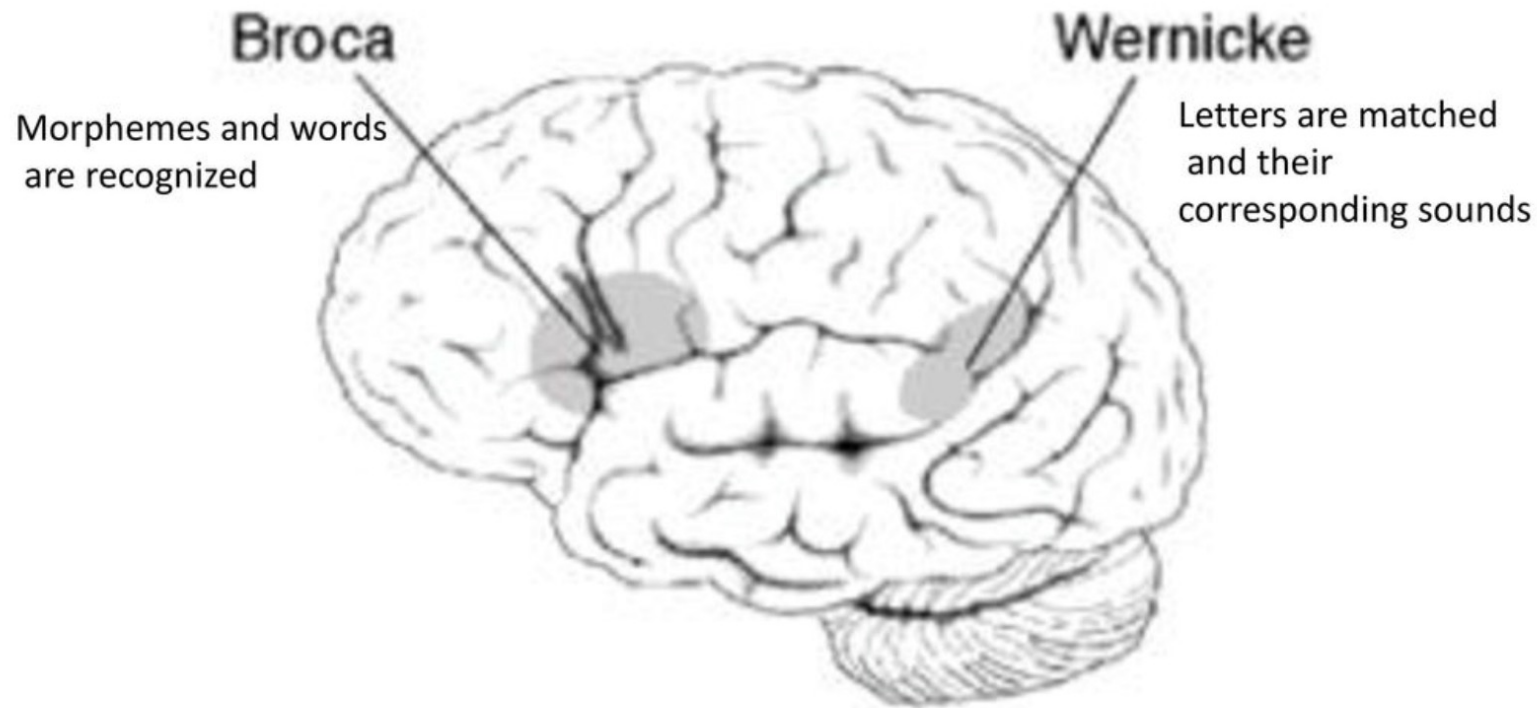
Is that something I've seen before?

Bottom-up processing:
taking sensory information and then assembling and integrating it



Jack Westin

Skilled and Unskilled Reading use different parts of the brain



Poor information design can disrupt reading

- Example 1:
- **Unfamiliar Terms**
- *Your session has expired. Please reauthenticate.*

Poor information design can disrupt reading

- Example 2: **Difficult scripts and typefaces**

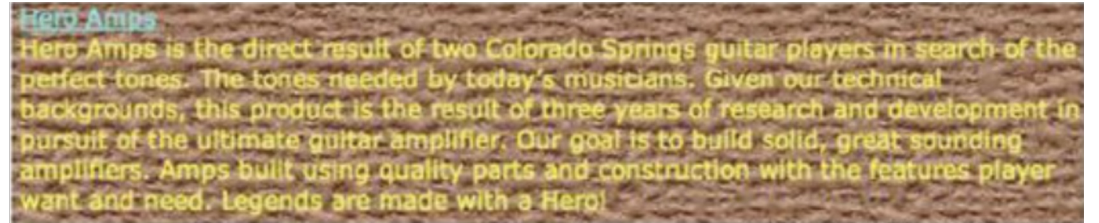
- *This script is difficult to read and interpret.*

- *THIS SCRIPT IS DIFFICULT
TO READ AND INTERPRET.*



Poor information design can disrupt reading

- Example 3:
- **Patterned background or poor contrast.**



Poor information design can disrupt reading

- Example 4:
- **Information buried in repetition.**

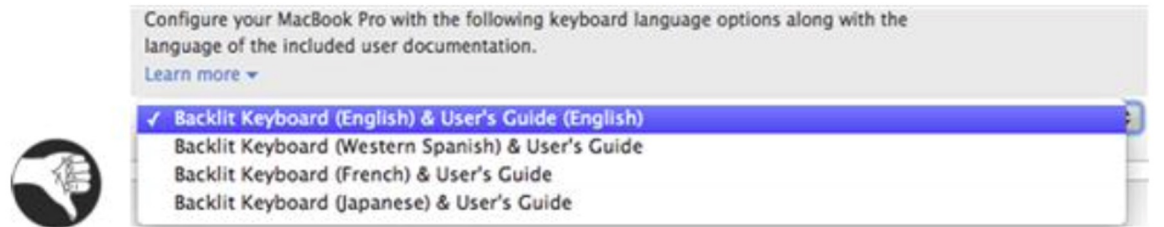


FIGURE 6.12 Apple.com’s “Buy Computer” page lists options in which the important information (keyboard language compatibility) is buried in repetition.

Poor information design can disrupt reading

- Example 5:
- **Centered text.**

I never really knew that she could dance like this (hey)
She make a man wants to speak Spanish
¿Cómo se llama? (Sí), bonita (sí)
Mi casa, su casa (Shakira, Shakira)

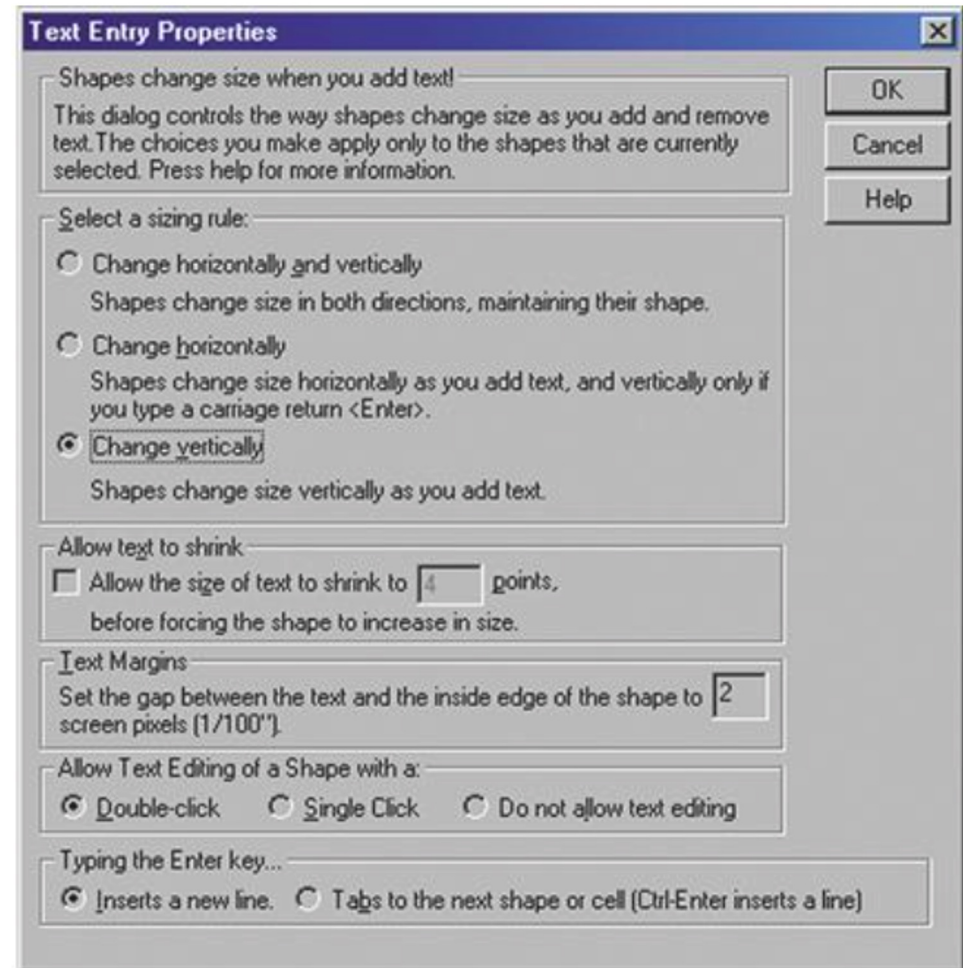
Design implications:

Don't disrupt readings!!

Much of the Reading Required by Software is Unnecessary

Users typically read too much text in many software user interfaces.

Consider how much unnecessary text is in a text enter properties dialog box.



Design implications:

Minimize the need for reading



2002

Jeep

FIND A DEALER

It's easy to locate a dealer. 1. Click and hold box number 1 to select your search by Zip Code, City, Dealership Name or State. 2. Enter the Zip Code, City, or Dealership Name in the box marked number 2. 3. If searching by State only, select the state from the pull-down menu in box number 3. **If choosing to search by city or state, type the city in box 2 then select a state in the box marked number 3 to make your search complete. 4. Once finished, simply click the "Search" button.

Search by: Enter Zip Code, City, or Dealership name:

1 2

3 4

If you are a member of the U.S. Military, an executive, or a diplomat living outside the U.S., [click here](#) for special options.



2003

Jeep

FIND A DEALER

It's easy to locate a Jeep Dealer near you.

- Select Zipcode, City or Dealership Name
(If you choose to search by city, you will be prompted to provide the state.)
- Provide the Zip Code, City or Dealership Name
- Click on Search

Search by:

Enter Zip Code, City, or Dealership name:



2007

FIND A DEALER ▾



Thank you!

Citation:

- https://www.google.com/search?q=bottom+up+processing+example&tbm=isch&ved=2ahUKEwjRtvDd8er6AhUKsIMKHfjxDNwQ2-cCegQlABAA&oq=bottom+up+processing&gs_lcp=CgNpbWcQARgBMgoIABCxAxCDARBDMgUIABCABDIFCAAQgAQyBQgAEIAEMgUIABCABDIFCAAQgAQyBQgAEIAEMgUIABCABDIFCAAQgARQAFgAYI8LaABwAHgAgAFqiAFqkgEDMC4xmAE AqqELZ3dzLXdpei1pbWfAAQE&sclient=img&ei=4zBPY5G5IYrkzgL447PgDQ&bih=743&biw=1440#imgsrc=wiahhA3EzZ-i-M