

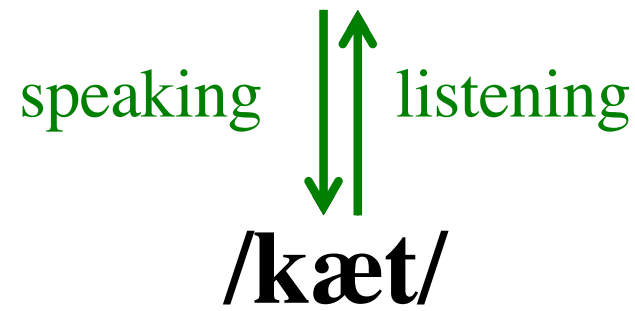
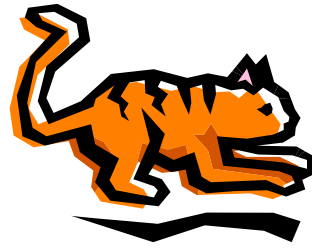
Reading

Behavioral foundations

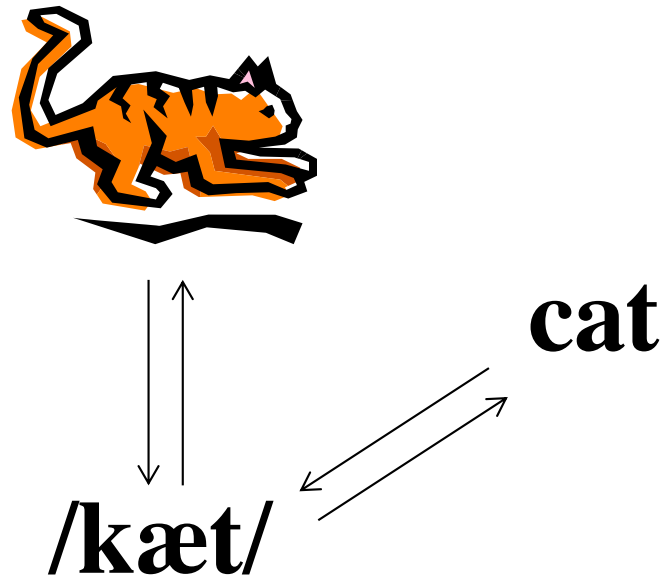


Language vs. Reading/Writing

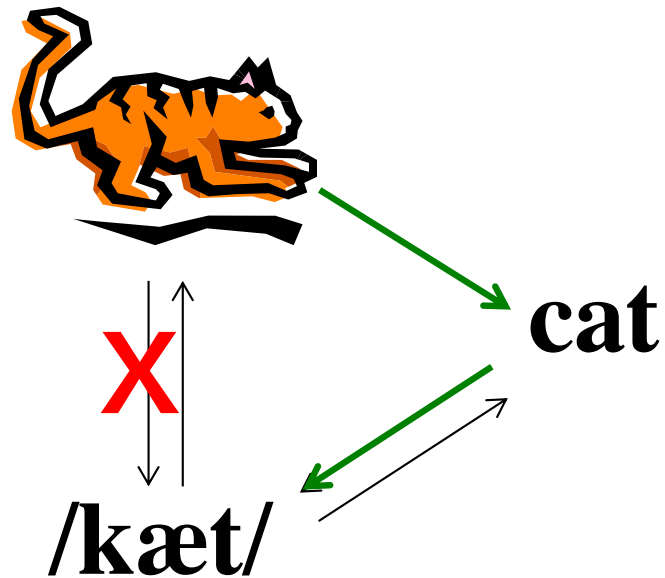
- Language is universal. Reading and writing are not.
- Of the 7000 or so languages in the world, about half are unwritten.
- Children do not learn to read as naturally as they learn to speak.
- About 20% of children are affected by reading impairment.
- Contra Language, which does not need to be taught to children, reading and writing are taught skills.



cat

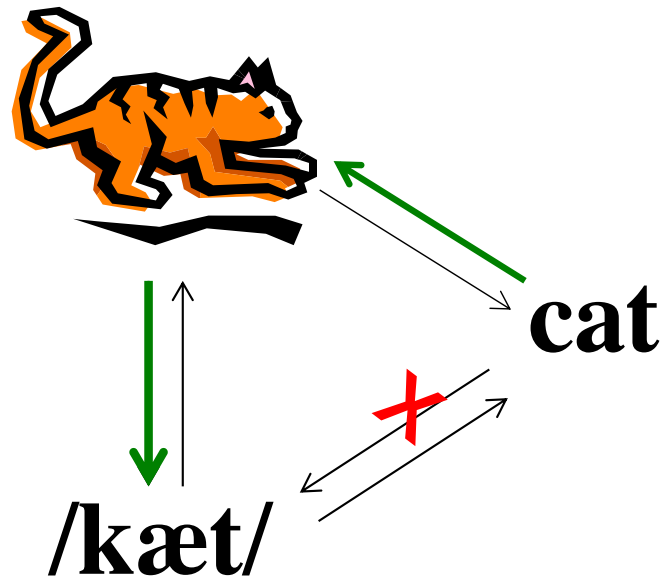


- We can read nonwords, so the meaning part is not crucial for reading: MIDE
- We can write nonwords too, so we need a bidirectional arrow between sound and orthography.
- Do we need an arrow between orthography and meaning?



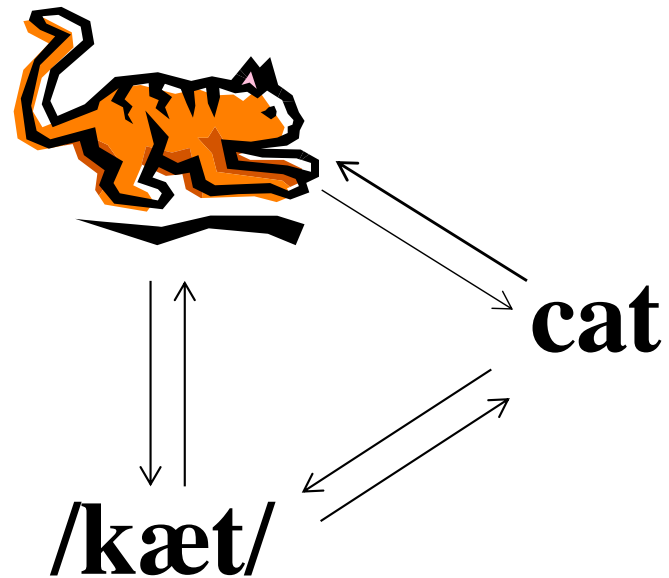
- Some aphasics who exhibit
 - an inability to name objects
 - while being able to write down their names
 - and then read them out loud.

[Swanberg et al. 2007]



- In aphasia, it is also possible to
 - lose your ability to read aloud nonwords
 - while being able to read even complex existing words (chrysanthemum)
 - and while maintaining good reading comprehension.

Triangle Model of lexical representations



Plaut, Seidenberg, McClelland, and Patterson (1996)

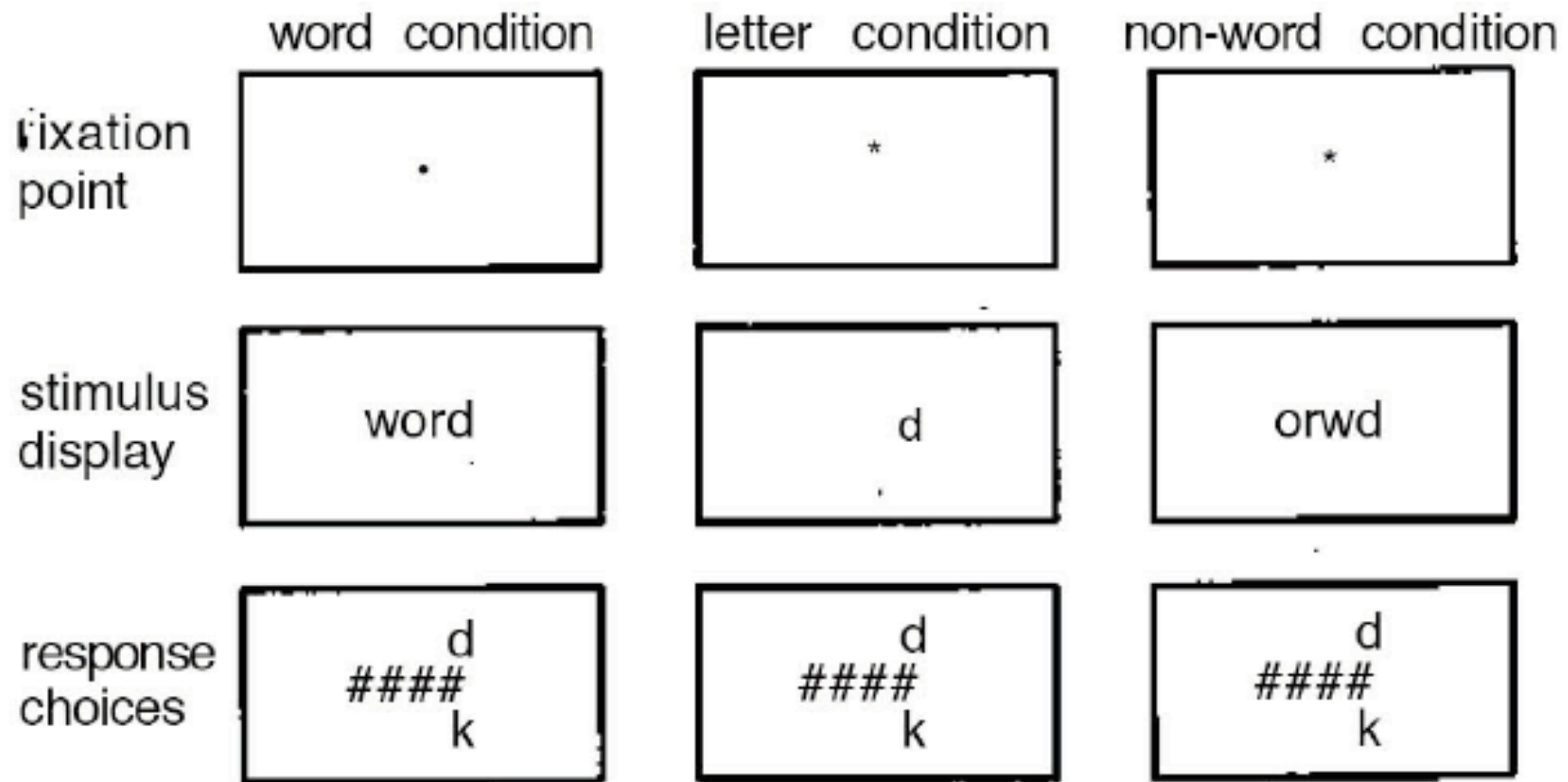
How do our brains read?

- Since sound unfolds over time, we process the sounds of a word largely serially.
- Does the processing of written words parallel this, even though serial processing is not mandated by the inherent properties of the visual modality?

Do we read serially, letter-by-letter?

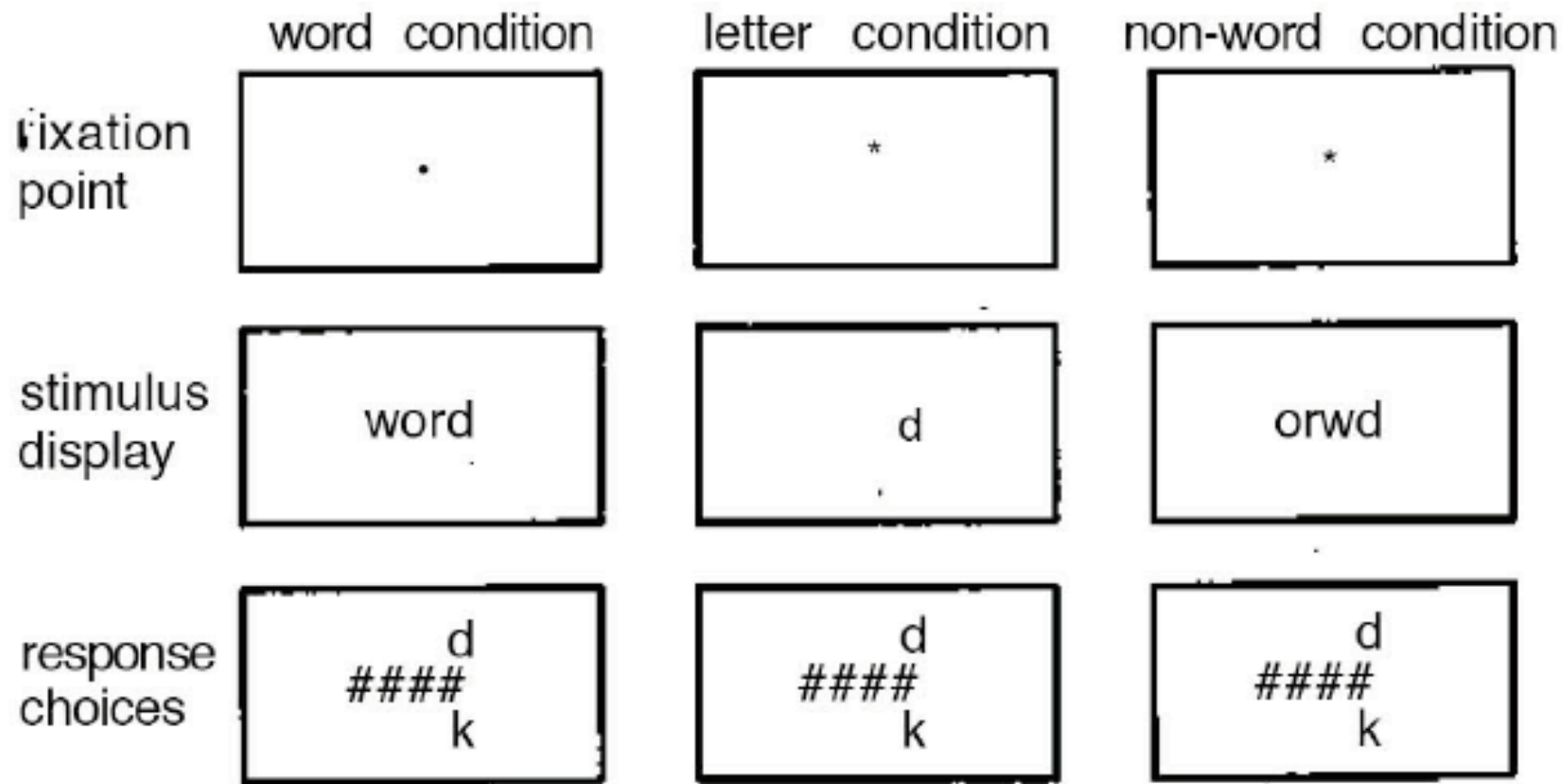
Word superiority effect (old argument against letter-by-letter reading)

FIGURE 3-2 Sample displays from the experiment by Reicher (1969).



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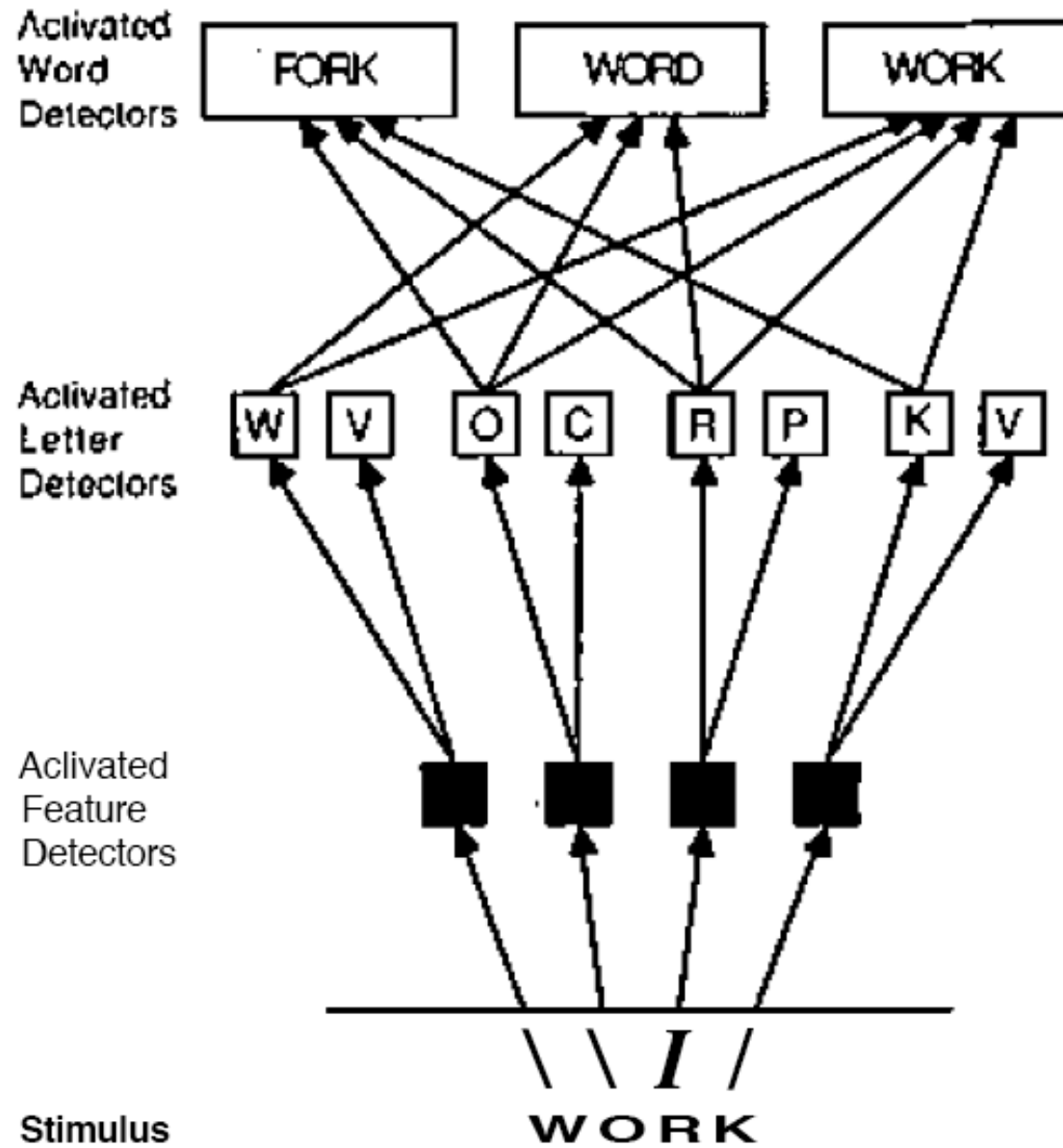


↑
Most accurate

We do not read serially letter by letter

- If we processed words serially letter by letter, processing a letter should be faster than processing a word.
 - **This basic prediction is wrong.**
- Most models of visual word recognition assume some type of parallel letter detection.

Parallel letter detection (Rayner & Pollatsek)



Letter and word form representations must be abstract

work

WORK

work

WOrK

work

WORK

wOrK

WORK

work

- In fact, changes in font, upper/lower case, even script, tend to have little to no effect on processing.

Non-serial reading teaches us something about LANGUAGE

- The seriality that is inherent in the sound domain is NOT an inherent property of LANGUAGE.
 - **The Language system can receive the input in a more parallel fashion when the form representation allows this.**

Psychology of reading

- ① Orthographic word form representations are connected to both sound and meaning.
- ① Reading involves parallel letter detection, leading to activation of abstract word form representation.

