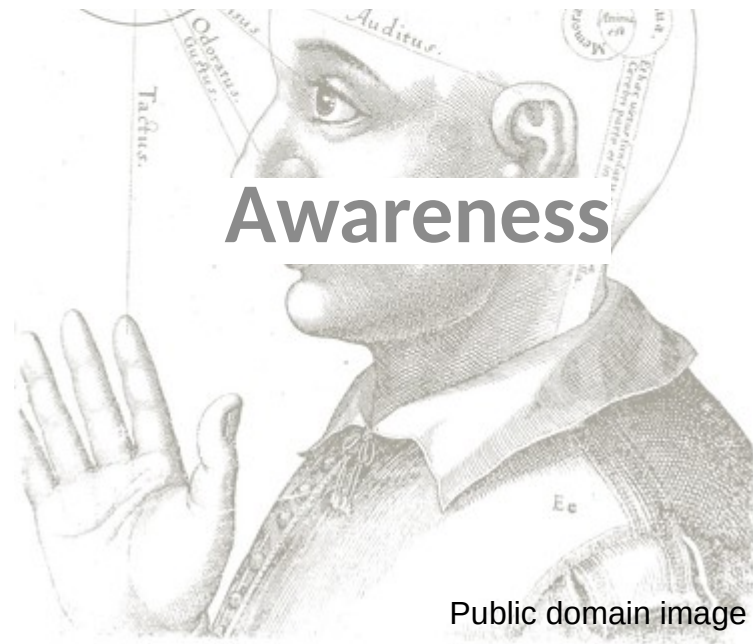


# Aspects of consciousness



Public domain image

# Further reading

- Change blindness:

<http://cognitrn.psych.indiana.edu/CogsciSoftware/ChangeBlindness/index.html>

- Blindsight:

<https://en.wikipedia.org/wiki/Blindsight>

•

“If I disappeared at the end of this sentence and was replaced by a different person, would you notice?”



Public domain image

# Change blindness

- Good introductory review:

Simons, D. J., & Rensink, R. A. (2005). Change blindness: past, present, and future. *Trends in Cognitive Sciences*, 9 , 16-20.

- Great video (start at 1:40)

[www.willslab.org.uk/vid/cblind/changeblind.mp4](http://www.willslab.org.uk/vid/cblind/changeblind.mp4)

# Facts about change blindness

Series of compelling demonstrations  
of the flicker effect

[www.willslab.org.uk/vid/cblind/](http://www.willslab.org.uk/vid/cblind/)

*In order to get these to work, you have to enable looping on your media player.*

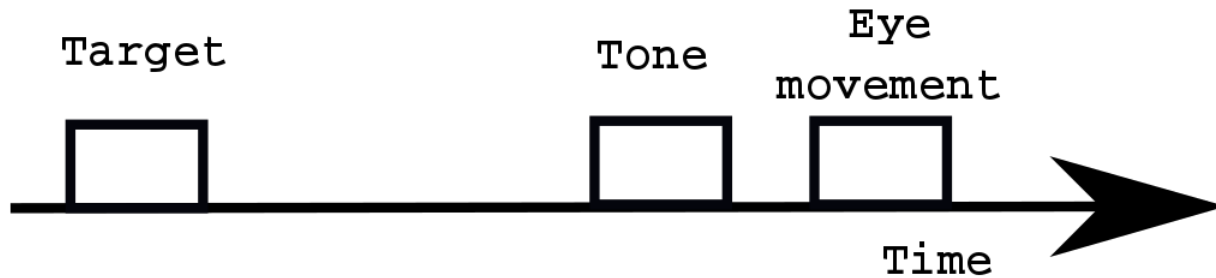
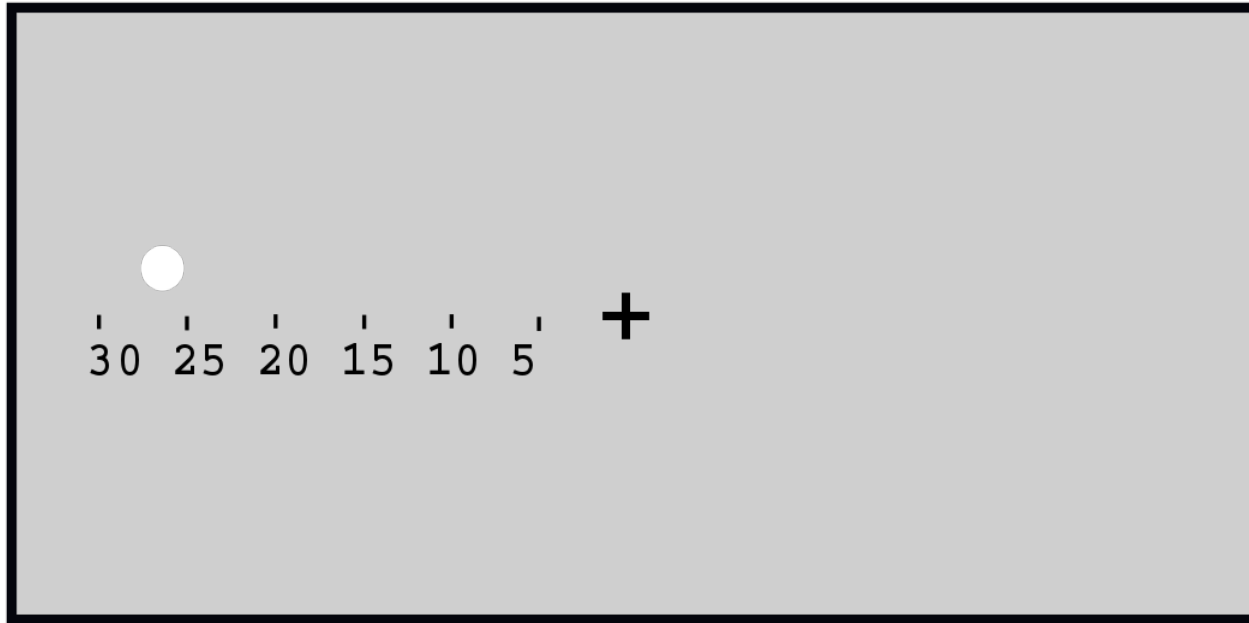
# See it now?



# What's happening here?

- The two frames are separated by a brief flash of grey across the whole visual field.
- Without this, the change is trivially easy to spot.
- Interpretation:
  - We can distribute attention across 4-5 items at a time, but only a single *change* can be seen at any moment.
  - So, we need to be attending in exactly the right place to be aware of change!
  - Typically, most of the visual field is relatively stable, and the brain directs attention automatically (preconsciously) to those areas – exogenous cueing.
  - The flicker (or form) prevents that from happening.

# Blindsight - Weiskrantz (1986)



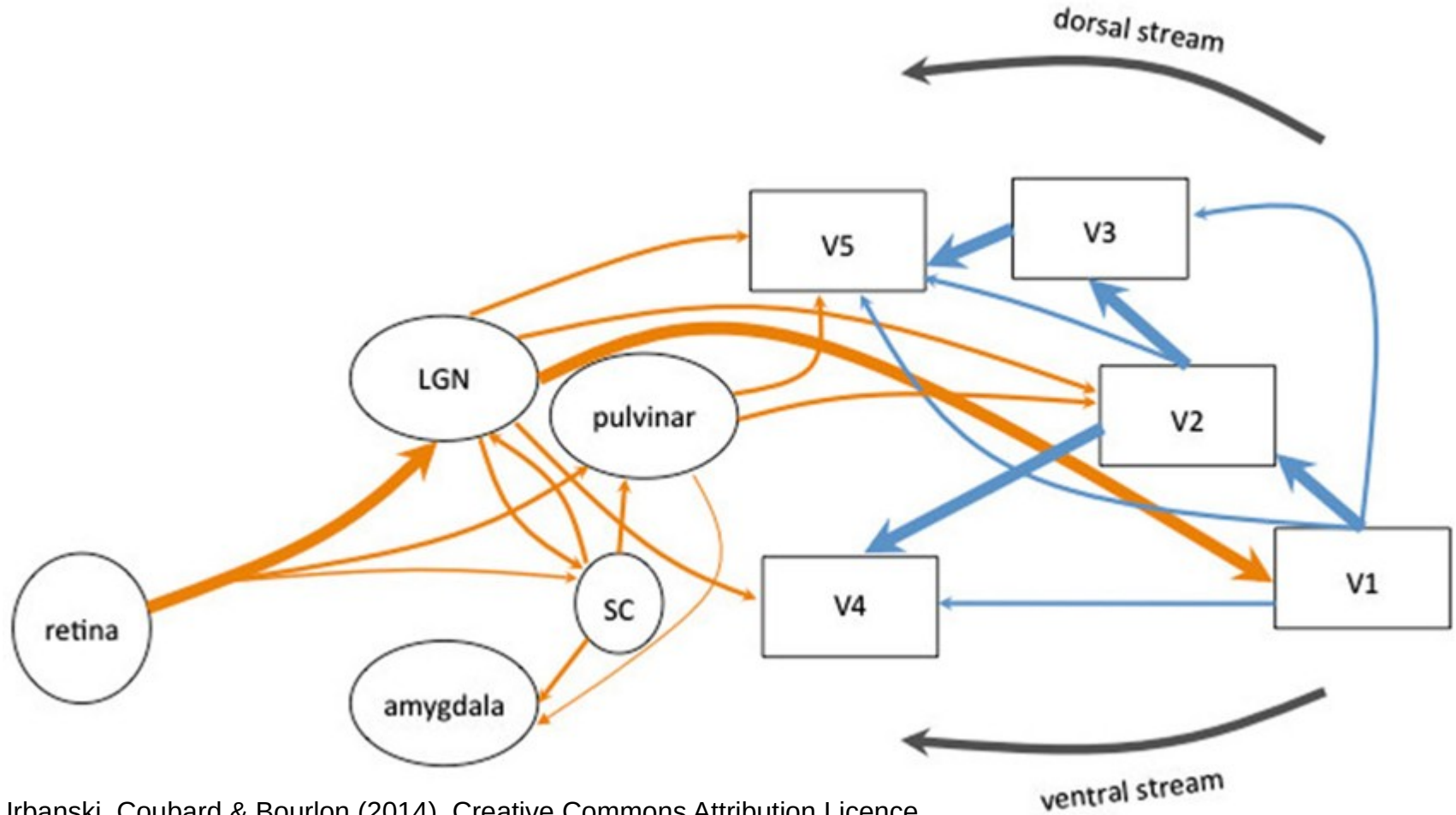


# Defining blindsight

“Blindsight is the ability ... of subjects with clinically blind field defects to detect, localize, and discriminate visual stimuli of which the subjects say they are completely unaware”

- Cowey (2004, p. 577)

# V1 MISSING!



Urbanski, Coubard & Boulton (2014). Creative Commons Attribution Licence.

V1 is one part of a complex system.

It's sight, Jim, but not as we know it.



Public domain image

- Aside from the issue of conscious experience, sight in the blind field is **rubbish**.
  - So bad, even a seeing subject would be classified blind.
  - Colour discrimination – About x10 worse than normals.
  - Shape discrimination basically absent.

# Do you see it ... !!NOW!!

- If e.g. a tone signals the exact time a stimulus would be present (if it occurs on that trial) then you get some of these striking blindsight effects.
- But if there is uncertainty about the time of appearance, even if only a few seconds, performance deteriorates massively.
- This is not normal sight in any meaningful sense.

# Perception without awareness (without brain damage)

“It is possible to conclude with considerable confidence that stimulus information can be perceived even when there is no awareness of perceiving” (Merikle et al., 2001).

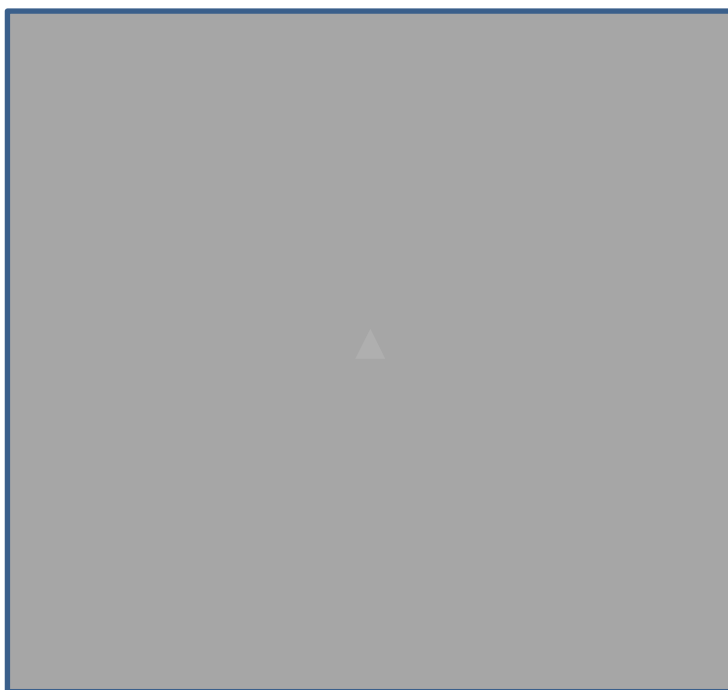
# Williams (1938)

Circle, triangle, or square?

(a) Saw clearly

(b) Saw something but doubtful about your choice.

(c) Saw nothing, and your choice was a complete guess.

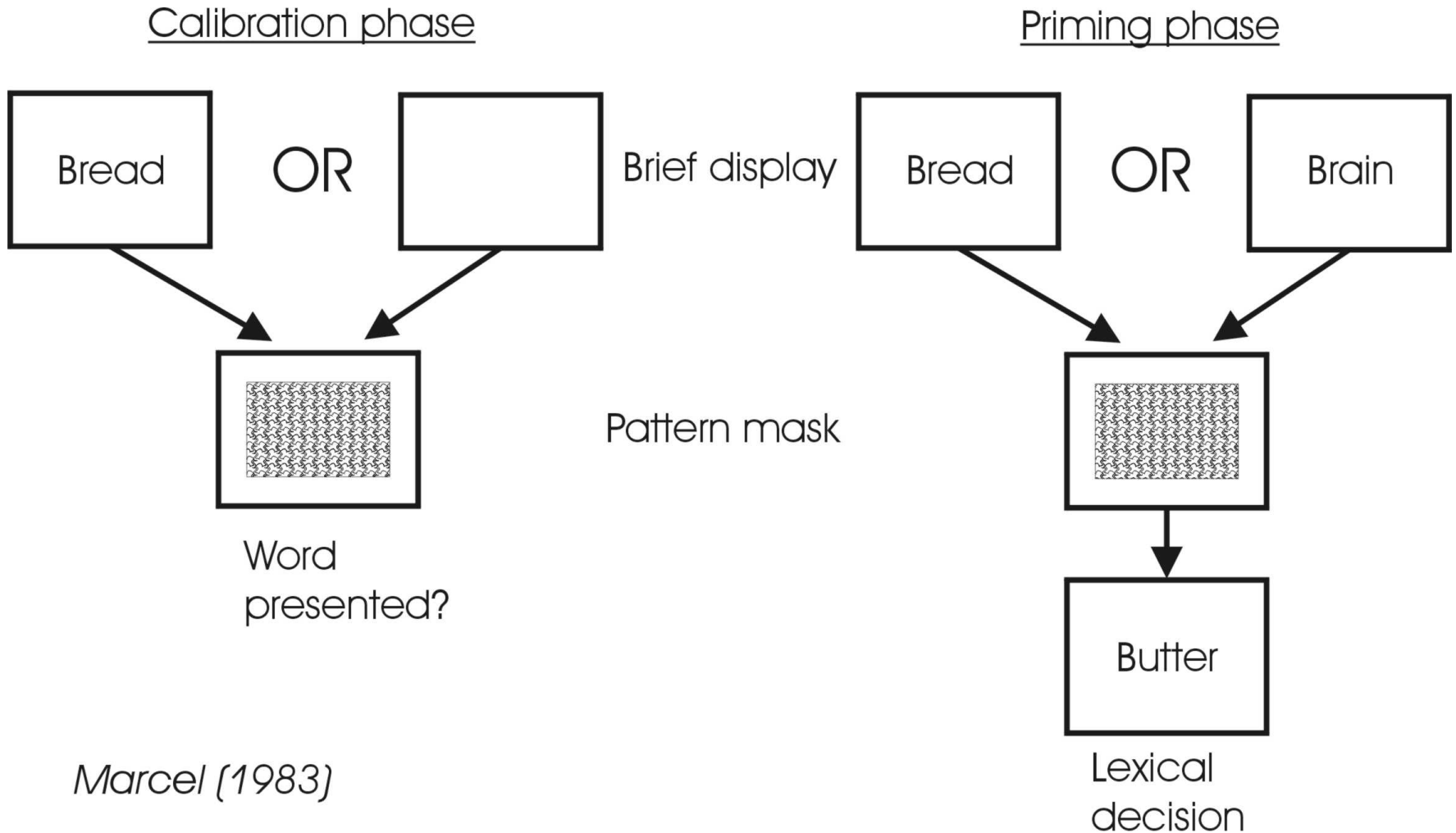


# Sensitivity criterion

- Both of these demonstrations suffer from the possibility that people have low-confidence conscious knowledge.
  - It's low confidence, so they don't report it in an open questioning.
  - However, where forced to make a choice between alternatives – and hence a choice between using low-confidence knowledge or deliberately ignoring it forcing a guess – they go for using the knowledge.
- Much more on all this in Shanks & St. John (1994) – not in the reference section of the handout, but optional additional reading for those who are interested (ask me for full reference if you can't find it on WoS).
- Some studies overcome this limitation...



# Marcel (1983)

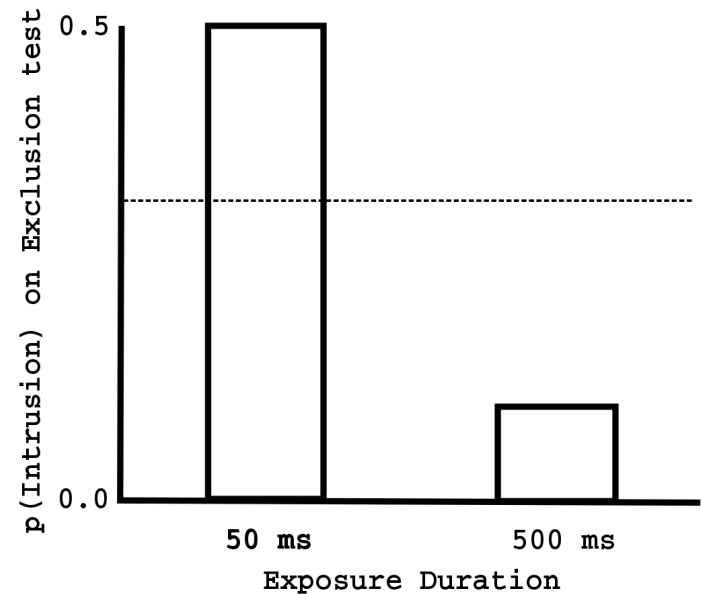


# Unconscious or differently conscious?

- It's perhaps a fool's errand to search for evidence for situations where everyone is going to be convinced there is no conscious access to what has been perceived.
- Instead, it might be more interesting and informative to attempt to characterize how the relationship between perception and attention/memory/action varies as we approach the threshold of conscious experience ("barely conscious" experiences).

# Debner & Jacoby (1994)

- Word presentation followed by fragment completion.
- 2 presentation intervals – 50ms, or 500ms.
- Inclusion test (use the first word that comes to mind)
- Exclusion test (use any word other than the one just presented).



# Perception and awareness

1. Our awareness of changes in our environment is different, and poorer, than most people expect (change blindness).
2. Our visual awareness possibly corresponds to just one aspect of a multi-process system for processing visual information:  
Loss of V1 (which seems to determine our consciousness visual experience) does not mean total loss of perceptions that can control attention and action (blindsight patients).
3. Things we can't see nevertheless affect our behaviour when forced to make a choice (Williams), even where a low-confidence explanation seems unlikely to work (Marcel).
4. Perhaps more interestingly, stimuli on the edge of consciousness seem to affect behaviour in a less flexible way than stimuli we clearly "see" (Debner & Jacoby, 1994).

OVERALL – The relationship between perception, and awareness is much more complex than most lay views would suggest.

**THE END**

(until the next bit...)