

# Spelke (1998) on objects

- Empiricist accounts of knowledge assume that people's knowledge of objects is based on **experience with objects**
- Rationalist account assume that some object knowledge is **innate**
- But even newborn chicks **who have never experienced occlusion** know that objects complete behind occluders
- Human infants similarly are surprised when objects disappear
- Why is the “blank slate” hypothesis so popular?



Cat

The **object concept**:  
= The idea that objects have continued existence and properties over time



Mountain Lion



Dog



Raccoon



Baboon



Orangutan

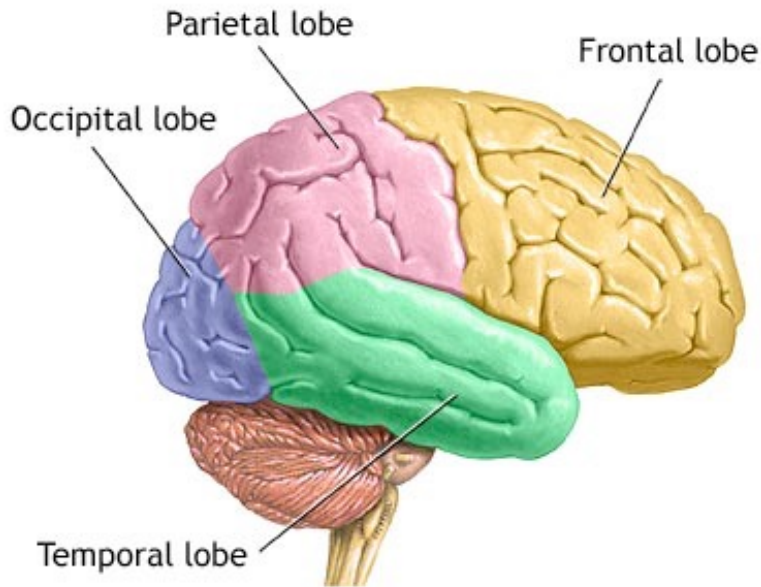


Human

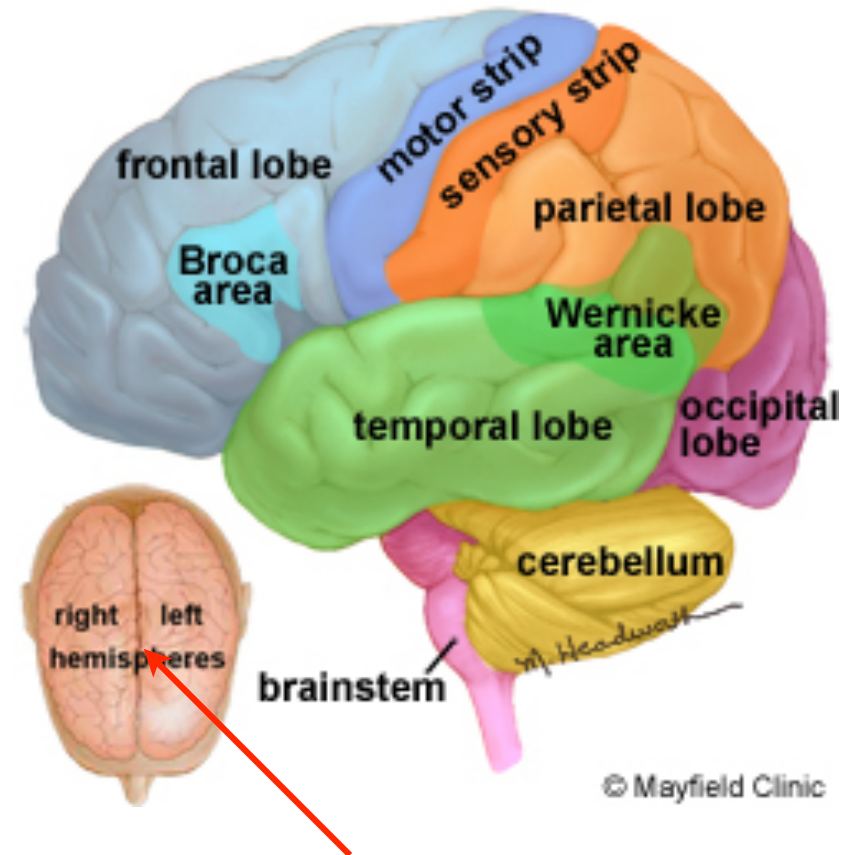
# Beyond objects

- Similarly, many areas of cognition are now thought to build from innate knowledge:
  - Innate **physics**: ideas of mass and solidity
  - Innate **math**: basic concepts of number, summation, subtraction
  - Innate **biology**: naive notions of life and growth
  - Innate **psychology**, aka **Theory of Mind**: Other people have minds, including intentions and goals

The brain =  $10^{11}$  neurons



Cortex = “rind”

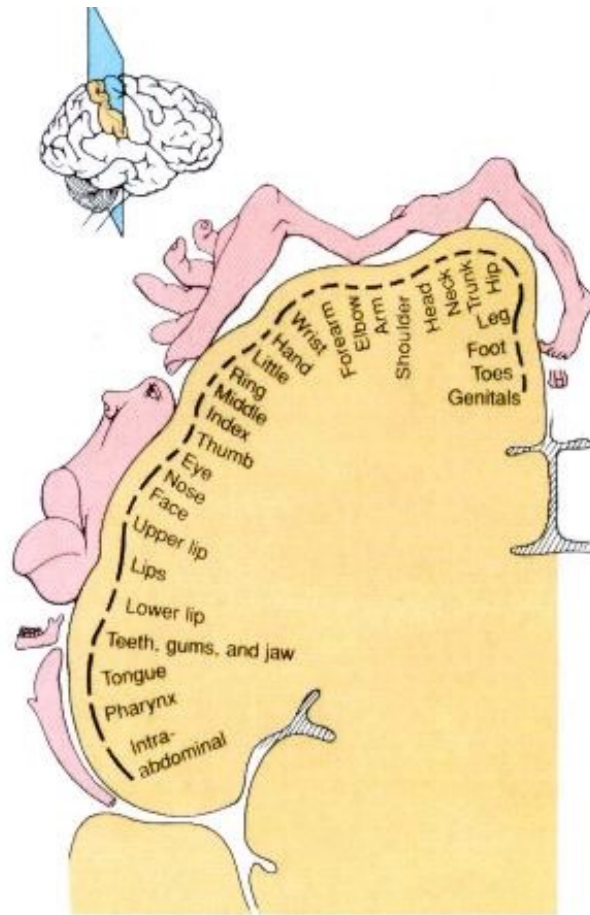


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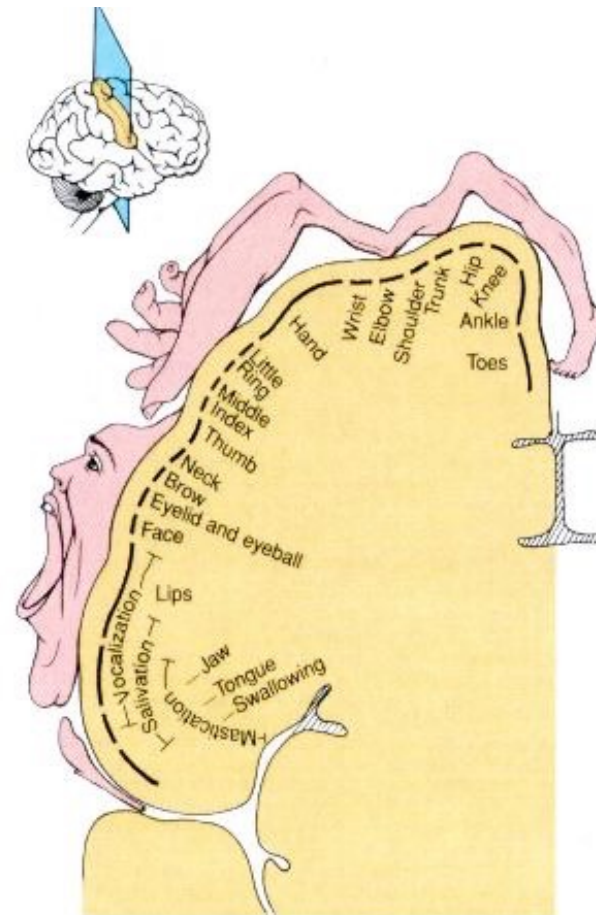
Occipital lobe -- vision  
Temporal lobe -- audition etc  
Parietal lobe -- attention etc -  
“sensory homunculus”, “motor homunculus”  
Frontal lobe - executive function, decision making

Corpus callosum connects hemispheres





(a) Somatosensory cortex in right cerebral hemisphere



(b) Motor cortex in right cerebral hemisphere

- Localization of function

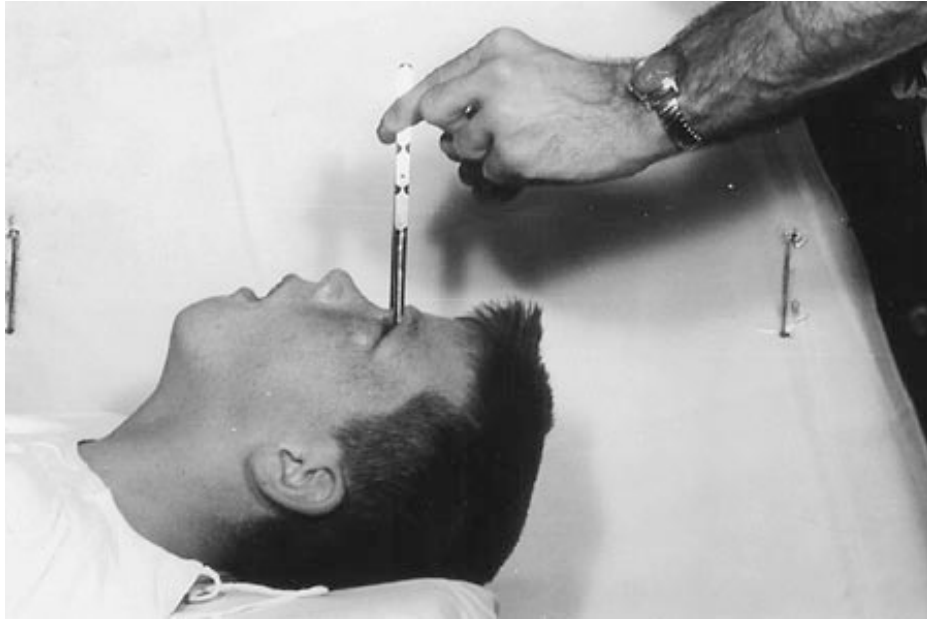
Different parts of the brain do different things

First famous example: Broca's area (about 1860)

Broca's patients with left hemisphere damage in a particular place lost the power of speech

First clear evidence that “higher thought” was localized in the cortex

- Many other examples always being discovered!



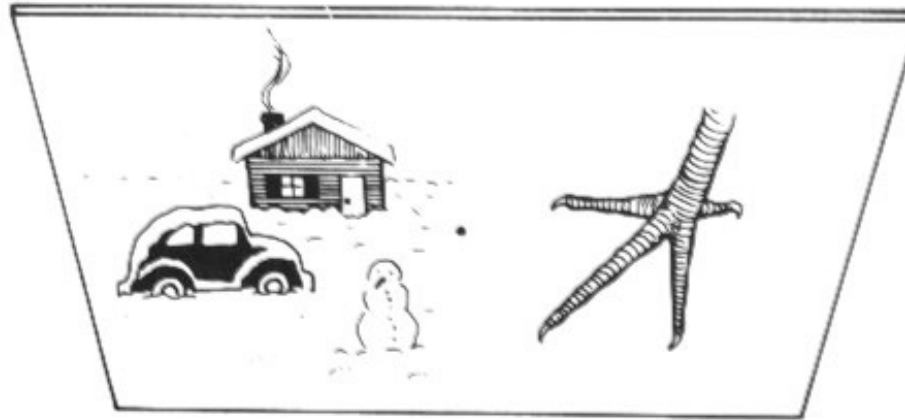
Transorbital lobotomy - see

<http://www.npr.org/2005/11/16/5014080/my-lobotomy-howard-dullys-journey>

or

<https://www.youtube.com/watch?v=q1-aCbnc4fg>

# A split-brain patient



Left hemisphere sees  
the RIGHT visual  
hemifield and controls  
the RIGHT arm

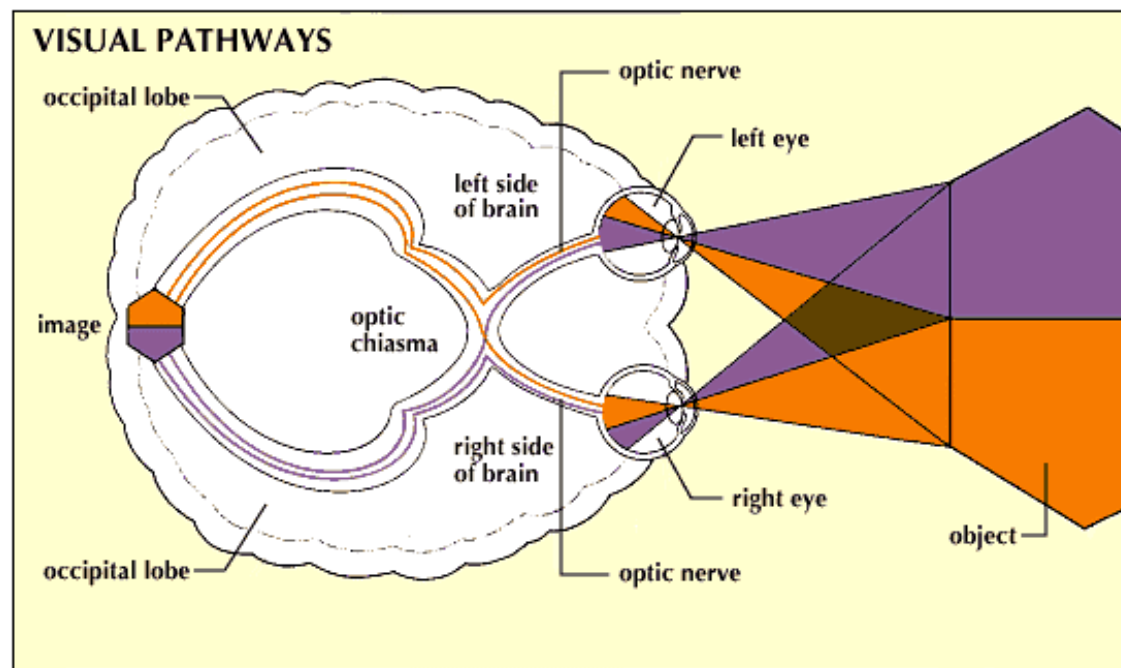


Right hemisphere sees  
the LEFT visual  
hemifield and controls  
the LEFT arm



# Sperry: Split-brain patients

After the corpus callosum is cut, the two hemispheres are mostly independent, like two brains in one head



Contralateral: opposite side

Ipsilateral: same side