




Neuroscience and a sense of place

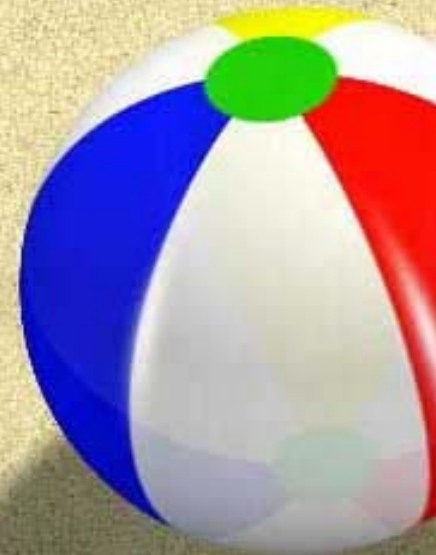


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Making sense of the body in which you live

DUALISM → mind separate from brain

- ❖ Brain Transplant
- ❖ *You are your brain*
- ❖ Exploration questions
 - ❖ *How does the brain produce conscious experience?*
 - ❖ *Is your consciousness the same as mine?*
 - ❖ *How do we know the brain gives rise to mind?*
 - ❖ *What does this mean for my outlook on life?*



proprioception - awareness of body

Study of brain damage patients

Concepts to cover

- Historical perspectives on mind-brain

- ◆ Cartesian dualism → Descartes

separation of physical + non physical matter

- From the clinic: neuropsychology

- ◆ Readings from Oliver Sacks

- ◆ Anterograde Amnesia (Memento; HM, Clive Wearing)

monism - one type of matter in

- Phantom Limbs

- Hallucinations

- Brain stimulation - Penfield

- Psychopharmacology (drug effects on behavior) altering

the man who mistook his wife for a hat

psychoactive - mind altering

EPISODIC VS. PROCEDURAL



Internet Resources

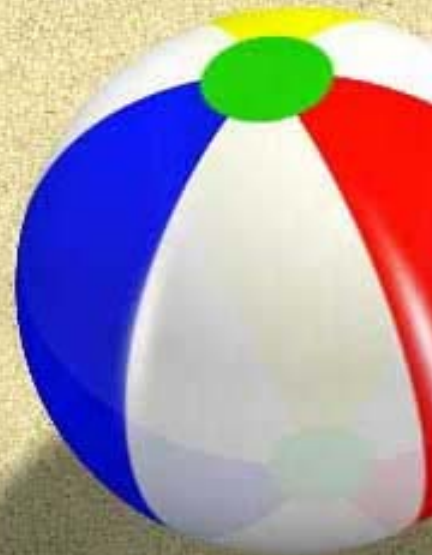
- Society for Neuroscience
 - www.sfn.org
 - Brain Facts book/pdf
- Neuroscience for Kids
 - <http://faculty.washington.edu/chudler/neurok.html>
- Neuroanatomy
 - <http://www9.biostr.washington.edu/da.html>
 - <http://www.loni.ucla.edu>

Hands on Neuroanatomy

- Sheep brains
 - Ward's Biological
 - <http://academic.scranton.edu/departments/psych/sheep/>
 - http://www.psychology.uoguelph.ca/learnmatl/sheep_labman/Contents.html
- Basic principles
 - Comparative anatomy
 - Protection of the brain
 - Divisions of the brain

Station 1: Lateralization

- ❖ Corpus Callosum
- ❖ Hemispheric Specialization
 - ❖ Right brain/left brain?
- ❖ Split Brain Procedure



Chimeric Faces task

- Which face do you see in the bottom photo?



Chimeric Face

Patient verbally reports which face was seen will report b.

Patient uses left hand to point to the face that was seen. Will select d.



Sensory systems

- Sensation is the business of the brain
- We synthesize the worlds in our brains
- Gather stimulus energy from outside world, transduce it into electrochemical energy of the nervous system, and sometimes, into the ephemeral nature of conscious perception

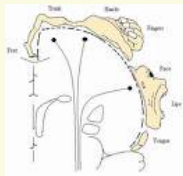
- Accuracy?

http://www.michaelbach.de/ot/sze_muelue/index.html

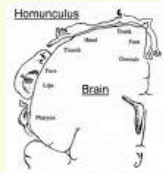
http://www.michaelbach.de/ot/sze_shepardTables/index.html

Station 2: Somatosensory Map

- Somatotopic maps exist in the brain
 - Motor homunculus

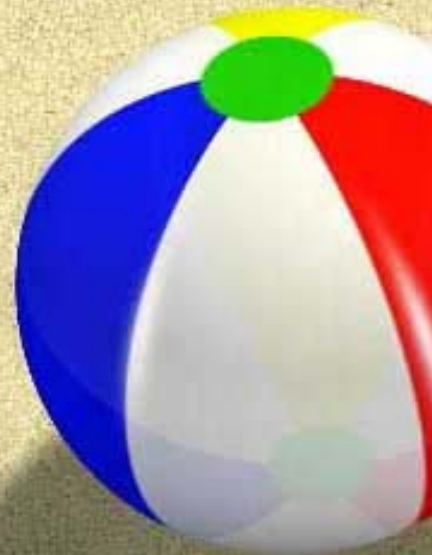


- Sensory homunculus



Station 3: Sensory Habituation

- ❖ Olfactory system
- ❖ Habituation
 - ❖ Receptor fatigue
 - ❖ Adaptiveness

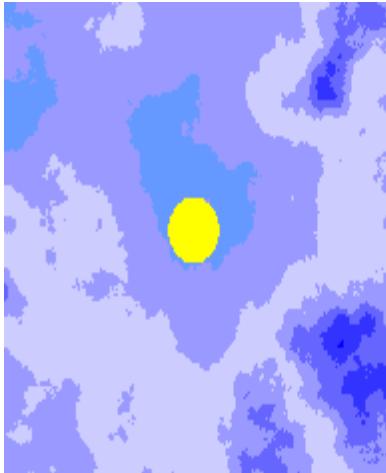


Station 4: Visual System

- ❖ Blind spot
- ❖ Color afterimages



Blind Spot Demo



1 2 3 4 5 6

Color afterimages



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Color opponency in the retina

❖ +R-G

❖ +G-R

❖ +B-Y

❖ +Y-B

❖ +B-W

❖ +W-B

Opponent process

