Thinking 3

Jill Bolte Taylor

- Stroke, memory, hemispheric asymmetry, brain states

Do you know someone who has suffered a stroke?
A. Yes – Family member or close friend
B. Yes – But not someone I know well
C. No

Communication Between the Hemispheres of the Brain

- Corpus callosum (300 million axons)
- Agenesis of the corpus callosum
- Three other smaller connections
  - Anterior commissure (50 thousand axons)
  - Hippocampal commissure
  - Posterior commissure
  - Other subcortical connections

If you are concerned and want to determine if someone may be having a stroke, which of the following should you do?
A. Ask “Can you smile?”
B. Ask “Can you raise both arms?”
C. Ask “Can you say a simple sentence?”
D. Ask all three of the questions above.
E. Something else, questions like this cannot help determine if someone is having a stroke!

Functional Asymmetry of the Hemispheres

- Handedness – Control of the opposite side of the body
- Unresolved issue: Why are hemispheres specialized?

<table>
<thead>
<tr>
<th>Left Hemisphere Functions</th>
<th>Right Hemisphere Functions</th>
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<tbody>
<tr>
<td>Heavily language oriented</td>
<td>Some language comprehension</td>
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<tr>
<td>Syntax and speech production</td>
<td>Important for appreciating jokes, puns, and prosody</td>
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<tr>
<td>Brain chatter</td>
<td>Awareness of the immediate moment</td>
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<tr>
<td>Time analysis relating the now to the past (generalization) and future (planning)</td>
<td>Spatial orientation, face perception</td>
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<tr>
<td>Sequencing (apraxia), body sense</td>
<td>Self as separate</td>
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<td>Categorization generally</td>
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Taylor’s Stroke Symptoms

- Left hemisphere stroke
  - Severe headache
  - Right arm paralysis
  - Actions sequences become slow and poorly coordinated
  - Can hear but is unable to speak or comprehend language
  - Unable to comprehend numbers or letters, but still able to do shape matching
  - How can she recall so much detail?

Stroke Recovery

- We will return to this general topic at the end of the quarter
- Her recovery required 8 years of therapy and retraining
- Although she is “recovered,” the brain she has now is not the same as the brain she had before the stroke

Unusual States of Awareness

- Among the effects of her stroke, Taylor describes
  - Euphoria of disconnection from the external world
  - Peacefulness and a feeling of nirvana
  - Witnessing events from the outside her body
  - A sense of losing the boundaries of her body

Body Sense
The Rubber Hand Illusion


Body Sense
The Rubber Hand Illusion

- After a short period, most of participants start to feel the touch in the position of rubber hand and experience as if the rubber hand is the real hand.

Two Modes of Thought

- Left: Linear, analytic, language oriented, separate, “me” focused
- Right: Non directed, non separated, immediate, “deep inner peace”
- Taylor exhorts us to choose – but how?
### Other Paths to these Two Modes

- **Near death experiences**
  - A sense of being dead,
  - A feeling that one's "soul" has left the body,
  - A voyage toward a bright light, and
  - A reality where love and bliss are all-encompassing.

- **Hallucinogens and other drugs**

- **Just before falling asleep**

- **Flow** - Mental state in which a person in an activity is fully immersed in a feeling of energized focus, full involvement, and success in the process of the activity.

- **Meditation**
  - In Yoga meditation: Witnessing = Observing + Non-Attachment

### Looking Ahead

- **Next Wednesday**
  - Chapter Test on Thinking

- **For Friday**
  - Gleitman: Ch. 9, pp. 358-364
  - Zap #14: Decision making