

Consciousness: The Webcourse

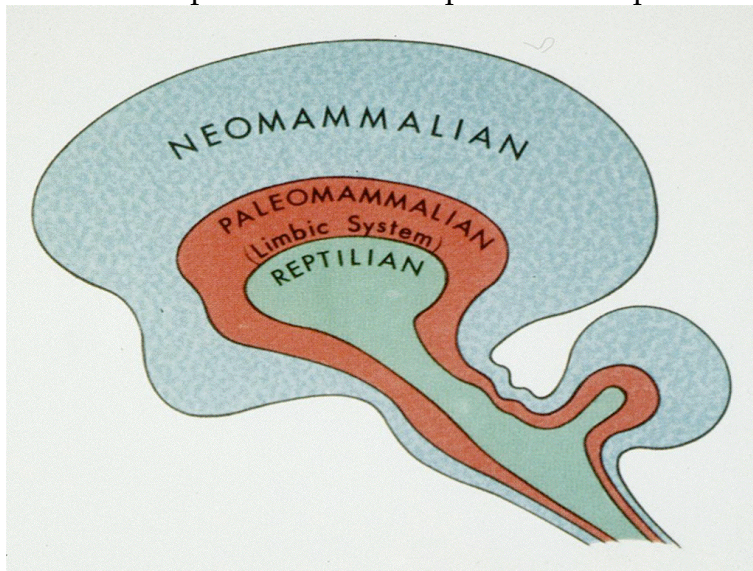
Lecture 10. Consciousness and Emotion

Emotional processes involve conscious, unconscious and fringe conscious processes. In real time and in real life, our emotions involve a complex, continuous interplay of conscious and unconscious processes. This arrangement serves us well. Well-learned, automatic appraisal and response systems can operate efficiently outside of awareness to promote our adaptation in our particular environments. Conscious processes can then be reserved for deliberate decision making, learning, and relearning.

The evolutionary context

Our brains as well as our emotional systems have evolved. Paul McLean (1990) gave us the concept of the *triune brain* as a way of talking about the three evolutionarily different layers of human brains. All mammals, in fact, have brains composed of phylogenetically ancient brain stems (reptilian brain), more recently evolved limbic systems that lie on top of the brain stem (paleo-mammalian brain), and, finally, the most recent addition, the cortex (neo-mammalian brain). The brain has grown by accretion--- adding new layers to handle new environmental challenges. To some extent, each layer continues to operate as it has during evolutionary history--- subserving particular mental and bodily functions. However, the more recent layers seem to manage this extraordinary brain by inhibitory control of lower layers. There are times when we see that the different layers of the brain are in conflict with each other [see below in the discussion of fear].

In our layer-cake brain, the outside layer is most closely associated with conscious processing --- at least in humans --- and the layers underneath contribute to unconscious processes that shape conscious processing.



Or, more humorously:

The Triune Brain

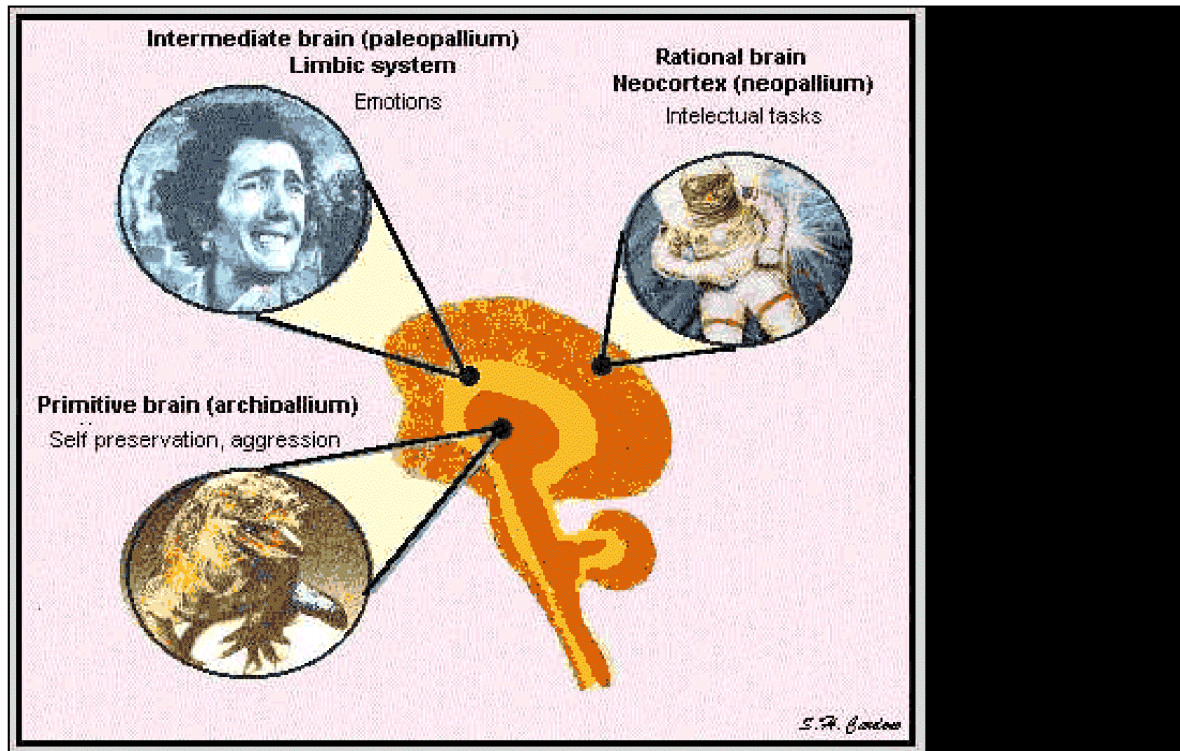



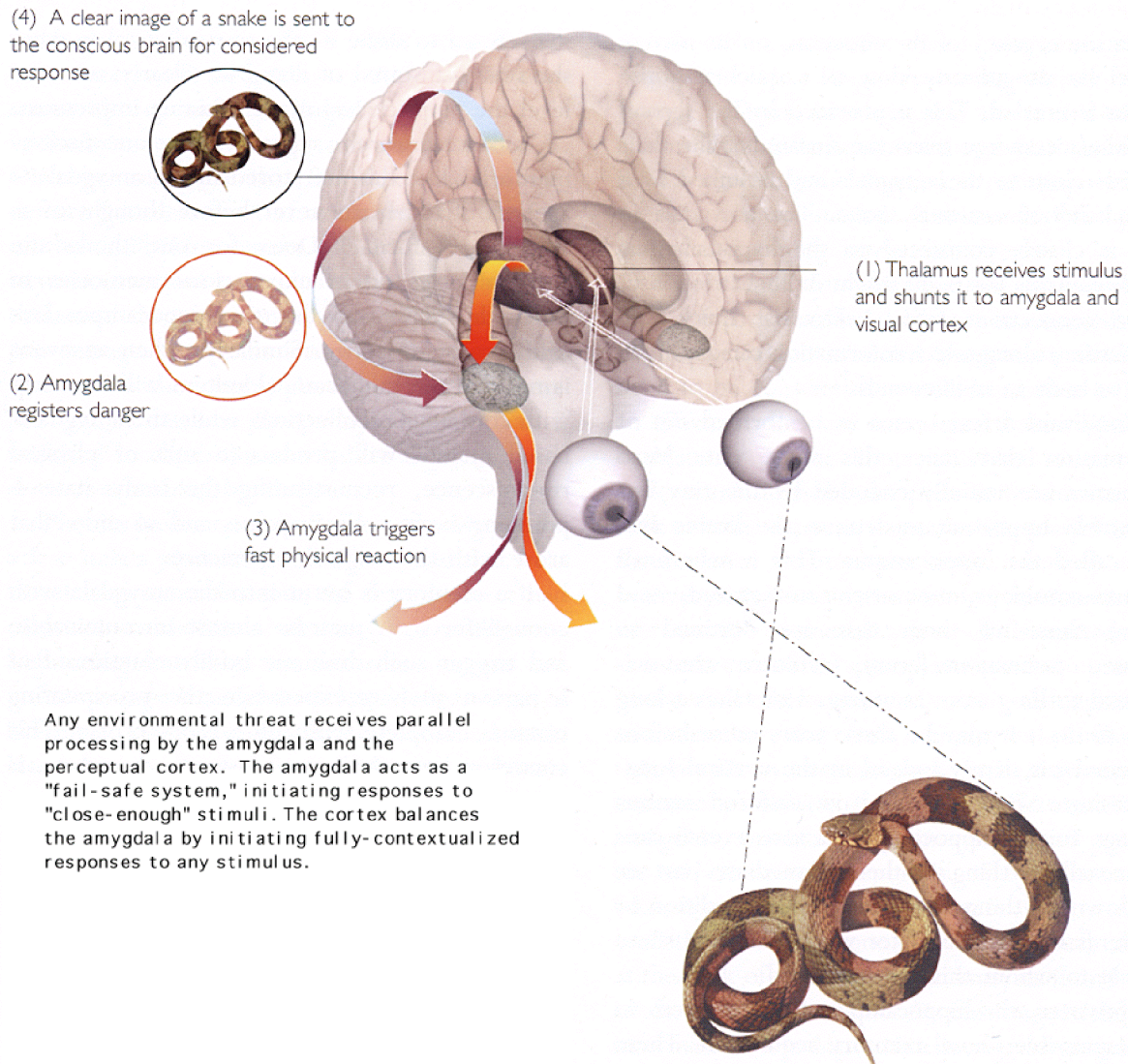
illustration from  [The three units of the human Brain](#) -
Júlio Rocha do Amaral, & Jorge Martins de Oliveira
(image somewhat degraded to speed up download)

LeDoux on fear

Joseph LeDoux has spent his professional life studying the emotion of fear. In the brain, fear depends heavily on the functioning of the two amygdalas, each one a compact collection of nuclei, and each one deep inside each cerebral hemisphere. However, there is more than one pathway from perception through the amygdala and out to emotional response systems. There is potential for two layers of the triune brain to come into conflict with each other.

In his highly regarded book *The Emotional Brain* (1996), LeDoux introduced what he called the “high road” and the “low road” to the emotion of fear. As we can see in the figure, environmental events activate two parallel information-processing streams. One is an emotional “fail safe” system-- from the senses, through the thalamic gateway straight to the amygdala (without going to cortex) and out to the action systems--- which responds when the stimulus is “similar enough” to a dangerous stimulus. This system would rather be safe than sorry. It is biased toward over-reacting on the side of safety. The other stream of processing is the socialized and deliberate stream--- from senses through thalamic gateway to the cerebral cortex, then to the amygdala and out to

response systems. This “high road” of fear allows us to make considered responses to events--- without jumping to conclusions.



(From Carter, Mapping the Brain, 1998.)

The example illustrated is from LeDoux (1996). He speaks of being at the zoo and seeing a snake in a glass cage. We know consciously that we are safe and the snake is contained; there is no cause for alarm. However, if the snake strikes at the side of the cage, we still jump back in a state of arousal. Moments later we can laugh at ourselves and wonder why did such a seemingly silly thing. Here the high road process knows we are safe but the low road processing decides to play it safe anyway.

We can all think of times when we have jumped in fear of a stimulus only to find that there is “nothing to be afraid of.” This is a moment when our two emotional brain pathways giving different interpretations of reality. Daniel Goleman built on these

ideas in his book *Emotional Intelligence* (1997). The overarching idea is that our limbic emotional systems are ancient and operate under a different set of operating instructions--- to be safe, to respond to “close enough” versions of stimuli, to ignore social conventions, and to operate without context. Our cortical emotional systems are the socialized and socially constructed parts of ourselves. This system has a different agenda--- be socially appropriate, don’t embarrass us, maintain the social order and our place in it, and to undertake deliberate, context-sensitive decision-making. The two systems have somewhat different definitions of “safe”--- one is bodily safety, the other is social and psychological.

The point we want to make in this course on consciousness is that the parallel streams of emotional information processing seem to differ in the extent to which they involve conscious processing. The “low road” involves mostly unconscious, conditioned and unconditioned stimuli that evoke responding to the simple outlines of stimuli --- to stick figures. The stimulus as seen by the amygdala is a sparse stimulus without context. The cerebral “high road” involves socialized, fully cognized, and more conscious processing of the full stimulus and all of its contextual associations.

It is worth noting that a century ago Freud told us that the work of healing in psychotherapy is the work of “making the unconscious conscious.” The neuroscience of emotion has helped us discover the origins of some of our unconscious processes.

Emotional processing

Brain circuits

The emotional systems of adult human beings are built from the ground up during the course of a lifetime. According to Panksepp (1998), at birth, we have about five separate, hard-wired brain circuits for emotion ---

- fear,
- anger/aggression,
- panic/loss/grief,
- lust/pleasure,
- interest/seeking.

Panksepp also suggests that a sixth system, supporting emotions related to the self, likely exists but for which the wiring diagram is less clear. “Self-conscious emotions” include guilt, shame, embarrassment, jealousy, and pride. Starting from these emotions, our life experience in a particular family and cultural context develop into a much larger and more nuanced set of socially named and socially defined emotions.

Panksepp’s thinking suggests that there is a neurological basis for the distinction between **primary process** and **secondary process**. These terms traditionally refer to more “primitive” vs. more “socialized” mental activities.

Appraisal processes

When we begin to look into the complex and contextualized processing that happens in LeDoux's "high road," it becomes clear that there are separate appraisal processes for each emotion. When we see an event, we begin a rapid process of answering a set of questions that will determine our ultimate emotional response. Richard Lazarus (1991) is one emotion researcher who proposed a set of appraisal decisions --- constituting an appraisal decision tree-- that need to be made in the process of emotion generation. He says we decide:

- Is this about me?
- If so, is this a harm or a benefit for me?
- Which of my values or goals is at stake here? How am I involved?
- Who is responsible? Who has control? Who is to blame?
- What can I do in this situation? Am I powerless? Do I have resources?
- How is this going to unfold? How will this work out? Will it always be this way?

So, imagine, for example, that I hear about lay offs being announced at my place of employment. I will very quickly:

- Decide if this affects me or not. If not, I am relieved. If so, I need to know more.
- Ponder whether I will be laid off. Or will my friends be laid off? If I am laid off, I may move toward fear and perhaps anger. If my friends are laid off, I may move toward compassion.
- Decide whether this event is fair or not. If unfair, then I feel anger.
- Decide whether someone can be identified as responsible, I may direct anger toward them. If I find that I am responsible myself, I will turn my anger toward myself.
- Decide whether there is anything to be done about the impending lay off. If there is, I may become hopeful. If there is nothing to do, I may move toward resigned or desperate fear depending on what resources and alternatives I perceive elsewhere.
- Notice whether this is a one-time event in my life, in which case I may be able to shrug it off. If I perceive that this is another in a long string of injustices, I may become angry and frantic.

Clearly, the emotion that arises depends on the current state of the person, on their past experience, and on their perception of alternatives and resources in the present. We decide not only the significance of the situation for our well-being (primary appraisal) but also the potential for coping with the situation now and in the future (secondary appraisal; Lazarus, 1991). While appraisal theorists (Lazarus, 1991; Roseman et al., 1995; Ellsworth and Scherer, 2003) may differ somewhat on the exact list of appraisal components, all agree that there is a fast, complex, established set of decisions that are made prior to the generation of an emotion.

When we first encounter evocative events, we may consciously work through all of these and other decisions. We may be quite aware of why we feel the way we do. However, over time, when we encounter similar situations with similar appraisals over and over, the appraisal process itself can become automatic and mostly unconscious. So here we find that a once conscious process has become unconscious through repetition

and use. In this way, even “high road” emotional processing can become unconscious. Notice, however, that we will always be conscious of the stimulus, though we may not be conscious of the details of the information processing that follows and which gives rise to our emotional responses. Also, with effort or with psychotherapy, we can become conscious again of the processes and decisions underlying our automatic emotional responding. Emotion is an ongoing interaction between conscious and unconscious processes.

Applications: Managing the contents of consciousness to regulate emotion and mood.

It is a truth about our emotional life, that what reaches consciousness determines how we feel. Throughout our lives, we innately tune into this truth and engage in activities that manage the contents of consciousness so that we can feel how we want to feel. We learn from experience how to:

- seek stimulation until we are feeling optimally jazzed,
- use chemicals, music, exercise, food, sex, or work to keep undesired thoughts out of mind,
- use compulsive behaviors or more healthy coping strategies to replace undesired thoughts,
- develop defense mechanisms that gate access to consciousness.

Considered from both Eastern and Western perspectives, one benefit of meditative practice is greater self-reflective awareness of our naturally developed habits of mind, ways of managing consciousness. It is also part of the work of psychotherapy to bring into our awareness the defenses and coping strategies.

Within the last 20 years, mindfulness meditation has received attention from mainstream American psychological science (Baer, 2003) as a way of working with stress (Kabat-Zinn, Massion, Kristeller, Peterson, Fletcher, Pbert et al., 1992), pain (Kabat-Zinn, Lipworth, and Burney, 1985), depression (Ma and Teasdale, 2004), and even suicidal ideation in Borderline Personality Disorder (Linehan et al., 1993) and addiction with BPD (Linehan et al., 2002). In all of these clinical situations, mindfulness practice helps individuals become aware of the contents of consciousness that motivate maladaptive behaviors. Once individuals become aware of these habits of mind, continuing meditation practice can be used to help clients separate thought from action and tolerate difficult thoughts.

At the same time, other research on rumination (Nolen-Hoeksema, 2000; Spasojevic and Alloy, 2001) shows that individuals who engage in rumination have higher levels of depressive symptoms over time, even accounting for initial levels of depression. Nolen-Hoeksema (2000) defines rumination as a tendency to “think repetitively and passively about... negative emotions, focusing on ...symptoms of distress (‘I feel lousy, ‘ I just can’t concentrate’) and worrying about the meanings of [the] distress (‘Will I ever get over this?’)(p. 504).” Rumination is an attempt by depressed individuals to cope with and manage their depression. Paradoxically, the activity of repetitively thinking about one’s distress can lead to higher levels of

depression. It is a misguided coping strategy; any process that maintains negative contents in mind leads to greater negative mood.

Review

Recall Phenomenology Lab 1 where we meditated and noted the contents of our consciousness. We also kept consciousness diaries as a way of tuning in to our daily stream of consciousness. Exercises like these can clearly be helpful in clinical settings to increase awareness and then non-attachment to our thoughts.

The Phenomenology Lab for this week contains Handouts from Marsha Linehan's *Skills Manual for Treating Borderline Personality Disorder* (1993). Use the handouts to guide you in another experience of mindfulness meditation. Notice how mindfulness practices --- observing, describing, participating, non-judging, focusing, and doing what works----are incorporated. What is the effect on your mood?

We live in our stream of consciousness. We can shape the flow of that stream. The only question for us is whether we do this automatically without awareness or whether we can do it mindfully and intentionally.