

Consciousness: The Webcourse

Lecture 4.

In the bright spot of the Theater:

The contents of consciousness.

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Readings: Chapter 3 in the textbook.

- The traditional contents of consciousness can be found in Aristotle, and the rest in William James! (As well as Asian sources, and who knows where else? There are lots of traditional sources of insight into conscious experiences.) Aristotle had the five senses --- actually there are many sub-senses, like pain, tickle, and gastric nausea, but we can stick with the classical five. James added fringe experiences like familiarity, tip-of-the-tongue, rightness/wrongness, beauty/repulsiveness, and, very likely, fringe-like abstractions we label with words like “democracy,” “art” and “geometry.”
- Some conscious contents are *exogenous* --- of external origin --- notably sensory perception, but also our socially learned conscious ideas. Others conscious experiences are *endogenous* --- of internal origin.
- There are striking parallels between the two sets of experiences:

<u>Exogenous conscious contents</u>	<u>Endogenous conscious contents</u>
Conscious vision – objects, features, and events.	Visual imagery – objects, features, and events. (Including dream imagery.)
Conscious speech perception.	Inner speech perception (which used to be called the “phonological loop of Working Memory.”)
Consciously-guided speaking (speech output).	Inner speech production (which used to be called the “articulatory loop...”)
Consciously-driven (voluntary) interaction with the physical world.	Consciously-guided mental practice of interaction, including sports performance, music-playing practice, and the like.

- Aristotle suggested that a mental image is a “vague copy” of a visual percept. A number of brain studies have now shown that he was right: visual imagery activates visual cortex and inner speech activates speech cortex (e.g., Broca’s and Wernicke’s areas). Imagined interaction with the world activates sensorimotor cortices, as well as other brain areas needed for interaction, such as cerebellum and basal ganglia. (See Stephen Kosslyn and others for specific studies).
- So it seems that we mentally simulate the outer world in our inner world! This suggests a major simplification of our understanding of the contents of consciousness.
- Please keep in mind that conscious sensory experiences activate not just local sensory cortices but also widespread cortical activity beyond these

local areas. (See in Lecture 2, the brain image from Dehaene et al). That is, talking in terms of the theater metaphor, they are “broadcast” or “distributed” to the unconscious audience in many regions of the brain.

- Fringe: We will look at the nature and function of the “fringe” of consciousness following James, Managan, and McGovern.

Every definite image in mind is steeped and dyed in...the sense of its relations, near and remote, the dying echo of whence it came to us, the dawning sense of whither it is to lead. The significance, the value, of the image is all in this halo or penumbra that surrounds and escorts it--- or rather that is fused into one with it and has become bone of its bone and flesh of its flesh; leaving it, it is true, an image of the same thing it was before, but making it an image of that thing newly taken and freshly understood.

---- William James, The Principles of Psychology, 1890, p.255

Why study “fringe conscious” feelings?

Much of the current scientific evidence bearing on consciousness comes from neuroscientific studies of visual and auditory perception (Sheingold and Logothetis, 1997; Baars 2002). Little attention has been paid to the various non-perceptual qualia that co-occur with perceptual contents, giving them their unique “feel” and guiding action and affect with respect to these percepts. Mangan (1991, 1993, 2001) has repeatedly cited the need for study of fringe consciousness and has added greatly to our understanding of its function and purpose.

In today’s lecture, we review James’ observations on fringe and

feelings, offer a simple demonstration which may enable us to feel our own feelings in the present moment, think a bit about their role in the architecture of consciousness, consider expanding our conception of fringe consciousness or “feelings” to include affective feelings as well as cognitive feelings, and finally, offer some concluding observations on how James’ and Mangan’s conceptions can be usefully extended to include the affective fringe..

Features of James’ definition of fringe

If we examine James’ brief description of fringe consciousness carefully, we can identify at least four characteristics of fringe:

- Focus fringe co-occurrence: “Every definite image” is accompanied by a “sense of its relations”: That is, each focal percept is colored by fringe accompaniments.
- Fusion of focus and fringe: The “penumbra” is “fused” or bound to the “definite image.”
- Value and significance: Fringe adds value and significance to the conscious focus.
- Information bearing character: The same focal content is “newly taken,” in James’ words, as a result of the accompanying fringe. Fringe is informative and definitive with respect to the conscious focus.

Fringe consciousness seems to have some very definite functions in James’ understanding. What is needed is further evidence bearing on the variety of conscious feelings and their role in the architecture of consciousness. Again, James provided an initial inventory of fringe experiences.

James' Examples of Fringe in Everyday Experience

In the 1890 *Principles of Psychology*, James provided a number of examples of what he meant by fringe consciousness. He cited:

the feeling of familiarity:

Events can be “recognized as familiar, as having been enjoyed before, though we cannot name it or say where or when.....” (p.252)

the feeling of knowing (experienced in the Tip-of-the-Tongue state):

James described a gap in our consciousness where “ a sort of wraith of the name is in it, beckoning us in a given direction....” (p. 252) This is not so much an absence as a feeling of a certain absence.

feelings of rightness or harmony:

“Relation...to our topic of interest is constantly felt in the fringe, and particularly the relation of harmony and discord, of furtherance or hindrance of the topic...” (pp. 259ff.)

feelings of intention to speak:

“One may admit that a good third of our psychic life consists in these rapid premonitory perspective views of schemes of thought not yet articulate.” (p. 253)

feelings of expectancy:

Commands such as “Hark!” “Look!” “Wait!” have “a sense of the direction from which an impression is about to come” (pp. 250ff.) Notice: these impressions are different from each other.

feelings of relation:

Words like “but,” “if,” “and,” “or” convey a “felt meaning” of the relations between objects and events (see pp. 252ff).

From the beginning, James used the term “feelings” as synonymous

with fringe consciousness. I will adopt the same terminology, especially since the word “feelings” is used in every day language as well as in the memory and metacognition literature where “feelings of knowing, “ etc. are widely studied.

We can get a sense of fringe consciousness as it accompanies focal percepts by observing ourselves observing visual stimuli.

Feeling our own feelings: A demonstration

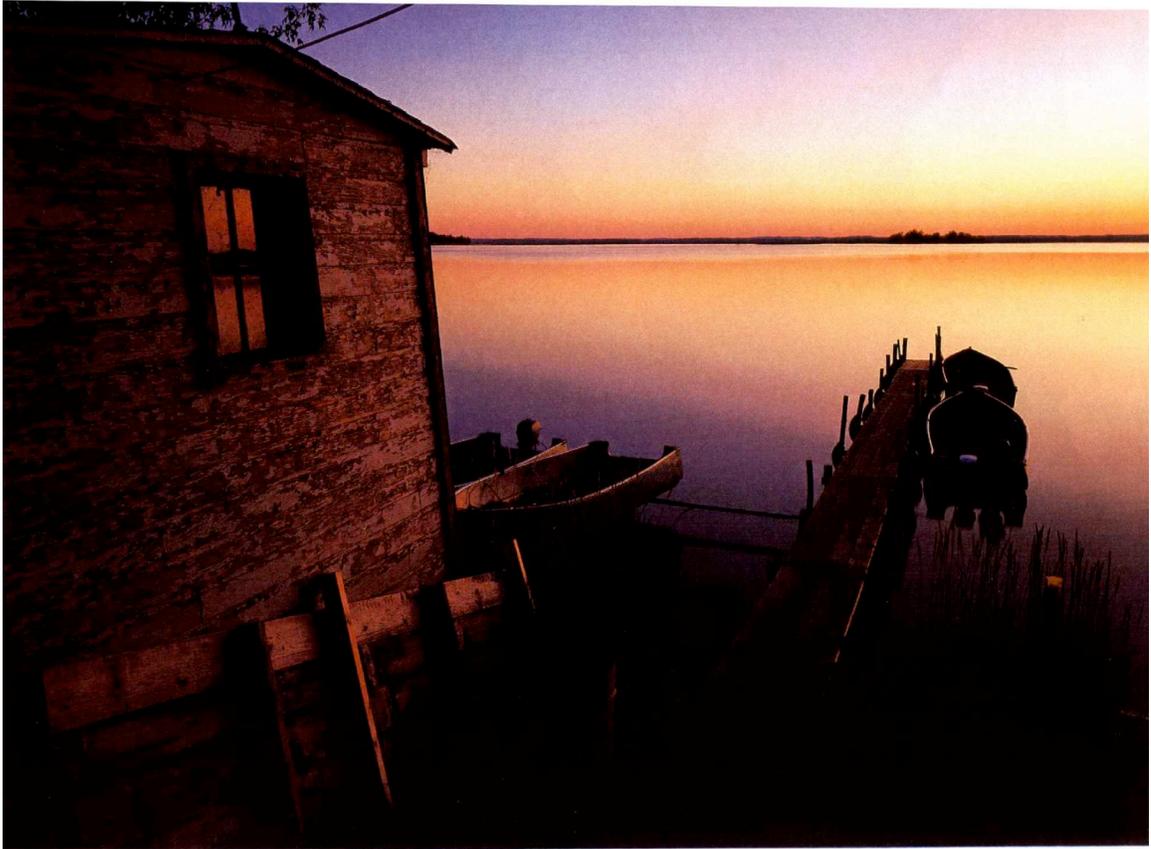
For a moment, let your observing ego do some work. Become willing to attend to your own inner experience. As you look at the following four pictures, notice what the different aspects of the experience. What’s happening?

Figure 1.



What did you see? How did it feel?

Figure 2.



Again, what did you see? How did it feel??

Figure 3.



Reflect. How did this feel?

Figure 4.



Reflect. How did it feel?

Presumably the four visual experiences were somewhat different in both content and feeling. The first two photographs both show colorful sunsets. The, felt accompaniment, however, was very likely different from one to the other. How did the feelings differ for you? Were the feelings noticeably different? In what way? Was the first picture more threatening or ominous ? The second more tranquil?

The last two photos --- the Popsicle factory and the Dallenbach Cow--
- give most observers felt experiences very different from the first two photos, usually involving a sense of effort and puzzlement, sometimes surprise. Again, the focal percepts are different as are the feelings, which accompany them. Notice that in our subjective experience we can not only

distinguish and name focal contents but we can separately distinguish and identify fringe accompaniments.

Role of the fringe in the architecture of consciousness

Over the past ten years, Mangan and others have identified the unique functions of fringe consciousness or feelings (Mangan, 1991, 1993, 2001; McGovern, 1993, 2001).

Feelings fulfill a unique role in the architecture of consciousness in that they provide strategic and evaluative information concerning focal content--- within the same conscious moment. As Mangan has explained, this co-occurrence allows feelings to circumvent the normal rigid capacity limitations on conscious contents as well as and the requirement for internal consistency (Baars, 1988, 1997). Focus-fringe binding creates a single, coherent conscious experience which nevertheless contains information from more than one source ---- that is, environmental as well as multiple self-referent sources. (Notice feelings always convey information about the subject or the states of the psychological system, while focal percepts convey information about objects or the world external to the psychological system (even when the percepts involve events within the physical body. See below). Feelings thus contribute to adaptive efficiency by creating an informational multiplex in each conscious moment. All available information bearing on the focal content is represented in consciousness, avoiding the content swapping that would otherwise be necessary in order to hold two sources of information in consciousness at one time. Finally and importantly, as is true of any conscious content (Baars, 1988), conscious

feelings can initiate voluntary, goal-directed action. Focus-fringe binding is apparent in everyday language.

Everyday examples of focus and fringe

A few examples of everyday linguistic constructions that convey focus-fringe binding follow. In each phrase, the underlined word names the fringe or felt component, which is self-referent; the noun is world-referent.

- *A meaningful conversation*
- *A familiar house*
- *A surprising sound*
- *A frightening automobile accident*
- *A beautiful sunset*
- *An elegant proof*
- *A joyous reunion*
- *An exciting movie.*

In everyday language about consciousness, we use the word “feelings” to mean both cognitive conscious qualities (such as a feeling of knowing) as well as affective qualities (such as a feeling of fear or joy). Though evidence suggests that cognitive and affective feelings have different natural

histories and origins in the brain, both kinds of feelings convey useful information. And neuropsychological conditions that occasion the loss of either kind of feeling interrupt ongoing, adaptive behavior (McGovern, 2001).

If James is right that fringe is informative, what kinds of information do *cognitive* feelings add to the focus?

Any focal content may be bound to more than one kind of cognitive feeling. Each feeling can potentially convey different kinds of information about the relationship of the focus to the individual perceiver's psychological system. For example, the feeling of:

- **Familiarity** conveys "I have perceived this before."--- episodic memory
- **Knowing** conveys "I have knowledge related to this."--- semantic memory (see Tulving, 1983, for discussion of the different feelings accompanying episodic and semantic memory retrieval)
- **Meaningfulness** conveys "I have extensive sources of knowledge related to this percept."
- **Rightness, harmony** conveys "What I am conscious of now is congruent with my plans or desires."
- **Aesthetic beauty, elegance** conveys "This object is right and meaningful to me at many levels."

- **Intention** is part of Wundt's Gesamtvorstellung, i.e. the intention to say thus-and-so before it is uttered. [See the discussion of Wundt's conception of the simultaneous, pre-utterance intention to speak in Blumenthal, 1970.]
- **Effort** conveys "This is not an automatic, habitual activity!"
- **Spiritual or mystical feelings** may convey "There's something more here than I can apprehend cognitively."

What information do emotional fringe experiences carry?

If emotional or affective feelings function in the same way as cognitive feelings, then we would expect that different affective feelings can be identified and that each carries different, useable information about the focus for the perceiver. Over the last two decades, emotion researchers have gained consensus on the information content of different emotions. The list below is adapted from Lazarus (1991).

Fear Facing threat of physical harm or loss

Anger Being insulted or demeaned

Anxiety Facing existential threat

Sadness Experiencing irrevocable loss

Guilt Transgressing a moral value

Shame	A failure of one's self in living up to an ideal
Envy	Wanting something that someone else has
Jealousy	Resenting someone for having what one wants
Disgust	Taking in or standing too close to a nauseating object
Happiness	Making progress toward achieving a goal
Pride	Experiencing enhanced self-worth by receiving credit
Love	Enjoying mutual affection from another
Hope	Fearing the worst but yearning for better
Compassion	Being moved by another's suffering
Gratitude	Crediting another with an altruistic gift

Despite the cross-cultural validation of the meanings of these emotional feelings, a persuasive argument that feelings play an active role in the architecture of consciousness requires evidence that feelings—cognitive and affective-- are actually used, that feelings have demonstrable effects on behavior.

Evidence that the information content of feelings is actually used.

There is considerable evidence that feelings influence behavior. In the domain of cognitive feelings, feelings of knowing (FOK) have been found to guide intuitive problem-solving, including verbal and pictorial problems (Bowers, Regehr, Balthazard, and Parker, 1990), promote persistence in memory search during TOT states (Brown and MacNeill,

1966), guide memory retrieval and persistence in self-directed study (Metcalf, 1986), and influence judgment tasks and decision-making (Nelson, Gerler, and Narens, 1984; see also reviews of feeling of knowing by Metcalfe and Shimamura, 1994, Nelson, 1992, and Yzerbyt, Lories, and Dardenne, 1998.) Similarly, affective feelings have been found to influence behavior in a variety of ways. Anxiety influences the level of environmental vigilance (Mineka and Sutton, 1992), strong negative affect leads to selective perception of central over peripheral details in a scene (Christianson and Loftus, 1992), many affective states alter or bias perception of events (Lazarus, 1991), depression influences the content and speed of autobiographical memory retrieval (Teasdale and Barnard, 1993; Schwarz, 1990), feelings of liking influence social judgments (Clore, 1992), fear influences judgment (Mineka et al., 1992), feelings of guilt lead to prosocial remedies for transgressions (Lazarus, 1991) and, in general, to adaptive social action.

The down-side of focus-fringe binding

Whether we are discussing cognitive or affective feelings, there is a cost paid in exchange for the efficiency of focus-fringe binding. In general, feelings are vulnerable to attribution errors. In other words, feelings originating within one's self (fear, anger, surprise, familiarity) are attributed to the external objects or people which occasion them. In viewing the beautiful sunset, we attribute the beauty to the sunset rather than acknowledge that beauty is a response in the mind of the perceiver. Witnessing a frightening automobile accident, we attribute the "scary" to the accident rather than to ourselves.

Clinical psychologists often work with enmeshment and “boundary issues” where the client is described as “projecting” their feelings on another person or event. The client is seen to have a confused understanding of the ownership and the causality of their own feelings (Burns, 1980). This seems to be a natural consequence of focus-fringe binding, but one that sometimes gets us into trouble. The clinician may well ask “Whose feeling is it, anyway?” It is difficult sometimes to accept that the affect is not a quality of the environmental event but of one’s self.

Feeling as a marker of nonconscious information processing

A number of theories have been proposed to account for cognitive feelings. For example, Whittlesea and Williams (2001) have argued that the feeling of familiarity for verbal and other stimuli comes from a complex, non-conscious process of comparing current perceptual fluency and past personal experience. In other words, the processing takes into account the implications of the quality of processing among parts of the experience and the relations between the quality of processing and the quality that one could expect given the structural and semantic characteristics of the stimulus and context. Moreover, in attempting to integrate all of these aspects of processing, the evaluation process arrives not only at a conclusion about the global meaning of the event but also at a conclusion about the global coherence of the experience. They suggest that this latter function is the basis of the feeling of familiarity.

Koriat and Levy-Sadot (2001) have proposed a model for the basis of feeling of knowing (FOK), which combines cue familiarity and accessibility. In both cases, the cognitive feeling appears in consciousness as an assessment of the stimulus and

as a guide to current action, i.e. judgment responses; the information processing remains nonconscious.

In a similar way, cognitive appraisal theorists (Lazarus, 1991; Roseman, Dhawan, Rettek, Naidu, and Thapa, 1995.; Smith and Ellsworth, 1985) of emotion have argued that the felt emotion is the result of a complex cognitive appraisal process, which is itself not fully in awareness. For example, Lazarus (1991) outlined a complex appraisal process where knowledge about the precipitating event is assessed in light of the individual's immediate state and long-term personal goals. The assessment draws on knowledge of the expected harm or benefit of the stimulus event, the degree and kind of such harm or benefit, the individual's assessment of who is to be blamed or credited with the state of affairs, an assessment of the individual's present ability to cope with the precipitating event, and the individual's expectations about the future unfolding of the episode. While other emotion researchers have used different terminology, there is considerable consensus on the kinds of information processed during generation of emotion across cultures.

Conclusion

Based on the evidence, it appears that affective feelings perform functions in the architecture of consciousness much like the functions of cognitive feelings – James' fringe. For both cognitive and affective feelings, focus-fringe binding creates a single, coherent conscious experience which nevertheless contains information from more than one source ----an environmental source as well as multiple self-referent sources. As Mangan has argued for cognitive feelings, we find that feelings in general serve as conscious markers for complex, concurrent nonconscious

information processing. For both cognitive and affective feelings, a great deal is known about the nonconscious information processing and how feelings guide behavior. So, while James never included affective feelings in his discussion of fringe, it appears that the subjective part of emotions could well be added to the inventory of fringe experiences.

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