

Consciousness and the Self

Fall 2009

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Two or Three Kinds of Consciousness

Block (1995)

- Phenomenal-Consciousness (P)
 - Experience
- Access-Consciousness (A)
 - Directly Controls Thought. Action
- Mutually Dissociable
 - A-Consciousness w/o P-Consciousness
 - P-Consciousness w/o A-Consciousness
- Self-Consciousness
 - Possession of a Concept of the Self
 - Ability to Think About Oneself

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“Cogito, ergo sum”
“Sum, res cogitans”

Rene Descartes (1596-1650)

The **self** is the core
of consciousness

“I”
“Me”

If you've got one,
you can be conscious.

If you don't,
you can't.



Five Characters in Thought

James, *Principles of Psychology* (1890)

- 1) Every thought tends to be part of a personal consciousness.
- 2) Within each personal consciousness thought is always changing.
- 3) Within each personal consciousness thought is sensibly continuous.
- 4) It always appears to deal with objects independent of itself.
- 5) It is interested in some parts of these objects to the exclusion of others, and welcomes or rejects... all the while.



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Thought Tends to Personal Form

[E]very thought is part of a personal consciousness...

In this room -- this lecture-room, say -- there are a multitude of thoughts, yours and mine, some of which cohere mutually, and some not...

My thought belongs with my other thoughts, and your thought with your other thoughts.

Whether anywhere in the room there be a mere thought, which is nobody's thought, we have no means of ascertaining, for we have no experience of its like.

The only states of consciousness that we naturally deal with are found in personal consciousnesses, minds, selves, concrete particular I's and you's [sic].

Each of these minds keeps its own thoughts to itself.

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Thought tends to Personal Form

It seems as if the elementary psychic fact were not *thought or this thought or that thought, but my thought, every thought being owned..*

Neither contemporaneity, nor proximity in space, nor similarity of quality and content are able to fuse thoughts together which are sundered by this barrier of belonging to different personal minds.

The breaches between such thoughts are the most absolute breaches in nature.

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Thought tends to Personal Form

James (1890)

On these terms the personal self rather than the thought might be treated as the immediate datum in psychology.

The universal conscious fact is not “feelings and thoughts exist”, but “/ think” and “/ feel”.

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Janet on the Self in Consciousness

The Major Symptoms of Hysteria, 1907

There are then in the “I feel”, two things in presence of each other: a small, new psychological fact, a little flame lighting up -- “feel” -- and an enormous mass of thoughts already constituted into a system -- “I”.

These two things mingle, combine; and to say “I feel” is to say that the already enormous personality has seized upon and absorbed that little, new sensation which has just been produced.

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Janet on the Self in Consciousness

The complete consciousness which is expressed by the words, “I see, I feel a movement”, is not completely represented by this little elementary phenomenon [i.e., of a sensation of vision or of motion].



It contains a new term, the word “I”, which designates something very complicated. The question here is of the idea of personality, of my whole person....

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Claparede on Amnesia

“Recognition et Moitte”, 1911

- Case of Korsakoff’s syndrome
 - Cannot recognize doctors or nurses
 - Does not know date or own age
- New declarative, procedural knowledge
 - Way to bathroom
 - Cannot say where it is, or describe it
 - Behaves appropriately with nurse
 - Cannot name her or specify role
 - Knows isolated facts
 - Claparede’s Pin

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Claparede on the Self Amnesia in Korsakoff Syndrome

“Recognition et Moitte”, 1911



If one examines the behavior of such a patient, one finds that everything happens as though the various events of life, however well associated with each other in the mind, were incapable of integration with *the me* itself.

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The Self as the Key to Consciousness

- All statements about consciousness may not be intentional
- All statements about consciousness are couched in the first person.
 - / hear the music.
 - / remember going ice-skating.
 - / feel angry.
 - / want a hamburger.

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The Self as a Knowledge Structure

Kihlstrom & Cantor (1984); Kihlstrom et al. (1988);
Kihlstrom & Klein (1994); Kihlstrom, Beer, & Klein (2003)

- The self is one's mental representation of oneself
 - Stored in memory
 - Activated by experience, thought
 - Part of "working memory"
 - Linked to other knowledge structures in working memory

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Forms of Mental Representation

After Anderson (1995)

- Perception-Based Representations
 - Analogical knowledge about objects, events
 - Physical Appearance
 - Spatio-Temporal Relations
 - The "Self-Image" (not merely self-esteem)
- Meaning-Based Representations
 - Propositional knowledge about objects, events
 - Features
 - Semantic relations among them
 - The "Self-Concept" (not merely self-esteem)

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Knowledge Structures in Memory (1)

Winograd (1972); Anderson (1976); Tulving (1983)

- Declarative Knowledge
 - Represented as propositions
 - Available to conscious awareness
 - Semantic Memory
 - Abstract, Generic, Context-Free
 - Apples are fruits
 - Columbus discovered America
 - Episodic Memory
 - Discrete Location in Spatio-Temporal Context
 - Autobiographical Memory

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Knowledge Structures in Memory (2)

Winograd (1972); Anderson (1976); Tulving (1983)

- Procedural Knowledge
 - Represented as productions
 - Not accessible to conscious awareness
 - Motor Skills
 - Tying a half-hitch knot
 - Driving a standard-shift car
 - Cognitive Skills
 - Performing long division
 - Programming in *Scheme*

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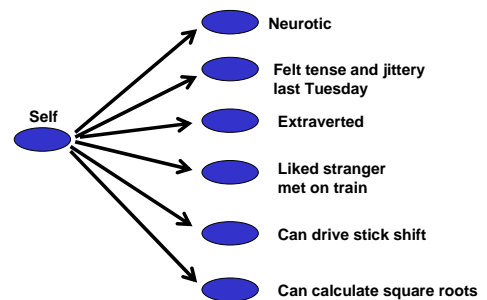
Self as a Declarative Knowledge Structure

- Episodic Self-Knowledge
 - Autobiographical Memory
- Semantic Self-Knowledge
 - Physical Characteristics
 - Psychological Characteristics
 - Sociocultural Characteristics
 - Metacognition
 - Knowledge *about* procedural knowledge

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Semantic and Episodic Self-Knowledge

Kihlstrom et al. (2003)



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Mental Representation of the Self

A Structure in Declarative Memory

- Meaning-Based Knowledge
 - Own Name, Names of Significant Others
 - Physical, Psychological Characteristics
 - Psychosocial, Demographic Features
 - “Self-Defining” Memories
 - Network of Autobiographical Memories
- Perception-Based Knowledge
 - Face
 - Voice
 - Body Image

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Consciousness in Memory

James (1890)

Memory proper, or secondary memory as it might be styled, is the knowledge of a former state of mind after it has already once dropped from consciousness;

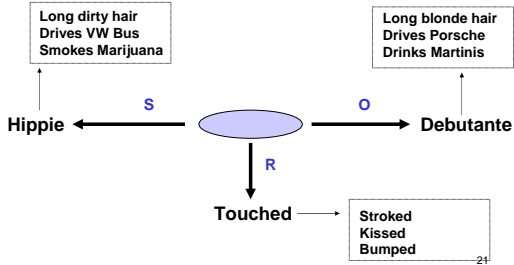
or rather *it is the knowledge of an event, or fact, of which meantime we have not been thinking, with the additional consciousness that we have thought or experienced it before.*

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Propositional Representation of Experience

After Anderson (1976)

A hippie touched a debutante.



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Consciousness in Memory

James (1890)

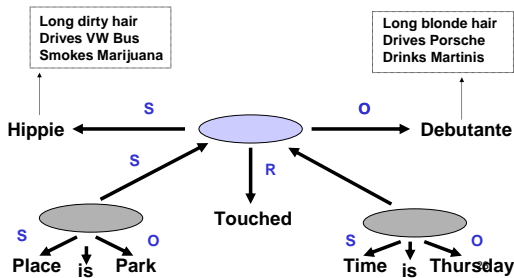
- The first element which such a knowledge involves would seem to be the revival in the mind of an image or copy of the original event...
- [But] a farther condition is required before the present image can be held to stand for a *past original*.
- That condition is that the fact imaged be *expressly referred to the past*, thought as *in the past*...

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Propositional Representation of Experience

After Anderson (1976)

A hippie touched a debutante in the park on Thursday.



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Consciousness in Memory

James (1890)

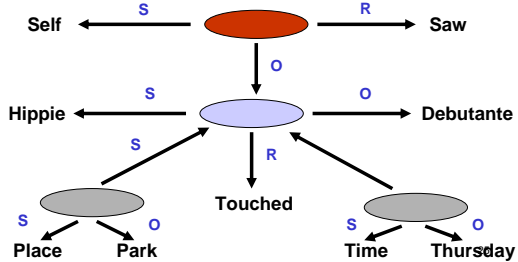
- But even this would not be a memory.
- Memory requires more than the mere dating of a fact in the past. It must be dated in *my* past.
- In other words, I must think that I directly experienced its occurrence.
- It must have that “warmth and intimacy”... characterizing all experiences “appropriated” by the thinker as his own.

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Propositional Representation of Experience

After Anderson (1976)

I saw a hippie touch a debutante in the park on Thursday.



Consciousness in Memory

James (1890)

- A general feeling of the past direction in time, then,
- a particular date conceived as lying along that direction,
- and defined by its name or phenomenal contents,
- and imagined as located therein, and **owned as part of my experience**, --

such are the elements of every act of memory.

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Features of Conscious Experience Represented in Perception or Memory

- Representation of Event
 - Raw Description
 - Associations with Other Events, Ideas
- Representation of Episodic Context
 - Time, Place
- Representation of Self
 - Agent or Patient of Some Action
 - Stimulus or Experiencer of Some State

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Role of the Self in Experience

After Brown & Fish (1983)

- Agent or Patient of an Action
 - **I** gave a present to Lucy.
 - Lucy gave a present to **me**.
- Stimulus or Experiencer of a State
 - **I** love Lucy.
 - Lucy loves **me**.

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“Me-ness” in Memory

- *I saw the hippie touch the debutante.*
or
- *I was the hippie who touched the debutante.*
- *I was the debutante whom the hippie touched.*

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The Self and Consciousness

- Consciousness comes when we...
 - Inject ourselves into our experiences, thoughts, and actions
 - Take possession of them
 - Acknowledge them as our own
- Loss of Consciousness
 - Loss of sense of self
 - Loss of our connection to ongoing activity

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Explicit and Implicit Tests

- Explicit tests always posed in 2nd person
 - What do you remember.
- Correct answer always involves 1st person
 - / remember...
 - Awareness of self
 - Agent or patient of some action
 - Stimulus or experiencer of some state
- Implicit tests always posed in 3rd person
 - Correct answer also involves 3rd person

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Explicit and Implicit Memory

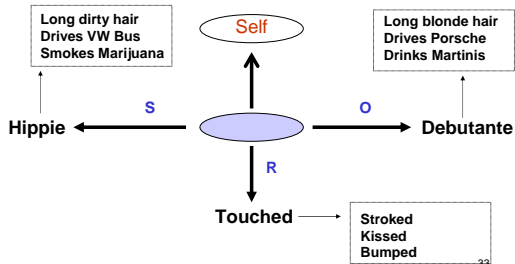
- Study *ashcan*
- Explicit Memory
 - What word did **you** study?
 - I studied *ashcan*.
- Implicit Memory
 - What word starts with *ash---*?
 - That word is *ashcan*.

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Propositional Representation of Conscious Memory

After Anderson (1976)

I saw a hippie touch a debutante.

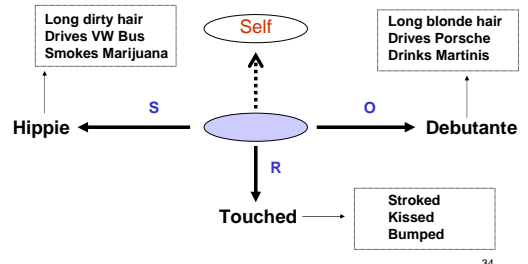


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Propositional Representation of Unconscious Memory

After Anderson (1976)

I saw a hippie touch a debutante.



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Explicit and Implicit Perception

- Present *doctor* (masked)
- Explicit Perception
 - What word did **you** see?
 - I didn't see anything.
- Implicit Perception
 - Is *nurse* a word?
 - Yes, *nurse* is a word (quickly).

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Explicit and Implicit Thought

- Present triad
 - Playing*
 - Credit*
 - Report*
- Explicit Thought
 - What word do **you** think they have in common?
 - I don't know.
- Implicit Thought
 - Is *card* a word?
 - Yes, *card* is a word (quickly).

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Explicit and Implicit Emotion

- Present *snake*
- Explicit Emotion
 - Are **you** afraid of the snake?
 - No, I'm not.
- Implicit Emotion
 - Your blood pressure has increased.
 - OK, if you say so.

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Explicit and Implicit Motivation

- College Student
- Explicit Motivation
 - Do **you** want to achieve high honors?
 - No, I don't -- not if I have to work hard at it.
- Implicit Motivation
 - Your TAT shows you have high *n*Achievement.
 - Gee that's a surprise! I thought I was a slacker!

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One Kind of Consciousness

After Block (1995)

- Access-Consciousness isn't Consciousness
 - Mere Information-Processing
- Phenomenal-Consciousness is the Only Kind of Consciousness There Is
- Consciousness Entails Self-Reference
 - Self as Agent/Patient, Stimulus/Experiencer
- Self-Consciousness as Consciousness of Oneself
 - *I am aware of an event vs. I am aware of myself*

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Self and Consciousness

- We know that we have...
 - consciousness
 - a mental representation of self
 - Crucial for consciousness
- Who else has it?

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Views of Development

- Phylogenetic
 - Evolution of a trait across species
 - Comparative Psychology
- Ontogenetic
 - Emergence of a trait within individual
 - Life-Span Developmental Psychology
- Cultural
 - Effects of social/economic development
 - Sociology, Anthropology, Political Science

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Descartes

1596-1650



- Substance Dualism
 - Body
 - Mind
- Animals as Reflex Machines
- Humans with Souls
 - Mind
 - Free Will
 - Legitimized concepts of sin, crime
- Humans as the highest stage of development
 - Except God, angels

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Origin of Species by Natural Selection

Darwin (1859)



- Evolution by Natural Selection
- Adaptation to Environmental Niche
 - Passed on to Offspring
- Different Species Descended from Common Ancestors
- Doctrine applied to Morphological Similarity
 - What about *mental* similarity?

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Descent of Man

Darwin (1871)

There can be no doubt that the difference between the mind of the lowest man and that of the highest animal is immense....

Nevertheless, the difference in mind between man and the higher animals, great as it is, certainly is one of degree and not of kind.

We have seen that the senses and intuitions, the various emotions and faculties, such as love, memory, attention, curiosity, imitation, reason, etc., of which man boasts, may be found in an incipient, or even sometimes in a well-developed condition, in the lower animals....

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Descent of Man

Darwin (1871)

If it could be proved that certain high mental powers, such as the formation of general concepts, self-consciousness, etc., were absolutely peculiar to man, which seems extremely doubtful, it is not improbable that these qualities are merely the incidental results of other highly-advanced intellectual faculties; and these again mainly the result of the continued use of a perfect language....

That such evolution is at least possible, ought not to be denied, for we daily see these faculties developing in every infant; and we may trace a perfect gradation from the mind of an utter idiot, lower than that of an animal low in the scale, to the mind of a Newton.

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Animal Intelligence

George John Romanes (1882)



- Anecdotal Evidence
 - Intelligence
 - Consciousness
- Dog and its food dish
- Coordinated Baboon Attack on Humans
- “Fellow-Feeling” and Sympathy in Ants

“This observation seems unequivocal as proving fellow-feeling and sympathy, so far as we can trace any analogy between the emotions of the higher animals and those of insects.”

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Mental Evolution in Man

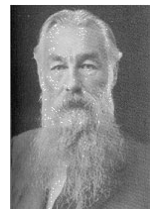
Romanes (1888)

- Improbable that body continuous, but mind discontinuous
- “[There is a] very strong *prima facie* case in favour of the view that there has been no interruption of the developmental process in the course of psychological history; but that the mind of man, like the mind of animals... has evolved.”

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Introduction to Comparative Psychology

C. Lloyd Morgan (1894) -- a Student of Romanes!



- Double Induction
 - Objective
 - Subjective
- ‘Lloyd Morgan’s Canon’
 - Instincts
 - Trial-and-Error Learning

• Always interpret behavior in terms of the lowest psychological process....

• A human process is scientifically interesting to the extent that it can be studied in animals.

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John B. Watson

Psychology as a Behaviorist Views It (1913)
Psychology from the Standpoint of a Behaviorist (1919)

- Consciousness and intelligence play no role in animal behavior
 - Reflex
 - Instinct
 - Conditioned Response



Animals don't have consciousness -- and humans don't, either!

The Paradox of Continuity

Darwin vs. Descartes

- Everybody agrees on evolutionary continuity of mind
- Romanes, extended intelligence down to nonhuman animals
- Thorndike, Watson extend reflexes and instincts up to humans!
- Morgan segregates some capacities as exclusively human

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The Animal Mind

Margaret Floy Washburn (1908)

1st woman
PhD in Psychology
(Cornell, 1894)

2nd woman
president of APA
(after Mary Whiton Calkins)



- Problem of Other Minds
 - Inference from words and actions
 - Assumption that all human minds “built on the same pattern”

“The mind of each human being forms a region inaccessible to all save its possessor....”

If my neighbor's mind is a mystery to me, how great is the mystery which looks out of the eyes of a dog, and how insoluble the problem presented by the mind of... an ant or a spider?”

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Mentalistic Comparative Psychology

Washburn (1908)

- [A]ll psychic interpretation of animal behavior must be on the analogy of human experience....
- Our acquaintance with the mind of animals rests upon the same basis as our acquaintance with the mind of our fellow-man; both are derived by inference from observed behavior.

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Criteria for Attributing Mind to Animals

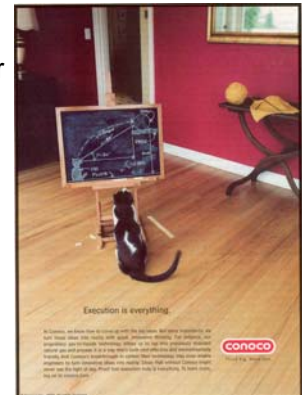
- Unsatisfactory Criteria
 - Behavioral response to stimulation
 - Approach/avoidance behavior
 - Behavioral adaptation to a goal
 - Variability of behavior
- Dual Criterion
 - Anatomical Resemblance to Humans
 - Rapid Learning
 - Past recalled as “idea or mental image”

Arguably, Washburn was the direct target of Watson (1913)

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Inferences from Complex Behavior

- Not all “intelligent” behavior involves consciousness
- Not all “intelligent” behavior involves *intelligence*



Donald B. Griffin and Cognitive Ethology

The Question of Animal Awareness (1976)
Animal Thinking (1984)
Animal Minds (1992)

“What is it about some kinds of behavior that leads us to feel that it is accompanied by conscious thinking?”

- Not Mere Complexity
- Adaptability to changing circumstances
- Arguments for Animal Awareness
 - Similarity of Nervous System
 - Complexity of Behavior
 - Functionality of Consciousness

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Griffin on the Assassin Bug

“Animal Thinking” (1984)

[The bug has] camouflaged itself chemically and tactile by gluing bits of a termite nest all over its body. In this way it is able to capture a termite at the opening of the next without alarming the soldier termites.

After sucking out the termite's semifluid organs, the assassin bug jiggles the empty exoskeleton in front of the next opening in order to attract another termite worker....

When a second termite seizes the first, it is then captured and consumed itself.... [T]he process may be repeated continuously many times by the same assassin bug.

The extraordinary complexity and coordination of these actions strongly suggest conscious thought, even though the assassin bug's central nervous system is very small.

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Griffin: An Argument from Design?

Blumberg & Wasserman (1995, 1996)

- Behaviorist critique of mentalistic comparative psychology
- Conscious, mindful designer
 - Creationism, God
 - Cognitive ethology, Mind
- Animal Mindlessness
- Human Consciousness is Epiphenomenal

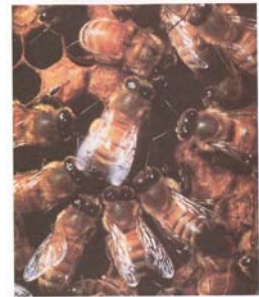
“[T]he mentalistic approach in vogue today is as useless for understanding human behavior as it is for understanding animal behavior.”

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Consciousness in Honeybees

Gould & Gould, *The Animal Mind* (1994)

- Nest-Building
- Pattern-Learning
- Dance “Language”
- Foraging Decisions
- Nest-Site Decisions
- Route Planning



“This vibrating pollen forager is reporting a food source about 15 degrees to the right of the sun's direction. Six attending bees are also being told of the distance to the food and the dancer's opinion of its quality.”

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Self-Recognition: Darwin's Test

Darwin (1871, 1872)

- Orangutans in London Zoo
- Three Stages of response
 - Surprised, Alarmed, Curious
 - Kisses, Grimaces
 - Ignored Object
- But what's *really* going on?
 - Reacting to image as if another ape?
 - Noting what they themselves look like?



Franz de Waal

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Repeating Darwin's Test

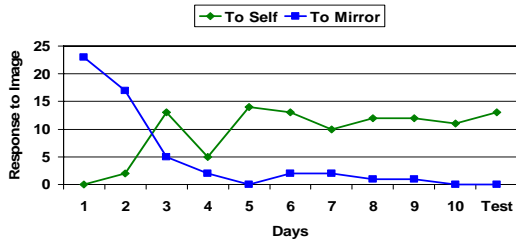
Gallup (1970)

- Chimpanzees
 - Initially, explored mirror
 - React to image as if another animal
 - Later, explored self (hidden parts of body)
 - React to image as if a representation of self
 - Grooming otherwise invisible body parts
 - Picking food from teeth while watching image
 - Visually guided manipulation of anal/genital areas
 - Nose-picking after inspection of image

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Reactions to Mirror by Chimpanzees

Gallup (1970)



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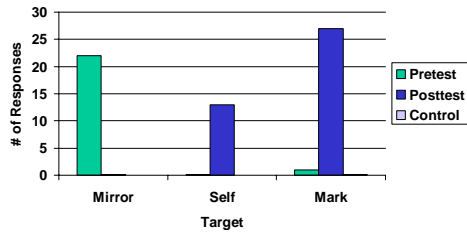
Mirror-Recognition Experiments

Gallup (1970)

- Anesthetize chimpanzees
 - Prior experience with mirror
- Apply odorless paint to foreheads
 - Odorless
 - No tactile sensation
- Awaken in cage with mirror present
 - Mirror-directed behaviors
 - Self-directed behaviors
 - Touching of marked spot
- Control: No Prior Experience with Mirror⁶²

Self-Recognition Behavior

Gallup (1970)



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Self-Recognition by Chimpanzees

Gallup (1970); Suarez & Gallup (1981)

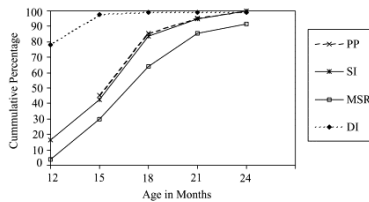
- No such recognition in other primates
 - Stump-tailed macaques
 - Rhesus Monkeys (14 days, 12 hours/day)
 - Cynomolgus monkeys (250 hours)
- Self-Awareness
 - Match experience with representation of self
- Implies concept of self

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Mirror Self-Recognition in Human Infants

Nielsen & Dissanayake (2004)

- Deferred Imitation
- Pretend Play
- Synchronic Imitation
- Mirror Self-Recognition



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Critique of Mirror Self-Recognition

Heyes (1994, 1995, 1998)

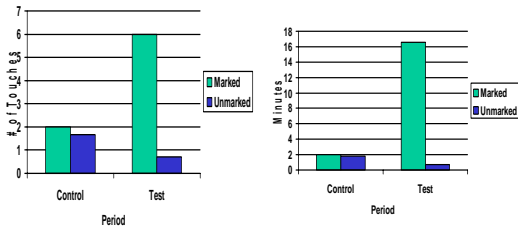
- Artifact of ambient face-touching
 - Anesthesia depresses face-touching
 - Increases reflect recovery from anesthesia
- Response
 - Examine marked and unmarked areas



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Comparison of Marked and Unmarked Facial Regions

Povinelli et al. (1997)



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Mirror-Contingent Behaviors

Povinelli et al. (1993)

Contingent
Body Movements



Contingent
Facial Movements

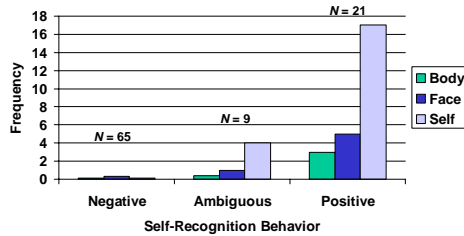


Self-Exploratory
Behavior



Self-Recognition and Mirror Behavior

Povinelli et al. (1993)



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Differences in Self-Recognition

Recognition

- Chimpanzees
 - Aged 4-15
 - Raised in Groups
 - Prior Mirror Experience
- Orangutans
- Bonobos
- Human Infants
 - Aged 18-24 months

No Recognition

- Chimpanzees
 - Aged < 4 or > 16
 - Raised in Isolation
 - No mirror exposure
- Gorillas?
 - Koko's double-take
 - "Me, Koko!"
- Baboons
- Monkeys
- Non-Primates

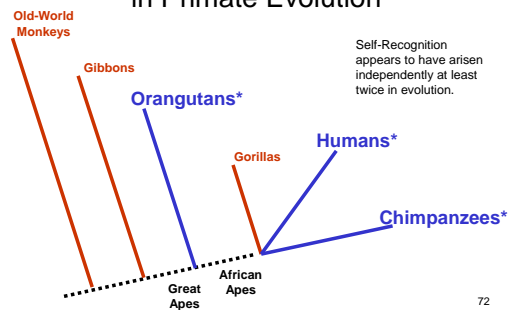
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Self-Recognition in Gorillas

- Koko (Paterson, 1978)
 - Anecdotal
- Suarez & Gallup (1981)
 - N = 4, 80 Hours of Exposure
- Ledbetter & Basen (1982)
 - N = 2, 400 hours of exposure

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Self-Recognition in Primate Evolution



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Self-Recognition in Tamarins?

Hauser et al. (1995)

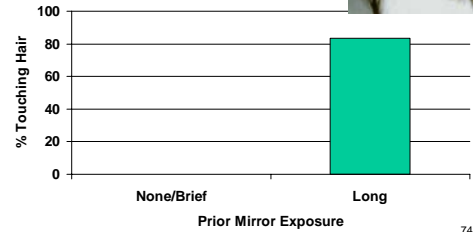
- Hominoid vs. NonHominoid Primates
- Competence vs. Performance Distinction
- Problem with Mirror
 - Staring at a creature who is staring back
- Problem with Mark
 - Not salient enough?



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Self-Recognition in Cotton-Top Tamarins

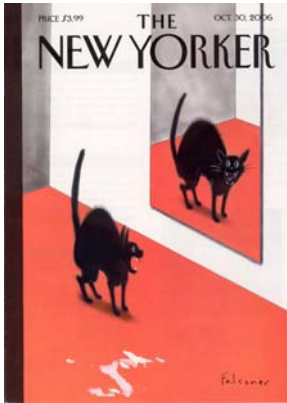
Hauser et al. (1995)



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Self-Recognition in Non-Primates?

Self-Recognition in Non-Primates?



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Stages of Mirror- Self-Recognition

Gallup (1994); Keenan, Gallup, & Falk (2003)

- Social Response
- Physical Inspection of Mirror
- Repetitive Mirror-Testing
- Self-Directed Behavior

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Self-Recognition in the Dolphin?

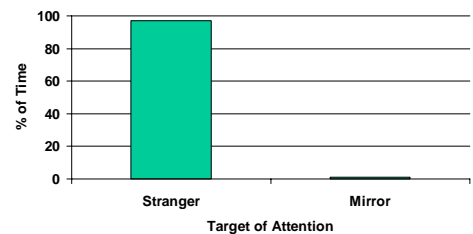
Marten & Psarakos (1994)

- Bottlenose Dolphin (*Tursiops truncatus*)
 - Mammal, Non-Primate
- Mirror placed in pool
- Dye mark on side
- Behavioral evidence of attention
 - Own reflection in mirror
 - Real stranger viewed through gate

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Self-Recognition in the Dolphin?

Marten & Psarakos (1994)



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Self-Recognition in the Dolphin?

Marten & Psarakos (1995)

- Dye mark on side
- Manipulated Video
 - Real-Time Self-View
 - Taped Playback
- Behavioral evidence of attention
 - Live vs. Playback
 - Interactions with real strangers
 - Mirrors vs. Playback
 - Switch real-time view from frontal to side

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Self-Recognition in the Dolphin?

Marten & Psarakos (1995)

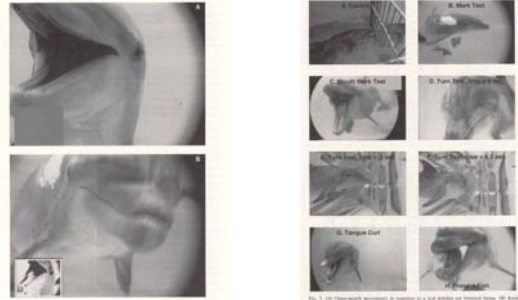
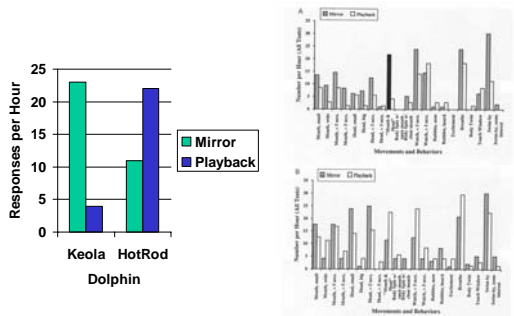


Fig. 2. (A) Mirror setup. When the dolphin is visible, left video image on the mirrored "mirror" side. (B) Side view. (C) Side view. (D) Side view. (E) Side view. (F) Side view. (G) Side view. (H) Side view. (I) Side view. (J) Side view. (K) Side view. (L) Side view.

Fig. 3. (A) (Open-mouth) experiment to monitor if a dolphin can detect being. (B) Side view. (C) Side view. (D) Side view. (E) Side view. (F) Side view. (G) Side view. (H) Side view. (I) Side view. (J) Side view. (K) Side view. (L) Side view.

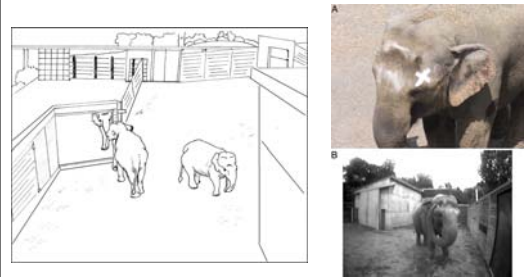
Television Test Behavior

Marten & Psarakos (1995)



Self-Recognition in Elephants

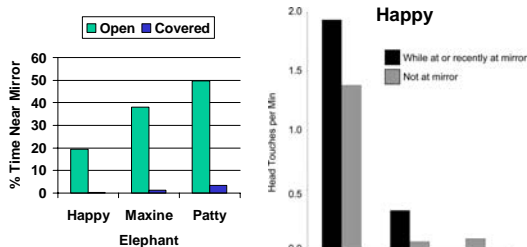
Plotnik et al. (2006)



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Self-Recognition in Elephants

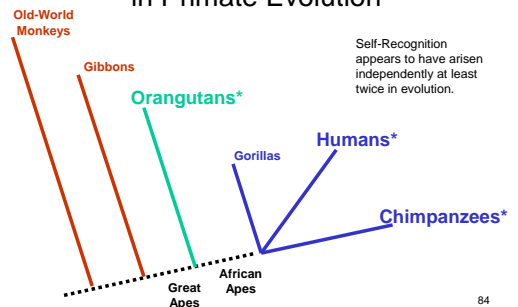
Plotnik et al. (2006)



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Self-Recognition in Primate Evolution

Self-Recognition appears to have arisen independently at least twice in evolution.



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