Who Am I?

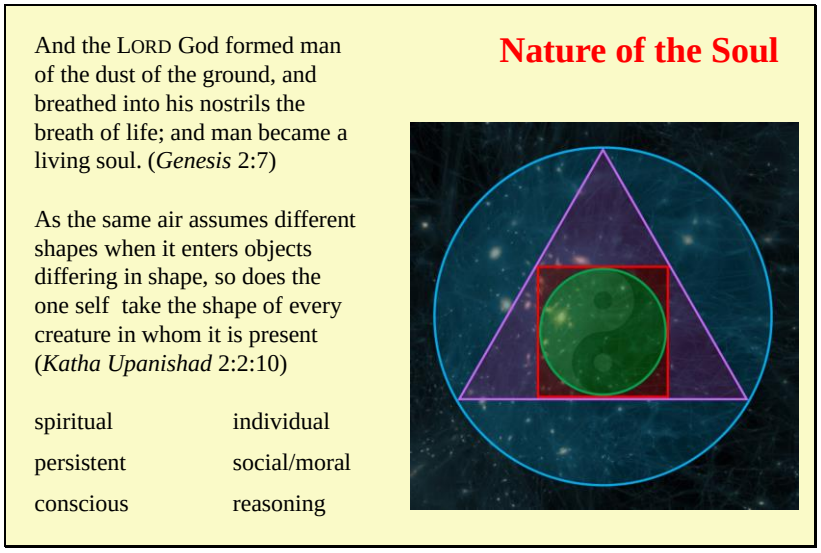
Luohan, from Yixian, China
11th-12th century CE
Nelson-Atkins Museum of Art
Kansas City, Missouri

We begin this session by reviewing some the different theories of the soul. Regardless of whether it is metaphor or real, the soul is what makes us who we are. And the world we live in is what the soul is conscious of.

Hindus use meditation to reach a level of consciousness wherein their individual souls are united with the universal soul. The levels are described in the Katha Upanishad:

Higher than the objects of the senses is *manas* (mind, from *man* think)
Higher than the mind is *buddhi,* (awakened intellect, cf. Buddha)
Higher than the intellect is *mahat* (great self, saint, cf. Mahatma Gandhi)
Higher than the great self is *avyakta* (unmanifest. transcendent)
Higher than the unmanifest is *purusha* (cosmic soul, absolute, source of all).

Buddhists use similar approaches. The illustration shows a statue of a *luohan* reaching the unmanifest. A luohan (Chinese equivalent to Sanskrit *arhat*) is a Buddhist monk who has attained *nirvana* (enlightenment). The legs are crossed with the feet resting on the opposite thighs: the *padmasana* or lotus posture. The position of the hands, called *dhyana mudra*, indicates concentration. Like the Buddha, luohans have prominent earlobes. The fact that they are unadorned indicates withdrawal from the riches of the world. They may also indicate a highly developed sense of hearing, so acute as to hear the cries of all the suffering.



At the end of the last session we considered the Roman Catholic view of evolution. The doctrine is that human beings may have evolved from other animals but that the human soul is special – God-given and unprecedented in other life-forms.

The soul is often held in disrepute by scientists since an incorporeal and spiritual being does not make sense in terms of the physical world. However, the idea of the soul as that which has an individual personality and which interacts freely with the world is worthwhile. Other words are "self" or "person" or "mind" or "consciousness"

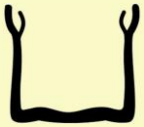
How one considers the soul differs among religions, mainly on how much the soul is individual and how much part of a more universal consciousness. Western religions focus on the individual and his or her responsibilities. Eastern religions consider how the individual can become one with the universal. Buddhism even recommends that one deny or dissolve the individual self – "no-self" or *anatta.*

The lower left shows the main characteristics that have been attributed to the soul. The first is its non-corporeal nature – a characteristic that may not be necessary. The second related attribute is that it persists as the body decays or dies – again something that may not be true. The other characteristics can be used to describe the mind or the brain.

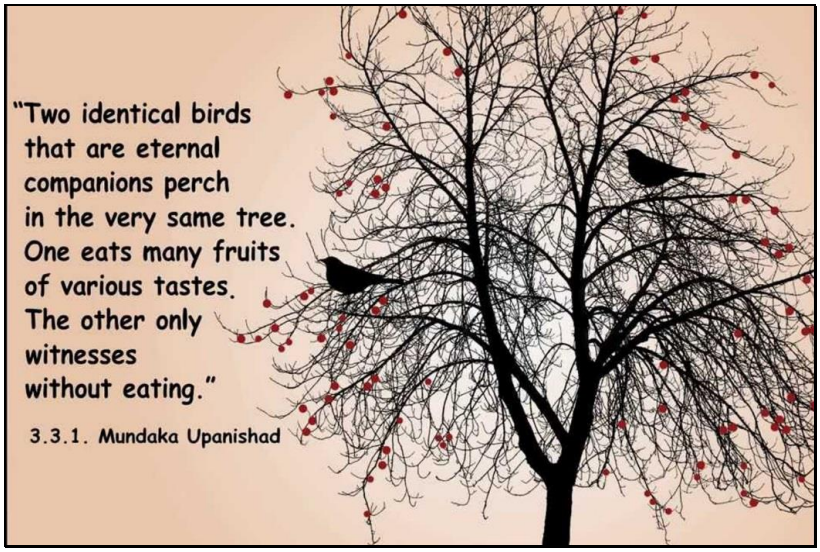
The illustration on the slide uses the alchemical symbol for quintessence (also known as the "philosopher's stone") – "Make of a man and woman a circle; then a quadrangle; out of this a triangle; make again a circle, and you will have the Stone of the Wise." In the inner circle is the symbol for the way in Taoism – the *taijitu*. The background is composed of neurons

Soul in Ancient Egypt

The soul had two main parts: the *ba* or individual person and the *ka* or vital essence. *Ba* is often portrayed as a bird with a human head, as in the above amulet from the tomb of Tutankhamun (14th Century BCE). *Ka* is shown hieroglyphically by raised arms. After death these left the body and become united as the *akh* – often represented as a crested Ibis.



Some Egyptian writings propose other parts to the human soul in addition to *ba* and *ka.* The *ren* is the name of a person. The *jib* is the heart (emotional and moral center). The *sheut* is the shadow or death.



The illustration is from
http://tripurashakti.com/
In Hindu religious thought, the "soul" is sometimes considered to be of two kinds. *Jiva* is the individual soul – the one that experiences the pleasures and the suffering of experience. The word in Sanskrit comes from a root meaning "to breathe." It comes down to us through the Latin *vivus* (living) in words such as "vital." *Atman* is the universal soul – the creative life-force of the universe. Each person shares to some extent in this life-force. The word *atman* comes from another Indo-European root meaning "breath." The goal of Hinduism is to join the individual spark of atman to the universal atman – to become one with God.

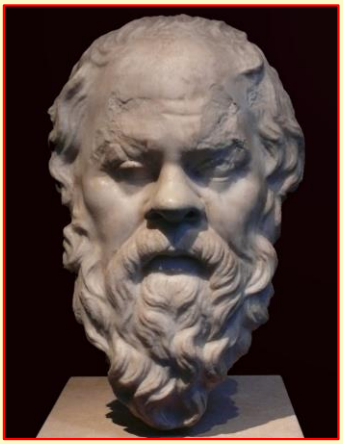
Soul in Ancient Greece

The Greeks proposed that reason was the main function of the soul. In *The Republic* Plato attributes to Socrates the idea of a tripartite soul (*psyche*):

- reason (*logos*)
- spirit (*thymos*)
- appetite (*epithymia*)

Aristotle wrote in his *De Anima* that there are three levels to the soul

- rational
- sensitive
- vegetative



Socrates (470-399 BCE)

Plato used the allegory of the charioteer to describe the soul. The charioteer reason must control the horses of spirit and appetite.

Amor and Psyche

In his *Metamorphoses* the Roman poet Apuleius (2nd Century CE) tells the story of how the god Amor (Cupid) fell in love with Psyche and visited her at night when he could not be recognized. When Psyche violates his trust and shines a light on him, she is condemned to various trials. Ultimately, she visits Hades and on her return enters a death-like sleep. Cupid revives her, she becomes immortal, and they are married.

Psyche revived by Cupid's Kiss
Antonio Canova, 1787

An ancient story may provide an allegory of how the soul develops, and how it reconciles passion and reason. The story (much simplified in the above summary) has been interpreted in many ways. One Freudian approach is that Psyche becomes aware of her subconscious passions. Initially she is unable to control them but finally she reaches a compromise with her passions and lives happily ever after.

Panentheism

Steps leading to the Areopagus

In his sermon on Mars Hill (the Areopagus) near the Acropolis in Athens, Paul quoted from the Greek Epimenides, urging his listeners:

That they should seek the Lord, if haply they might feel after him, and find him, though he be not far from every one of us:

For in him we live, and move, and have our being; as certain also of your own poets have said

Acts 17: 27-28

Most western thought has focused on the individuality of the soul. However, another view of the soul's relation to the world is expressed in "panenthesim." Theism generally separates God from the world: G|W. Pantheism identifies God with the world: G=W. Panentheism makes the world part of a greater God: G>W.

Paul's sermon describes how the individual is infused with the divine. Paul quotes from the Cretan poet Epimenides who railed against those who had made a tomb for Zeus. Zeus was immortal and everywhere:

> For thou diest not – for ever thou livest and standest;
> For in thee we live and move and have our being.

Several modern philosophers have promoted panentheism, particularly in its process form, wherein God is the universe becoming itself. (e.g. Clayton, P., & Peacocke, A. R. (2004). *In whom we live and move and have our being: Panentheistic reflections on God's presence in a scientific world*.). Since the process is intelligible rather than mysterious, science becomes the study of God in all his manifestations. Process theology also provides a way of reconciling the existence of God with the presence of suffering in the world. God and the universe are in the process of becoming. Evil and suffering are present to the extent that this process is as yet incomplete.

Panentheism fits well with the writings of Hinduism. In the *Bhagavad Gita*, Krishna equates his divine self with the *atman* (soul) that pervades the universe, being part of every individual self that exists therein:

> He who sees Me everywhere,
> And sees all things in Me
> I am not lost to him,
> And he is not lost to Me.

Panentheist theology is compatible with many tenets of Christian belief. Christ as the incarnation of God is a powerful metaphor of God infusing the world with love. The God of process panentheism is equivalent to the *logos* of the prologue to the Gospel of John. Christ was sent to the world to make intelligible the idea of God. However, the resurrection of Christ clashes with

the laws of nature. Such an event could not be the work of a panentheist God. Since most Christian theologians have difficulty considering the resurrection as metaphor, panentheism is not accepted by mainline Christian churches.

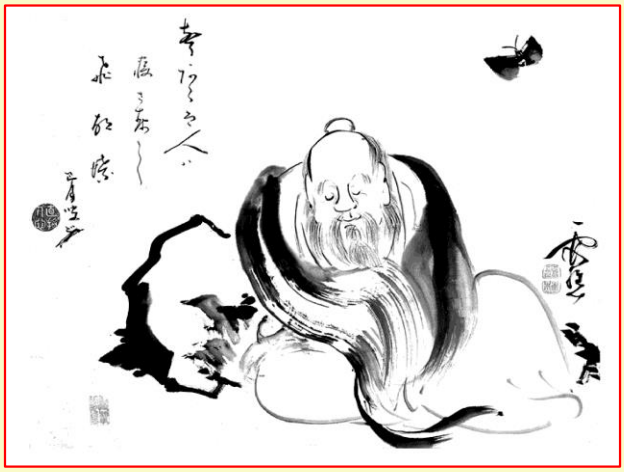
Skepticism

When considering what is true, we are well served by refusing to believe something until it has been demonstrated beyond reasonable doubt.

In the 1600s philosophers began to doubt their experience. Dreams seem true at the time but when we awaken we realize that they were only dreams. Our perceptions are often false. Dreams and illusions suggest that things may not actually be how they appear.

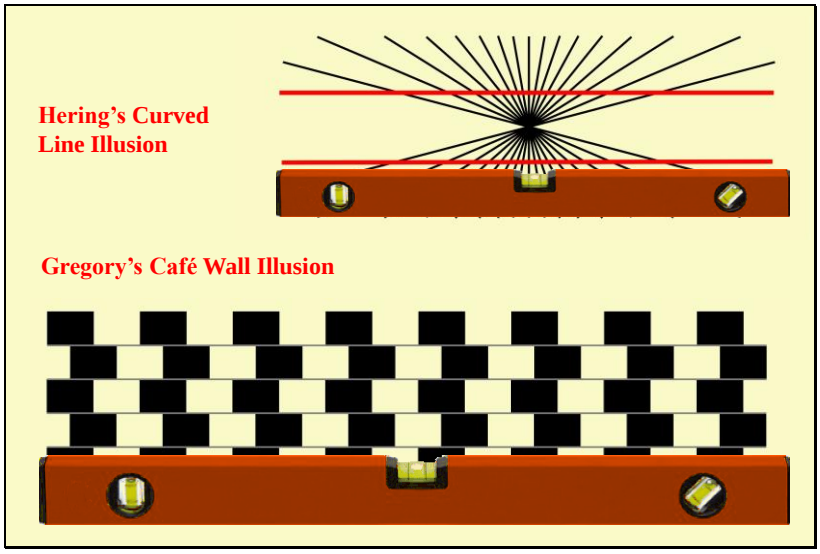
Many people are skeptical about such ideas as the soul and God. Skepticism has a long history Perhaps the most famous skeptic was Pyrrho of Ellis (360-270 BCE), who doubted everything. He believed that against every statement a contradictory statement can be advanced and justified. This Pyrrhonism was not cynical. Rather it lead to a state of mind *ataraxia* (not perturbed) somewhat akin to the Buddhist state of withdrawal from the world. Indeed, Pyrrho had visited India and may have learned of Buddhist ideas.

Chuang Tzu Dreaming of Being a Butterfly



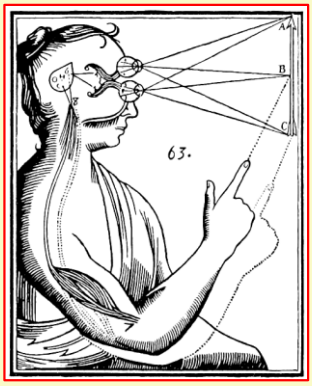
Dreams can easily make us skeptical about the real world.

During a dream we are usually unaware that our experience has no basis in the real world. At the moment of the experience, it is therefore difficult to distinguish dreams from reality. This issue has a long literary history. In the 4th century BCE, Chuang Tzu was unsure whether he was Chuang Tzu who had just woken up from a dream of being a butterfly or whether he was a butterfly dreaming that he was Chuang Tzu. The illustration shows Ike no Taiga's representation of this story (Japan, 18th century CE).



So is our idea that we have a soul an illusion? Visual illusions are common. They help us to understand how the visual system works. We quickly learn that things may not always look the way they are, and we often double-check our perception using a different view.

Despite the illusion of the tilting tiles in Richard Gregory's café-wall, we can prove with a "spirit level" that they are actually all horizontal. We can similarly prove that the red lines in the Hering Illusion are not curved.



from *Treatise on Man*, written in 1632, withdrawn in 1633 because of Galileo's trial, finally published in 1662

Consciousness

If we reject all of which we can entertain the smallest doubt, and even imagine that it is false, we can easily suppose that there is neither God, nor sky, nor bodies, and even that we ourselves have neither hands nor feet, nor body. Yet we cannot in the same way suppose, while we doubt of the truth of these things, that we ourselves are nothing, for there is a repugnance to conceiving that what thinks does not exist at the very time when it thinks. So "I think, therefore I am" [*cogito ergo sum*] is the first and most certain idea that occurs to anyone who philosophizes in an orderly way.

René Descartes, 1644

However, illusions have bothered philosophers for many years. If we cannot be sure of what we see, how can we be sure of anything?

Descartes began to write about how the human brain worked in his *Treatise on Man*. Galileo's condemnation by the Church in 1633 slowed down the progress of science. Fearing that the Church might consider his findings heretical, Descartes decided first to provide a philosophical justification for his work – *The Discourse on the Method* (1637). He proposed a method of doubting everything until we are left with something that we cannot doubt – that we are conscious of our doubt. This led him to his famous *je pense donc je suis* or *cogito ergo sum*. The idea was first expressed in French and then in Latin in the *Principia Philosophiae* of 1644. Descartes used this irrefutable fact as a firm foundation on which to base an understanding of ourselves, the universe and God. The conscious thinking self is thus the basis of all we know.

In *Les passions de l'âme* (1649), Descartes proposed that the pineal gland was *le principal siège de l'âme* (the seat of the soul). The illustration shows the eyes being activated by visual input. This sends fluid to the pineal gland which directs the fluid to the muscles causing the arm to point to the perceived object

Mind and Brain

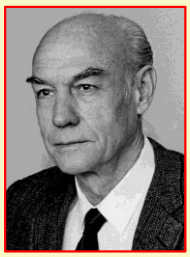
MIND, n. A mysterious form of matter secreted by the brain. Its chief activity consists in the endeavour to ascertain its own nature, the futility of the attempt being due to the fact that it has nothing but itself to know itself with (Ambrose Bierce, *The Devil's Dictionary*, 1911).

Dualism: Mind and brain are two separate kinds. God knows how they communicate. (e.g. René Descartes, 1596-1650)

Idealism: All that exists are ideas. The "real" world is just an illusion (e.g. Bishop George Berkeley, 1685-1753).

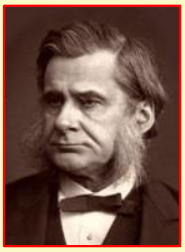
How consciousness occurs – how mind is manifest in brain – has been a matter of great philosophical debate since it was considered in the works of Descartes. He basically espoused the idea of dualism – a spiritual soul/mind in a corporeal body/brain. Berkeley thought that all we know are ideas and that there is no way to know if there is a real world.

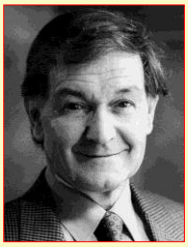
Mind and Brain



Emergentism: Consciousness is an emergent property of particular patterns of neuronal activity. (e.g. Roger Sperry, 1913-1994)

Materialism: Consciousness is an epiphenomenon with no causal connection with matter. (e.g. Thomas Huxley, 1825-1895)



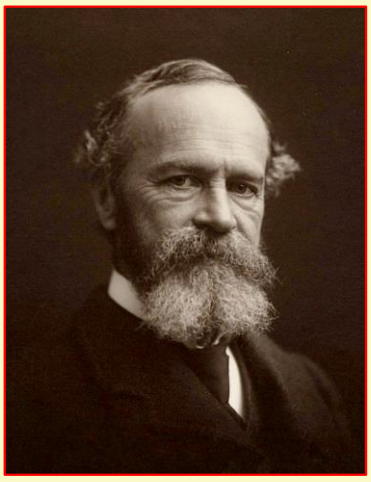


Quantum uncertainty: Consciousness is a result of quantum processes in neuronal microtubules in the human brain. (e.g. Roger Penrose, 1931-)

So which approach is true?
How should we understand our consciousness?

This is a clip from the movie *The Matrix*
Keanu Reeves plays the character Neo who has come to believe that there may be more to the world that what he is being told. Lawrence Fishburne plays Morpheus. In Greek mythology Morpheus is the god of sleep and dreams. He tells Neo that he can take the blue pill and accept what he is told or take the red pill and try to figure out what is really happening.
The full episode is on YouTube:
https://www.youtube.com/watch?v=3VFDIKgm_QI

This idea has become a point of discussion in the philosophical literature, with philosophers not yet decided on which pill to take. My suggestion is that you should not accept a completely materialist or a completely idealist interpretation of reality. Bishop Berkeley – everything is just ideas - supposedly took the blue pill. Perhaps Thomas Huxley – everything is just matter- did too. I suggest that you take the red pill and, to quote Morpheus, "see how deep the rabbit-hole goes."



Photograph 1903

William James (1842-1910)

1) Every thought tends to be part of a personal consciousness.

2) Within each personal consciousness thought is always changing.

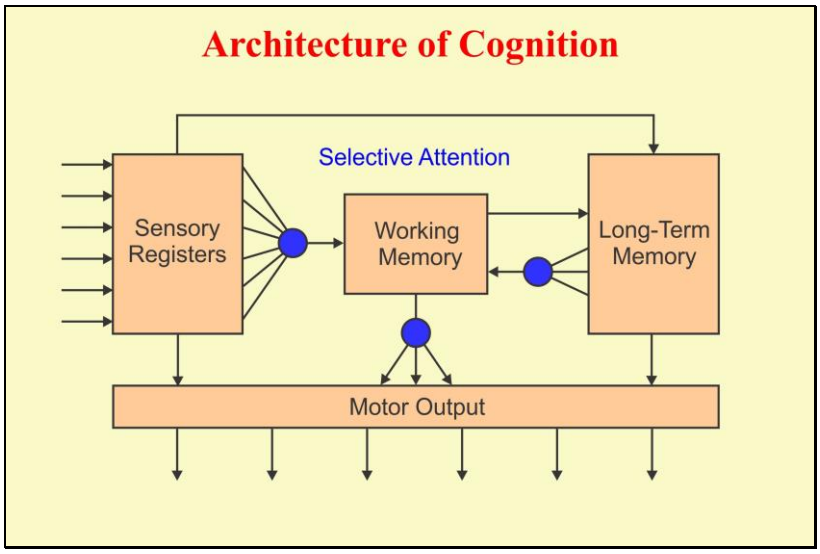
3) Within each personal consciousness thought is sensibly continuous.

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 – chooses from among them, in a word – all the while.

The Principles of Psychology, 1890
Chapter IX: The Stream of Thought

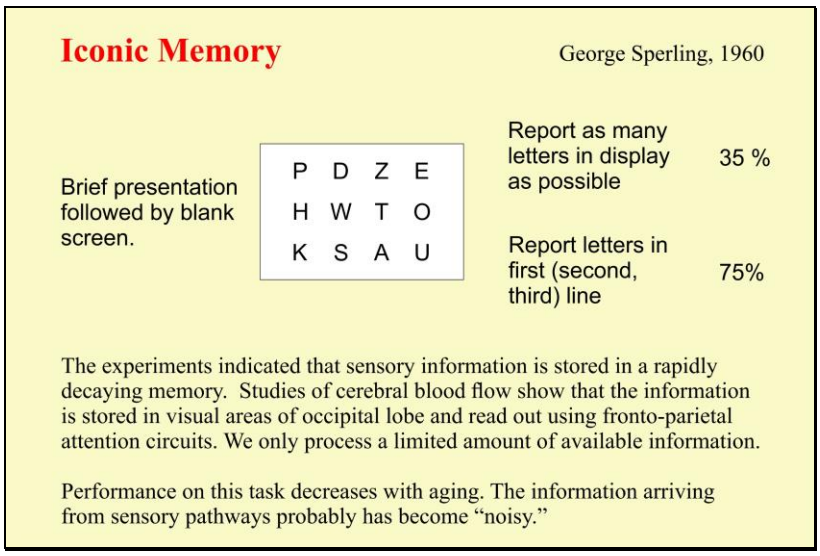
Now we shall consider what is going on in the consciousness of an awake human being. William James characterized our waking consciousness – the stream of thought – as personal, changing, continuous, independent and selective. William James was the older brother of the novelist Henry James.



This diagram shows the flow of information in the conscious human brain/mind. Everything is much more inter-related than is suggested by the separate boxes, but it sometimes helps our understanding to look at things separately.

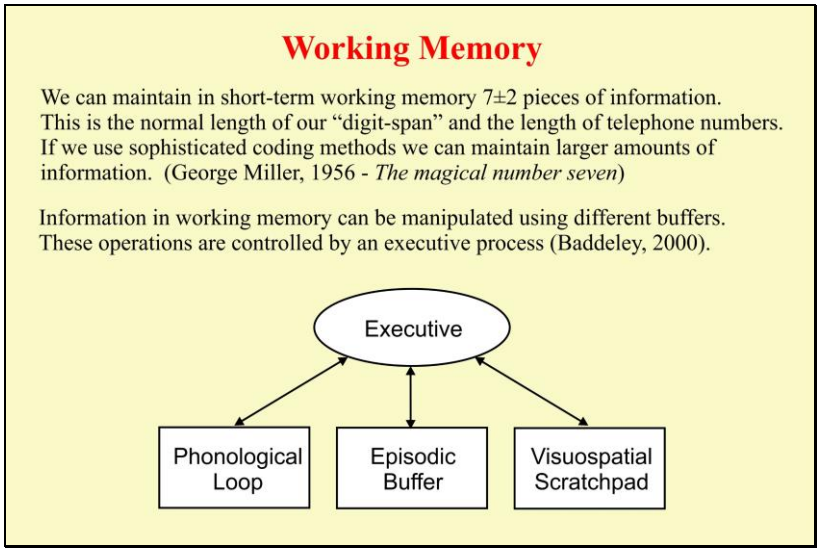
Information comes in via the senses and is stored in sensory registers. This information is accessible by working memory. Working memory is where consciousness operates. Working memory can transfer information in and out of long-term memory, and can initiate motor responses.

All of the transfers are under the control of selective attention (blue). Attention determines what we perceive and what we ignore, what we put into memory and what we remember, what actions we decide to respond with.



This experiment by George Sperling demonstrated that there is a sensory register that holds information for a brief period of time.
A large array of letters is briefly stored in a visual register called iconic memory.
If we try to read out all of the letters, most of them disappear before we get to them.
However, if after the presentation we are told to read out just one particular line (chosen at random), we are much more accurate – all the letters are there but only for a brief time.

In the auditory system, there is an analogous sensory register called echoic memory. This is the memory that allows you to read the paper while your spouse is talking. When he or she says, "You haven't been listening," simply say, "Oh yes, you were saying … " and fill in whatever words pop up from echoic memory.



Information is read out of sensory registers into a working memory system, which has limited capacity – about 7 separate pieces of information. The length of old-style telephone numbers.

This limited capacity makes us unable to attend to everything – we have to select only some inputs among all possible inputs.

Working memory uses a variety of buffers to store information while it is operating. Alan Baddeley has proposed several buffers. The phonological loop stores speech-sounds. This is where we remember a telephone number after hearing it. The visuospatial scratchpad allows us to manipulate two- and three-dimensional representations. The episodic buffer frames our experience into a set of events.
Another buffer might use somatosensory codes. This might be helpful in figuring out dance movements or athletic strategies. Also, a musical buffer is likely separate from the phonological buffer.

Episodic Memory

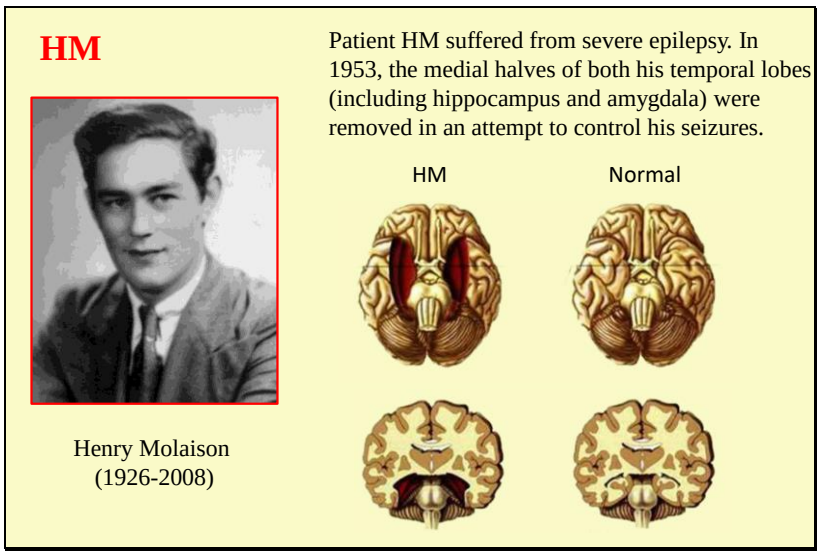
Explicit long-term memory is generally divided into semantic memory for facts and episodic memory for events in one's own life. Endel Tulving was the first person to distinguish these two kinds of memory:

"Episodic memory is a recently evolved, late-developing, and early-deteriorating past-oriented memory system, more vulnerable than other memory systems to neuronal dysfunction, and probably unique to humans. It makes possible mental time travel through subjective time, from the present to the past, thus allowing one to re-experience, through autonoetic awareness, one's own previous experiences. Its operations require, but go beyond, the semantic memory system."

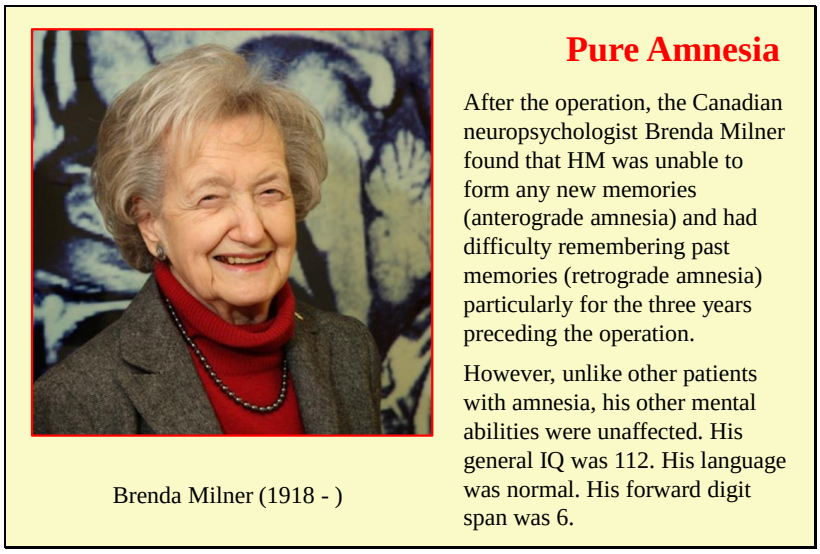
Endel Tulving (1927 -)

The most important conceptual advance in our understanding of long-term memory is the idea that there are two basic kinds of long-term memory: semantic memory for facts (What is the capital of France?) and episodic memory for one's personal experience (What did I have for breakfast this morning?).
When we recall facts they come back without any sense of personal involvement. We just "know" them.
When we recall episodes in our life they come back with a personal flavor – to some extent we re-experience them. We "remember" them.
Autonoetic = self understanding
Endel Tulving has also proposed that episodic memory can also be directed to the future – we can imagine what we might be doing tomorrow. Mental time travel can go forward as well as backward.

Episodic memory is the basis for our sense of self – our soul.



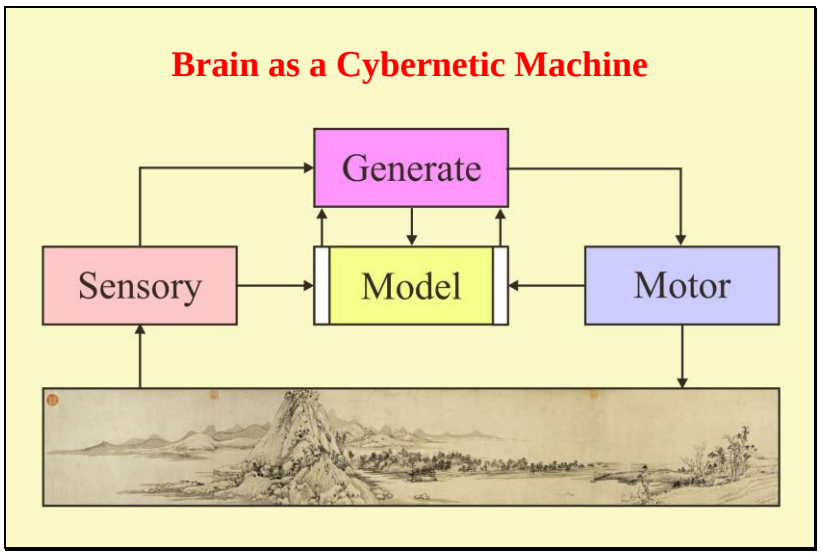
Now we shall look as some of the disorders of memory – amnesia.
The most famous patient in neuropsychology is Henry Molaison – HM.
Dr. William Scoville, a neurosurgeon in Hartford Connecticut removed both his medial temporal lobes in order to control his epileptic seizures.



After the surgery he was unable to make new memories – anterograde amnesia – and he remembered only some of his past – partial retrograde amnesia.

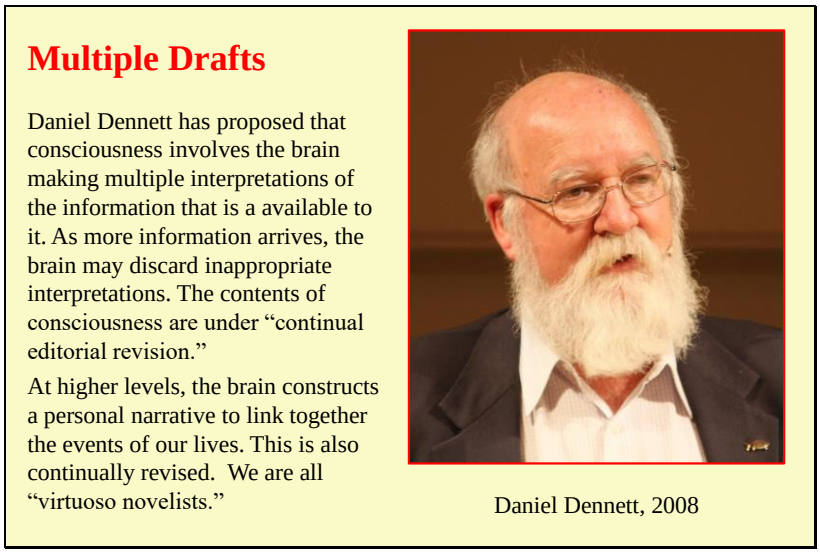
Brenda Milner – almost 101 years old – is still active at the Montreal Neurological Institute.

Luke Dittrich, the grandson of William Scoville, has published a recent book *Patient HM: A Story of Memory, Madness and Family Secrets.*



The brain contains myriads of feedback loops. The illustration shows how these feedback circuits can generate models that it then fits to incoming sensory information, and creates motor behavior that fits to a model of desired action. Consciousness is based on the model of the world that we construct. The system only works if there is a real world – here represented by a part of Huang Gongwang's scroll painting of *Dwelling in the Fuchun Mountains* (1350 CE).

The word "cybernetic" – deriving from the Greek word *kybernao,* to steer or govern – was coined by Norbert Wiener in 1948 to describe the process whereby feedback-systems could control behavior.



Conscious perception actively interprets what is happening in the world to cause our sensations. We try to make the best sense out of what we experience. Dan Dennett has proposed that consciousness involves an ongoing interpretation of what is happening. We make multiple drafts

to explain our experience. What we are conscious of at any one time is our best attempt to explain the information that we are receiving through the senses – the current draft.

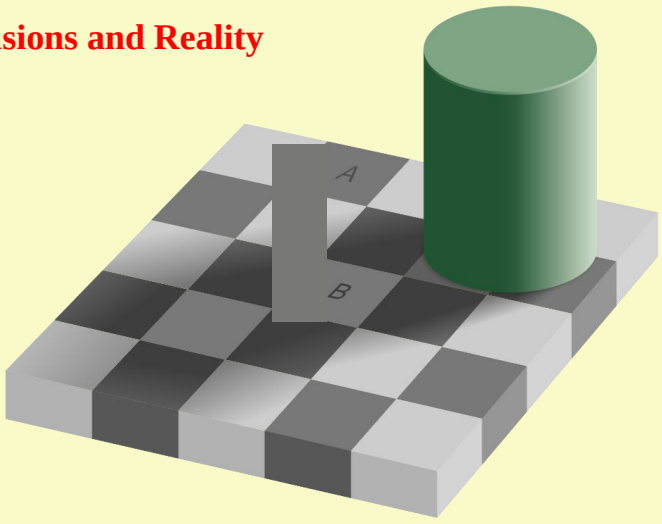
Hic Anima Est

Consciousness is a particular pattern of neuronal activity. This pattern occurs when the cerebral cortex has been activated by brainstem and thalamic reticular systems to process information in a manner that relates present experience to past memory and makes predictions for the future. The pattern is necessarily distributed across multiple areas of cortex and characterized by intense communication between these areas. Feedback loops fit mental models to incoming information and prepare action models for planned behavior.

Robert Fludd
1619

Consciousness is a special kind of cerebral activity that compares what is happening to what we predict should be happening on the basis of what we have learned so far. It is based upon a complex, widespread, intense interaction between many cerebral neurons.
The diagram is from Robert Fludd (not the quotation – that is pure Picton ☺). It shows various processes in the brain – sensation, imagination, reason, memory. The soul is located in all of these processes – *hic anima est*.

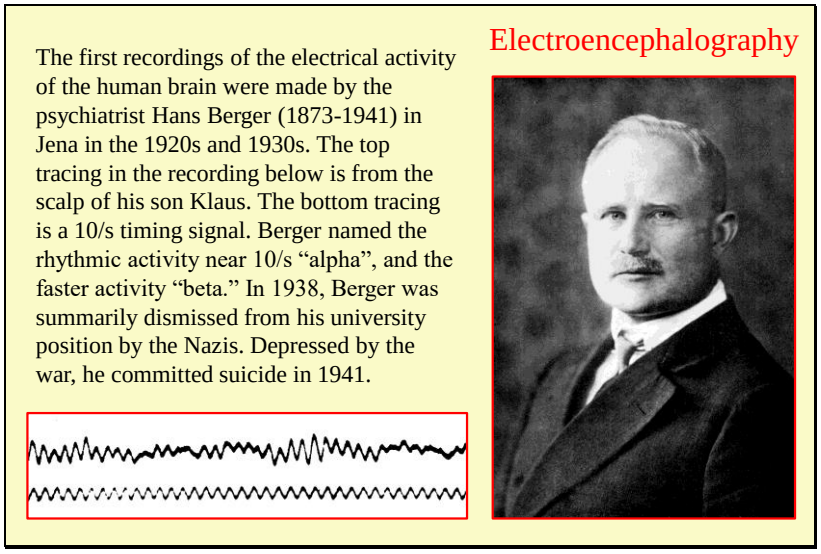
Illusions and Reality



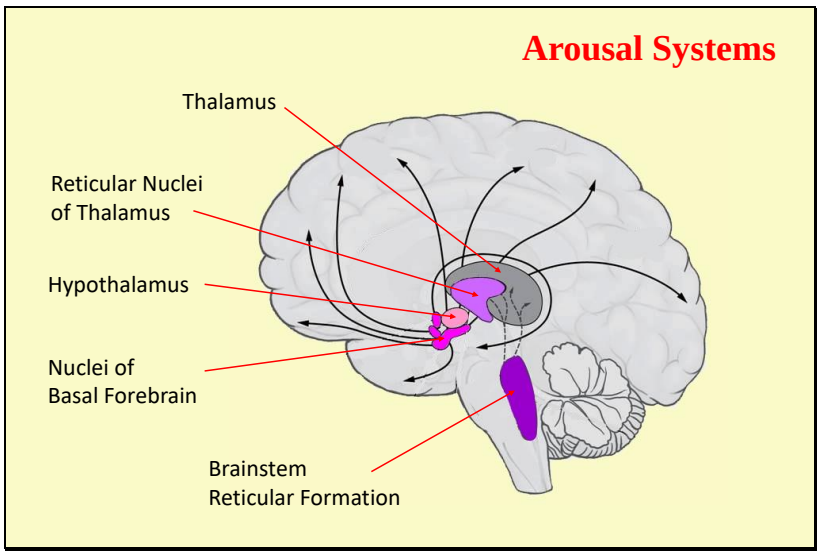
This is our final slide in the discussion of the soul, consciousness, illusion and reality. This illustration demonstrates how our perception is an active and creative process. We construct the best possible interpretation of the information that we receive from our senses.

The square labeled A appears much darker than the square labeled B. In actuality (as shown when they are linked together by the rectangle) they have the same shade of grey. This is considered an illusion. In actual fact it is not. The real checkerboard is composed of dark and light squares and our visual system is correctly perceiving this, despite the shadow cast by the cylinder.

Interestingly, the diagram shows an improper perspective – a square checkerboard should show an apparent decrease in width as it recedes in depth. Our eyes tell us that something is wrong – this is a diagram and not a photograph.



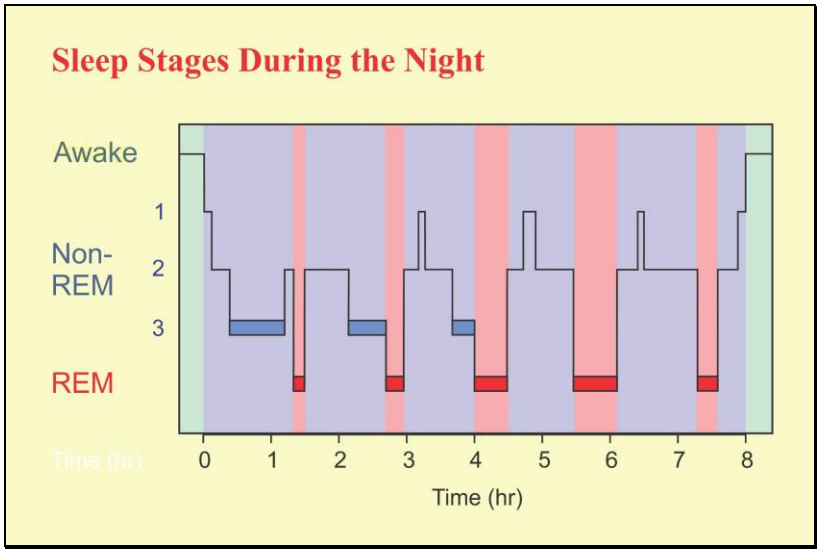
One way to study human consciousness is to record the activity of the conscious brain. The first person to record from the human brain was Hans Berger, the father of electroencephalography (EEG).



The reticular formation is a loose network of nuclei in the center of the brainstem and thalamus. In 1949, Giuseppe Moruzzi and Howard Magoun found that stimulating the reticular formation in the midbrain caused the cat to wake up from sleep. Lesions to this area caused the cat to be permanently comatose. The reticular formation is activated by novel and intense stimuli.

This slide shows the arousal systems in the human brain.The brainstem reticular formation projects to the thalamus (gray, and mauve) and thence to the cortex. Other connections are to the hypothalamus (pink), which controls the autonomic nervous system (heart rate, breathing, etc.), and the nuclei of the basal forebrain, which are involved in emotions. As well as waking up the brain, arousal activates the body and triggers the emotions – we get "excited."

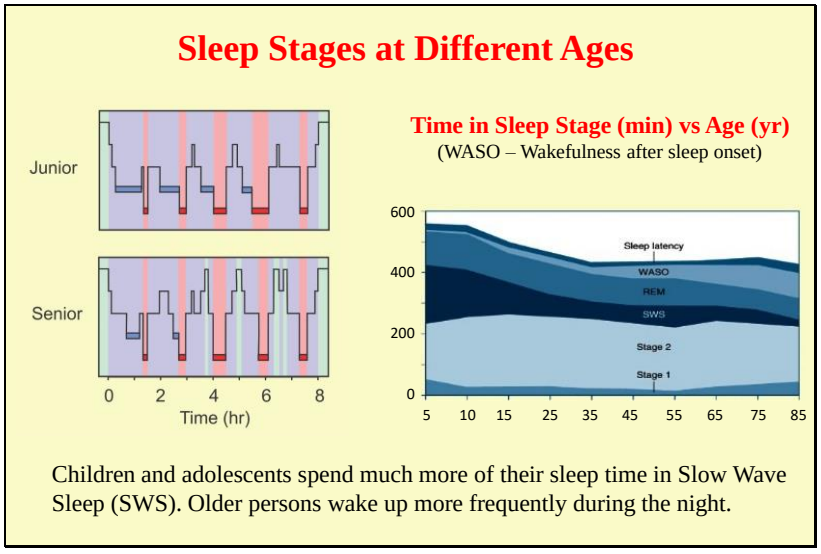
The hypothalamus interacts with nuclei in the brainstem to control our sleep cycle. Sleep is the daily transient lowering of consciousness.



Sleep is not a unitary state. Two types of sleep (REM and non-REM) alternate during the night with a cycle duration of 90-100 minutes. The switching between them is controlled by neurons in the pontine reticular formation, particularly the midline raphe nuclei and the adjacent locus ceruleus. The brain thus follows both "circadian and ultradian" rhythms.

REM sleep is characterized by an EEG that looks similar to wakefulness, rapid eye movements (REMs), lack of muscle tone, muscle twitches, and vivid visual dreams.
Non-REM sleep shows various EEG patterns, resistance to arousal, and "thought-like" dreams.

This is a graph of the sleep stages during the night – a hypnogram.
Slow wave sleep (blue) is more prominent in the first half of the night.
REM sleep (red) occurs every 90 minutes. The stages are longer in the second half of sleep.
Note that in some hypnograms the REM stages are plotted at the top rather than the bottom of the graph – as stage 1REM. However, this can be confusing, since the N1 and REM states are very different even though the EEG patterns are similar.



The hypnograms on the left come from a young adult and from a normal elderly subject. WASO – wakefulness after sleep onset.
Elderly people wake up a lot during the night and have much less SWS (dark blue on the right graph).

Unconsciousness

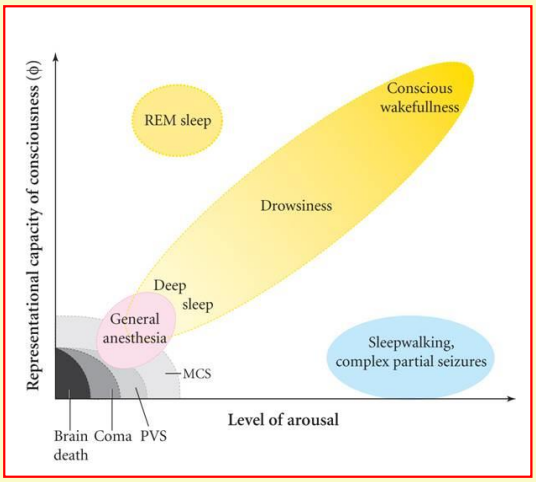
Coma: The patient is unconscious and unresponsive to sensory stimulation. This is caused either by generalized malfunction of the cerebral cortex or by interference with the brainstem arousal systems. Severe **metabolic abnormalities** cause coma by their generalized effect on neurons. Coma can be pharmacologically induced in **anesthesia**. **Head injury** can cause coma by shearing damage to the axons – "diffuse axonal injury."

Persistent Vegetative State: If a patient remains in coma for a period of weeks, the sleep-wake rhythms may slowly return. The patient may sometimes appear awake, although they still do not show any clear response to stimulation. As time progresses, the patient may even become slightly responsive – a "minimally conscious state."

Brain Death: The patient shows no evidence of any brain function. There are no brainstem reflexes (pupils, eye-movements, gag, etc.). Most importantly, the patient is unable to breathe without assistance.

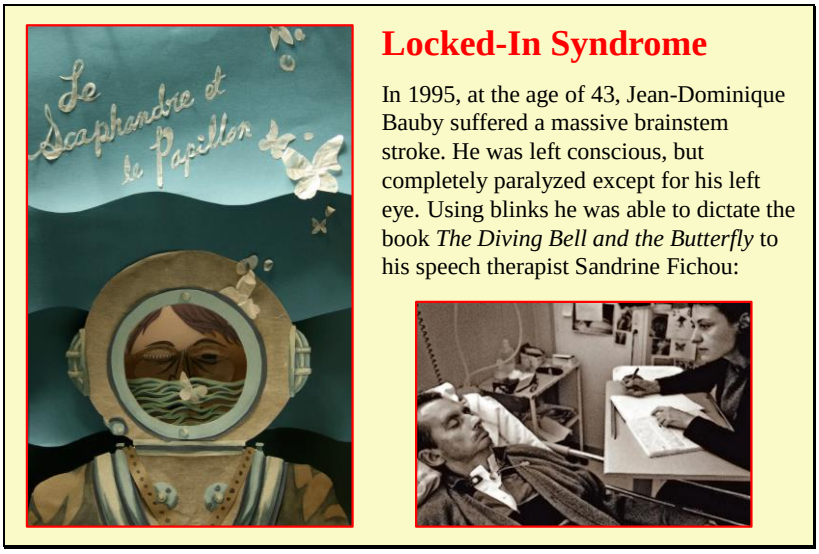
We are normally unconscious during much of sleep. Unconsciousness can be pharmacologically induced by anesthesia. Sleep and anesthesia causes transient or reversible unconsciousness. This slide categorizes the abnormal states of unconsciousness that occur following brain damage or dysfunction. Coma is unconsciousness that cannot be reversed (in the short-term). In the persistent vegetative state, the patient is able to maintain breathing without a respirator. This state is very difficult to handle – the patient is not dead but there is usually little hope for any return to normal cognitive function. The issue for the family and the physicians is what should one do? Brain death is diagnosed in Canada by withdrawing the patient from the respirator, and seeing whether the patient can start to breathe spontaneously – the apnea test.

Dimensions of Consciousness



Florian Mormann & Christof Koch *Scholarpedia* 2007

This graph attempts to map the different states of consciousness.
The y-axis denotes the level of cognitive processing.
The x-axis shows the level of bodily arousal.



The graph in the previous slide did not plot the "locked-in syndrome." This is what happened to Jean-Dominique Bauby. The French *scaphandre* is a "diving suit" rather than a "diving bell," but the latter sounds better in English.

Although the patient is separated from his body – unable to feel and unable to move – he cycles through sleep and wakefulness and is fully conscious when he is awake. If there is some residual motor control – of the eyes – the patient can communicate. One particular problem raised by this disorder concerns how many patients with Persistent Vegetative State are actually "fully" locked-in? And how can one tell? Recently neurologists have been using imaging to see if these patients' brains can respond.

This clip from the movie by Julian Schnabel portrays the solitude of the locked-in patient. The waves go on and on but the patient in the wheel chair is by himself and cannot communicate. Jean-Dominique liked jazz – the background music.

Neuroscience of the Soul

Neuroscientists are now able to study what is happening in the human brain when it is consciously processing information about the world and deciding how to respond to that world. Two basic principles underlie conscious processing:

(i) multiple discrete areas of the brain are activated, each devoted to a specific type of processing

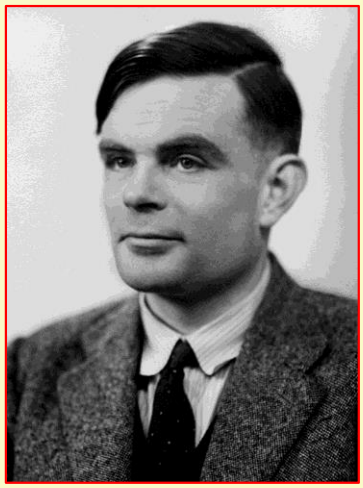
(ii) these are functionally connected according to complex patterns.

This slide illustrates the idea that conscious thought occurs through the interactions between multiple areas of the brain. It contains from left to right a diagram of the different regions of the cerebral cortex (Glasser et al., *Nature*, 536, 171-178, 2016), a figure of the interconnecting networks in the cortex (Meunier et al., *Frontiers in Neuroinformatics*, 3, 37, 2009), and a reproduction of Rodin's *Thinker* (1904).

We have discussed how the brain might be conscious. Is it possible to have artificial intelligence? For that we need to consider the work of Alan Turing.

Alan Turing (1912-1954)

Educated at Cambridge University, Turing worked on the logic of computing in the 1930s and then was appointed to the Ultra Program at Bletchley Park. He and his colleagues were able to break the Enigma code used for German signals. This saved numerous lives, and in some estimates was instrumental in winning the war. His work remained secret and he was never honored during his lifetime. In 1952 he was prosecuted for his homosexuality and underwent chemical castration in order not to be imprisoned. He committed suicide in 1954.



It was not until 2013 that Turing was posthumously pardoned for his offence of "gross indecency"

Slide 36

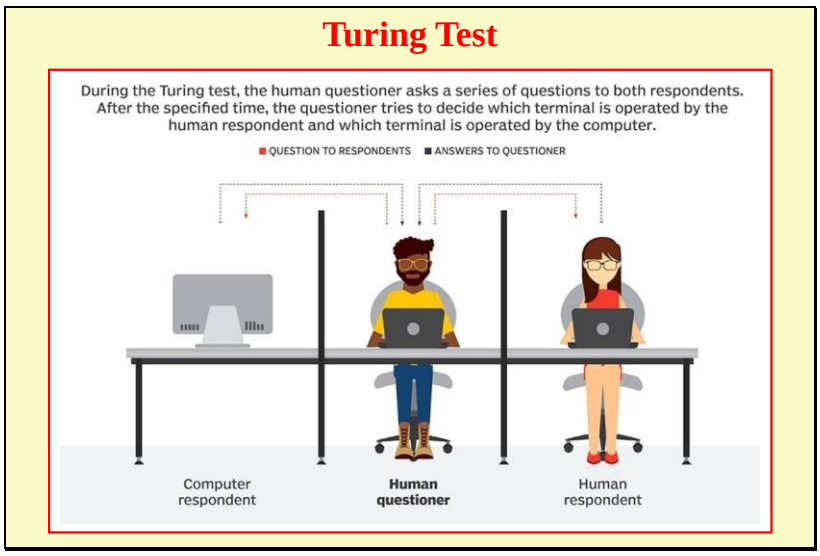


illustration from
https://searchenterpriseai.techtarget.com/definition/Turing-test

Computers can do many things much better than human beings. However, they cannot yet act sufficiently like a human being that we cannot recognize the difference.

In 1950, Turing suggested that computers would soon show intelligent behavior. He proposed a test: a human interrogator (or jury) would not be able to distinguish the computer from another human being after a brief conversation.
In 1991, Hugh Loebner, an American inventor, established prizes for the first computers to pass the Turing test. None has yet won the silver (text only) or gold (audio and visual) prize.

We have discussed human consciousness and wondered about the human soul.
Computers can do many things much better than human beings. They cannot yet act sufficiently like a human being that we cannot recognize the difference. Yet they may in the future become more like us.

Can they become conscious? Can they have a soul?

This clip is from the episode entitled *The Measure of a Man* of the TV series *Star Trek the Next Generation (*2nd Season*)*. In this episode a commander from Star Fleet wishes to disassemble the android Data (played by Brent Spiner) so that he might learn what makes him special with the goal of creating many more androids like him. Data does not wish this to happen and a hearing is set up to determine whether he has the right to refuse. Captain Picard (Patrick Stewart) is assigned as Data's representative and Commander Riker (Johnathan Frakes) is given the task of presenting Star Fleet's position that Data is just a machine.

A similar clip is on YouTube:
https://www.youtube.com/watch?v=vjuQRCG_sUw

An impressive incident in the clip occurs when Data is turned off. This intrigues me because it is not that different from when a patient is anesthetized. One moment they are conscious and the next moment not.

Does Data have a soul? Is he conscious?

Who Am I?

Seated Guan Yin
11th Century Chinese Wooden Statue
Walters Art Museum, Baltimore.

Guan Yin is the most popular deity of China and Southeast Asia. She derives from *Avalokitesvara* – "the one who regards the cries of the world." The god (or goddess) who has attained the supreme consciousness of compassion. The relaxed and self-assured pose with her right arm resting upon the raised knee is called *lalitasana* (royal ease).

Full consciousness is compassion. Compassion is the goal of human morality. This is the segue to the next session of the course wherein we shall discuss human morality.