

Near-Death Experience Evidence

And the Next Steps in Mind-Brain Research



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The nature of scientific revolutions ...

What are the factors *in the past* that enabled the rapid acceptance of a new scientific paradigm?

Two examples: (Butterfield, 1957)

- **In the development of the modern heliocentric theory of planetary motion:**
 - Copernicus, Galileo, Kepler, and Descartes struggled to fit the observed motion of the planets around the sun
 - There was no comprehensive framework—certain planetary motions were *anomalous*—the motions didn't fit their models, which used epicycles, elliptical orbits, or planetary vortices
 - Isaac Newton developed a *new intellectual framework* that all bodies of mass attract one another at a distance—the universal law of gravitation, fully explaining the observed planetary motion
- **In the development of the model of the internal structure of the atom:**
 - Lord Kelvin, J. J. Thomson, and Ernest Rutherford proposed several models—particle vortices, the plum pudding model, and the electron cloud model
 - There was no comprehensive framework—the problem was thought to be “too complex” to solve
 - Niels Bohr proposed a solar-system-like model based on Max Planck's *new intellectual framework* of *quantized energy* that fit the observed hydrogen spectrum precisely, within experimental error



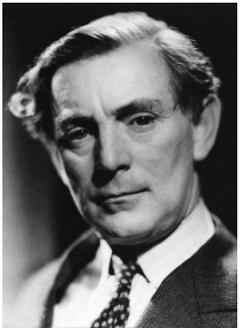
Isaac Newton
1643–1727



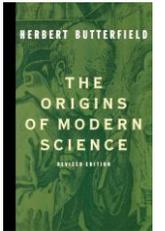
Niels Bohr
1885–1962

The nature of scientific revolutions

- Common threads in the process of past scientific revolutions:
 1. Recognition of *anomalies*—phenomena *still* needing explanation
 2. Proliferation of theories to address some of the anomalies but were *formulated under the existing scientific framework*, resulting in *ad hoc* additions to the framework
 3. “[The problem] could not be solved ... within the framework of the older system of ideas—it required a transposition in the mind” (Butterfield, p. 17)
 4. They adopted a radically new way of viewing the problem which led to a *new framework* and model
 - Newton proposed that gravitation *applies to all bodies of mass*
 - Bohr applied Planck’s non-continuous “*quantum*” energy to the electron in the hydrogen atom and ultimately to *all* atoms
- Therefore, the requirements for a successful scientific revolution are:
 - To develop an encompassing approach that “grasps the whole in a mighty synthesis” (Butterfield, p. 57)
 - To establish an “*adequate intellectual framework*,” one that addresses the anomalies (Butterfield, p. 203)
 - To describe a theory and a model that *explains the anomalies*, providing a “demonstration that [fits] the facts (on the whole) when applied to the phenomena in detail” (Butterfield, p. 39)
 - The new theory needs to encompass *already understood* phenomena



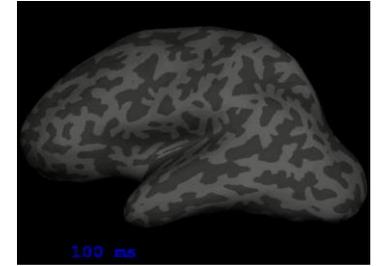
Herbert Butterfield
1900-1979



Origins of Modern Science

A new intellectual framework for consciousness ...

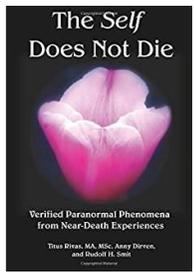
- What is consciousness?
 - How does it manifest in the world?
 - Does human consciousness survive the death of the physical body?
- There is a proliferation of theories about consciousness: physicalism, idealism, panpsychism, neutral monism, dualism
 - The “hard problem of consciousness” remains—
 - — Brain electrical activity *closely correlates* with conscious awareness (“neural correlates of consciousness”)
 - — But the correlation does not address the fundamental question *how* brain activity produces *subjective experiences*
- We propose that consciousness (i.e., the experience of *subjective awareness*) manifests in the world *in living beings*, especially in individual human beings
 - Furthermore, consciousness needs to be described through *empirical evidence*, through our own subjective experiences and through the *reported* experiences of others.
 - The common experiences shared by numerous people can be taken as *objectively real*
- Subjectively, one’s awareness has a *particular locus*, that is, it is *located* in a particular position in space and has a particular *perspective* or point of view
 - This is understandable because one is generally embodied in a particular physical body
 - One can “project” their locus of awareness, for example through an image-guided surgical instrument to perform microsurgery or through a flight simulator to practice flight maneuvers
 - Also, one experiences different *faculties* such as perception, thought, feelings, volition, memory, self-awareness, and agency
- We call the *center of subjective awareness* the *mind*, which has its particular locus and point of view



MEG sequence – reading
a word, 385 msec

A new intellectual framework for consciousness ...

- A new perspective is possible if we expand the existing framework for consciousness to include *anomalous experiences of consciousness*
 - “Anomalous” phenomena are phenomena that can’t be readily explained in normal scientific terms
 - Anomalous experiences are reported in NDEs, shared-death experiences, after-death communications, etc.
- Our research focuses on NDEs because NDErs experience an apparent *separation* from the physical body during which the *locus of awareness* is outside the physical body
 - There are numerous reported cases during NDEs of *verified, accurate (veridical) perceptions* of the physical realm while out of body, especially while the brain is nonfunctional
 - In these cases, the NDEr reports particular perceptions in the physical realm from a *perspective outside their physical body*, which should not have been possible either because their brain was not functional, or the object was out of their physical line of sight, or both.
 - More than five dozen of these verified cases are documents in *The Self Does Not Die* (Rivas, et al., 2016, pp. 1–126)



The Self Does Not Die

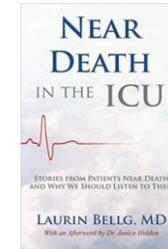
A new intellectual framework for consciousness

- Here is Case 3.33 of veridical out-of-body perceptions from *The Self Does Not Die*:

- Dr. Laurin Bellg's patient Howard (see also Bellg, 2015, 33-43)



Laurin Bellg



*Near Death
in the ICU*

- The *number* of these cases and the *weight of evidence* in them is strong enough to assert that the locus of awareness has *in fact* separated from the physical body
- Veridical perceptions from a vantage point separate from the body, particularly while the brain is nonfunctional, imply that one's subjective awareness can function *independent of the physical brain*
 - They imply that one's awareness (the mind) *in general* can separate from the physical body and operate independently of it
 - In this view, the mind conceptually ceases to be a *by-product of brain neural activity* and can now be viewed as an *autonomous conscious entity*
- The concept of a *mind entity* separate from the physical body can serve as a *new intellectual framework* for explaining consciousness

The nature of the out-of-body mind ...

- During an NDE, the mind functions as a *cohesive unit*
 - The NDEr experiences that their entire being has separated from the body
 - There is *continuity of subjective awareness* throughout the separation and return
- *All aspects of the NDEr's mind are still consciously present throughout their NDE*
 - Subjectively, the NDEr experiences all cognitive faculties: perception, thought, feelings, volition, memory, self-awareness, and agency
- The out-of-body NDEr does not identify with the physical body:
 - Some NDErs exclaim, "That physical body wasn't me!"
- The out-of-body mind is *objectively real*
 - The NDEr can be seen by animals – Jerry Casebolt and the German Shepherd
 - The NDEr can be seen by other people ("apparitional" NDEs)
- Thus, NDE evidence strongly suggests that:
 - A person's mind is a *separate entity* that is independent of the body
 - The mind is *objectively real, a real thing, a real being*
 - All faculties of cognition occur in the mind, not in the brain
 - In effect, the separate mind is the *essence* of the person



The nature of the out-of-body mind

The separation of the mind from the body is a *general* phenomenon

- The mind can separate from the body under many different circumstances, *not* just “near death”
 - There are *also* NDE-like cases that are *not* close to death, as in fainting, sleep, meditation, alcohol, or drugs
 - The person’s awareness separates *even though* the brain is *still functional*
 - Such cases are called near-death-like experiences (NDLEs)
- The subjective experiences of NDEs and NDLEs are *indistinguishable*—the *same number* and *intensity* of NDE elements (Charland-Verville et al., 2014)
 - Therefore, NDEs are a *general phenomenon* regardless of the antecedent causes
 - This fact implies there is a *common proximate cause* for all NDEs and NDLEs, regardless of antecedent causes
- The main common *feature* of all NDEs and NDLEs is the *separation* of subjective awareness from the body
- Therefore, we propose that the *common proximate cause* of all NDE and NDE-like experiences is the *actual separation of the mind from the physical body*, rather than any other antecedent cause

Our *mind entity* hypothesis

- The NDE evidence so far indicates:
 - The mind is a *separate entity* that can *separate from* and operate independently of the physical body
 - The mind entity is an objectively *real thing*, a *real being*
 - All faculties of cognition occur in the mind, *not* in the brain
- Out-of-body NDErs experience easily passing through solid objects like walls
 - Therefore, the mind appears to be “*nonmaterial*”—not made up of material particles (atoms and molecules)
 - The mind can *merge* and be *coextensive* with physical objects like the body and brain
- Our mind entity hypothesis states
 - The human being consists of a nonmaterial “mind” (or center of subjective awareness) that is *united*, *coextensive*, and *integrated* with the physical body
 - The mind entity is the *seat of consciousness* of the person; all cognitive faculties reside in the mind, *not* in the brain
 - There are two possible states of awareness, the “in-body” state and the “out-of-body” state
 - For the in-body state, there is a close correlation between brain neural activity and subjective awareness; therefore—
 - The mind entity is *completely dependent* on the brain’s electrical activity for subjective awareness
 - The mind entity must *interact with the brain* to achieve subjective awareness even of its own mental content and to effect willed movement
 - For the “out-of-body” state in an NDE, the mind entity *separates* from the body and operates independent of the brain
- For this theory to be consonant with existing scientific knowledge, there must be:
 - Some form of *causal, energetic interaction* between the mind and the brain
 - Some plausible *mechanism* of interaction

NDE evidence of mind-brain interaction

How could a nonmaterial mind interact with the material brain to achieve consciousness?

- There is strong evidence that the out-of-body mind *does* interact with physical processes
 - Light, sound waves in the air, and solid matter ...
 - Giving rise to subjective sensations and accurate veridical perceptions in the physical realm
- There are also numerous reports that NDErs encounter a subtle *resistance* or *increased density* when passing through solid matter
 - This implies a new subtle, *push-pull force* when the out-of-body mind entity passes through solid matter
 - According to Newton's third law of motion, for every force of one object on another, there is an equal and opposite opposing force
- There is also evidence that NDErs can interact with the *neural processes* of an in-body person
 - Example: an NDEr passed her hand through the doctor's arm and felt something that was the consistency of 'very rarified gelatin' that seemed to have an electric current running through it
 - Example: an NDEr reported tickling the nose of a patient with dementia causing her to sneeze
- Therefore, the evidence indicates the mind can interact with matter and specifically with neural electrical processes
 - Both to *sense* and to *trigger* neural electrical activity



Philosophical objections to the mind entity theory

- **Addressing philosophical objections to interactionist dualism**
 - There is strong evidence that the *out-of-body mind interacts with physical processes*
 - There is evidence that a subtle, previously unrecognized *two-way force* is involved in mind-matter interactions
- **Three specific philosophical challenges to interactionist dualism**
 - Taking the mind to be a “thing” is a *category error*: the “mind” is simply the *collection* of a person’s dispositions and capacities, so the mind is in a different category from the physical objects like a brain (Ryle, 1949)
 - The nonmaterial mind is actually in the *same category* as physical objects because the mind is an objectively real thing that unites with the brain and body
 - The *causal pairing* problem, how a nonmaterial mind existing outside physical space can causally interact with the physical brain; the mind must interact in spatial relation to the brain (Kim, 2011)
 - The nonmaterial mind is a three-dimensional object in physical space
 - The mind and brain are located in intimate spatial relation to one another and exert direct causal interactions with each other
 - The *causal closure of the physical*, stating that all physical effects have only physical causes (Kim, 2011)
 - The mind is nonmaterial, yet *interacts* with physical processes and thus takes part in *physical causation*
 - The mind interfaces with the brain at *specific points of contact* at the surface of the cortex

- Kim, J. (2011). *Philosophy of mind* (3rd ed.). Westview Press.
- Ryle, G. (1949/2009). *The concept of mind*. Routledge.

How does the mind interface with the brain? ...

- Because the NDEr retains all cognitive faculties while out-of-body, these faculties reside *in the mind*, not in the brain
 - Even in ordinary consciousness, all faculties of cognition and all mental content *originate* in the mind
 - However, the mind entity is *completely dependent* on the brain's electrical activity for subjective awareness
 - Therefore, in ordinary consciousness, the mind must work *through the brain's neural activity* for subjective awareness, even awareness of *its own mental content*
- Neuroscientist Benjamin Libet found that it takes time for neural activation to build up to conscious awareness
 - Libet's "time-on" principle: subjective awareness requires a minimum duration of 300–500 msec of neural activity (Libet, 2004)
 - Otherwise, the stimulus remains unconscious (a "subliminal" stimulation)
- Libet distinguished between *detection* and *subjective awareness*
 - Before awareness occurs, the stimulus is still *detected*, and one can still respond within 100 msec (e.g., a baseball batter can adjust his swing *before* being subjectively aware of the pitch)
 - Even without subjective awareness, "subliminal" stimulations are detected and have an effect (a phenomenon called "subliminal priming")
 - The stimulus is *detected* even at its first appearance (with the so-called "evoked potential" in the brain) and then goes through a process of "*coming to awareness*"
 - Because the initial appearance was *detected*, the person *knows* when the stimulus started even though the sensation was subliminal for 300 msec or longer (called *backward referral in time*)
 - The process of coming to awareness applies to *all* awareness—awareness of sensory perceptions and *also* of inward (or endogenous) thoughts, imaginations, etc.
- Libet's findings have now been confirmed in more recent studies of "conscious processing" (Dehaene & Changeux, 2011)



Benjamin Libet
(1916-2007)

- Dehaene, S., & Changeux, J.-P. (2011). Experimental and theoretical approaches to conscious processing. *Neuron*, 70(2), 200-227.
- Libet, B. (2004). *Mind time: The temporal factor in consciousness*. Harvard University Press.

How does the mind interface with the brain? ...

In our view, the mind is engaged throughout the process of “coming to awareness”—from detection to subjective awareness

- The mind adds its mental content by *impressing* the content on the specific brain regions for that cognitive function
- The *neural activations* in these regions bring the mental content to subjective awareness
- The primary *purpose* of cortical neural activations is to bring the mind’s mental content to subjective awareness

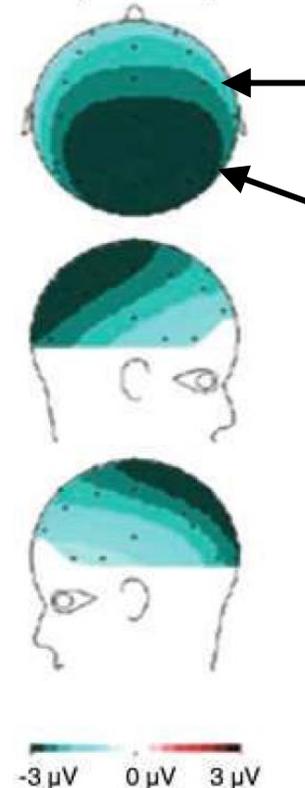
When reading words, an incongruent word in a sentence evokes a strong minus voltage at the top of the scalp

In our view, the full process for reading a single word happens this way:

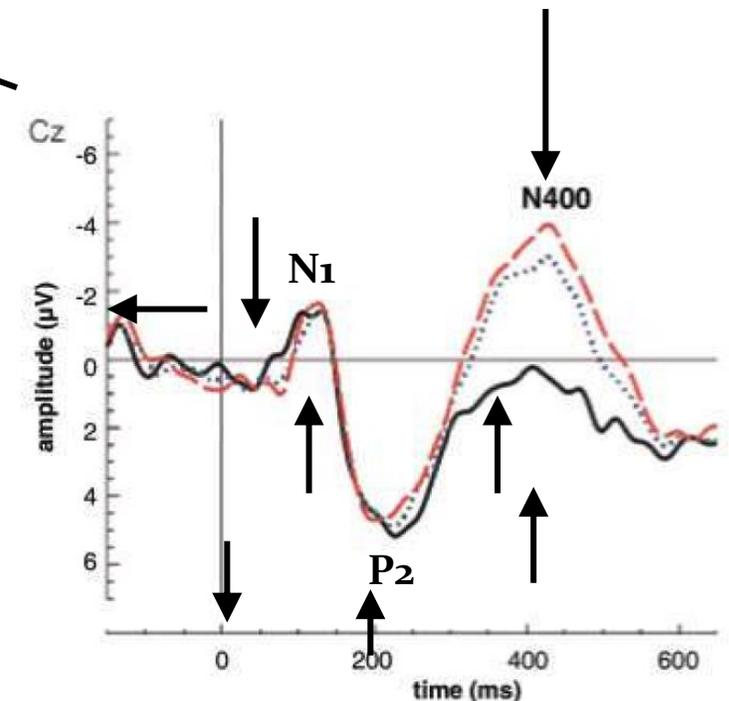
- At 115 ms (N₁): the minus voltage is associated with detecting the *word percept* (form of the word)
- At 200 ms (P₂): the plus voltage is associated with detecting the *meaning* of the word (concept)
- At 400 ms (N₄₀₀): strong minus voltage is associated with *awareness* of how congruent or incongruent the word is in context
- Perception and comprehension proceed in three distinct stages
 - Detect the *form* of the word
 - Recognize the *meaning* of the word
 - Evaluate the word’s meaning *in the current context* as the word comes to awareness
 - The mind is involved *at each stage*

semantic N400-effect

(300 - 550 ms)



From Hagoort, et al. (2004)



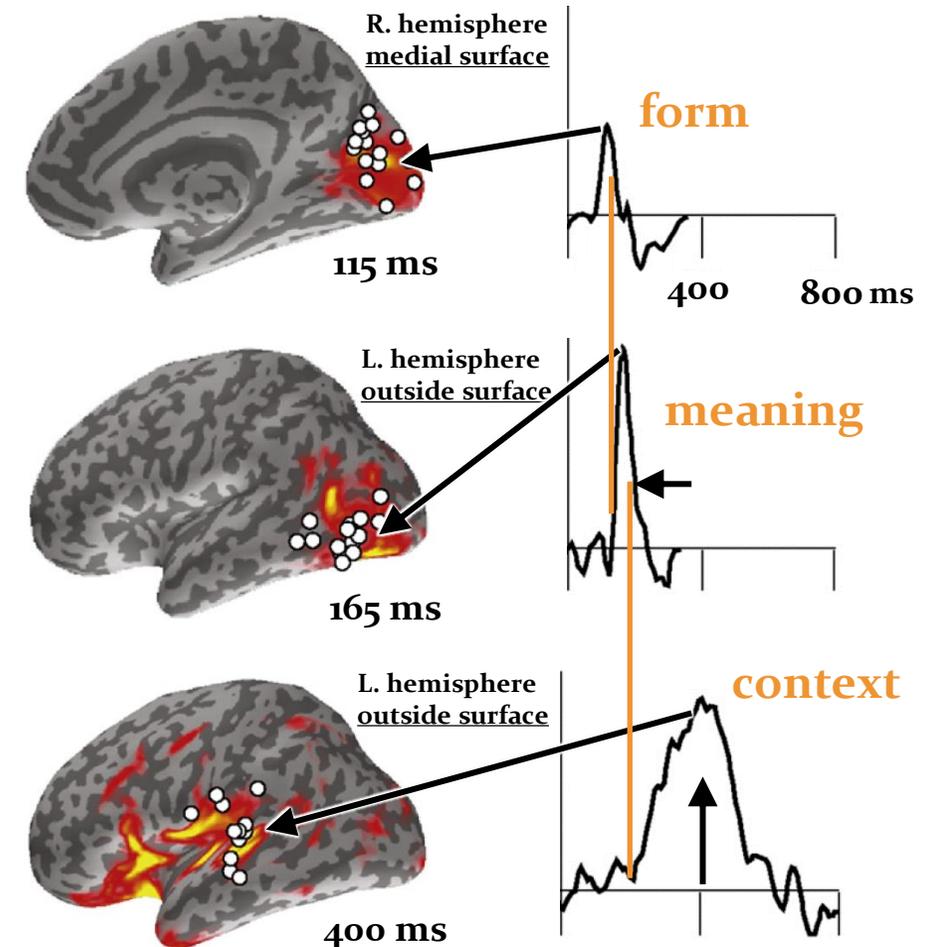
The Dutch trains are yellow and very crowded. ←
The Dutch trains are white and very crowded. (elevated N₄₀₀)
The Dutch trains are sour and very crowded. (elevated N₄₀₀)

How does the mind interface with the brain? ...

In reading a single word, the mind *also* engages three specific *regions* of the brain

- MEG recordings of reading a novel word, producing a large N400

1. At 115 ms: activation in medial occipital area is associated with detecting the word percept (form of the word)
2. At 165 ms: activation in the fusiform and occipitotemporal areas is associated with detecting the meaning of the word (concept)
3. At 400 ms: activation in superior temporal and prefrontal areas is associated with awareness of how the word fits in the current context
 - Each new word adds to and builds the context of the sentence
 - Note the *timing gap* between steps 1 & 2, and steps 2 & 3

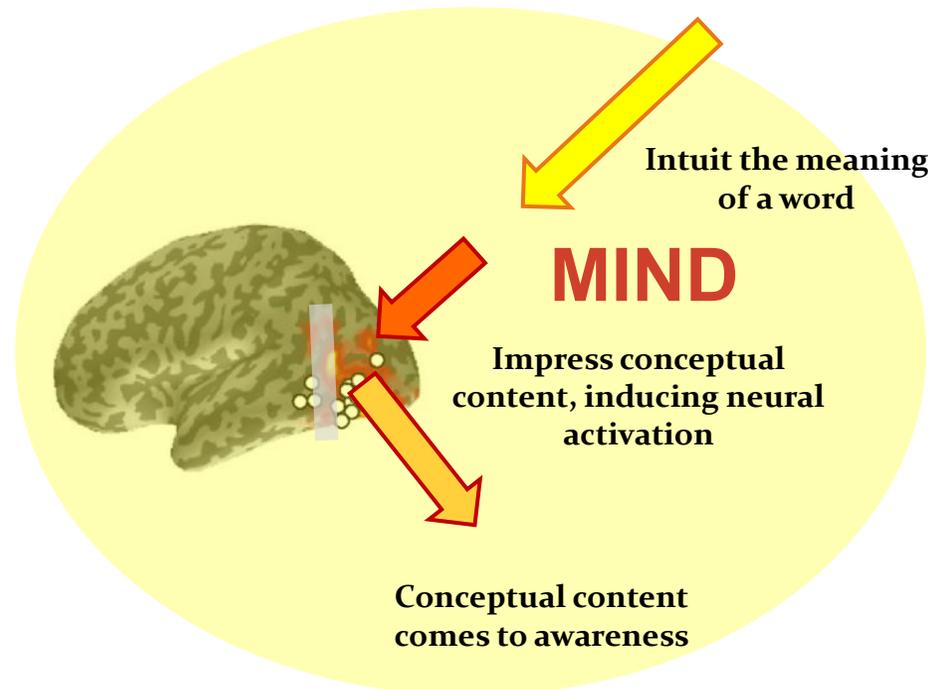


The mind induces neural activations to come to awareness

Neural activations are needed to bring *mental content* to conscious awareness

- The mind must first *impress* its conceptual content on the appropriate brain regions, inducing neural activations
- The neural activations in those regions act like a *mirror* to raise the mind's conceptual content to awareness
- Neural activations indicate that the mind's mental content is in the *process of coming to awareness*

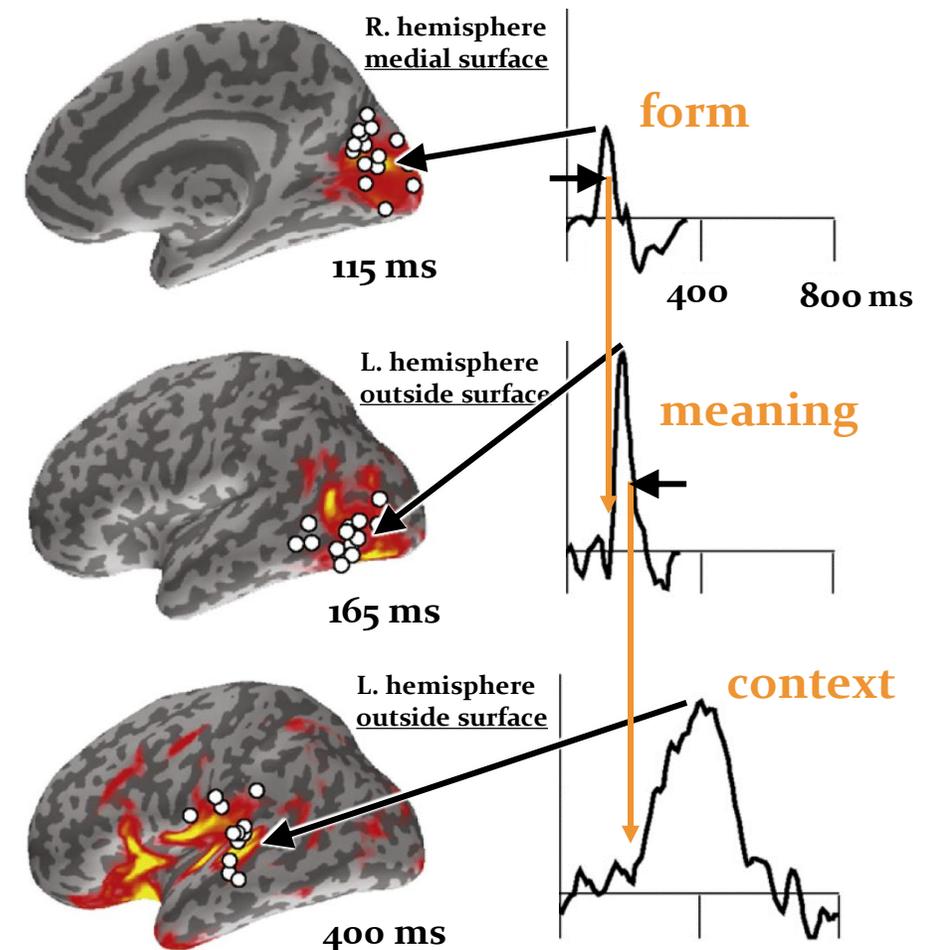
Schematic process



How does the mind interface with the brain?

Proposed involvement of the mind in the stages of reading a word in context

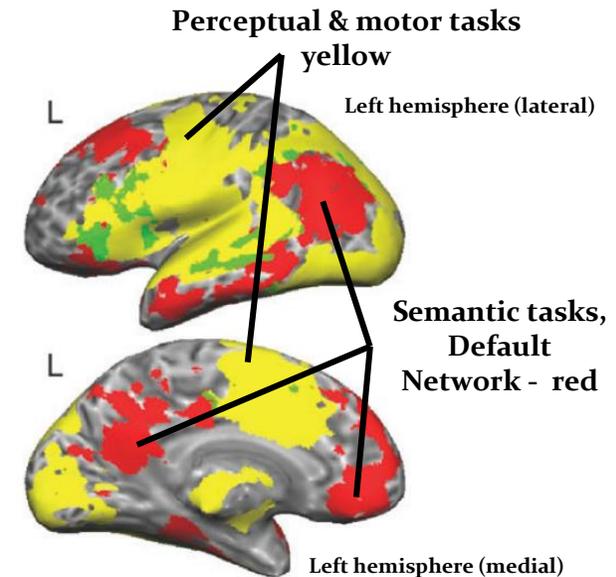
1. At 115 ms: the mind *detects* the percept, the form of the word w-h-i-t-e in the sentence “The Dutch trains are white ...” in the occipital region
 - The mind *decodes* the percept as the form of an English word, the word “white” and intuits the concept or meaning of “white”
 - After the peak, *based on this content*, the mind *impresses* the *meaning* of the color white on the *next regions*, the visual word form area (VWFA) and related language regions; the meaning of “white” is still subliminal at this point
2. At 165 ms: with the neural activations, the mind *detects* the meaning of the concept “white”
 - The mind *evaluates* the incongruity of the color white in the context of “Dutch trains”
 - After the peak, the mind *impresses* the incongruity of Dutch trains being white on the next regions, the superior temporal and prefrontal areas; the incongruity is still subliminal at this point
3. At 400 ms: the mind *comes to awareness* of the incongruity of “white” in the context of “Dutch trains” in the sentence



The mind operates *throughout* the neocortex

The mind entity model is applicable to *all* conscious experience. We propose this is the way consciousness works.

- There are two largely distinct, *complementary* brain networks that have been identified
- The two complementary networks are:
 - An *externally directed perceptual* system, involving sensory areas (the yellow areas); the mind impresses its semantic content to *recognize* and *interpret* perceptions
 - An *inwardly directed conceptual* system used in semantic tasks – that is called the “default network” (the red areas); the mind *impresses* its semantic content for *inward thought*, such as daydreaming, solving a mental problem, planning a shopping list, etc.



In this model, the mind is engaged effectively *throughout* the neocortex:

- External sensory processes
- External motor processes
- Inward sources of information

The mind impresses its mental content in all cortical regions *except* for the purely input modalities in the primary sensory areas

- Binder, J. R., Desai, R. H., Graves, W. W., & Conant, L. L. (2010). Where is the semantic system? A critical review and meta-analysis of 120 functional neuroimaging studies. *Cerebral Cortex*, 19(12), 2767-2796.
- Binder, J. R., Medler, D. A., Desai, R., Conant, L. L., & Liebenthal, E. (2005). Some neurophysiological constraints on models of word naming. *Neuroimage*, 27(3), 677-693.
- Buckner, R. L., Andrews-Hanna, J. R., & Schacter, D. L. (2008). The brain's default network: Anatomy, function, and relevance to disease. *Annals of the New York Academy of Sciences*, 1124(1), 1-38.

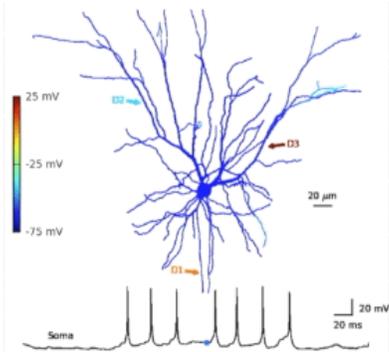
A radical departure from physicalist neuroscience

The mind entity theory is a radical departure from the prevalent physicalist view in neuroscience

- In this theory, all mental content *comes from the mind* and is *impressed* on brain regions, causing neural activations which bring the content to subjective awareness
 - So, in this theory, the *brain* does not *generate* mental content, nor is mental content and memory *retained* in *brain structures*, nor does the brain perform *mental computations*
- In this theory, semantic memory, working memory, episodic memory, and implicit or pattern memory are all “carried” in the mind, *not in brain structures*
 - So, in this theory, there are no “memory traces” in the cortex, hippocampus, or cerebellum
 - “Long term potentiation” (LTP) serves not to *store mental content* as traces, but rather to *facilitate* memory *formation* in the mind and memory *recall* from the mind
 - The specialized memory structures (hippocampus for episodic memory, cerebellum for pattern memory) act as specialized interfaces with the mind
- The brain’s function is to support the mind in its *perceptual* and *endogenous* mental processes
 - The brain’s neural processes (action potentials) act as a *mirror* that enables the mind to *come to awareness* of its cognitive content: perceptions, thoughts, feelings, volition, memory, self-awareness, and agency.
 - Specific cognitive content is mirrored in *specialized brain regions*: e.g., the fusiform face area, the visual word form area, etc.

A plausible mechanism for *sensing* neural activity

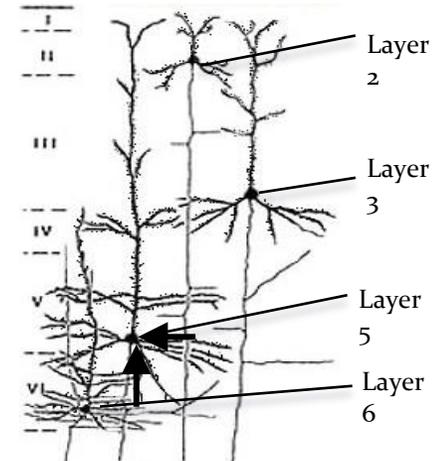
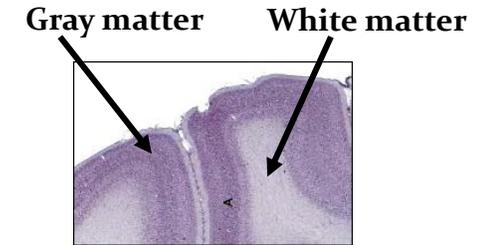
- In the mind entity theory, the mind *impresses* its mental content on cortical neurons and causes *action potentials* which bring the mental content to awareness
 - This implies that the *interface* of the mind with the brain is *at the surface* of the cortex, in the gray matter
 - The gray matter contains pyramidal neurons with their apical and basal dendrites
 - On the dendrites there are innumerable nodules called *dendritic spines*
- The mind must be able to *trigger* action potentials in the pyramidal neurons and in some way *sense* the resulting action potentials



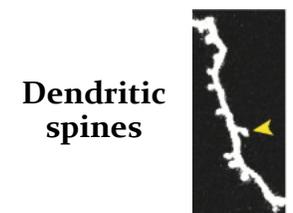
Action potentials propagate back through the dendritic arbor

- Out-of-body NDErs can directly *sense* neural activity in an *in-body* person
- Therefore, the mind most likely *senses* the *back propagation* of action potentials when they spread throughout the dendritic arbor
- The question now is how does the mind *trigger* action potentials

- Smith, S. L., Smith, I. T., Branco, T., & Häusser, M. (2013). Dendritic spikes enhance stimulus selectivity in cortical neurons in vivo. *Nature*, 503:115-120.



Cortical pyramidal neurons in layers 2, 3, 5, and 6 with apical and basal dendrites



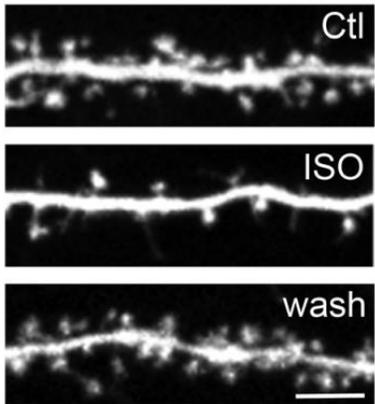
Dendritic spines

A plausible mechanism for *triggering* action potentials ...

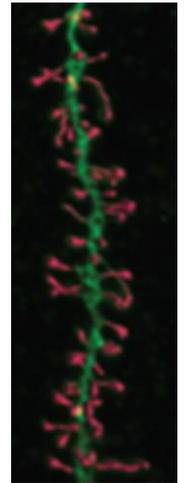
Volatile or inhalation anesthetics provide evidence for how the mind operates with the brain

- Volatile anesthetics, like diethyl ether or isoflurane, readily cause the loss of consciousness and therefore *inhibit* the action of the mind
- Volatile anesthetics *also* alter the properties of the dendritic spines on the pyramidal neurons

Isoflurane



- The volatile anesthetics pass through the spine wall and *unravel* the spine's *cytoskeleton* causing the spines temporarily to shrink and collapse (Platholi et al., 2014)
 - This diagram shows the effects of isoflurane anesthetic; the normal spine structure is at the top
 - Then with isoflurane at clinical concentrations where the spines have shrunk and collapsed (middle)
 - These effects are reversed when the anesthetic is washed out and the cytoskeleton has *reassembled* (bottom)

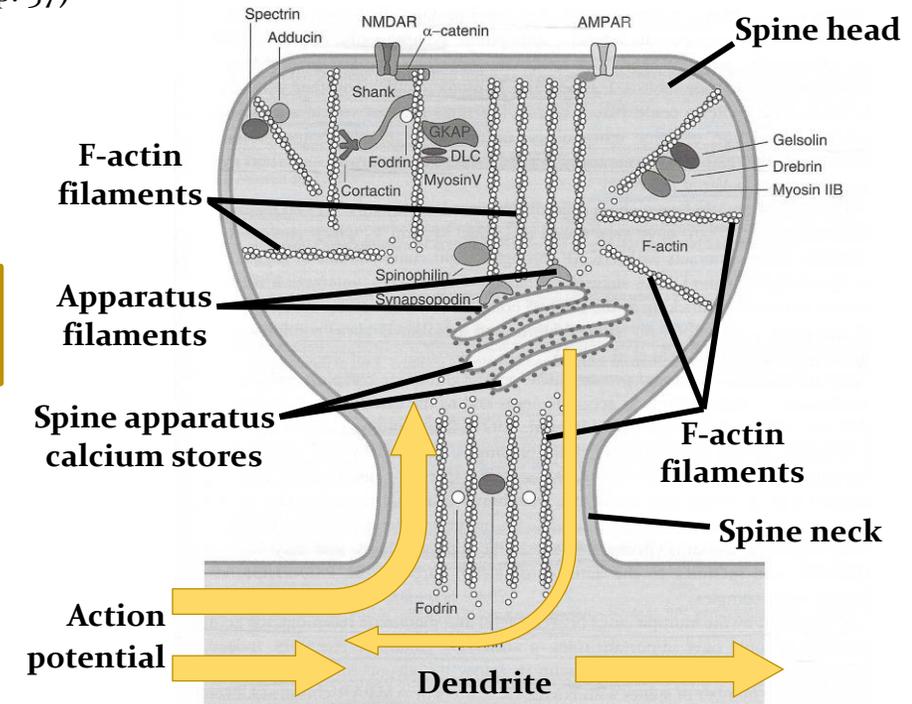


Dendritic spines (red)

- The internal *spine cytoskeleton* consists of numerous microfilaments of a substance called F-actin
 - The F-actin filaments maintain the spine's *shape* and *rigidity*, and help with vesicle *movement* within the spine
 - F-actin filaments are polymers of a basic actin unit, strung together
 - These structural filaments are *unraveled* by volatile anesthetics and can subsequently be *reassembled*

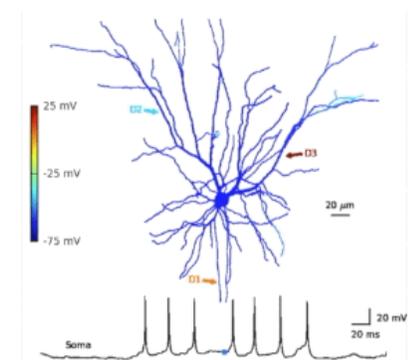
A plausible mechanism for triggering action potentials ...

- Volatile anesthetics cause the loss of consciousness; they *also* unravel the F-actin filaments in dendritic spines
- Because these facts appear to be related, we propose:
 - The *interface* for the mind to *trigger* action potentials is located *in the dendritic spines*
 - The *mechanism* of interaction must rely on interaction of the *mind* with spine F-actin filaments and would be disrupted by anesthetics, preventing mind-induced neural activity and subjective awareness
- We believe such an interface and mechanism exists in the dendritic spines
- This is a schematic of a dendritic spine connected to its dendrite (Yuste, 2010, p. 57)
 - Numerous F-actin filaments maintain the structure of the spine neck and the spine head
 - At center are several *stores of positively charged calcium ions* in a collection of vesicles called the “spine apparatus”
 - The spine apparatus also has F-actin filaments associated with it
- In our view, the *mind can trigger* the release of calcium ions from the spine apparatus by interacting with the spine apparatus filaments—
 - Causing a “mind-induced calcium release”
 - The positive calcium ions flow into the dendrite and induce spikes which can then trigger an action potential
 - The action potential, in turn, causes an influx of calcium ions *back* throughout the spines.
 - The calcium ions are stored again in the spine apparatus—resetting the neuron for further action potentials
 - Similar calcium-driven mechanisms are well-understood and operate throughout the body, for example in regulating the heartbeat



A plausible mechanism for triggering action potentials

- Volatile anesthetics unravel the F-actin filaments in the spines such that the mind *can't trigger* the release of calcium ions from the spine apparatus
 - This prevents mind-induced action potentials and causes the loss of consciousness because the mental content remains unconscious
 - When the anesthetic has washed out, the F-actin *re-forms* enabling consciousness to return
- In this view, the mind triggers action potentials *only* by triggering the spine F-actin filaments
 - The force needed to trigger the actin filaments is likely very small, probably comparable to the *subtle resistance* NDErs report when passing through solid matter
 - In contrast, the *force of the action potential* propagating back through the dendritic arbor can be inferred in this image of a series of action potentials from Smith and colleagues
 - The energy of the back propagation *resets* the neuron for further action potentials, allowing it to achieve *high firing rates*



Action potentials propagate back through the dendritic arbor

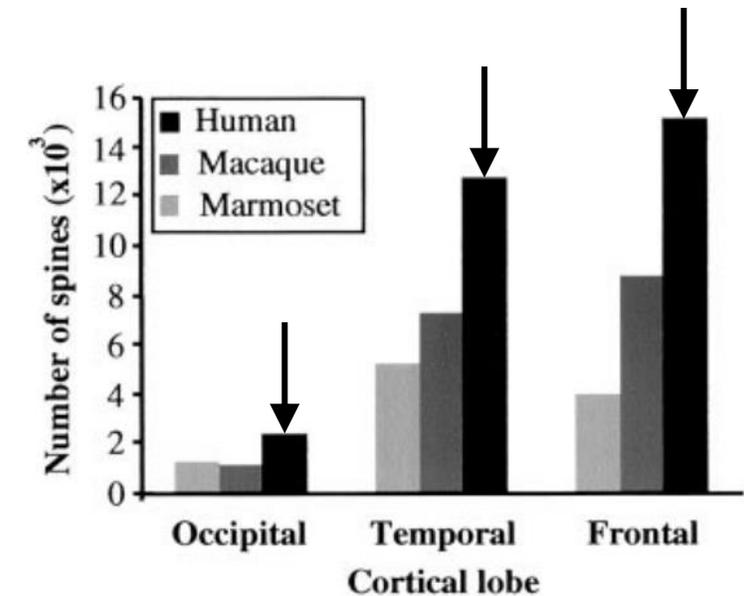
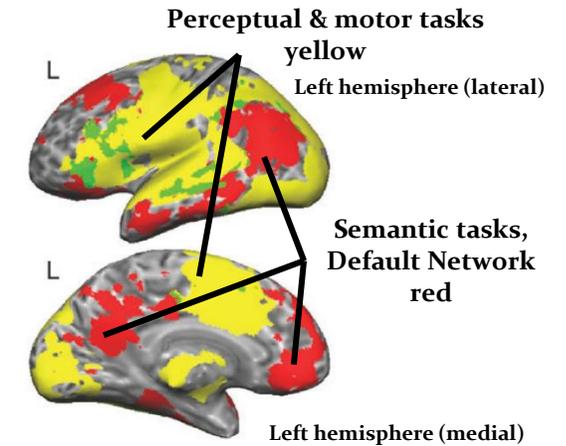
A validation of the mind entity theory

In the mind entity theory, the mind impresses its mental content in *all* cortical regions (yellow and red) *except* in the primary sensory regions for sight, hearing, and touch

- Since the primary *sensory* areas are purely input modalities, the mind *does not* impress its mental content in these areas
- These points suggest that there should be more dendritic spines in the yellow and red regions compared to the *primary sensory regions* for sight, hearing, and touch

This prediction is validated by studies done by Guy Elston, for example in estimating the number of spines in different regions of the cortex (Elston et al., 2001)

- In the human brain, the dendritic spine densities are significantly higher in the temporal and frontal lobes compared with the occipital lobe



The next steps in mind-brain research

A true revolution in science requires:

- a *transposition in thinking* that *grasps the whole* in a broader synthesis of the phenomena ...
- creating a *conceptual framework* that explains the anomalies

The concept of an *autonomous mind entity* can serve as a *new conceptual framework* for explaining consciousness

- “The important thing in science is not so much to obtain new facts as to discover new ways of thinking about them.” (Sir William Bragg, physicist)

There are several avenues to help scientists make the “mental transposition” to this new framework

1. Show that the new framework *better explains* existing neurological phenomena
 - Phenomena that are well-known but not fully understood
 - Consciousness, semantic knowledge, perception, language, attention, memory, movement, brain plasticity
2. Show that the new framework explains the *anomalies* of neuroscience
 - For example, split brain phenomena, phantom limb phenomena
3. Validate the proposed mind-brain mechanisms through improved clinical therapies and results
 - Therapies applied to disorders of consciousness (DOCs)—unresponsive wakeful state, minimally conscious state, etc.
4. Validate the proposed mind-brain mechanisms through experimental testing
 - Energetic interaction with neurons: experimenting with the squid giant axon
 - Energetic interaction of a healer’s energetic field with the brain and body, and validated by MRI or MEG scans