

Theories of consciousness that neuroscientists take seriously



Three theories of consciousness <

- Explanatory gap
- Difference between first order & higher order
- Transitivity Principle
- Ambitious vs Modest higher order
- Ambitious higher order theory ad hoc
- Neuroscience
- Psychology

Higher Order Theory

State about the pain 

What makes a pain conscious is that there is **another state** which is about the pain

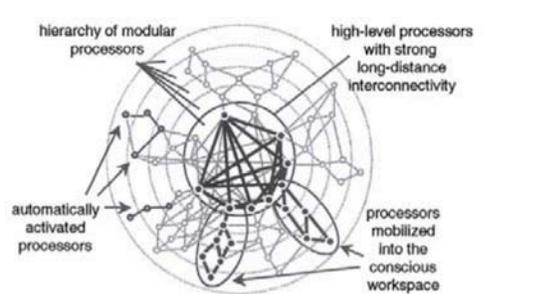
Higher Order Theory

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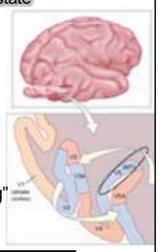
Global Workspace Theory

Dennett: "fame in the brain"



Biological theory: Consciousness = neural state

Content of, e.g., visual experience of motion = recurrent loop from MT+ to V1 or V2



What makes that content conscious =

- High activation
- Cortico-thalamic loop
- Special type of computation
- Activation of "self" circuits

¥ 'gci fW' i b_bck b" 5" f[\hg fYgYfj YX" H\]g V&bhYbh]g YI WI XYX Zfca 'ci f' 7fYUhh] Y' 7ca a cbg"]WbgY": cf' a cfY']bZcfa Uh]cbz' gYY \Hd. #cVW "a]h'YXi #ZU]fi gY"

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Intuitive Advantages

- ☞ Global Workspace
 - Captures common sense idea that a conscious state is one that can be reported, remembered, used in reasoning, guides action, etc.
- ☞ Higher Order
 - Captures intuitive Transitivity Principle: A conscious state is a state that one is conscious of being in.
- ☞ Biological
 - Captures observation that there seems more in consciousness (in quantity and fineness of grain) at any moment than can be captured in thought or globally broadcast



Point of view of biological theory

- ☞ Production of global broadcasting and higher order states are things consciousness **does**, not what consciousness **is**.
- ☞ Higher order views are too intellectual—consciousness is something simpler

What proponents considers advantages of HO view can equally be considered advantages of a first order view that also recognizes higher order states that have top-down effects



Higher order state

∨

First order phenomenal consciousness

Extremely important fact about debate: Biological and Global broadcasting views recognize a special higher order kind of consciousness



Challenge to HO theorists: find advantage of HO accounts that are not equally advantages of first order accounts that allow top-down effects on phenomenal consciousness

Three theories of consciousness

Explanatory gap <

Difference between first order & higher order

Transitivity Principle

Ambitious vs Modest higher order

Ambitious higher order theory ad hoc

Neuroscience

Psychology

That there **seems** a deep problem does not depend on any controversial theory of consciousness

The experience is subjective

The brain state is objective

How can something subjective be something objective?

:] [i fYg:fYa cj YX'Xi Y'hc `Vtdnrf][\h'fYghf]V]cbg"

From the first order point of view

Phenomenal consciousness is first order;
Reflective consciousness is higher order

What is phenomenal consciousness?



:][i fYg fYa cj YX Xi Y hc 'V&dnf][\h fYgrf]V]cbg"

What it is like to, e.g. see a sunset

What is what it is like?

:][i fYg fYa cj YX Xi Y hc 'V&dnf][\h fYgrf]V]cbg"

Add: Higher order c

... 'consciousness' does not admit of a definition ... Nonetheless, it is important to say exactly what we are talking about because the phenomenon of consciousness that we are interested in needs to be distinguished from certain other phenomena such as attention, knowledge, and self-consciousness. By 'consciousness' I simply mean those subjective states of sentience or awareness that begin when one awakes in the morning from a dreamless sleep and continue throughout the day until one goes to sleep at night or falls into a coma, or dies, or otherwise becomes, as one would say, 'unconscious'.



Pinning down phenomenal consciousness

- ☞ The subject of the explanatory gap
- ☞ Basis of what Mary learns
- ☞ What is important in suffering

Phenomenal consciousness is the basis of the explanatory gap

The experience is subjective
The brain state is objective

How can something subjective be something objective?

:][i fYg fYa cj YX Xi Y hc 'V&dnf][\h fYgrf]V]cbg"

Jackson's "Mary" argument

- ☞ Mary knew all the physico-functional facts about color vision in the black and white room
- ☞ Mary learns (comes to know) a new fact: what it is like to see blue
- ☞ So there must be facts about color vision that are not physico-functional facts

"I am so glad to see blue, finally."

Phenomenal consciousness is the basis of what Mary learns

:][i fYg fYa cj YX Xi Y hc 'V&dnf][\h fYgrf]V]cbg"

Pinning down phenomenal consciousness

- ☞ The subject of the explanatory gap
- ☞ Basis of what Mary learns
- ☞ What is important in suffering

☛ If a dog or a 1 year old baby or a 2 year old deaf child or an autistic adult suffers but has no higher order state, I say that suffering is bad **in itself**, whereas higher order theorists have to say it is unconscious so only bad in **its effects**.

Figures removed due to copyright restrictions.

Pains in cattle, sheep, pigs and chickens are not "felt" and hence are of no moral significance*

: [[i fYg'fYa cj YX'Xi Y'hc'V&dnf][\hfYghf]M]cbg'

Phenomenal consciousness is the basis of what is bad about suffering

*Carruthers (1999) says frustration of animal desires are of moral significance, but does not take back claim about animal pain

: [[i fYg'fYa cj YX'Xi Y'hc'V&dnf][\hfYghf]M]cbg'

☛ Basis of what Mary learns	Mary learns what it is like to see red, not what it is like to think about seeing red.
☛ The subject of the explanatory gap	Representation and thought are not completely mysterious from a scientific point of view.
☛ What is important in suffering	What is important in suffering is the first order suffering, not thinking about it.

Issue of how to distinguish first and higher order theories often dissolves in practice

: [[i fYg'fYa cj YX'Xi Y'hc'V&dnf][\hfYghf]M]cbg'

Brain activation while watching movie. Little activation in frontal areas

:][i fYg'fYa cj YX'Xi Y'hc 'W&dnf][\h'fYghf]V]cbg"



Problematic for global workspace accounts too

:][i fYg'fYa cj YX'Xi Y'hc 'W&dnf][\h'fYghf]V]cbg"

No problem distinguishing first and higher order views in practice

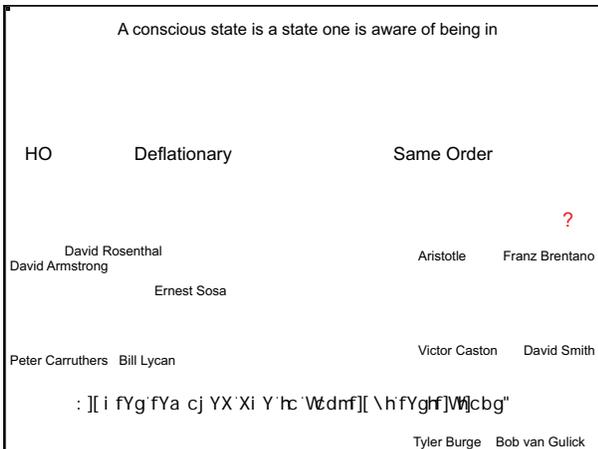
We are absolutely certain that we have phenomenal consciousness when we watch a Clint Eastwood movie

We are not certain that we have higher order states about those phenomenally conscious states

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Transitivity: A conscious state is a state one is aware of being in

☞ There are 3 accounts, only one of which is higher order



Deflationary

"Just as one automatically jumps one's jumps, smiles one's smiles, and dances one's dances, however, so one experiences one's experiences. And since experiencing is a form of awareness, one is thus in one sense automatically aware of one's experiences, precisely in experiencing them"

:][i fYg'fYa cj YX'Xi Y'hc 'W&dnf][\h'fYghf]V]cbg"

Trivial automatic awareness of experience distinct from actually noticing an experience

HO View

State about the pain

Agrees with HOT: what makes an experience conscious is that one is aware of it

A conscious experience is reflexive in that it consists in part in an awareness of itself

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Modest vs. Ambitious HO views

Modest: ∃ a number of senses of 'conscious', including

- ☞ Phenomenal Consciousness
- ☞ Reflexive Consciousness

OK with me

Ambitious

phenomenal consciousness can be to reflexive consciousness, either empirically or a priori

Cannot hear "a natural sense of the phrase "conscious state" other than as meaning "state one is conscious of being in"

Ambitious HO accounts are conceptually and empirically problematic

Am I saying HOT theory is false?



- ☞ Either a postulation (modest version)
 - but there is a better modest version
- ☞ Or if ambitious, faces conceptual and empirical difficulties

A theory of reflexive consciousness

A theory of phenomenal consciousness

Imagining falsifications



- ☞ Pain without a thought about it or about oneself

Consciousness w/o HOT

Imagining falsifications

- ☞ Losing oneself in an intense experience

: [i fY 'fYa cj YX `Xi Y `hc `W dmf][\ h fYgf]Vh]cbg"

Consciousness w/o HOT

:] [i fYg'fYa cj YX'Xi Y'hc`Vtdnrf] [\hfYgfh]V]cbg"

Consciousness
w/o
HOT

Imagining falsifications

- ☞ Biofeedback allows people to know that their blood pressure is going up without knowing how they know
- ☞ Perhaps the same machinery coupled to fMRI would allow knowledge of unconscious perceptions via another internal route

HOT w/o
Consciousness

Freudian Theory

Freudian unconscious thought that directs repression

Freudian unconscious desire to murder my father and marry my mother

- ☞ Sophisticated dreamwork, e.g. coding key subjects in anagrams

HOT w/o
Consciousness

Conceptual

Empirical

:] [i fYg'fYa cj YX'Xi Y'hc`Vtdnrf] [\hfYgfh]V]cbg"

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OK if purely nominal

Puzzle: sensation of green causes HOT to the effect that one has a sensation of red. What is the phenomenology?

Phenomenology goes with...

1st order Both 2nd order

Close to: thinking makes it so

¥ 'gci fW'i b_bck b''5''f][\hg'fYgYfj YX''H\jg'WcbhYbh]g'YI Wl XYX Zca 'ci f'7fYUhj Y'7ca a cbg''WbgY''': cf'a cfY']bZ:fa Uh]cbžgYY \Htd. ##cVk "a]h'YXi #ZJ]fi gY"

The unconscious states we know about are hard to make conscious: Figures removed due to copyright restrictions.

1. Chomskyan grammatical machinery
2. Modular perceptual states
3. The states psychiatrists unearth

☞ But HOTs are easy to make conscious

Mystery, unless concerns a way of talking rather than a natural kind

edge image 2^{1/2}-D sketch 3-D model

¥ 'gci fW'i b_bck b''5''f][\hg'fYgYfj YX''H\jg'WcbhYbh]g'YI Wl XYX Zca 'ci f'7fYUhj Y'7ca a cbg''WbgY''': cf'a cfY']bZ:fa Uh]cbžgYY \Htd. ##cVk "a]h'YXi #ZJ]fi gY"

Why does HO relation to one's own mental states make the mental states conscious-- but not rocks? And not others' mental states?

Ad hoc to postulate HO only has this relation to

- mental states
- that are one's own

☞ Since same order relation is reflexive, the only thing the relation can be a relation to is a mental state

:] [i fYg'fYa cj YX'Xi Y'hc'Wtdnrf][\hfYgfh]Vh]cbg"

Same advantage for deflationary view

HO Solution

Figures removed due to copyright restrictions.

Deflationary solution

Same order Solution

☞ All that awareness comes to is the trivial fact that one experiences one's experiences. Trivial fact not true for rocks

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Anton's Syndrome

Suppose: "I am now seeing something"

Must she in fact be experiencing hearing?

: [i fYg fYa cj YX Xi Y hc V&dmf][\h fYghf]VW]cbg"

Evidence against hallucination as a general account of anosognosia

- ☞ Ventromedial patients clearly fit the pattern of confabulation, a cognitive deficit usually considered a response to the need to eliminate cognitive dissonance and enhance self-image
 - Anosognosia for prosopagnosia
- ☞ Debriefing after recovery

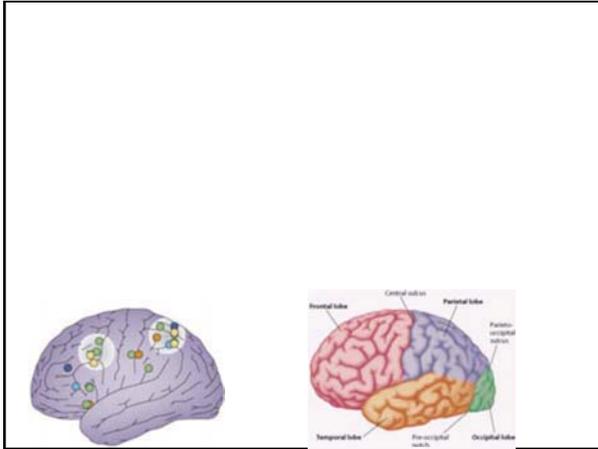
Upshot of anosognosia

HO view seems to have to embrace a position on an empirical issue that goes against the main thrust of the science

Crick-Koch basic postulate

- ☞ We can study visual consciousness in cats and monkeys because their visual systems are fairly similar to ours despite the huge cognitive differences reflected in differences in frontal lobe function.

: [i fYg fYa cj YX Xi Y hc V&dmf][\h fYghf]VW]cbg"



¥ 'gci fW' i b_bck b''5''f][\hg'fYgYfj YX''H\ Jg'W&bhYbh]g'YI Wl XYX
 Zfca 'ci f'7fYUhhj Y'7ca a cbg''JWbgY''': cf'a cfY 'JbZcfa Uh|cbžgYY
 \Htd. ##cVK "a Jh'YXi #ZJfi gY"

Even if visual consciousness is different in patients who have a lot of frontal damage, still HOT theory is supposed to apply to all consciousness. Figure removed due to copyright restrictions.

¥ 'gci fW' i b_bck b''5''f][\hg'fYgYfj YX''H\ Jg'W&bhYbh]g'YI Wl XYX
 Zfca 'ci f'7fYUhhj Y'7ca a cbg''JWbgY''': cf'a cfY 'JbZcfa Uh|cbžgYY
 \Htd. ##cVK "a Jh'YXi #ZJfi gY"

High ratio of perceptual synapses to frontal synapses

High ratio of frontal to perceptual synapses

Myelination too

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24.08J / 9.48J Philosophical Issues in Brain Science
Spring 2009

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