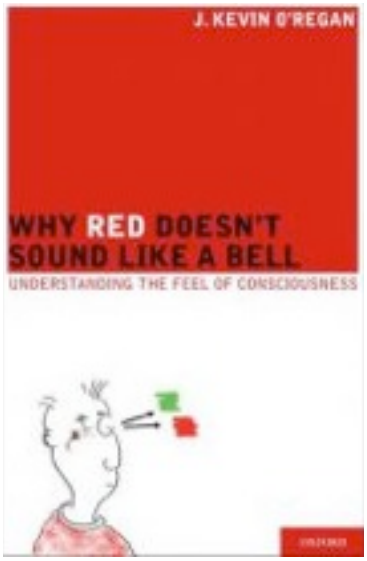
Ricardo Téllez's
CognitiveNotes
More Cognitive Knowledge in Less Time



THE BIG IDEAS

1.1
The eye is just like a giant hand that samples the world (a form of palpation)

1.2
Seeing is not something that happens to us, is something WE DO

1.3
What defines an object/color/sound/feeling are the laws that govern how you interact with it.

Richness: the world is richer than memories and imaginings
Bodiliness: changes in my body produce instant changes in my sensors
Grabbiness: brain has a mechanism that can grab the cognitive processing from what is doing now, on the occurrence of sudden events
Insubordinateneness: sensory input can change by itself, having my body nothing to do with it

Understanding The Feel of Consciousness

Why Red Doesn't Sound Like a Bell

BY J. KEVIN O'REGAN · OXFORD UNIVERSITY PRESS 2011 · 211 PAGES

This book describes and interesting approach to the hard problem of consciousness, called the **sensorimotor approach**. Basically, what his theory says is that feelings/sensations are not something that happens to us, but rather a thing that we do, and, what actually defines the object/color/sound/small/taste or feeling that one is having are the laws that govern how one interacts with it. This theory leads to the conclusion that the brain is not the place where the feel is generated, but is in the sensorimotor interaction that is generated. The brain only enables the sensorimotor interaction that constitutes the experience of feel.

THE CATASTROPHE OF THE EYE

The eye has several defects that should prevent us from seeing as good as we do:

1.Upside-down vision
2.Blind spot
3.Vascular scotoma
4.Out of focus outside the center and not focused for all the colors at the same time
5.Nonuniform sampling
6.Bad color vision in periphery
7.Geometric distortion
8.Blur due to saccades
9.Shifts in retinal image

Since we are able to see very well, current theories suggest that there must be some compensation mechanisms in the brain that correct those errors, preventing us from noticing them.

A NEW VIEW OF SEEING

The feeling of wholeness when perceiving an object derives from you knowing that you can access the object via exploratory actions.

The feeling of consciousness resides in being engaged in the process of acquiring sensory information

If mental representations were required -> Representations should be perfect (because is what we feel) -> Compensation mechanisms for errors required

Nothing of that is required with the sensorimotor approach. In this approach, seeing is not the activation of representation. Seeing is the process of being engaged in asking and answering questions about what is before us.

Presence of seeing has (those properties differentiate from remembering or imagining):

- Richness
- Insubordinateness
- Grabbiness
- Bodiliness

THE BIG IDEAS

2.1
Seeing doesn't require actual action, but having previously acted (this means that we have learnt the future potential for action)

Expectations help select the aspects of the scene which are important for the task at hands

APPLYING THE NEW VIEW OF SEEING

Visual recognition does not involve recognition of all the parts in an uniform way. Different parts involve independent recognition mechanisms.

Vision is completely independent of the defects or distortions of the sensors (Q: how does distortion influence, hence?)

THE ILLUSION OF SEEING EVERYTHING

We only see those parts of a scene that we are actively engaged in manipulating (the rest is discarded). And what you manipulate depends on your expectations.

Those expectations lead to several types of blindness:

- Inattentional
- Change
- Slow-change

⇨ You only see what you are currently (implicitly) asking yourself about

SOME CONTENTIOUS POINTS

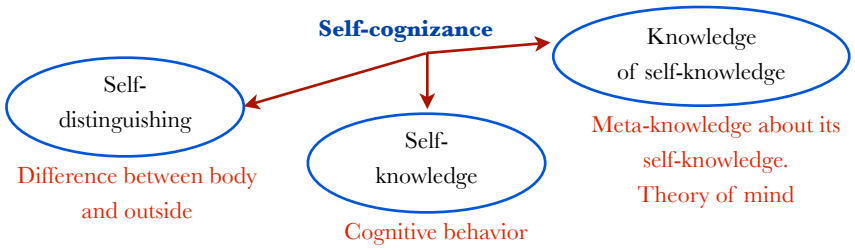
What is important is not the representation itself, but how it is used.

Visual experience is not the end product of some kind of neural processing: it is the way humans potentially interact with their visual environment.

There is no internal representation: the illusion of internal representation is generated by the fact that we can access to information in the environment almost immediately.

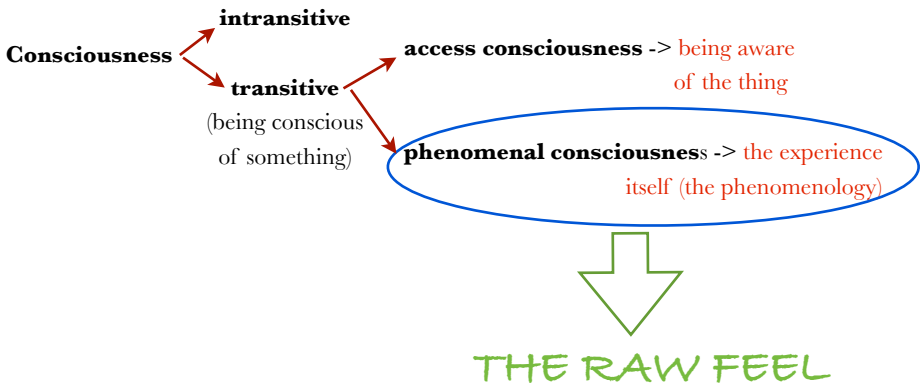
Action gives vision its presence.

TOWARD CONSCIOUSNESS



The reason I experience myself as being so real is that I am telling myself a self-consistent story about myself being real -> 'I' is part of its story

TYPES OF CONSCIOUSNESS



THE BIG IDEAS

3.1
Brain mechanisms do not generate the feel. They enable sensorimotor interaction that constitute the experience of feel

3.2
Feel = law of sensorimotor interaction + cognitively access the engagement

Feeling: A way of interacting with the world. Things we could do if we wanted to

The raw feel: the part of experience that remains after all the extra components (bodily, mental, states) are taken away

Qualia: the basic quality or what-is-like experience

access consciousness
- Being ready to make use of that thing in our cognitive actions (that is, cognitive access)
- Being aware of the whole context within which you are doing the cognitive access
  - Must have cognitive access to the fact that it has cognitive access to that something
- Some notion of self

Cognitive access -> choice
- **with regard to situation**
- **with regard to possibilities for action**

PHENOMENAL CONSCIOUSNESS

Components of feel
- cognitive states
- learned bodily reactions
- physiological states or tendencies
- the raw feel -> the basic quality or what-is-like experience

The raw feel cannot be generated by the brain

Raw feel
- Feels like something
- Has different qualities
- There is structure in the difference
- Is ineffable (can't be spoken of)

A SENSORIMOTOR APPROACH TO FEEL

Feeling is a quality of the interaction you have with something.

Feeling of something does not occur in the brain: it resides in your noting that you are currently interacting in a particular way with the something.

Feel is a quality of the interaction with the world.

This view explains why:

- Raw feel feels like something
- Raw feel has different qualities
- Raw feel has structure in differences
- Raw fee is ineffable

CONSCIOUSLY EXPERIENCING A FEEL

An organism consciously feels something when it has access consciousness to the fact that it is engaged in a particular type of sensorimotor interaction with the world, one that has richness, bodiliness, insubordinateness and grabbiness.

Conscious feeling of something requires:

THE BIG IDEAS

4.1
We do not see with our brains. Seeing is a visual manipulation.

4.2
Red is not a frequency of light reflected. It is the way red things change the light.

4.3
Color is not something that enters our brains. Color is just a law (the law that says how a colored thing changes with light)

Modes = sensorimotor laws

- Interaction with the thing in some way. The interaction should havE::
  - richness
  - insubordiness
  - bodiliness
  - grabbiness
- Agent must have a self (knowledges of own body, mind and social context)
- Agent must have conscious access to the quality

Machines have cognitive access to the environment?

No cognitive access to what it is doing

No notion of 'it' at all

THE SENSORIMOTOR APPROACH TO COLOR

Color is the way surfaces change incoming light.

Color is an aspect of the laws that govern changing responses of our photo receptors as we move surfaces around under changing illumination

The sensorimotor laws determine our experience of color

⇩

It is possible to change color experience by changing sensorimotor laws

SENSORY SUBSTITUTION

It is possible to feel with one sense as it were another, provided that arranges things to obey the same laws of interaction

The location and organization of the sensors is irrelevant. what is relevant are the laws that describe how motion of the sensor affect the sensed information

What counts for a sensation is not the part of the brain activated, but the MODE OF INTERACTION involved with the environment

⇩

That is why red doesn't sound like a bell !!. Because their modes are different

THE LOCALIZATION OF TOUCH

Why the activation of neurons in the brain induce sensations in some body location?

There is nothing more to feeling a touch than the fact that the brain has registered that certain laws currently apply -> the felt location is determined by which laws apply.

What constitutes the fact of having a feel is that changes of a certain type will occur when we do certain things.

The reason I feel it in my arm is that the brain has previously registered that when such activation occurs, certain laws apply

active motion of the body part	passive motion of the body part	vision	audition

The felt location is determined by which particular laws applies.

To have the feeling, one must attend to the identification of the law

THE PHENOMENALLY PLOT

Experiencing a raw feel is more than having a quality, it involves phenomenallity or presence.

Presence could be explained by the four aspects of sensory interactions:

- grabbiness
- richness
- bodiliness

- insubordinateness

Those are possessed by sensory experiences but not by thoughts. The more of those aspects a neural activity has, the more presence it will have.

Automatic bodily responses are one thing, but the feeling of an emotion involves cognitively monitoring of the bodily reactions. However, feeling emotions hasn't the same presence as feeling with sensors.

From all the aspects of a sensory interaction, bodiliness and grabbiness are the essential ones that determine the degree of sensory experience.

CONSCIOUSNESS

Feel is not something that happens to us, but something that we do.

A feel is conscious when we know that we are able to make use (in our judgements, reasoning, planning and communication) of the fact that the feel is occurring.

SUMMARY OF MAIN POINTS

1. Feeling is not something that happens to us, but rather a thing that we do.
2. The only important thing are the sensorimotor laws. They are the reason why no compensatory mechanisms are required
3. The feeling of something does not require continuous contact with the object. It requires you to be engaged in the action of exploration of the object.
4. The feeling of something appears not because you have now a complete access to the object, but because you explored the object in the past and you could do it again right now.
5. The feeling of completeness of an object is not due to the current sensory input but to the possibility of accessing sensory information
6. The feeling of continuousness of an object resides in being engaged in acquiring sensory data, not in the current sensory input.

About the author of Why red doesn't sound like a bell

J. Kevin O'Regan

Director of the Laboratoire Psychologie de la Perception, which specializes in human visual and auditory perception both in babies and adults. Discovered of change blindness effect, now working on a particular aspect of the problem of consciousness, namely the "what it's like" of sensory experience.

About the author of this note

Ricardo Téllez

PhD on Artificial Intelligence, works in the development of Service Robots and how they can understand our world. He is engaged in showing the difference between artificial intelligence and artificial cognition, and how the later can lead to artificial understanding for robots.