A Scientific Explanation of Spirituality

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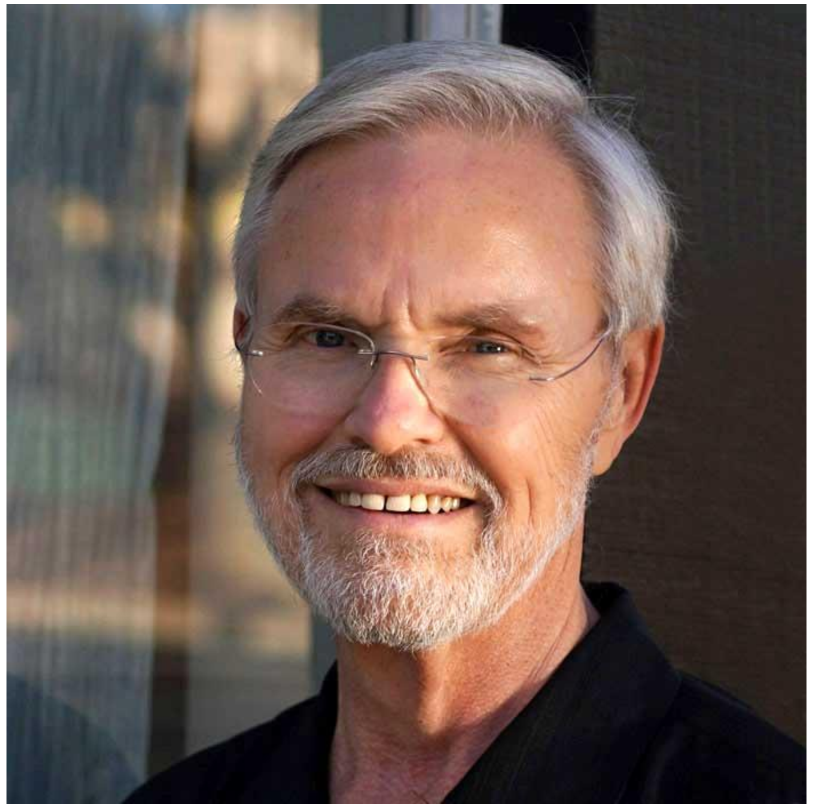

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- My ***forthcoming*** book is entitled,

Spirituality Explained
A Model of Consciousness and Spirituality

  - This talk presents a few of the core ideas of that book

- Everything is completely compatible with the **currently** known theories of physics and science

- There are **no** ***"spirits"*** in this explanation of **spirituality!**

What is Spirituality?

- My Equation is: **Spirituality = Religion – Dogma**
  - Spiritual paths can be either theistic or non-theistic
  - Spirituality cultivates: compassion, altruism, love, forgiveness, trust, acceptance, and other positive values
  - Spiritual practices may include prayer, meditation or some kind of surrender to a higher power
- This model of spirituality will explain:
  - Both theistic and not theistic spiritual paths and the positive values they cultivate
    - For theistic paths: why and how the "God" concept arose
  - Why and how spiritual practices work

When and How Did Spirituality Start?

- Hypothesis: **Spirituality developed approximately 50K years ago when human consciousness changed**
  - Human "Behavioral Modernity" was completed ~50K years ago
    - Burial, fishing, pigments, art, composite tools, bone tools, blade improvements, long distance material transport, and hearths
    - Relatively rapid transition versus slow improvement previously
- **The development of a complete language model of the world changed human consciousness** (~50K yr ago)
  - This new language world model facilitated the development of behavioral modernity
  - And it also caused a "living" problem,
    - Spirituality is the cure for that problem

Agents, Models of the World, and Self-Models

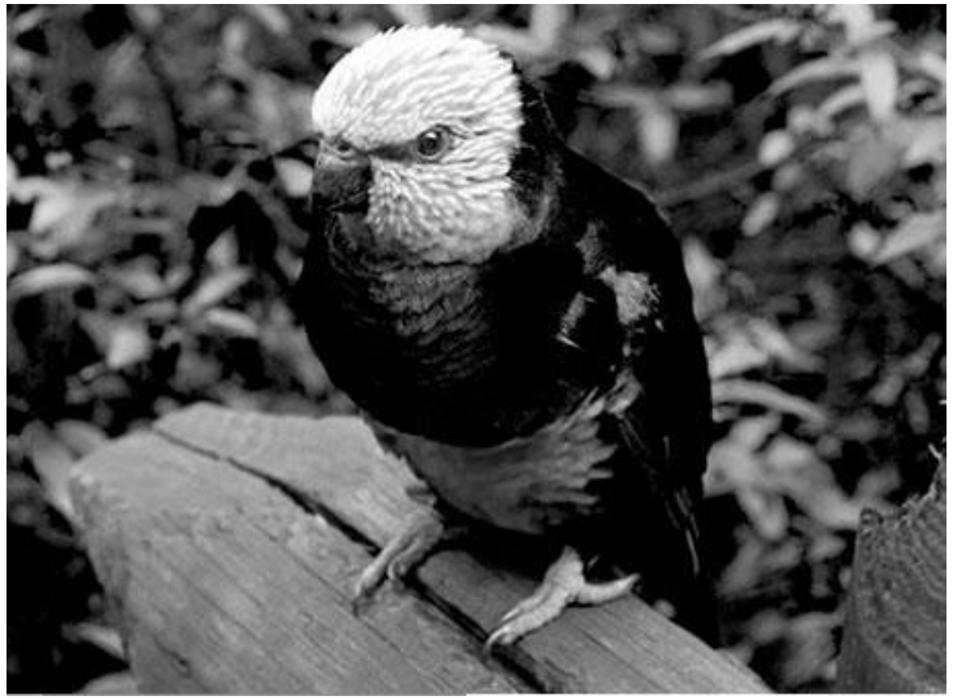
- An **Agent** has goals, a way of sensing the world, and a way to make changes to the world to achieve its goals
  - A human can be considered to be a successful agent
- A theorem(1) from control theory says "**Every Good Regulator of a System Must Be a Model of That System**"
  - This means any good agent must have a **model of it's world**
  - In addition, if the agent itself is part of the world, then the agent must also contain a **model of itself** (a self-model)

(1) Conant & Ashby, Int. J. Systems Sci., 1970, vol. 1, No. 2, 89-97,
"Every Good Regulator of a System Must Be a Model of That System"

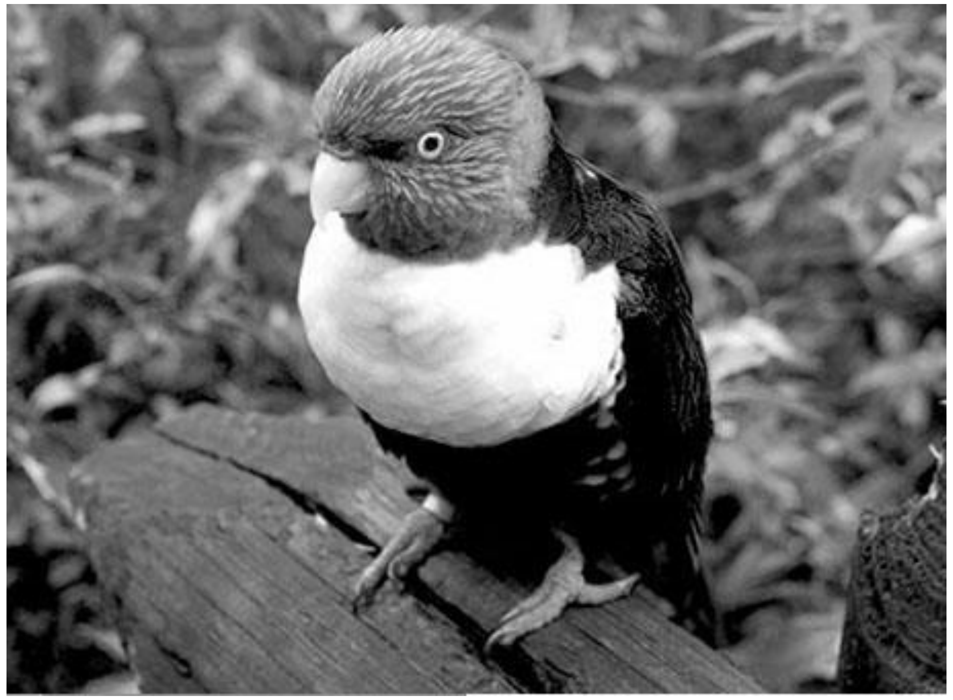
Where Do Humans Live?

- Humans are good agents so we must contain a **model of the world** and a model of the ourselves (a **self-model**)
  - Self-model = **body model** + **autobiographical self-model**
- A **body** in a **world** is equivalent to a **body model** in a **model of the world =>** no answer to “where do we live?”
- However, we are also an **autobiographical self-model**
  - An autobiographical self-model is a purely **conceptual** model
  - **Concepts do not exist in the world!**
  - So our **autobiographical self-model** can **only** exist in our **language model of the world** – i.e. not in the “**real**” world!
- Therefore we live in our **model of the world!**

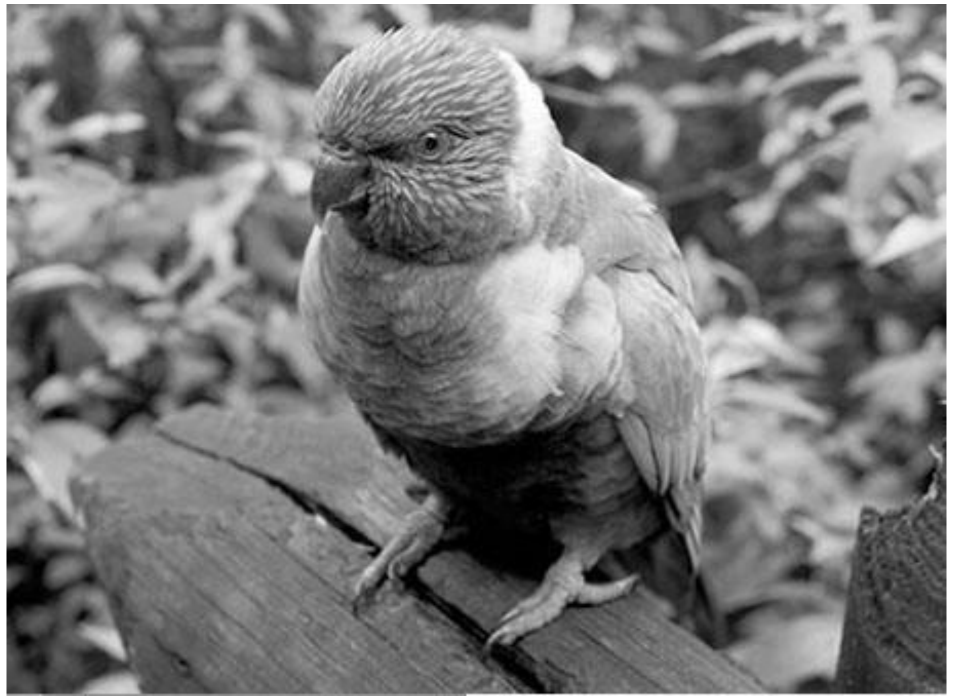
Do We Experience the World Directly? **OR** Do We **Only** Experience Our Model of the World?



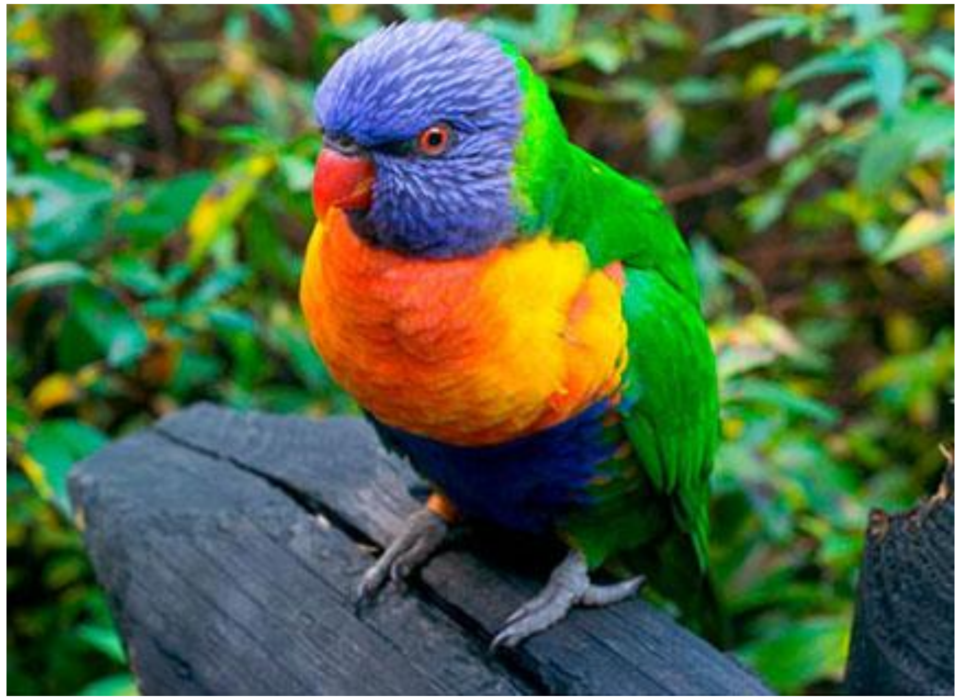
Blue Light



Red Light



Green Light



Colors

Exist Only In Our Model of the World

We are a Self-Model Experiencing & Living In a Model of the World

- We are **not** just a body living in a world
- We are a **self-model** living in a **model of the world**
- Our sensory **experiences** are of that **model of the world**
  - We do **not** directly experience the **"real world"**

The Main Hypothesis of this Explanation of Spirituality is:

- The human agent (and hence human consciousness) can be broken down into **three different, but interconnected sub-agents**
- Whereas animals only have **two of these sub-agents**
    - The 3rd agent is very limited in animals compared to humans
    - The "god" concept can be found in one of the 2 agents in animals
- The human "**living problem**" was caused by this new very effective **3rd agent** that evolved in modern humans

The Three Agent Model of the Brain

- Three different, but integrated, functional agents in the brain:
  - **The Thinker** – the executive function which uses language, symbols, concepts, and images to **solve problems**
  - **The Doer** – controls the body and has emotions
  - **The Experiencer** – constructs both the sensory and the language (or conceptual) model of the world and the body
- The most compelling evidence for the Thinker and Doer agents is **Dual Process Theory**(1) (DPT) in psychology
  - DPT System 1 (the **"Fast" subconscious** system) is the **Doer**
  - DPT System 2 (the **"Slow" conscious** system) is the **Thinker**

(1) Nobel Laureate **Daniel Kahneman** popularized **Dual Process Theory** in his 2011 book**, "Thinking, Fast and Slow"**

Dual Process Theory

- **Doer**=System **1**: **fast**, intuitive, implicit, & **subconscious**
- **Thinker**=System **2**: **slow**, deliberative, explicit, & **conscious**
- Popularized by psychologists Daniel Kahneman's 2011 book: ***"Thinking, Fast & Slow"***
  - Describes the **biases** that System 1 can have in decision making
  - Kahneman 2002 Nobel prize in Economics for Prospect Theory and Behavioral Economics is based on Dual Process Theory
- Also popularized by Malcom Gladwell's 2002 book: ***"Blink: The Power of Thinking without Thinking"***
  - He extols the **merits** of the System 1 decisions!
  - These are often intuitive decisions that are hard to logically justify

Dual Process Theory **Example**

- *Linda is thirty-one years old, single, outspoken, and very bright. She majored in philosophy. As a student, she was deeply concerned with issues of discrimination, and social justice, and also participated in anti-nuclear demonstrations.*

- Which of these three statements is the **most** probable?

Right Hand 1. Linda is active in the feminist movement
Left Hand 2. Linda is a bank teller
R & **L** Hands 3. Linda is a bank teller and is active in the feminist movement

- The **correct** answer is either Statement **1** or **2**

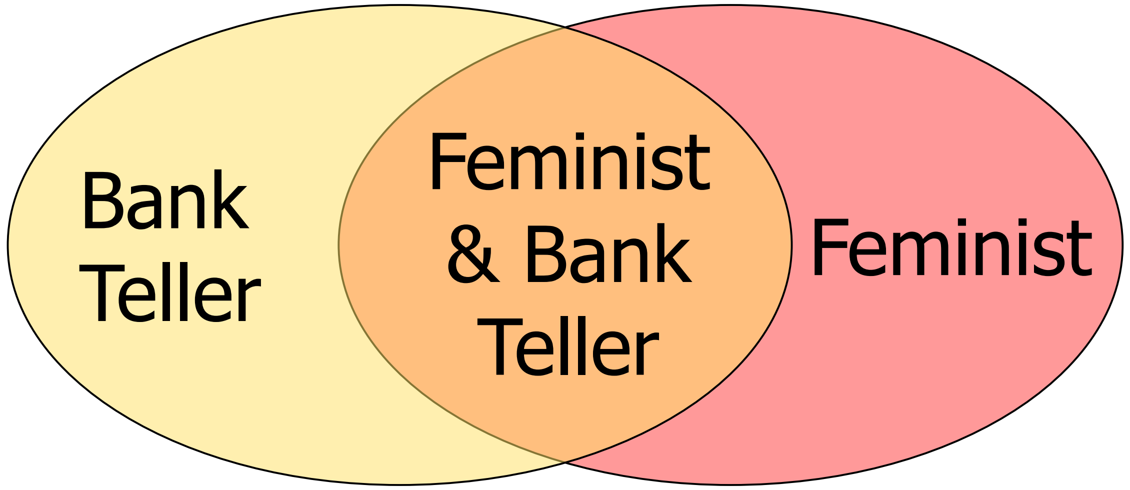
Dual Process Theory **Example**

- Which of these three statements is the **most** probable?

Thinker ⇦ 1. Linda is active in the feminist movement
Thinker ⇦ 2. Linda is a bank teller
Doer ⇦ 3. Linda is a bank teller and is active in the feminist movement

- The **correct** answer is either Statement **1** or **2**

The Thinker figures out this Venn diagram:



The Doer answers a different question:
Which statement matches more of the categories mentioned in the description?

Dual Process Theory **Example**

- When testing Stanford Business School graduates
  - Who majored in probability, decision making, and statistics
  - **85%** ranked feminist bank teller as **more** probable
    - **And they were wrong!**

- In a review of this experiment, **Stephen Jay Gould** wrote:
  - I am particularly fond of this example because I know that the third statement is **least** probable, yet a little homunculus in my head continues to jump up and down, shouting at me — "but she can't just be a bank teller; **read the description!**"

International Conference in 2006

"In Two Minds: Dual-process Theories of Reasoning & Rationality”

2009 Book: ***"In Two Minds: Dual Processes and Beyond"***

In Chapter 2, one of the organizers, J. Evans, says:

- “It would be more useful to describe this grand unifying form of dual-process theory as the **'two minds hypothesis'**.
- Here I define **'mind'** as a high-level cognitive system
  - **capable of representing the external world**
  - and **acting upon it** in order to
  - serve the **goals of the organism**.

  …”

"In Two Minds: Dual Processes and Beyond", 2009 Book

Book **'two minds hypothesis'** *quote continued:*

- "…The two minds hypothesis is that the human brain contains **not one but two parallel systems** for doing this.
  - **Animals**, according to this view, have but one system corresponding to the **'old mind'** in human beings.
  - **Humans** have a **'new mind'**, which coexists in uneasy coalition with the first, sometimes coming into direct conflict with it.
- This is a strong, even startling hypothesis, which makes it very interesting…"

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  - **Humans** have a **'new mind'**, which coexists in uneasy coalition with the first, sometimes coming into direct conflict with it.
- This is a strong, even startling hypothesis, which makes it very interesting **(if probably wrong!)."**
  - ***Hopefully THIS presentation will make this hypothesis much more plausible to YOU***

Thinker and Doer **Self-Models**

- Agents **need** a self-model if they **change** the world and if they are **part** of the world
- The **Thinker's** Self Model: is **VERY** complicated & includes:
  - The **autobiographical narrative history of "me"**
  - All the **goals** the Thinker made up, like *"I must always be right!"*
  - A **simplified Body Model** which he thinks he controls directly
- The **Doer's** Self Model: is much simpler:
  - The **full Body Model** which includes the current state of the body and knowing all of it's capabilities and limitations;
  - The **goals** which include attachments, and aversions as indicated by emotions and feelings

The Experiencer has **Two** Self Models (That Are Equivalent)

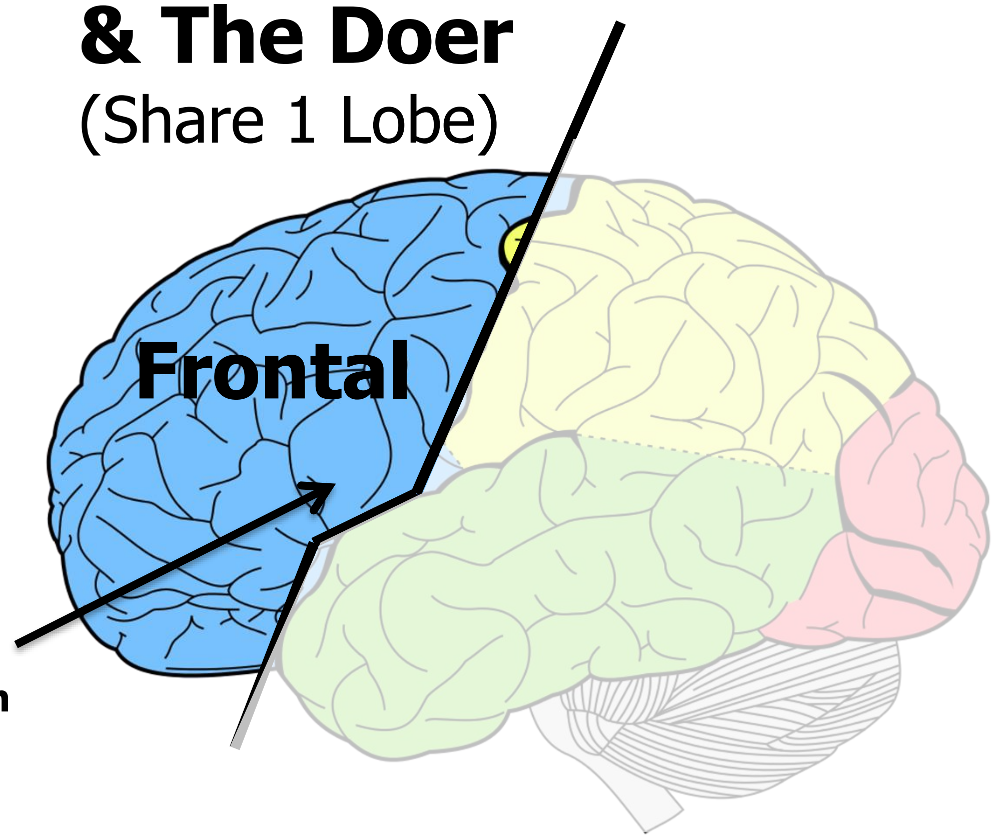
- The Experiencer **does not** change the **external** world
- However, the Experiencer **does** direct (TD & BU) **attention** and that **changes** the **internal** representation of the world
    - So, paying attention **does** modify the internal world model!
    - Therefore the attention state must be **part** of the world model
    - So in a sense, the Experiencer **is** the current state of **attention** **combined** with the current state of the **world model**
- **1st** Experiencer's **Self-Model** is identical to the **World Model**
    - So, the Experiencer does **not** have a **separate** self-model…
- **2nd** The Experiencer has **NO Self Model**

TD = Top Down

BU = Bottom Up

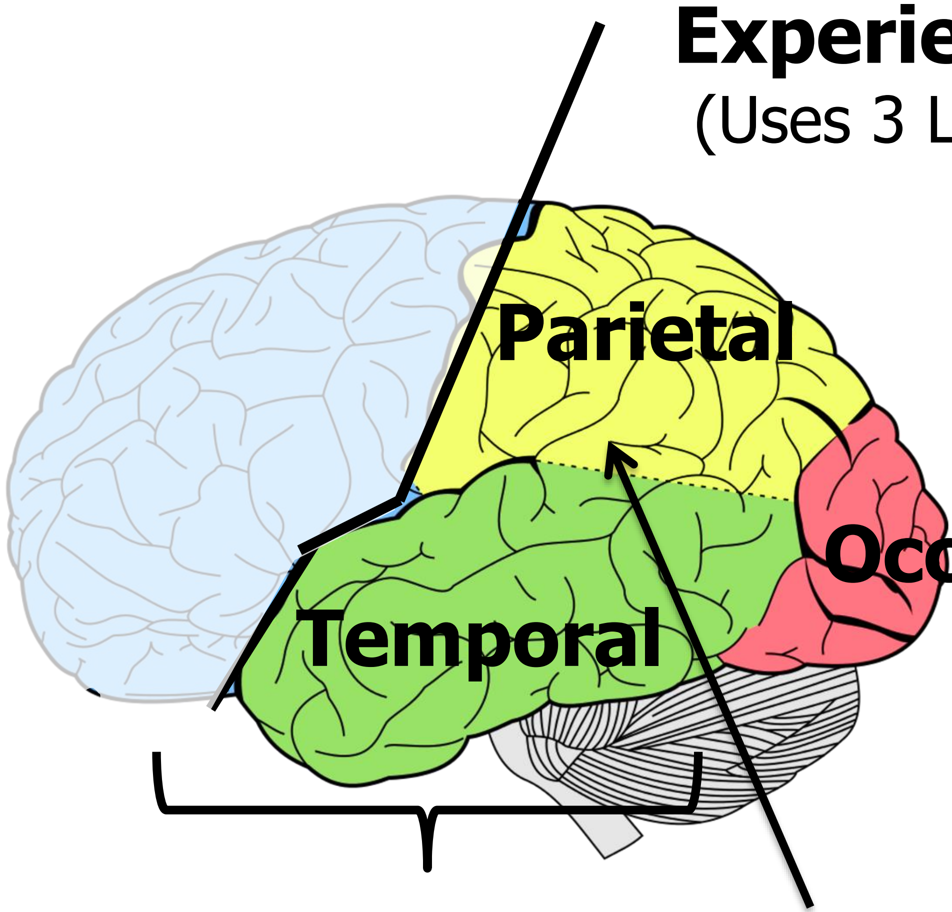
The **Approximate** Locations of the Three Agents in the Brain

The Thinker
& The Doer
(Share 1 Lobe)



Broca's Area for Language Production

The Experiencer
(Uses 3 Lobes)


Parietal
Occipital
Temporal

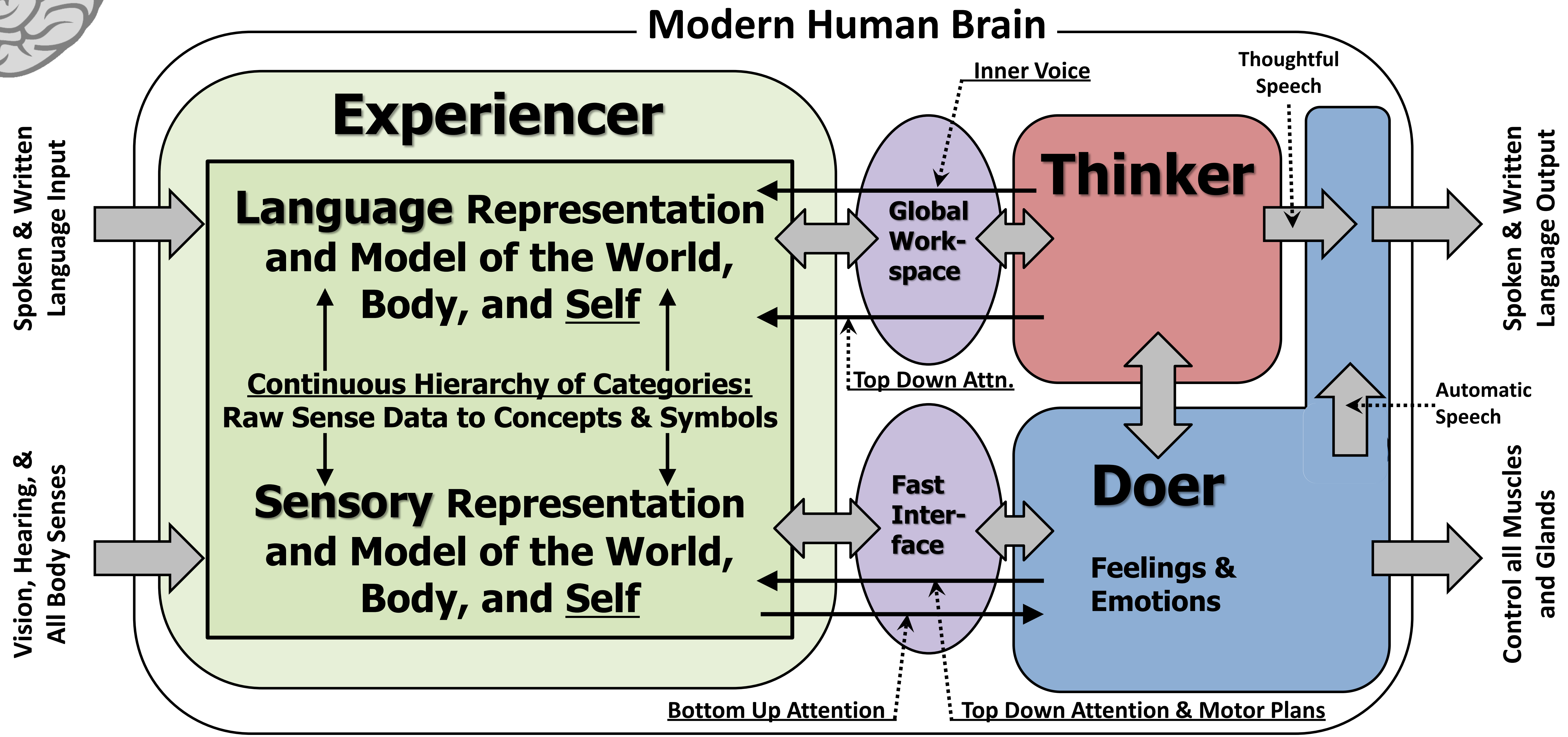
Semantic Memory in the Temporal Lobe

Wernicke's Area for Language Perception

The Thinker & The Doer
share 40% of brain

The Experiencer
is **60%** of the brain

The Three Agents & Their Interfaces:



Modern Human Brain

Spoken & Written Language Input

Vision, Hearing, & All Body Senses

Experiencer

Language Representation and Model of the World, Body, and Self

Continuous Hierarchy of Categories:
Raw Sense Data to Concepts & Symbols

Sensory Representation and Model of the World, Body, and Self

Global Work-space

Fast Inter-face

Inner Voice

Top Down Attn.

Bottom Up Attention

Top Down Attention & Motor Plans

Thinker

Doer

Feelings & Emotions

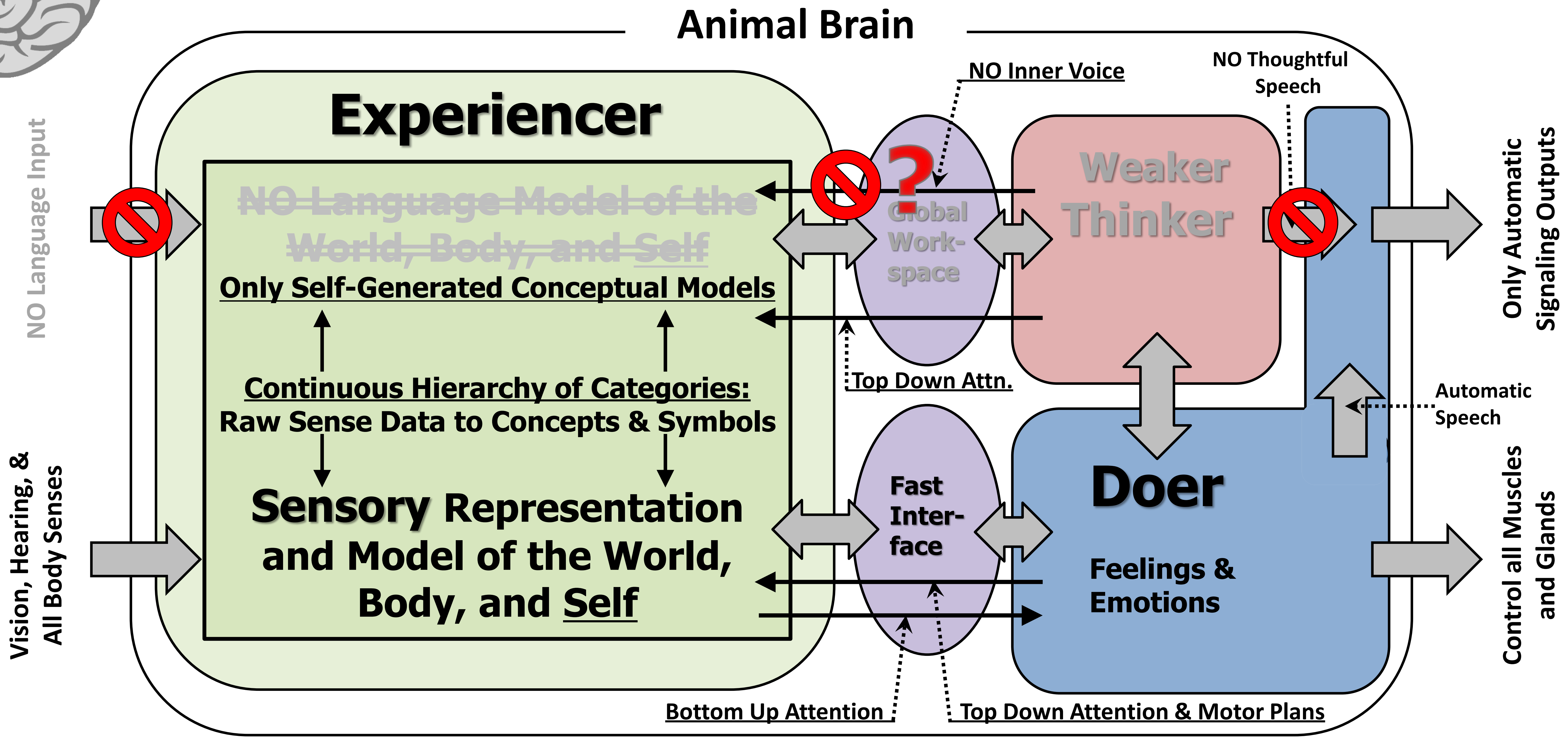
Thoughtful Speech

Automatic Speech

Spoken & Written Language Output

Control all Muscles and Glands

An Animal’s (or Ancient Human’s) Agents:



Animal Brain

NO Language Input

Vision, Hearing, & All Body Senses

Experiencer

~~NO Language Model of the World, Body, and Self~~

Only Self-Generated Conceptual Models

Continuous Hierarchy of Categories: Raw Sense Data to Concepts & Symbols

Sensory Representation and Model of the World, Body, and Self

NO Inner Voice

?

Global Work-space

Top Down Attn.

Weaker Thinker

NO Thoughtful Speech

Only Automatic Signaling Outputs

Fast Inter-face

Doer

Feelings & Emotions

Automatic Speech

Control all Muscles and Glands

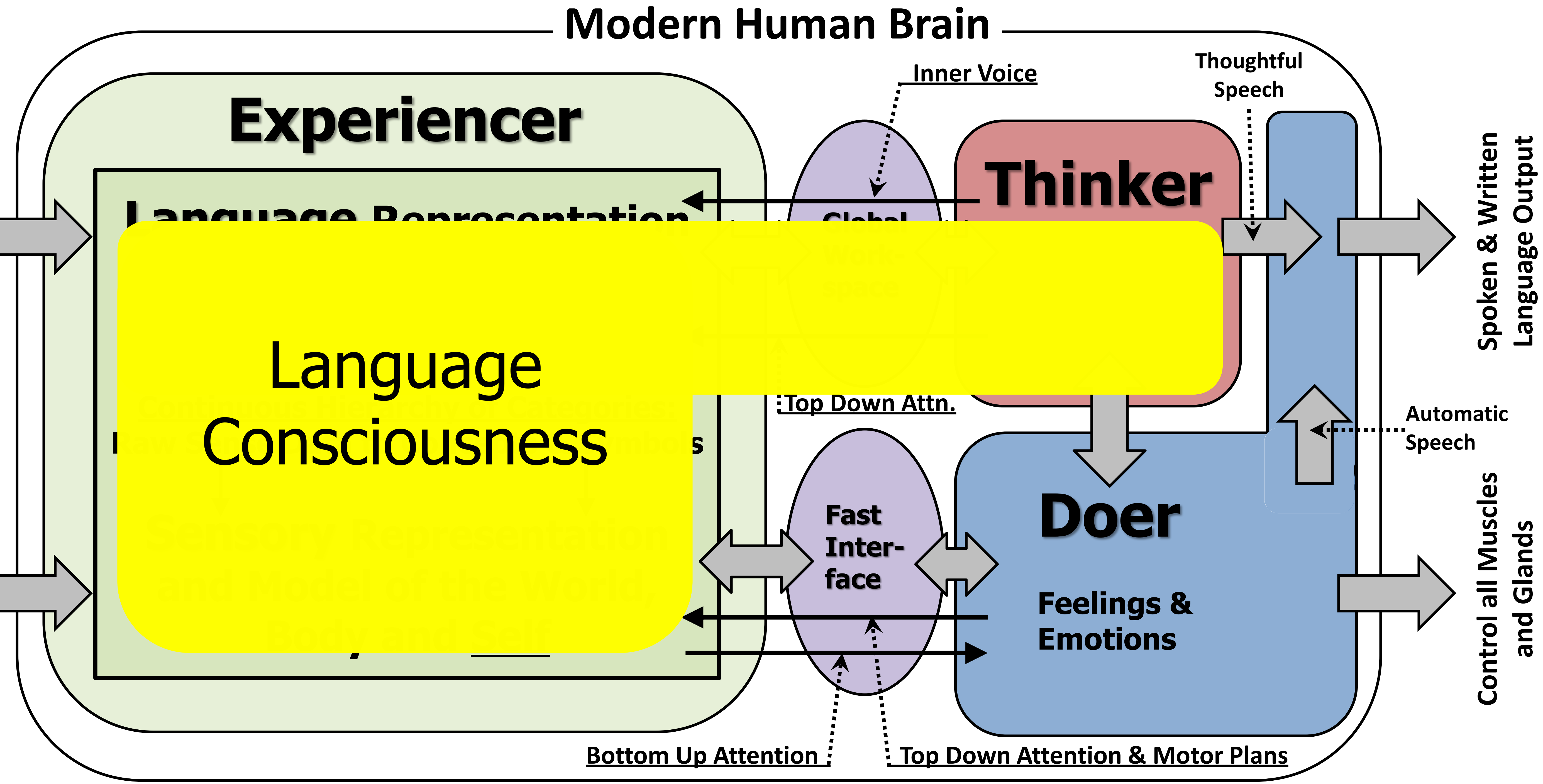
Bottom Up Attention

Top Down Attention & Motor Plans

Given Three Different Agents, Are There Three Kinds of Consciousness?

- Thinker Agent + Experiencer Agent gives rise to the…
  - **Thinker Consciousness**
  - I will call this the "**Language Consciousness**" (or **LC**)
- Doer Agent + Experiencer Agent gives rise to the…
  - **Doer Consciousness**
  - I will call this the "**Primary Consciousness**" (or **PC**)
- The Experiencer Agent gives rise to the…
  - **Experiencer Consciousness**
  - I will call this the "**Fundamental Consciousness**" (or **FC**)

Human Language Consciousness



Modern Human Brain

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Language Consciousness

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Thoughtful Speech

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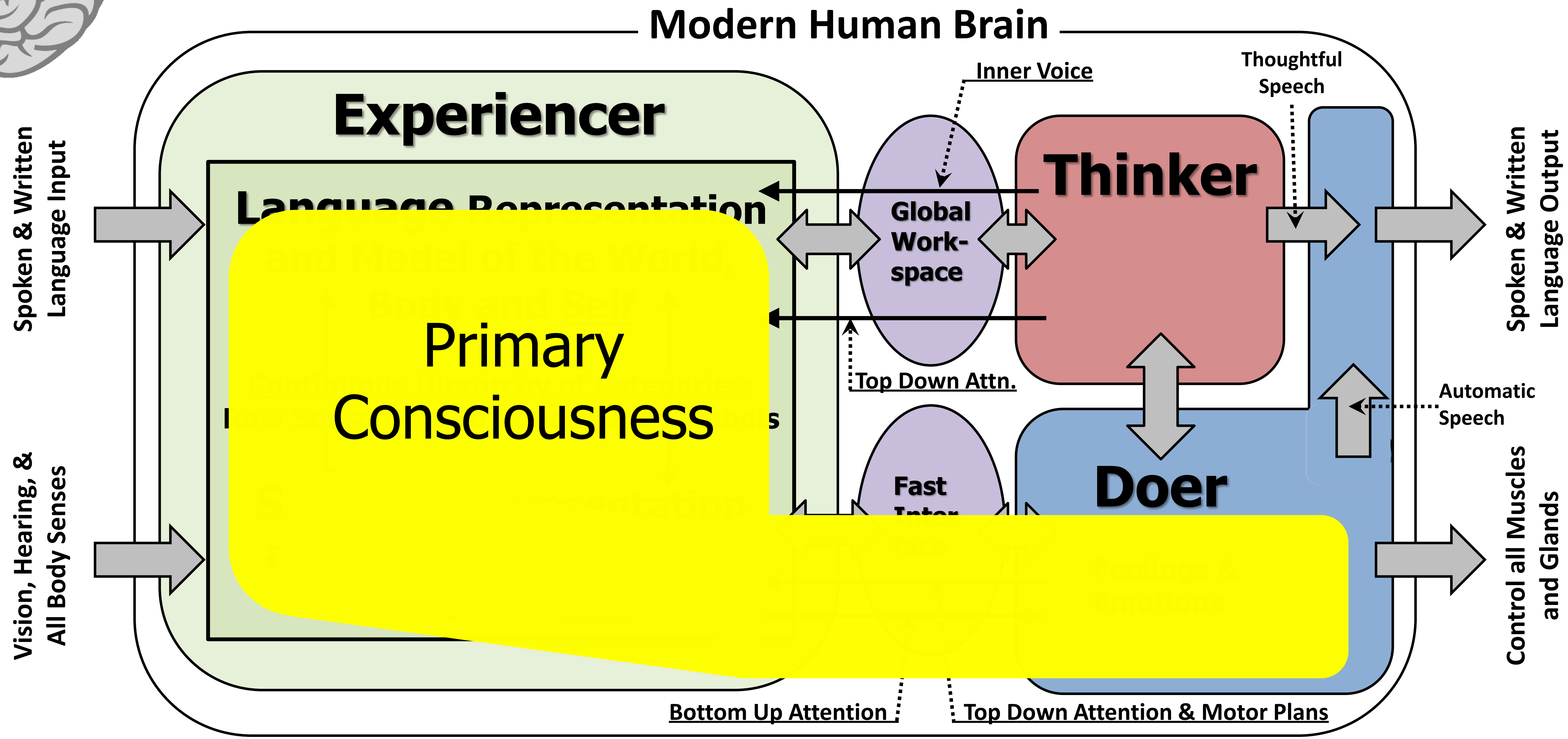
Human Primary Consciousness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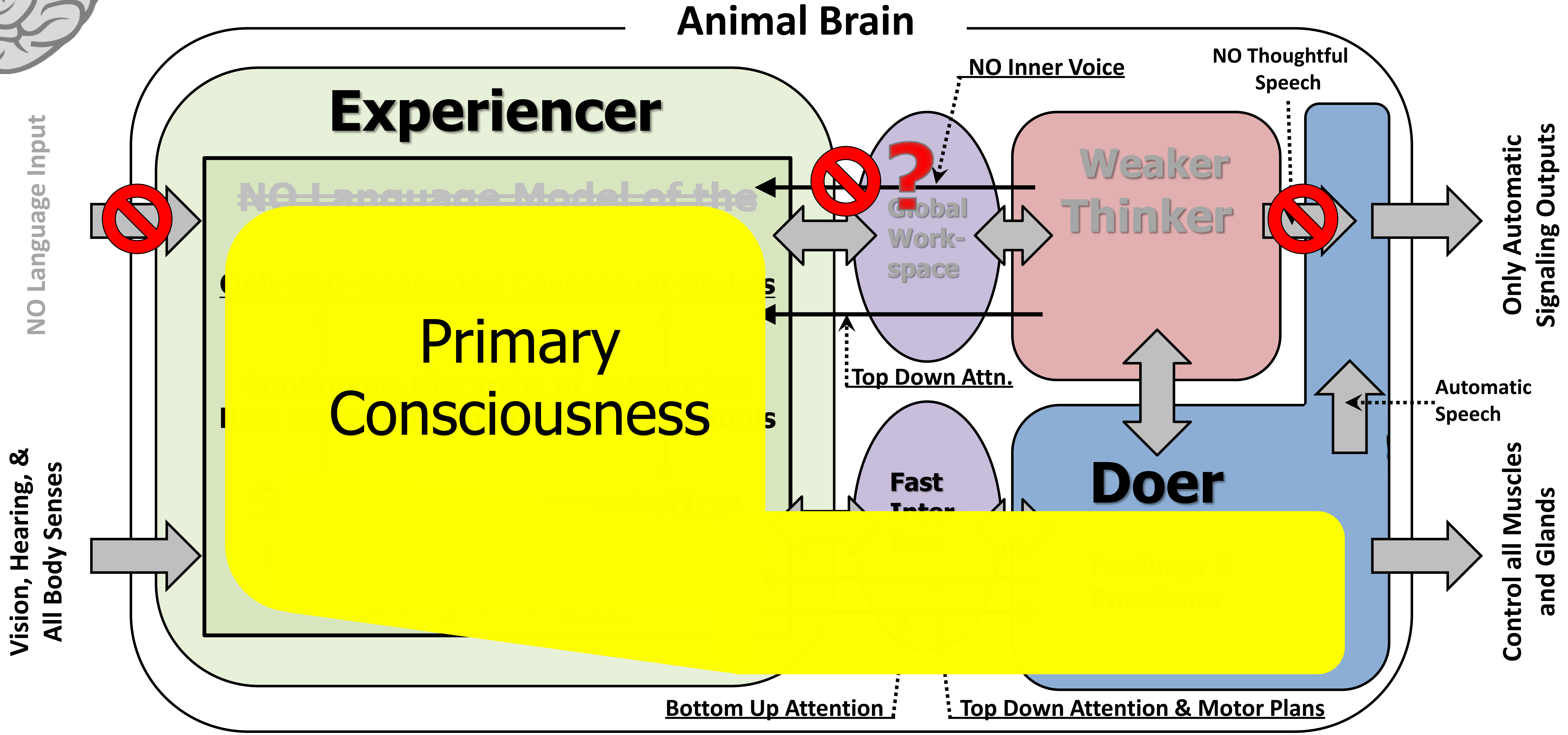
Animal Primary Consciousness


Animal Brain
Experiencer
~~NO Language Model of the~~
Only Self-Generated Conceptual Models
Primary
Consciousness
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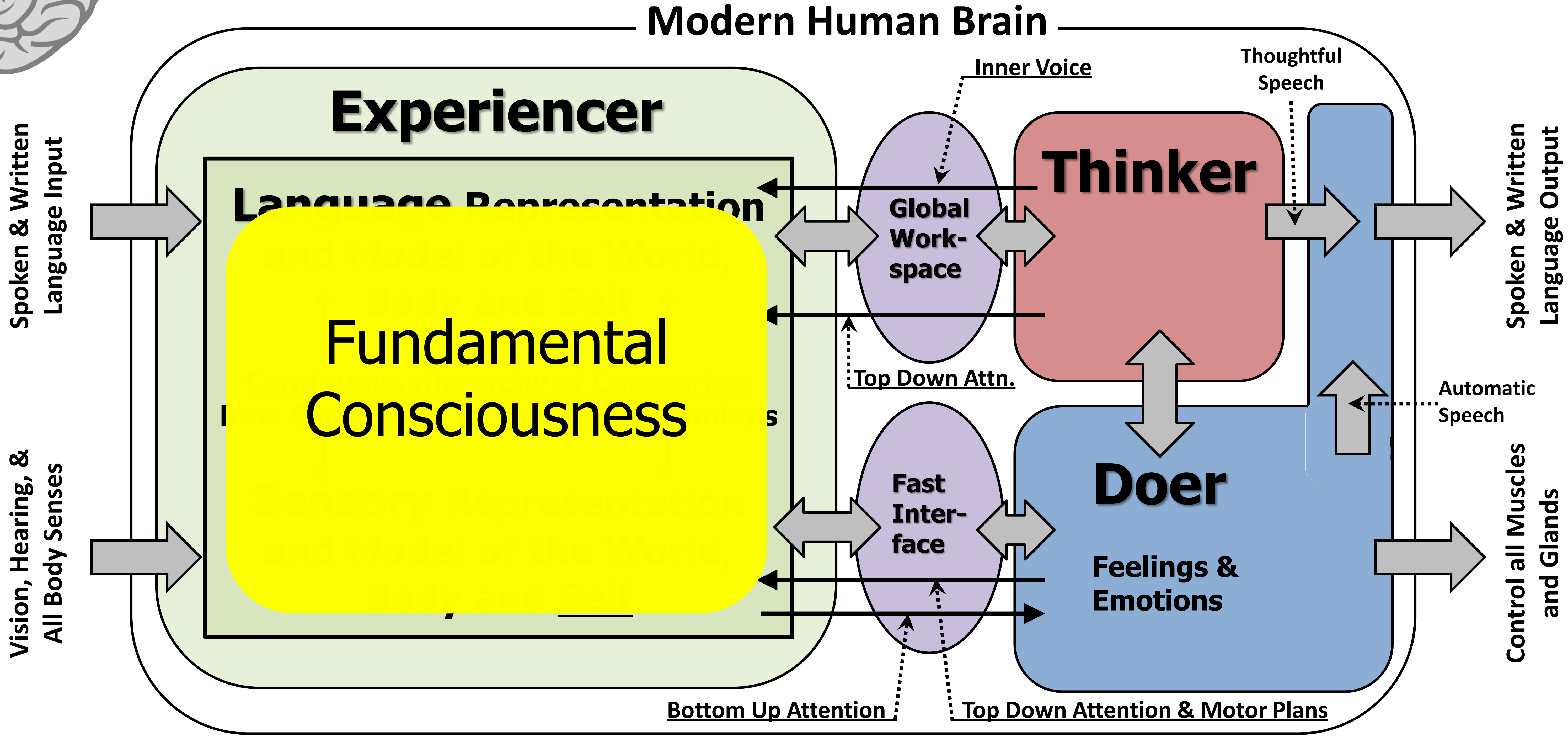
Human Fundamental Consciousness



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Fundamental Consciousness **IS** An Enlightened State of Consciousness

- Hindu **Advaita Vedanta** says enlightenment is **Nondual**
  - **Nonduality** means “not two – one”
  - It is seeing that “**self**” versus “**other**” distinctions are illusions
  - In other words, **“The world and I are one”**
  - The **1st** Experiencer **self-model** = the whole **world model**
  - Thus **Fundamental Consciousness** is **Nondual**
- In Buddhism, **Anatta** is the realization of no-self – that any experience of a self, of any kind, is an illusion
  - The **2nd** Experiencer self-model is that there is no self-model
  - **Anatta** is realized in the **Fundamental Consciousness** State

Primary & Language **Comparison:**

Primary Consciousness	**Language Consciousness**
Ancient (many millions of years)	New (about 50 thousand years old)
Primates and many other animals have this	Seems to be (almost) uniquely human
Massively parallel processing	Largely serial processing
High Bandwidth	Low Bandwidth
Intuitive, spatial, concrete thought, music, art, athletics	Language, logic, temporal sequences, abstract thought, science
Difficult to report the contents of consciousness without using the Language Consciousness	Easily “reportable”; often mistaken as the only consciousness
The entity that perceives the “blind sight” object	The entity that is blind to the “blind sight” object
The “Subconscious” (or Id or Unconscious)	The Ego (and Super Ego)
The “Self” (or “true self”)	The “self” (or “narrative self”)
Does most of the work	Takes most of the credit

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Does most of the work	**Takes most of the credit**

What’s the **Problem** that Spirituality and Spiritual Enlightenment Solve?

The problem is the Thinker! (the Thinker agent, i.e. Ego)

- The Thinker is **ideal** for developing civilization, science, and technology; and to help us achieve goals…
  - But it is **not good** at living a happy life
- The Thinker **finds** problems everywhere
  - This can lead to a negative critical attitude towards life
- If there is **no** problem, then that is a problem!
  - So the Thinker will find an old problem or invent a new problem
- The Thinker argues with reality: **“This should not happen” or “This is bad and wrong” or “I should not have done that!”**

⇨ An Experiencer model of the world filled with contradictions

More about The **Thinker “problem”**

- **Negative emotions** are a problem for the Thinker to solve:
  - “How do I prevent this from happening again?”
- **Positive emotions** can also be a problem for the Thinker:
  - “How do I make sure this happens all the time?”
- Problems can be in the **past** – often called a **resentment**;
- Problems can be in the **future** – usually triggering **fears**
- Thus, the Thinker is an **emotion amplifier** and an **emotion echo chamber**!
  - Buddhism: the cause of Suffering is Attachments and Aversions
  - The Thinker amplifies and echoes Attachments and Aversions

The **Purpose** of Spirituality

- The typical non-spiritual modern human **completely identifies as the Thinker's self-model**
  - "I am <the autobiographical self-model> and I am in complete control of the body!"
- The goal of spirituality is to **undo the problems that this Thinker identification creates:**
  - **Reduce identification** with the Thinker
  - Diminish the Thinker's **selfishness and self-centeredness**
  - Reduce the Thinker's **judgments and criticisms**
- **Theistic** spirituality asks the Thinker to **surrender** to "God"

Non-Theistic Spiritual Traditions:

- Try to undo the **suffering** caused by the Thinker
    - These paths arose when the **Thinker first became conscious**
    - The dramatic **increase** in suffering caused by the Thinker was **more apparent** at that time
- As I said, some of these paths have “**Enlightened States**” where this Thinker suffering can be **completely** undone
    - Meditation and other spiritual practices apparently result in a **Fundamental Consciousness** state
    - In that state there is no identification with the Thinker

… Now continuing with the Theistic Spiritual Traditions…

What is "**God**" in this model?

- When **Language first** started to become a **universal representational system**…
  - A **weaker Thinker** could have experienced a **stronger** agent (the Doer or Experiencer) with **more power in the world**
  - Thus the Doer or Experiencer could became identified as "**God**"
- The Experiencer is actually the best candidate for "God"
  - Experiencer **creates** the world where Thinker self-model **lives**
  - **Intuition** comes from the Experiencer & intuition is often said to be the channel God uses to answer prayer
  - **Wise intuitive** modifications of the **attention** mechanism could give the Experiencer (God) quite a bit of power over the world

Alcohol Addiction

- The **Thinker starts** the alcohol addiction cycle…
  - "I really like alcohol, I should drink more often!"
  - This creates a **Thinker goal** to drink
  - Repeating this behavior eventually trains the **Doer** to copy that **goal**
- Eventually, **both** agents become addicted to alcohol
  - Doer drinks if triggered by **BU** attention directed to alcohol
  - Thinker **obsesses** about alcohol and uses TD attention to get alcohol
  - Eventually the Thinker notices the negative consequences of drinking and wants to **stop**, but it's too late, both agents' goals are too strong
  - Thus addiction is using **TD** and **BU** attention focused on **alcohol** to keep the addiction process going

Theistic Spiritual Tradition Example: Alcoholics Anonymous Recovery

- AA claims that recovery from alcohol addiction is possible due to a “spiritual awakening” from working the 12 steps:
  - **Step 1:** We admitted we are powerless over alcohol and our lives are unmanageable
    - Thinker wants to stop drinking but it admits that it is powerless over alcohol and can’t manage its own life
  - **Step 2:** Came to believe that a Power greater than ourselves could restore us to sanity
    - Thinker sees that the Experiencer could help with the addiction
  - **Step 3:** Made a decision to turn our will and our lives over to the care of God as we understood Him
    - The Thinker surrenders to the Experiencer

The Experiencer's **Normal** Attention Control Mechanism

- The Experiencer knows the Thinker and Doer **goals**
  - The Experiencer uses **BU** attention to inform the Thinker and Doer if any of their **goal conditions are detected**
- Experiencer directs **TD** attention as requested by the agents
  - Also it pays attention to Thinker's inner voice or Doer's emotions
  - This attention effectively **amplifies** the inner voice or emotion
- In an **active alcoholic**, the Thinker inner voice **obsessing** about drinking gets amplified and reinforced so it continues
  - It treats the obsession as a **TD** attention request to find alcohol
  - Alcohol found by **BU** attention causes the Doer to drink it

The Experiencer's **Wise Intuitive** Attention Control Mechanism

- Experiencer notices the Thinker admits it is **defeated** by alcohol and it wants the Experiencer to **help** it stop drinking
  - The Experiencer uses **intuitive wisdom** to know that **less attention** to alcohol could help the agents not drink
  - The Experiencer directs **less** TD or BU attention to alcohol
  - Doing this also **diminishes** the obsessive alcohol thoughts
- This same mechanism can decrease all **attachments and aversions** as required for Buddhist enlightenment
  - It can also explain **less** emotions and inner voice that are reported by individuals in enlightened states
  - This happens if the Experiencer notes these **goal requests**

This Explanation of Spirituality Can Also Explain **Some Bible Passages**

- God brought all animals & birds to Adam so he could name them
    - The Experiencer allows the Thinker to generate many **nouns** – 1st step in creating a universal language representational system
- In Eden: *God said, You shall not eat of the fruit of the tree of the knowledge of good and evil; when they did eat it they were expelled from Eden and were cursed with all kinds of suffering.*
    - Describes when the Thinker **first became a conscious agent**
- [Jesus said] *"The Father and I are one"*
    - The Thinker has **surrendered** to the Doer and/or Experiencer
    - Or, perhaps Jesus was in a **Fundamental** Consciousness State

How Does **Meditation** Help Solve the Thinker "Problem"?

- Meditation attempts to **quiet the Thinker's inner voice**
  - **Concentrating on breathing** - Breathing is one area where the Thinker and Doer share motor control
  - **Mantras or Chants** - Repeating the same phrase over and over keeps the Thinker busy and decreases inner voice thoughts
  - **Focused top down attention** by the Thinker keeps it busy directing attention instead of generating inner voice thoughts
  - **Open monitoring of bottom up attention** is noticing the Experiencer since it is the generator of bottom up attention
  - This all makes it easier to **notice the Doer and Experiencer** agents and thus to **reduce identification with the Thinker**

How Do Other **Spiritual Practices** Help Solve the Thinker "Problem"?

- **Surrender** is the Thinker giving up his illusion of control
  - Thinker uses **Prayer** to ask for help from Doer & Experiencer
- **Living in the "Now"** is what the Experiencer does always but the Thinker is often off in the future or the past
- **Forgiveness & acceptance** can mitigate resentments caused by the Thinker trying to solve problems in the past
  - **"Forgiveness is giving up all hope of a better past"**
  - Krishnamurti said **"You see, I don't mind what happens"**
- **Trusting a Higher Power** (or God) can mitigate fear caused by the Thinker trying to solve problems in the future
- **Gratitude** is the antidote to the Thinker's many complaints

Thank You!

- Thanks for directing your Top Down Attention to my Presentation!
- I hope that:
  - Your Experiencer intuitively understood the three agent model of consciousness,
  - And that this model has explained the origin, purpose, and efficacy of spirituality!

The End

- I would very much appreciate any and all thoughts and feedback. Thank you!
  - Please check out **www.SpiritualityExplained.com** where there are links to all my **YouTube** videos and **PDFs** of all my presentations.
    - Also sign up for very infrequent emails by clicking on **"Sign Up Now"** on any page of the website.
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