

# **The Emerging Scientific Mind/Brain**

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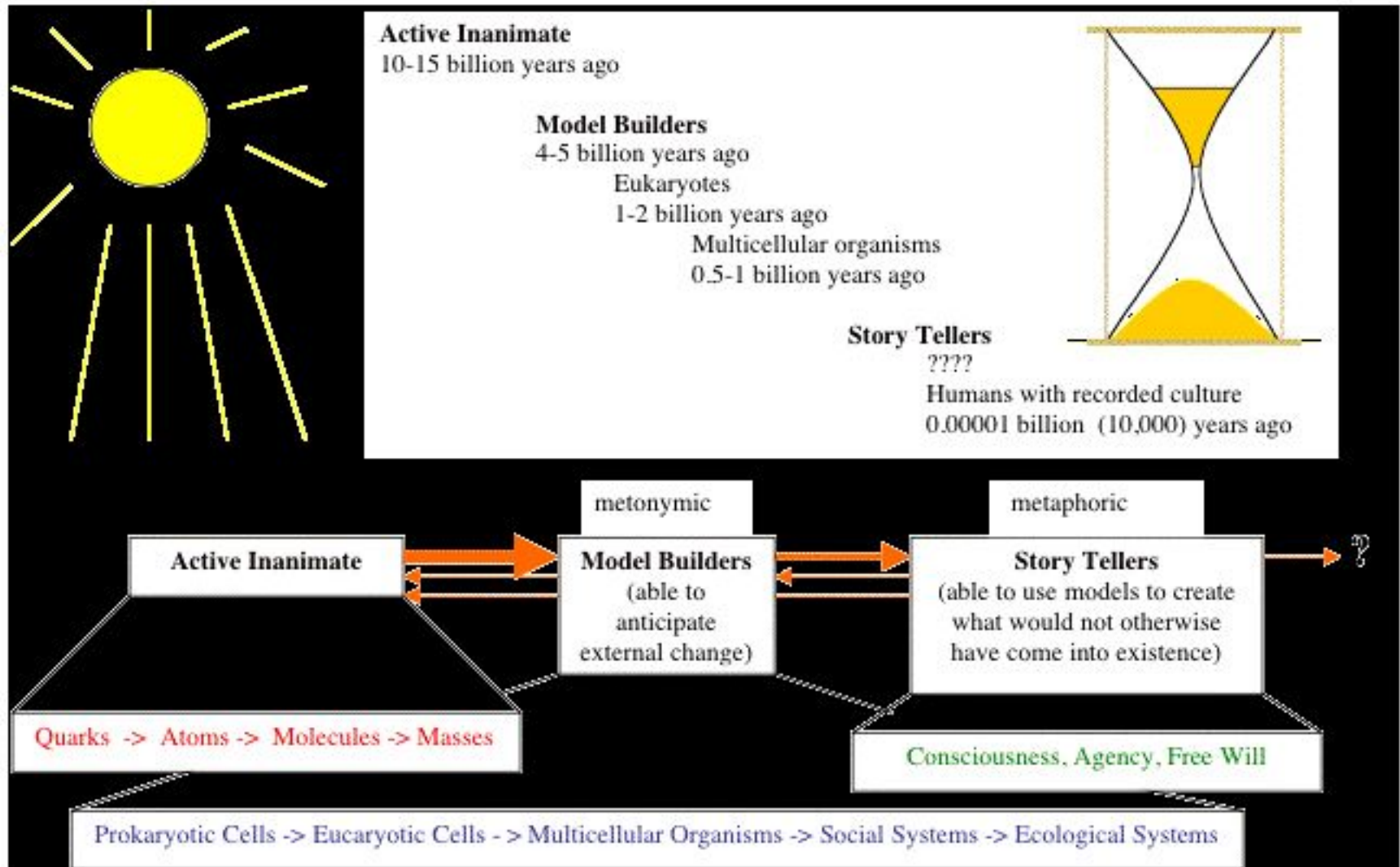
**“Building the Scientific Mind”  
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On-line at <http://serendip.brynmawr.edu/reflections/sciencemindbrain05/>

# Setting the context:

The universe as an emergent system with the mind/brain as a late product that substantially enhances the continuing exploration of possible forms of material organization

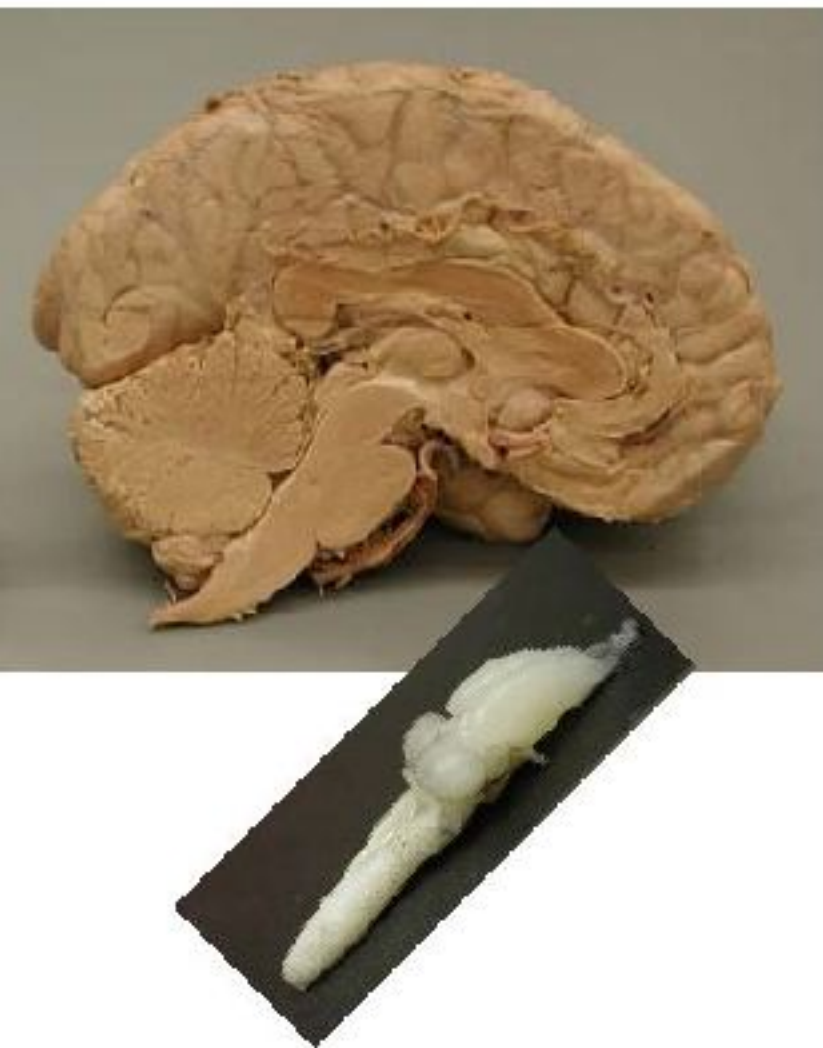


## Key points from “context”:

- A very long and continuing process of **exploration** of possible forms of organized matter/energy occurring for the most part without a planner or architect or blueprint (originally with **no purpose, intent, meaning**)
- Living organisms ("**model builders**") added internal organizations capable of representing aspects of their surroundings based on prior events and hence of anticipating external change
- Some living organisms ("**story tellers**") added the further capability of generating alternate conceptions of themselves and their surroundings. With this came purpose, intent, meaning, and the potential of bringing into existence forms of organization that would not otherwise have occurred, ie that exist only because of planning and intention.

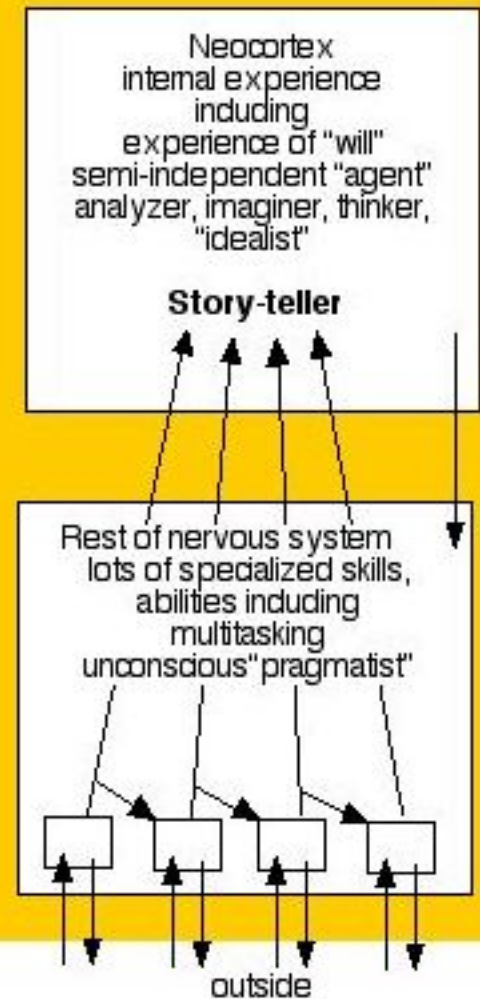
# The human bipartite brain as a form of organized matter having both model building and story telling capacities

The human brain as a frog brain surrounded by and reciprocally interconnected with neocortex



**Module 2**  
(conscious,  
experiencer,  
story teller)

**Module 1**  
(unconscious,  
actor,  
model-based,  
with elements of  
unpredictability,  
creativity)



## Key points from “bipartite brain”:

- Most of human dealing with the outside world (including learning and substantial parts of creativity) are done by Module 1, the part of the brain we share with all other vertebrates (and in different forms with all other living organisms), and take place mostly without our awareness of the underlying processes and much of their resultants.
- Module 2 provides the ability to be aware of, to reflect on, to be skeptical, and to create new things that depend on such reflections and skepticisms.
- Based on input from module 1, module 2 creates "stories", pictures/ideas/ways of making sense of things that constitute human experience and culture. Module 2 in turn influences module 1 and via module 1 the world outside (other story tellers, other model builders, and the inanimate world as well).
- Stories (including such things as "reality", "meaning", "ideals", and "science") provide a significant expansion of exploratory capability but should always be understood as challengeable creations of the brain rather than as definitive descriptions of anything that transcends the brain.

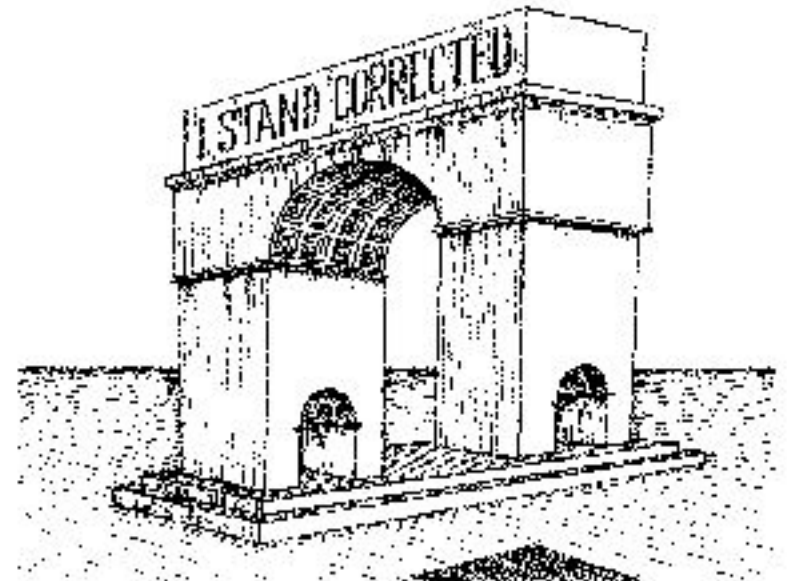
# The difference between model based processing and "story"

Seeing different stories with one input

Creating things that have never been inputs



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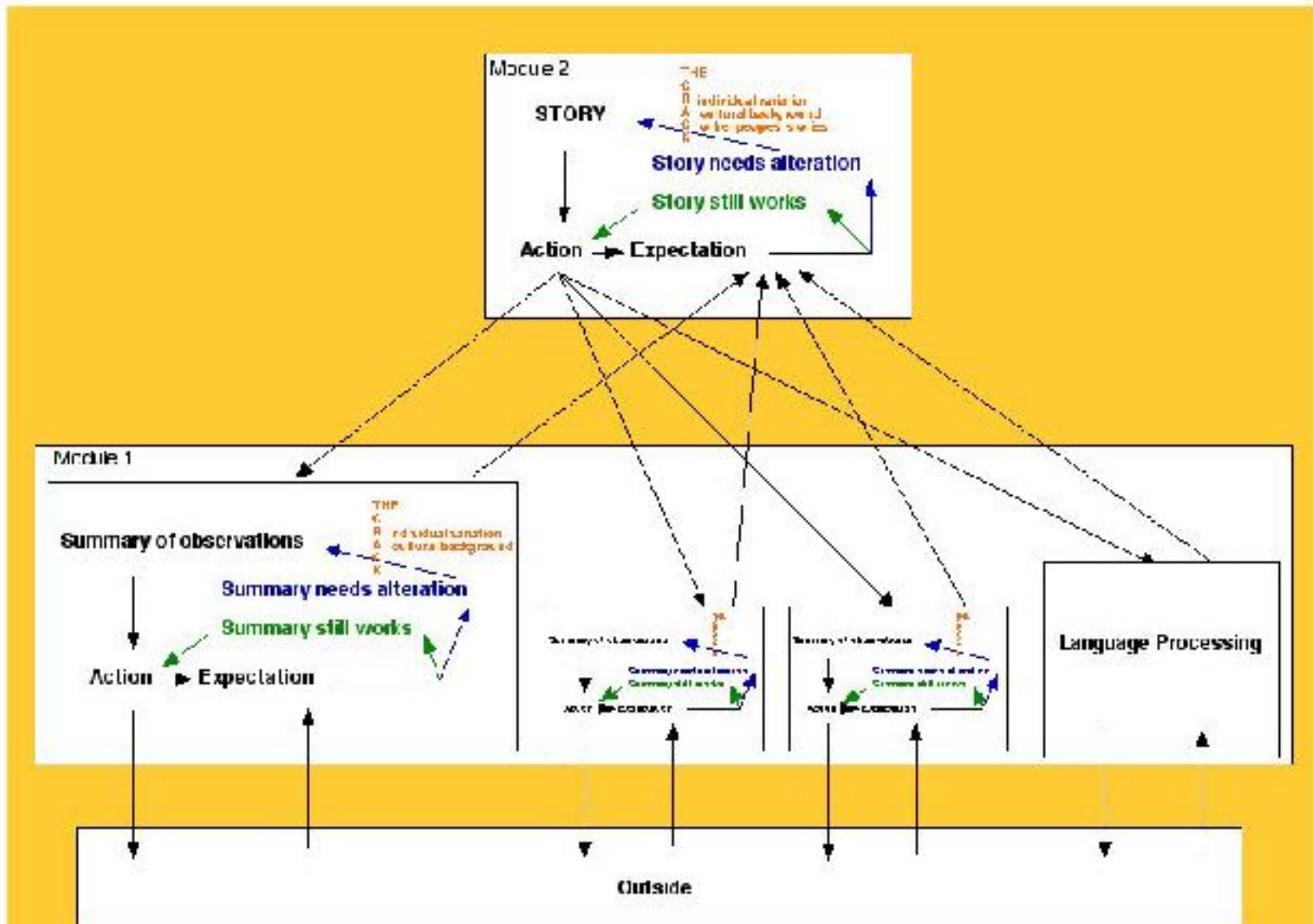
Roger Shepherd, *The Mind's Eye: Finding Truth in Illusion*

“Ambiguity and uncertainty are not ... the ripples of imperfect glass through which the brain tries to perceive reality. They are instead the fundamental “reality” by which the brain ... creates all of its paintings.” ... [Getting It Less Wrong, the Brain's Way](#)

Without the story teller, there is no ambiguity/uncertainty ... and hence no capacity to go beyond what the model makers can achieve themselves.

# The human bipartite brain as the doer as well as the creator of science

Learning, discovering, creating, at two interacting levels and by interaction with others



# Key points from “brain/science”:

- Science is actually about continually exploring and "getting it less wrong" rather than about getting it right
- Story telling, story testing, and story revising is as essential an element of science as is making observations, summarizing those observations, and testing those summaries with further observations
- The most important feature of science is skepticism, a continual responsiveness to what doesn't fit, a greater interest in what might be than in what is or has been, a willingness to and interest in going beyond existing observations, summaries, and stories
- All humans have in common the wherewithal to engage in scientific exploration and need only encouragement and support for doing so
- Science is most productive, both in and of itself and as a contributor to human culture, when it engages effectively with the widest possible range of observations and stories
- The unavoidable subjectivity and inter-subjectivity of science is a feature rather than a bug, something to be valued and made productive use of rather than to be concerned about
- "Science has the potential to be what we all collectively need as we evolve into a world wide community: a nexus point that encourages and supports the evolution of shared human stories of exploration and growth, an evolution in which all human beings are involved and take pride" ...

[Revisiting Science in Culture: Science as Story Telling and Story Revising](#)



## Going forward ....



**"An assumption behind the Advanced Colloquium on Building the Scientific Mind is that the scientific mind provides a key perspective that in essential ways complements the various other mindsets. In other words, it is a mindset that everyone should have." ... [Building the Scientific Mind](#)**

- Hope is that these thoughts in one way or another contribute to the Colloquium and to ongoing/future work to achieve our shared objective of assuring that everyone has access to the scientific mind/brain
- Comments, thoughts, suggestions, continuing discussion warmly invited in an on-line forum accessible from [http://serendip.brynmawr.edu/sci\\_cult/scistory/](http://serendip.brynmawr.edu/sci_cult/scistory/)
- On-line references available from <http://serendip.brynmawr.edu/reflections/sciencemindbrain05/>