

## **Neuroscience – Earl Miller**

Mechanisms behind working memory – Fundamental structure of the human thought process

How is it that human beings are able to seamlessly adapt behavior to changing rules and environments. Mental flexibility fundamental or crucial to survival – recognition to adapt appropriately: what happens to the brain when we see objects and shapes? Every one of us has about 10 billion neurons separated by gaps called synapses neurons talk to each other by passing signals across these spaces. When one neuron's signal is strong enough, it causes the neuron on the other side of the synapse to fire an electrical spike. When that second neuron fires, it passes messages to all the other neurons it's connected to, which can cause those neurons to fire. This sequential firing of neurons allows us to think, to move – and to see... it is the consecutive firing of individual, specialized neurons, each responsible for a specific detail in a picture or pattern, that helps us build complex images in our mind... expanding our brain power. The visual cortex... knits together a unified image from all the complex individual components... it starts the “higher level” processing of the outside world. .. Inherently sensitive to repetition- context – dependent behavior is what high level cognition is all about... “If we find a way to stretch the cycle, increase amplitude, make it taller or maybe slow the frequency a little bit, we could increase the capacity of working memory... It could have a profound impact on human performance, literally expanding our brain power.”

## **Dr. Christian Wertenbaker ~Shadows of the real World Exploring Neural Regions/Self Association**

Present moment awareness~ synchronizing mind and body

Matter, energy, and concept (idea, form, information) make a basic triad that applies to all things. These three aspects of everything can be related to three dimensions of time: linear time, eternity and possibility.

Our three brains, serving movement, thought and emotion, seem to be specialized along these lines. True consciousness requires a special interaction between them. This interaction produces a change in the dimensionality of our inner lives... what is seen in an instant is so full of content and meaning that it defies sequential description.

Expanded perception, what is seen in a moment...is a change in the arrangement and relationship of elements...to the dimensions of space time.

Harmonization of electromagnetic rhythms which underly these changes in the state of consciousness might make possible an entirely different level of functioning of the nervous system, in which the mechanisms of perception are no longer confined by

ordinary neural signaling, limited to meters per second, but function in part at the speed of electromagnetic wave propagation, at the speed of light.