# GreySmith Institute of Advanced Studies

Familiarization Tutorial

Part 1: Neuropsychology School

# Two Schools

- NeuroPsychology
  - A sub-topic in Neuroscience this school is mostly interested in the interface between Neuroscience and Psychology
- Computer Science
  - The main topic under which we study computers and how they can be used to form an Artificial Consciousness

# One Curriculum Division

- Neuropsychology Curriculum
- Computer Science Curriculum
- Artificial Consciousness Curriculum
- Related Topics Curriculum
- Miscellaneous Topics Curriculum

# The GreySmith Institute

- Is a collaboration within a larger collaboration called Wikiversity-en
- Has about the same relationship to Wikiversity as a private Institute has to the University it operates from
- Is currently working on an Artificial Consciousness Project
- Is currently Unfunded.

# The Neuropsychology School

- Is separated into four Divisions
  - Psychology Division
  - Neuro-Modeling Division
  - Neuroscience Division
  - Comparative Neuroscience Division

# The Neuropsychology School

- Is separated into four Divisions
  - Psychology Division
  - Neuro-Modeling Division
  - Neuroscience Division
  - Comparative Neuroscience Division

# The Psychology Division

- Is responsible for the creation of Functional Models of how the brain works

- And is broken up into Subdivisions according to:
  - Philosophical Theories
  - Historical Theories
  - New Theories
  - Neurological Theories
  - Technological Theories
  - Religious Theories

# The Psychology Division

- Is responsible for the creation of Functional Models of how the brain works
- And is broken up into Subdivisions according to:
  - Philosophical Theories
  - Historical Theories
  - New Theories
  - Neurological Theories
  - Technological Theories
  - Religious Theories

# The Philosophical Theories Subdivision

- Is itself broken up into subdivisions based on the classical philosophical theories known to impact on Consciousness:
  - Mind-Body Problem
  - Qualia
  - Materialism vs Dualism
  - Hard Problem
  - Computational Sufficiency

# The Psychology Division

- Is responsible for the creation of Functional Models of how the brain works
- And is broken up into Subdivisions according to:
  - Philosophical Theories
  - Historical Theories
  - New Theories
  - Neurological Theories
  - Technological Theories
  - Religious Theories

# Historical Theories Subdivision

- Is broken down into subdivisions according to historical theories:
- Hydraulic Theory of Memory
- Alternate Location of Mind Theories
- Humunculus Theory
- Dualism as a theory of Mind
- Cartesian Theater Theory

# The Psychology Division

- Is responsible for the creation of Functional Models of how the brain works
- And is broken up into Subdivisions according to:
  - Philosophical Theories
  - Historical Theories
  - New Theories
  - Neurological Theories
  - Technological Theories
  - Religious Theories

# New Theories Subdivision

- Is broken down into subdivisions such as:
  - New Attention Theories
  - New Memory Theories
  - New Consciousness Theories

# The Psychology Division

- Is responsible for the creation of Functional Models of how the brain works
- And is broken up into Subdivisions according to:
  - Philosophical Theories
  - Historical Theories
  - New Theories

  - Neurological Theories
  - Technological Theories
  - Religious Theories

# Neurological Theories Subdivision

- Is broken up into subdivisions such as:
  - Connectionism
  - Selectionism
  - Center Surround and Neural Groups
  - Basic TNGS
  - Differential Selection

# The Psychology Division

- Is responsible for the creation of Functional Models of how the brain works
- And is broken up into Subdivisions according to:
  - Philosophical Theories
  - Historical Theories
  - New Theories
  - Neurological Theories
  - Technological Theories
  - Religious Theories

# Technological Theories Subdivision

- Is broken up into subdivisions such as:
  - A History of Mechanistic Theories
  - A Cognitive Theory of Consciousness
  - A Biological Theory of Consciousness

# The Psychology Division

- Is responsible for the creation of Functional Models of how the brain works
- And is broken up into Subdivisions according to:
  - Philosophical Theories
  - Historical Theories
  - New Theories
  - Neurological Theories
  - Technological Theories
  - Religious Theories

# Religious Theories Subdivision

- Is broken into subdivision such as:
  - Christian Theories
  - Islamic Theories
  - Buddhist Theories

# General Rules for Subdivisions

- Divisional Structure is meant to divide responsibilities, not contributors interests It is quite acceptable to contribute in more than one Divisional structure.

- Divisional Structure is arbitrary and can be changed if a better structure is proposed

- Divisional Structure is not exhaustive and can be expanded to include more subdivisions, or contracted where no interest is shown.

# The Neuropsychology School

- Is separated into four Divisions
  - Psychology Division
  - Neuro-Modeling Division
  - Neuroscience Division
  - Comparative Neuroscience Division

# Neuro-Modeling Division

- The Neuro-Modeling Division is responsible for coming up with functional theories about how neural models work

- This is similar in organization to the Computer Science Schools Modeling (Phenomenal) Division, except that there they actually build the simulations to test the models and theories

# Neuro-Modeling Division

- Is broken down into Subdivisions such as:
    - Neural and Neural Network Models
    - Group and Heterogeneous Group Models
    - Organic Neural Models
    - Inter Organ Models
    - High Integration Models

# Neuro-Modeling Division

- Is broken down into Subdivisions such as:
  - Neural and Neural Network Models
  - Group and Heterogeneous Group Models
  - Organic Neural Models
  - Inter Organ Models
  - High Integration Models

# Neural and Neural Network Models Subdivision

- Is broken up into subdivisions such as:
  - Synaptic Models
  - Neuron Models
  - Network Models

# Neural and Neural Network Models Subdivision

- Is broken up into subdivisions such as:
  - Synaptic Models
  - Neuron Models
  - Network Models

# Synaptic Models subdivision

- Is further subdivided into Departments such as:
  - Hebbian Synapse
  - Taggable Synapse
  - BMC Synapse
  - STDP Synapse
  - Complex Synapse

# Neural and Neural Network Models Subdivision

- Is broken up into subdivisions such as:
    - Synaptic Models
    - Neuron Models
    - Network Models

# Neuron Models subdivision

- Is further subdivided into departments such as:
  - Hebbian Neuron
  - Hopfield Neuron
  - HH Neuron
  - Inheritable phylogeny Neuron
  - Short-term/Long-term Memory Neuron
  - Parallel Trace Neuron

# Neural and Neural Network Models Subdivision

- Is broken up into subdivisions such as:
    - Synaptic Models
    - Neuron Models
    - Network Models

# Neural Network Models subdivision

- Is broken up into Departments such as:
  - Simple Layer Model
  - Inheritable Phylogeny Layer Model
  - Hidden Layer model
  - Multiple Layer Network Model

# Neuro-Modeling Division

- Is broken down into Subdivisions such as:
  - Neural and Neural Network Models
  - Group and Heterogeneous Group Models
  - Organic Neural Models
  - Inter Organ Models
  - High Integration Models

# Group and Heterogeneous Group Models Subdivision

- Is broken down into subdivisions such as:
  - Homogeneous Group Models
  - Heterogeneous Group Models
  - Column Models

# Group and Heterogeneous Group Models Subdivision

- Is broken down into subdivisions such as:
  - Homogeneous Group Models
  - Heterogeneous Group Models
  - Column Models

# Homogeneous Group Models subdivision

- Is broken down into departments such as:
  - Simple Multi-layer Network
  - Inhibiative Multi-Layer Network
  - Inheritable Phylogeny Multilayer Homogeneous Group

# Group and Heterogeneous Group Models Subdivision

- Is broken down into subdivisions such as:
  - Homogeneous Group Models
  - Heterogeneous Group Models
  - Column Models

# Heterogeneous Group Models subdivision

- Is broken down into departments such as:
  - Inherited Phylogeny Heterogeneous Groups
  - Specific Phylogeny Heterogeneous Groups

# Group and Heterogeneous Group Models Subdivision

- Is broken down into subdivisions such as:
    - Homogeneous Group Models
    - Heterogeneous Group Models
    - Column Models

# Column Models subdivision

- Is broken down into departments such as:
  - 6$^{th}$ Layer Column Model
  - 5$^{th}$ Layer Mini-Column Model

# Neuro-Modeling Division

- Is broken down into Subdivisions such as:
  - Neural and Neural Network Models
  - Group and Heterogeneous Group Models
  - Organic Neural Models
  - Inter Organ Models
  - High Integration Models

# Organic Neural Models Subdivision

- Is broken down into subdivisions such as:
  - Organic Models
  - BBD Models
  - Psychology Impacts

# Organic Neural Models Subdivision

- Is broken down into subdivisions such as:
  - Organic Models
  - BBD Models
  - Psychology Impacts

# Organic Models subdivision

- Is broken down into subdivisions such as:
    - Marr's *A theory for Cerebral Cortex*
    - LaBerge's *Triangular Circuit of Attention*
    - A Column Theory of Center Surround
    - LaBerge's *Attentional Control*
    - GreySmith *A Theory of Thalamus*
    - GreySmith *A Theory of Focus*

# Organic Neural Models Subdivision

- Is broken down into subdivisions such as:
    - Organic Models
    - BBD Models
    - Psychology Impacts

# BBD Models subdivision

- Is broken down into subdivisions such as:
  - Cerebral Cortex BBD
  - Prefrontal Cortex BBD
  - Nucleus Accumbens BBD
  - Thalamus BBD
  - Basal Ganglia BBD
  - Nuecleus Reticularis Thalami BBD

# Organic Neural Models Subdivision

- Is broken down into subdivisions such as:
  - Organic Models
  - BBD Models
  - Psychology Impacts

# Psychology Impacts subdivision

- Is broken down into subdivisions such as:
    - Impacts of cerebral cortex model
    - Impacts of prefrontal cortex model
    - Impacts of Nucleus Accumbens Model
    - Impacts of Thalamus Model
    - Impacts of Basal Ganglia Model
    - Impacts of Nucleus Reticularis Thalami Model

# Neuro-Modeling Division

- Is broken down into Subdivisions such as:
  - Neural and Neural Network Models
  - Group and Heterogeneous Group Models
  - Organic Neural Models
  - Inter Organ Models
  - High Integration Models

# Inter Organ Models Subdivision

- The Inter Organ Models Subdivision is responsible for coming up with functional models of how multi-organ systems within the brain interreact to form more complex systems

- It has not yet been subdivided if only because I am not sure what the natural subdivisions would be.

# Neuro-Modeling Division

- Is broken down into Subdivisions such as:
  - Neural and Neural Network Models
  - Group and Heterogeneous Group Models
  - Organic Neural Models
  - Inter Organ Models
  - High Integration Models

# High Integration Models Subdivision

- The responsibility of the High Integration Models Subdivision is to come up with theories about how the Integrated Models inter-react in the larger brain model

- This Subdivision has not be subdivided yet, if only because I am not sure yet what the subdivision structure should look like.

# The Neuropsychology School

- Is separated into four Divisions
  - Psychology Division
  - Neuro-Modeling Division
  - Neuroscience Division
  - Comparative Neuroscience Division

# Neuroscience Division

- The Neuroscience Division is responsible for finding the neural correlates for specific theories

- It is broken up into subdivisions according to the type of theories that might have correlates.

# Neuroscience Division

- Is broken up into Subdivisions such as:
  - Neural Correlates
  - Evaluation Protocols
  - Results

# Neuroscience Division

- Is broken up into Subdivisions such as:
  - Neural Correlates
  - Evaluation Protocols
  - Results

# Neural Correlates Subdivision

- Is broken up into subdivisions such as:
    - Correlates to Philosophy
    - Historical Correlates
    - New Neural Correlates
    - Psychological Correlates
    - Technological Correlates
    - Religious Correlates

# Neural Correlates Subdivision

- Is broken up into subdivisions such as:
  - Correlates to Philosophy
  - Historical Correlates
  - New Neural Correlates
  - Psychological Correlates
  - Technological Correlates
  - Religious Correlates

# Correlates to Philsosophy subdivision

- Is broken up into subdivisions such as:
  - Philosophical Theories
  - Correlate Variations
  - Evaluations

# Correlates to Philsosophy subdivision

- Is broken up into subdivisions such as:
  - Philosophical Theories
  - Correlate Variations
  - Evaluations

# Philsosophical Theories subdivision

- Is broken up into Departments such as:
    - Mind Body Problem
    - Qualia
    - Materialism vs. Dualism
    - Hard Problem
    - Computational Sufficiency

# Correlates to Philsosophy subdivision

- Is broken up into subdivisions such as:
  - Philosophical Theories
  - Correlate Variations
  - Evaluations

# Correlate Variations subdivision

- Is broken down into departments such as:
  - Mind-Body Correlates
  - Qualia Correlates
  - Materialism vs Dualism Correlates
  - Hard Problem Correlates
  - Computational Sufficiency Correlates

# Correlates to Philsosophy subdivision

- Is broken up into subdivisions such as:
  - Philosophical Theories
  - Correlate Variations
  - Evaluations

# Evaluations subdivision

- Is broken up into departments such as:
  - Mind Body Evaluations Department
  - Qualia Evaluations Department
  - Materialism vs. Dualism Evaluations Dept.
  - Hard Problems Evaluations Department
  - Computational Sufficiency Evaluations Dept.

# Neural Correlates Subdivision

- Is broken up into subdivisions such as:
  - Correlates to Philosophy
  - Historical Correlates
  - New Neural Correlates
  - Psychological Correlates
  - Technological Correlates
  - Religious Correlates

# Historical Correlates subdivision

- This subdivision is not yet subdivided as I have not yet determined what subdivisions I need it to have

# Neural Correlates Subdivision

- Is broken up into subdivisions such as:
    - Correlates to Philosophy
    - Historical Correlates
    - New Neural Correlates
    - Psychological Correlates
    - Technological Correlates
    - Religious Correlates

# New Neural Correlates subdivision

- This subdivision has not yet been subdivided if only because I have not yet thought up a structure for subdivision

# Neural Correlates Subdivision

- Is broken up into subdivisions such as:
  - Correlates to Philosophy
  - Historical Correlates
  - New Neural Correlates
  - Psychological Correlates
  - Technological Correlates
  - Religious Correlates

# Psychological Correlates subdivision

- Is broken down into subdivisions such as:
    - Attention Theories Department
    - Motivation Theories Department
    - Personality Theories Department
    - Memory Theories Department
    - Self and Agency Theories Department
    - Mind Theories Department

# Neural Correlates Subdivision

- Is broken up into subdivisions such as:
    - Correlates to Philosophy
    - Historical Correlates
    - New Neural Correlates
    - Psychological Correlates
    - Technological Correlates
    - Religious Correlates

# Technology Correlates subdivision

- This subdivision has not been subdivided yet if only because I am not sure yet what subdivisions I should use.

# Neural Correlates Subdivision

- Is broken up into subdivisions such as:
    - Correlates to Philosophy
    - Historical Correlates
    - New Neural Correlates
    - Psychological Correlates
    - Technological Correlates
    - Religious Correlates

# Religious Correlates subdivision

- This subdivision has not been further subdivided yet, if only because I am not sure yet what subdivisions to use.

# Neuroscience Division

- Is broken up into Subdivisions such as:
  - Neural Correlates
  - Evaluation Protocols
  - Results

# Evaluation Protocols Subdivision

- Is broken up into subdivisions such as:
    - Protocols for Neural correlates to Philosophy
    - Protocols for Historical Correlates
    - Protocols for New Correlates
    - Protocols for Psychological Correlates
    - Protocols for Technological Correlates
    - Protocols for Religious Correlates

# Neuroscience Division

- Is broken up into Subdivisions such as:
  - Neural Correlates
  - Evaluation Protocols
  - Results

# Results Subdivision

- Is broken up into subdivisions such as:
  - Results for correlates to Philosophy
  - Results for Historical Correlates
  - Results for New Correlates
  - Results for Psychological Correlates
  - Results for Technological Correlates
  - Results for Religious Correlates

# The Neuropsychology School

- Is separated into four Divisions
  - Psychology Division
  - Neuro-Modeling Division
  - Neuroscience Division
  - Comparative Neuroscience Division

# Comparative Neuroscience Division

- The Comparative Neuroscience Division is responsible for comparisons between species
- It has been subdivided as follows:
  - Comparative Neuro-Anatomy
  - Evolutionary Neuroscience
  - Brain Evolution

# Comparative Neuroscience Division

- The Comparative Neuroscience Division is responsible for comparisons between species
- It has been subdivided as follows:
    - Comparative Neuro-Anatomy
    - Evolutionary Neuroscience
    - Brain Evolution

# Comparative Neuro-Anatomy Subdivision

- Is broken up by Taxonomy into subdivisions such as:
  - Comparative Invertebrate Neuro-Anatomy
  - Compatative Vertebrate Neuro-Anatomy
  - Comparative Lizard Neuro-Anatomy
  - Comparative Bird Neuro-Anatomy
  - Comparative Mammal Neuro-Anatomy
  - Comparative Hominid Neuro-Anatomy

# Comparative Neuroscience Division

- The Comparative Neuroscience Division is responsible for comparisons between species
- It has been subdivided as follows:
  - Comparative Neuro-Anatomy
  - Evolutionary Neuroscience
  - Brain Evolution

# Evolutionary Neuroscience Subdivision

- Is broken up taxonomically into subdivisions such as:
  - Evolutionary Neuroscience of Invertebrates
  - Evolutionary Neuroscience of Vertebrates
  - Evolutionary Neuroscience of Lizards
  - Evolutionary Neuroscience of Birds
  - Evolutionary Neuroscience of Mammals
  - Evolutionary Neuroscience of Hominids

# Evolutionary Neuroscience Subdivision

- Is broken up taxonomically into subdivisions such as:

  - Evolutionary Neuroscience of Invertebrates
  - Evolutionary Neuroscience of Vertebrates
  - Evolutionary Neuroscience of Lizards
  - Evolutionary Neuroscience of Birds
  - Evolutionary Neuroscience of Mammals
  - Evolutionary Neuroscience of Hominids

# Evolutionary Neuroscience of Invertebrates subdivision

- Is broken down into subdivisions such as:
  - Laboratories
  - Areas of Study
  - Resources and Techniques
  - Results

# Evolutionary Neuroscience of Invertebrates subdivision

- Is broken down into subdivisions such as:
  - Laboratories
  - Areas of Study
  - Resources and Techniques
  - Results

# Laboratories subdivision

- Contains just one Laboratory at present
  - Freidman Evolutionary Neuroscience Lab
    - An Open Access Laboratory the Exists only online

# Evolutionary Neuroscience of Invertebrates subdivision

- Is broken down into subdivisions such as:
  - Laboratories
  - Areas of Study
  - Resources and Techniques
  - Results

# Areas of Study subdivision

- The Areas of Study subdivision covers the areas of study of the laboratories in the Laboratory subdivision, thus:
  - Areas of Study at Freidman Lab

# Evolutionary Neuroscience of Invertebrates subdivision

- Is broken down into subdivisions such as:
  - Laboratories
  - Areas of Study
  - Resources and Techniques
  - Results

# Resources and Techniques subdivision

- The Resources and Techniques subdivision indicates the resources and techniques used by the Laboratories in the Laboratory section: Therefore:
    - Resources and Techniques of Freidman Lab

# Evolutionary Neuroscience of Invertebrates subdivision

- Is broken down into subdivisions such as:
    - Laboratories
    - Areas of Study
    - Resources and Techniques
    - Results

# Results subdivision

- The Results subdivision gathers the experimental reports of the Laboratories in the laboratories subdivision therefore:
  - Freidman Lab Results

# Comparative Neuroscience Division

- The Comparative Neuroscience Division is responsible for comparisons between species
- It has been subdivided as follows:
  - Comparative Neuro-Anatomy
  - Evolutionary Neuroscience
  - Brain Evolution

# Brain Evolution subdivision

- The Brain Evolution subdivision tracks brain evolution within taxonomic divisions in order to compare evolution at the boundary conditions of the taxonomy to figure out the relative order of newly evolved brain facilities being added to the original brain.

# Brain Evolution subdivision

- Is broken up into subdivisions such as:
  - Invertebrate Brain Evolution
  - Vertebrate Brain Evolution
  - Lizard Brain Evolution
  - Bird Brain Evolution
  - Mammal Brain Evolution
  - Hominid Brain Evolution