

DEEP SOUTH PHILOSOPHY AND NEUROSCIENCE WORKSHOP

September 28-29, 2018

Held in conjunction with the 56th Annual Meeting of the Alabama Philosophical Society
Hilton Pensacola Beach, Pensacola Beach, FL

This workshop is sponsored by the Mississippi State University Department of Philosophy and Religion.

SCHEDULE OF PRESENTATIONS AND EVENTS

FRIDAY, SEPTEMBER 28

Room: Aquamarine 2

12:30-1:15p.m. Box lunches and introductions/re-acquaintances

Session 1: Perception, Localization, and Sex

1:15-1:55p.m.: Michael Bruno, Mississippi State U., "Experiencing real and apparent motion"

1:55-2:40p.m.: Jennifer Mundale, U. Central Florida, "Why localization and cortical plasticity don't conflict"

2:40-3:20p.m.: Vanessa Bentley, U. Alabama, Birmingham, "A century of searching for sex/gender differences in the human corpus callosum"

3:20-3:40p.m.: Coffee break

Session 2: Confirmation and Experiment in Neurobiology

3:40-4:20p.m.: Greg Johnson, Mississippi State U., Meridian, "Confirmation in psychology and neurobiology"

4:20-5:00p.m.: John Bickle, Mississippi State U./U. Mississippi Medical Center, "Experiment tools drive progress in neurobiology, and engineering drives tool development"

SATURDAY, SEPTEMBER 29

Room: Ballroom F

8:30-9:00a.m.: Coffee and breakfast snacks

Session 3: Neuroscience, Mood, and Emotions

9:00-9:40a.m.: Mary McGuire, Mississippi State U., "Mood as more than a monitor of energy"

9:40-10:20a.m.: Josh May, U. Alabama Birmingham, "Reason vs. emotion in the brain: A dubious dichotomy"

10:20-11:00a.m.: Andrea Scarantino, Georgia State U., "How to do things with emotional expressions"

11:00-11:15a.m.: Break

Session 4: Neuroscience, Death, and Popular Media

11:15-11:55a.m.: Michael Nair-Collins, Florida State U. College of Medicine, "Homeostasis, the brain, and death"

11:55a.m.-12:35p.m.: Robert Stufflebeam, U. New Orleans, "On the glut and glory of current SciFi and the current fear regarding robots, AI and practical immortality"

12:35p.m.-2:00p.m.: Lunch on your own

Session 5: From Dysfunctional Brains to Neuroaesthetics

2:00-2:40p.m.: Patrick Hopkins, Millsaps College/U. Mississippi Medical Center, "Moral disease: An initial framework for definition and classification"

2:40-3:20p.m. James Dow, Hendrix College, "On the possibility of a neuroaesthetics of natural environments"

3:20-3:35p.m.: Coffee break

Session 6: Computational Neuroscience

3:35-4:15p.m.: Marshall Abrams, U. Alabama, Birmingham, "Imprecise probability in brain processes"

4:15-4:55p.m.: Istvan Berkeley, U. Louisiana, Lafayette, "Are so-called "Artificial Neural Network" systems (ANNs) really neural?"

5:15-7:15p.m.: Informal planning of what to do next, Poolside, appetizers and soft drinks provided, cash bar at poolside bar

TITLES AND ABSTRACTS

(in alphabetical order by presenters' last names)

Imprecise probability in brain processes

Marshall Abrams

Philosophy, University of Alabama, Birmingham

(Session 6)

There are well-known ways of defining various sorts of "imprecise probability", which is mathematically analogous to probability but doesn't assign precise numbers to outcomes. I argue that models that characterize brain processes in terms of probabilities--for example Bayesian models such as Friston's--would more accurately characterize those processes as involving imprecise probabilities, in some cases. I give a general argument for the existence of imprecise chances in nature, and then argue that because of environmental variation and constraints on evolution, natural selection can't produce brain processes that are optimally tuned to environmental conditions. I argue that in many cases the form of suboptimality will involve imprecise chances realized by brain processes, which should be less costly than realizing precise chances.

A century of searching for sex/gender differences in the human corpus callosum

Vanessa Bentley

Philosophy, University of Alabama, Birmingham

(Session 1)

The corpus callosum (CC) is a brain structure that researchers have identified as possibly “sexually dimorphic” and may explain purported differences between men’s and women’s brain function. Updating the story, I uphold previous findings of no differences (Bishop and Wahlsten 1997; Fausto-Sterling 2000). I identify four ways in which current practice is sex-essentialist. These practices uphold the historical tradition of attributing purported differences between men and women to nature or biology and may be further used to deny women’s equality. Thus, the research program is epistemically unsound for ignoring or disregarding evidence that contradicts the preferred view as well as being socially and morally irresponsible for its complicity in the continued oppression of women. I close with some considerations for improved practice using resources from feminist philosophy of science.

Are so-called “Artificial Neural Network” systems (ANNs) really neural?

Istvan S.N. Berkeley

Philosophy, Institute for Cognitive Science, and Center for Advanced Computer Studies,
University of Louisiana, Lafayette

(Session 6)

So-called Artificial Neural Network systems (ANNs) have been around and been popular for several decades now. It is this technology which lies at the heart of so-called ‘Deep Learning’ systems which have become an increasingly popularly deployed technology that is used to solve a variety of real world problems. Problems such as pattern and speech recognition systems are now often attacked, with some successes, using deep learning methods. The question still remains over how ‘neural’ these technologies really are. This talk will address this issue. It will start by considering a well-known and decidedly non-neural aspect of the commonly used backpropagation learning method. However, recent work will then be introduced which suggests that adding neutrally inspired constraints can actually improve the performance of these artificial systems. This talk will conclude with a discussion of the inscrutability problem which remains a serious Achilles’ Heel of such systems.

Experiment tools drive progress in neurobiology, and engineering drives tool development **John Bickle**

Philosophy, Psychology, and Institute for Imaging and Analytical Technologies, Mississippi
State University; Neurobiology, University of Mississippi Medical Center

(Session 2)

Working from case studies of the development of revolutionary experiment tools in neurobiology—gene targeting techniques, optogenetic and chemogenetic technologies, the metal microelectrode, and the patch clamp—I have developed a metascientific model of tool development experiments in the discipline (Bickle 2015, 2016, 2018). One important consequence of my model for contemporary philosophy of science is that in experiment-driven sciences like neurobiology, progress depends almost entirely on the development of new experiment tools. And the development of new experiment tools spurring real revolutions in the discipline, at least those recognized as such by neurobiologists, is driven almost entirely by engineering concerns. “Science-in-practice” approaches have helped to combat the theory-centrism that has dominated the philosophy of science since the field’s inception last century. But even these approaches have missed the important role that engineering and applied sciences play in the history and practices of laboratory sciences like neurobiology. In this brief talk I’ll introduce these influences with the development of the patch clamp, perhaps the most influential

experimental tool behind the “molecular wave” that has dominated mainstream neuroscience for three centuries.

Experiencing real and apparent motion

Michael Bruno

Philosophy, Mississippi State University

(Session 1)

Reflection on experimental research involving apparent motion illusions, and assessments of what the extant results show about the nature and realization of perceptual experiences, has a long and venerable history within contemporary philosophy. Much is now known about the neural basis of these illusory experiences as well as accurate experiences of motion and change. In this talk, I will present and discuss the current state of neuroscientific research and extrapolate lessons for the philosophy of time and time consciousness.

On the possibility of neuroaesthetics of natural environments

James Dow

Philosophy, Hendrix College

(Session 5)

Experiences of nature sometimes involve multisensory engagement, immersion of ourselves in nature, and transformative experiences. Could such aesthetic experiences be described, explained, and predicted by neuroscience? Neuroaesthetics has emerged as a discipline that explains and predicts aesthetic experiences of visual art, music, and literature. Enactivists about perception have argued against the possibility of neuroaesthetics based on the claim that perceptual experience involves sensitivity to sensorimotor contingencies. Engagement theorists about nature aesthetics have argued that engaged aesthetic experiences are non-conceptual, participatory, and action-oriented. Do the enactivist arguments against the possibility of a neuroaesthetics of art provide similar challenges to the possibility of explaining and predicting aesthetic experiences of natural environments? I argue for the counterintuitive thesis that while neuroaesthetics of art can overcome hurdles posed by the enactivists, by appealing to pragmatic representations, the neuroaesthetics of natural environments cannot overcome challenges presented by the action-oriented nature of the aesthetic experience of nature.”

Moral disease: An initial framework for definition and classification

Patrick Hopkins

Philosophy, Millsaps College; Psychiatry, University of Mississippi Medical Center

(Session 5)

Numerous studies have suggested that moral cognition is biologically generated and mediated in predictable ways. Assuming that is true and that moral emotions developed over time through an evolutionary process involving adaptation, human moral cognition should be understood as capable of going awry in the same way other cognitive and physiological processes can. As such, moral emotion, perception, and judgment can be subject to disease states. This presentation will present an argument for the concept of moral disease and lay out an initial classification for types of moral disease.

Confirmation in psychology and neurobiology

Greg Johnson

Arts and Sciences, Mississippi State University, Meridian
(Session 2)

Shapiro (2017) argues that confirming psychological explanations indirectly—that is, by using the hypothetico-deductive method or Bayes' rule—is just as warranted as verifying them by examining the underlying neurobiological processes. Indirect methods are also used in neurobiology, of course, but neurobiological processes can, in principle, be directly observed. I will examine some of the procedures used in neurobiology that come the closest to allowing investigators to observe neurobiological processes. While it is true that, at present, it is not possible to directly inspect the neurobiological operation of a cognitive process in primates, it is clear that the direct inspection of those processes (or something very close to direct inspection) will eventually be possible. Since observing how a process operates will provide a greater degree of confirmation than an indirect method of confirmation can provide, progress with these neurobiological techniques gives us a reason to, as a general standard, seek to verify psychological explanations by inspecting the relevant neurobiology.

Reason vs. emotion in the brain: A dubious dichotomy

Josh May

Philosophy, University of Alabama, Birmingham
(Session 3)

Neuroscience appears to challenge the beloved division between reason and emotion. Reasoning, we're learning, isn't always slow, conscious, reliable, or independent of affect. Similarly, despite their usual reputation, emotions can be utterly reliable guides to decision-making that are drawn out over time and rather present in consciousness. However, while the traditional reason/emotion dichotomy is somewhat confused, I'll argue that core debates in philosophy relying on the distinction aren't thereby confused or pseudo-problems. For example, the collapse of the reason/emotion divide is tending to support rationalist, not sentimentalist, views in moral psychology.

Mood as more than a monitor of energy

Mara McGuire

Philosophy, Mississippi State University
(Session 3)

Muk Wong (2016a, 2016b) has recently proposed a theory of mood and mood function on which mood is a mechanism that monitors our mental and physical energy level in relation to environmental energy demands and biases our cognitive processes as a result. The function of mood, then, is to maintain an *equilibrium* between our energy level and the energy demands of our environment. In response, I argue that energy levels are not the only dimension relevant to the elicitation of moods, that Wong's theory fails to explain how different types of moods are elicited across contexts and that mood function cannot be understood in terms of maintaining a balance between our energy and the demands of our environment. In light of these arguments, I draw on appraisal theories of emotion elicitation to propose that we should adopt a multi-dimensional theory of mood elicitation on which moods are elicited by appraisals of objects and events along various dimensions.

Why localization and cortical plasticity don't conflict

Jennifer Mundale

Philosophy and Cognitive Science Program, University of Central Florida
(Session 1)

Cortical plasticity is often taken to be a challenge to functional localization in the brain. In other words, if a given area of the brain is identified with a specific function, and then (perhaps post traumatically), that same region takes on a new function, how is this not in conflict with the localizationist program? In what follows, I argue that, not only is the idea of cortical localization consistent with cortical plasticity, but that localizationist assumptions help to explain cortical plasticity and provide an important heuristic for unmasking its existence and its limits.

Homeostasis, the brain, and death

Michael Nair-Collins

Behavioral Sciences and Social Medicine, Florida State University College of Medicine
(Session 4)

One common explanatory model of homeostasis posits that the organism defends internal stability using a central integrator or controller, which computes error signals by comparing inputs to set points, generating corrective negative feedback. This model plays a key role in the mainstream medical justification for brain death: When the central integrator – the brain – no longer functions, what remains is no longer a physiologically integrated, whole organism, only a collection of artificially supported subsystems. In this talk, I critically evaluate the assumption that homeostasis requires a central integrator, and argue that “brain dead” individuals are biologically living.

How to do things with emotional expressions

Andrea Scarantino

Philosophy and Neuroscience Institute, Georgia State University
(Session 3)

Emotion researchers acknowledge that emotional expressions carry information about various states of affairs. It is also widely recognized that emotional expressions influence their recipients. What has been missing so far is a general framework for the study of (i) what specific information emotional expressions carry, and of (ii) how such information influences the behavior of recipients. In this talk, I summarize my *Theory of Affective Pragmatics*, whose core claim is that emotional expressions make possible four of the basic communicative moves made available by speech acts: expressing, representing, directing and committing. I will describe some experiments I plan on doing in collaboration with psychologists from Germany and Israel to test cross-culturally the basic tenets of the theory.

On the glut and glory of current SciFi and the growth of fear regarding robots, AI and practical immortality

Robert Stufflebeam

Philosophy, University of New Orleans
(Session 5)

Over the last 50 years, TV and movie audiences have seen numerous depictions of artificial intelligence (AI). With few exceptions, AI is almost always presented as something harmful to human life or livelihood. Sometimes this happens as a result of malfunctioning AI (*2001, Prometheus*). More commonly, harm to humans results from AI achieving consciousness, which inevitably leads to machine revolts. Either those revolts get crushed (e.g., *Bladerunner, I Robot*,

Humans) or humanity is destroyed by thinking machines (e.g., *Terminator*, *The Matrix*, *Battlestar Galactica*). Little wonder then why Elon Musk and many other people want to halt research into the creation of autonomous AI or robots. What are their fears? Moreover, advances in neuroscience and computer science make depicting practical immortality possible (*Altered Carbon*, *Westworld*, *Humans*, *Get Out*). Is this a good thing? An unprecedented number of TV programs and movies dealing with AI and/or transferring consciousness are now available to watch. Consequently, calls for halting the manufacture of autonomous robots and eliminating AI research are rising. My aim for this talk is to meet those objections by using some recent TV shows and movies to explore certain fundamental questions regarding persons, minds, and machines.

**CONTACT INFORMATION FOR THE DEEP SOUTH PHILOSOPHY AND
NEUROSCIENCE WORKGROUP: PARTICIPANTS AT THIS FIRST WORKSHOP
AND OTHERS WHO COULD NOT ATTEND**

(more names and email addresses to be added as we talk about expanding the group for future meetings)

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