

Scribner Seminar – Mind Design

Professor

Dr. Flip Phillips, TLC 155, flip@skidmore.edu, <http://www.skidmore.edu/~flip>.

Office hours by appointment. Class website available at <http://learn.skidmore.edu>

Introduction

What are the critical components of ‘mind’? Can words like *mind*, *consciousness*, *behavior*, and *awareness* be adequately defined in order to properly answer this question? In this class, we survey the philosophical, psychological, biological, computational and design notions of what it would take to implement a mind. Discussions of the current and future state of our understanding of mind are replete with such notions as *artificial intelligence*, *expert systems* and other trans- and post-human concepts. Are any of these existing frameworks adequate to yield a veridical implementation of mind? Will some other approach be necessary? Or - are we destined to ultimately fail at our task?

The following *gedankenexperiment* serves as one of the primary touchstones of the course: If we design a machine that takes ‘inputs’ (information from the senses), transforms them precisely in the same mechanical way the brain’s neurons do, and generates ‘outputs’ (behaviors), can that machine be said to have a ‘mind’? If you answered “yes! wait! no! wait!” to this question you are a prime candidate for this seminar. We will survey a cross section of current and foundational cognitive science literature, all the while endeavoring to collaboratively and iteratively create a classical design specification for a mind.



What is ‘design’, broadly considered? Is it the creation of something? Its form? The existence of something? Its configuration? Intentional creation or can randomness result in design? What about ‘happy accidents’? Are they design? What the heck does this have to do with the mind? OK- we’ll get there, don’t panic.

The Plan

We will plot a course through this material via several disciplines that should inform our quest, roughly in this order:

- Philosophy
- Psychology
- Computer Science

These may only seem loosely related, but we’ll tie them together by comparing, contrasting, and discovering the intersections and relative influences of each field’s the notion of ‘mind’. We’ll try to look at design as-we-go, talking about how that features into ‘mind’. Humor me. It will be fun.



Scribner Seminar – Mind Design

More concretely, philosophy will almost certainly have much to say, but lacks the perspective (and most probably the desire) to ‘implement’. Computer science focuses on ‘implementation’ but doesn’t always base these implementations on empirically valid ideas. Psychology attempts to develop and empirically validate these ideas but sometimes lacks the philosophical perspective, implementation and modeling sophistication of other fields. Finally, design can help to unify these various disciplines by prescribing implementation methods.

Scribner Seminar – Mind Design

Materials

This course covers a wide variety of topics and, as such, there isn't a clear-cut 'reader' textbook available. Therefore, we'll be reading a few books and a collection of articles. In a sort of 'meta-writing' experiment, we'll look at how the primary source readings map into the monographs - what is included and what is left out?



Being There: Putting Brain, Body, and World Together Again

Andy Clark, The MIT Press; Reprint edition, 1998.

ISBN 0262531569

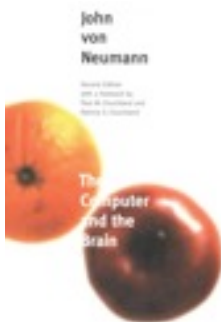
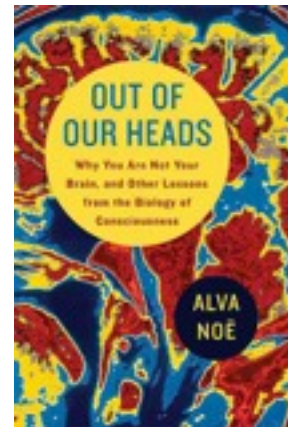
Without your body, your mind would be rather worthless, unless you particularly enjoy being a brain in a vat. The notions of *embodiment*, which I study a bit for what its worth, are presented here. There is a sense of 'circularity' in the fact that our mind is embodied in a body, as far as some folks are concerned the mind is just an emergent property of the body, others have conceived of ways that mind might exist externally, and still others figure that the whole argument is just full of mystery and we can never know for sure what's going on.

Out of Our Heads

Alva Noë, Hill & Wang, USA.

ISBN 9780809016488

Like Clark, Noë does a wonderful job making sense of some of the real problems with cognition – most importantly those involved with consciousness. Like Clark, Noë has been influenced by Gibson and other Ecological Psychologists as well as some of the newer breed of dynamical systems theories advanced by Turvey and friends, and the new movement of “Radical Embodied Cognition”. His position is reasonably strong and well-put, basically that, if we're looking only to the brain itself to understand consciousness and cognition we're making a huge mistake.



The Computer and the Brain

John von Neumann, Yale University Press; 2nd edition, 2000.

ISBN 0300084730

Despite the 2000 vintage of this reprint, it is actually based on a talk von Neumann gave in the 1950s. Von Neumann is best known today as the father of modern computer architecture and, at the time, neuroscience as a proper field had yet to evolve. So what you get here is a really smart math guy speculating what it might take to replicate the cybernetics of the brain in computer hardware. We'll evaluate this from a modern-day neuroscience perspective as well as a modern-day computer science per-

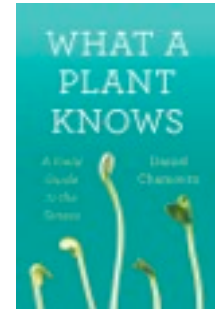
Scribner Seminar – Mind Design

spective. Note that, despite outrageous advances since his time, we've still not been able to even come close to replicating the volume of computational machinery in the brain. Also, more importantly, what does making a 'brain' have to do with making a 'mind'?

What a Plant Knows

Daniel Chamovitz, SciAm Press, 2012

OK- I'll admit it, this just seems like a good book to read to see if we can start the discussion of not just 'other minds' but really crazy other minds. Unlike a lot of popular press books on the topics of 'the hidden life of plants' Chamovitz puts together a really compelling discussion of the 'sensory systems' of various plants. Maybe 'knows' is a bit too strong, but maybe you will disagree? Let's read and see! Whee...



Scribner Seminar – Mind Design

Some additional reading, should you feel it-

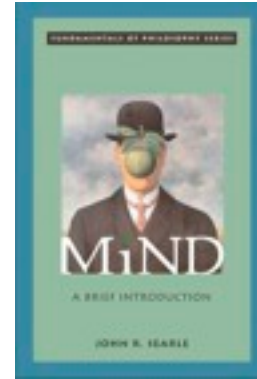
Here are some books we've used in the past in this class. There might be some cool extra reading to do here, should you be interested.

Mind: A Brief Introduction

John Searle, Oxford University Press, USA, 2005.

ISBN 0195157346

John Searle has been considering our problem from a philosophical perspective for the past 15-20 years. He has a rather hard-line and unique take on what it takes to have a mind and we'll spend a good amount of time looking at and criticizing his perspective. He was rather instrumental in breaking up the gigantic head of steam some in artificial intelligence had built up behind their theories. We'll see if any of it holds water.

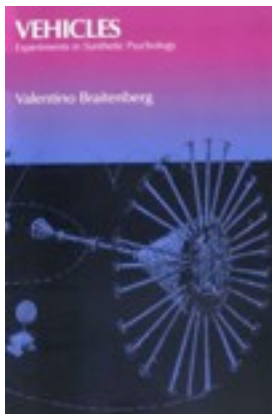
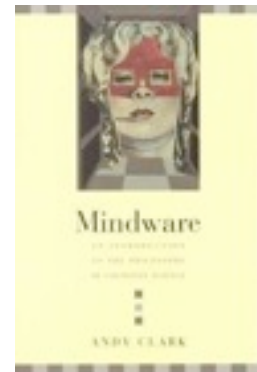


Mindware – An Introduction to the Philosophy of Cognitive Science

Andy Clark, Oxford University Press, USA.

ISBN 0195138570

Andy Clark has a nice way of thinking about humans as embodied cognitive things- *meat machines* I believe is the thought. But, of course, we have to ask if we're a bit more complicated than just machines, if consciousness and the mind are special things or just emergent phenomena of our main meat-part, the brain (or even our big toe?) We'll dig through this in an attempt to get a grounding in how we think about thinking – what the mind is mindful of.



Vehicles – Experiments in Synthetic Psychology

Valentino Braitenberg, The MIT Press.

ISBN 0-262-52112-1

Without your body, your mind would be rather worthless, unless you particularly enjoy being a brain in a vat. The notions of *embodiment*, which I study a bit for what its worth, are presented here. And what fun is psychology and cognitive science unless there are experiments! We'll use part of our 'fourth-hour' trying to build some of these things.

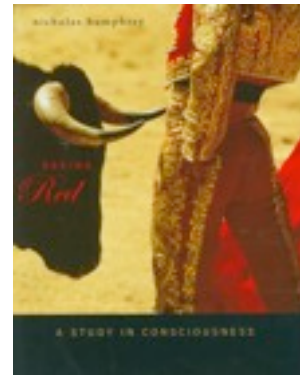
Scribner Seminar – Mind Design

Seeing Red: A Study in Consciousness

Nicholas Humphrey, Belknap Press, 2006.

ISBN 0674021797

Humphrey presents an interesting rationale for how sensation and perception interact and give us the phenomenon of consciousness. Presuming that consciousness is an essential part of ‘mind’ this approach might help shed some light on the ‘input’ part of the system. Admittedly this is only half of our proposed challenge and ‘output’ is still necessary, but this is a start.



Action in Perception

Alva Noë, The MIT Press; New Ed edition, 2006.

ISBN 0262640635

Noë presents several compelling discussions on the nature of *embodiment*, i.e. if we have a mind, that mind must have a ‘platform’ or a body in which it is implemented / supported. Finally, this system is embedded in the so-called ‘world’. Assuming that the mind we design isn’t a mind in a brain in a vat, how can we best leverage the fact that our mind is embedded to help us understand and design one?

Universal Principles of Design

Lidwell, Holden & Butler, Rockport Publishers, 2003.

ISBN 1592530079

Finally, since we’re talking about *designing* a mind, we’ll need to know a little about design. It turns out that ‘design’ is a concept that transcends the more colloquial usage (usually relevant to the world of graphics or products). Design, as a concept, is a fundamental method for solving problems – many sorts of problems, not just those we usually think of.



Scribner Seminar – Mind Design

Attendance and Class Format

As this is a seminar, the class will largely be run by you, the students. The class will take the presentation / discussion format where one or more of you will be responsible for preparing a presentation of the week's readings. Usually, this will evoke spirited discussion, but if the class remains 'shy' I will not hesitate to request your participation.

We'll follow a form of the Socratic framework – I'll regularly quiz each of you on the material verbally.

Bottom line – be prepared, you will be tested and evaluated largely by your participation.

Writing / Presentation Projects

There are two main writing projects – a mid-semester 'where are we' sort of wayfinding piece, roughly 5-10 pages, along with a final reviewed piece of 10-20 pages. The final paper will be reviewed by one of your fellow students, your peer mentor, and by me in *draft* and *final* form. This will allow you to get feedback from a variety of sources for the draft and further evaluation beside mine for the final grade.

Each week's reading will also require a 1-2 paragraph 'reaction' to be shared with the class. The student presenting the week's work will also prepare a simple outline to be shared with the class. These will be required to be posted on the class website or emailed to me the *day before* the first class of the week. Penalties for slacking on this step include public humiliation and ridicule.

Grading

Discussion / Socratic	50%	
Written Projects	50%	10% reactions, 15% mid-term, 25% final

At the class half-way mark I'll supply an evaluation as to how you're doing in the discussion / Socratic portion of the course so you'll know how you're doing.

Scribner Seminar – Mind Design

Scribner Seminar Goals

This course will introduce students to disciplinary and interdisciplinary perspectives on the science of mind, with the goals that follow below. In addition, this is a course about *knowing*, particularly about ways to identify problems, formulate productive questions, and go about answering those questions. Students in this course will demonstrate the ability to:

1. Distinguish among, and formulate, types of questions asked by different disciplines
2. Read critically, and gather and interpret evidence
3. Distinguish among the evidence and methodologies appropriate to different disciplines
4. Consider and address complexities and ambiguities
5. Make connections among ideas
6. Recognize choices, examine assumptions and ask questions of themselves and of their own work
7. Formulate conclusions based upon evidence
8. Communicate ideas both orally and in writing
9. Relate the results of the course to their educational goals

Honor Code

You are expected to adhere to the *Skidmore Honor Code* as stated in the student handbook:

I hereby accept membership in the Skidmore College community and, with full realization of the responsibilities inherent in membership, do agree to adhere to honesty and integrity in all relationships, to be considerate of the rights of others, and to abide by the college regulations.

Violations, such as, but not limited to, plagiarism, unauthorized collaboration, and deception / cheating, will be handled according to College policy. Please realize that punishments generally *start* at failure in the course and increase from there.

Scribner Seminar – Mind Design

Schedule

Philosophy of Mind	Week 1-4
Computation	Week 5-6
Paper I	Week 7
Embodiment	Week 7-10
Consciousness	Week 11-12
Paper II Draft	Week 12
Presentation of Papers	Week 13
Paper II Final	Week 14

Disclaimer

This document is subject to whimsical change, but with proper notification.