

# SYLLABUS

## Vision in the Blind

Psychology 351, Fall 2016  
Seminar, W 2:40–3:40, TLC 207

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### Overview

This one-hour, special seminar will look at how visual impairment or loss isn't always as clear cut as it seems. Furthermore, we'll dispel the seemingly ever-present idea that the blind exhibit superiority in other sensory systems. To do this, we'll investigate the 'why and how' of changes in the brain.

### Basics & Background

A growing body of evidence demonstrates that the brain can reorganize dramatically following sensory loss. The visual cortex of blind individuals, for instance, is functionally recruited to process tactile and auditory information. While the existence of such neuro-plastic cross-modal changes is not in doubt, their functional significance is unclear. Does cortical reorganization following sensory deafferentation serve an adaptive purpose? The dominant belief is that reorganization is compensatory; functional recruitment of the visual cortex for audition, for instance, can enhance hearing abilities in the blind and thus help compensate for the loss of vision. However, we argue here that a comprehensive analysis of empirical data challenges this narrative; the results thus far do not unequivocally support the claim that sensory deprivation results in enhanced abilities in other senses. We consider alternative reasons besides sensory compensation that might drive the brain to reorganize after sensory loss. One such possibility is that the cortex reorganizes not to confer functional benefits, but to avoid undesirable physiological consequences of sensory deafferentation. Empirical assessment of the validity of this and other possibilities defines a rich program for future research.

In this class, we'll be digging through a preprint-version of an article your professor and colleagues have prepared for the journal *Nature Neuroscience* titled "Why does the cortex reorganize after sensory loss?" We'll supplement this with additional readings drawn from the literature that is cited in this paper.

## Outcome Goal Objectives Buzzword Pedagogy Mandatory Section

Students who complete this seminar will have a basic understanding of mechanisms and consequences of sensory loss, cortical reorganization, and the subsequent neuroscientific and psychological implications.

Specifically —

- Types of sensory loss in humans and other animals.
- Consequences of this loss.
- Nature of cortical reorganization in light of this loss.
- Consequences of this reorganization.
- Vision in the ‘newly sighted.’

Assessment will be via —

- Class participation / presentation.
- Response writing.

## Materials

The primary reading for this course will be

Kalia, A. A., Phillips, F., Merabet, L. B., & Sinha, P. (2016). Why does the cortex reorganize after sensory loss? *Nature Neuroscience*, 1–9.

This paper is on-line as part of the class OneNote notebook. Additional readings will be from the bibliography of this paper. There are about 80 references, so we probably won't get to cover them *all* but we'll try!

There is no required book for this course, however there will be readings from —

Cattaneo, Z., & Vecchi, T. (2011). *Blind Vision*. MIT Press.

Kuusisto, S. (2013). *Planet of the Blind*. Delta.

Additionally, the author of *Planet of the Blind*, Stephen Kuusisto, will be doing a Skype-Hangout-Facetime chat with us at some point during the semester.

## Schedule

Roughly- we'll go at it like this —

PART 1: The Big Picture

Sensory loss in general, blindness in particular. Causes, effects, treatments.

PART 2: The Brain

What happens to the brains of beings affected with sensory loss? Why?

PART 3: The Behavior

What can we learn from human and animal performance in those with sensory loss?

PART 4: Recovery & Enhancement

What happens in the case of visual restoration? Should this give us hope?

## Assessment and Grading

PRESENCE: — 50%

PRESENTATION: — 50%

### PARTICIPATION, PRESENTATION & PRESENCE

Participation can take many forms. Feel free to do so as you feel comfortable, but do participate. Presence is more than 'attendance'. And finally, Presentation — you'll have to read and talk about specific things, presented to the rest of the class, in a clear, convincing, and curious way.

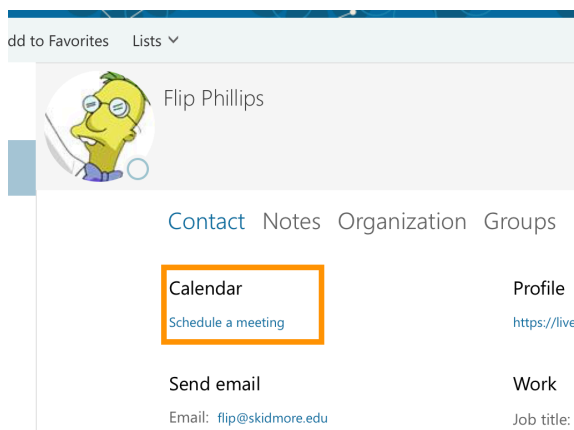
## Resources

We have a Microsoft OneNote collaborative area (as an alternative to BlackBoard this semester) that *might* be accessible via <http://goo.gl/2pqiNp> Regardless, you should have received an email invitation to the notebook already. If not, let me know.

## Office Hours & Appointments

I'm in a slightly chaotic mode, since I just got back from sabbatical (OK, honestly, I'm *always* in a chaotic mode). The easiest way to schedule an appointment is with your Skidmore Office 365 account — <http://office.com> since I keep my availability relatively up-to-date there. To do that —

- Go to the People section of Outlook (on-line or on your computer).
- Search for Flip Phillips.
- You'll see a little button that says Schedule a meeting —



- Do that.
- It will show you when I'm 'busy'.
- Schedule anything (rational, e.g., not before 8 AM or after 6 PM) and it will send me a request. If it's cool with the rest of my schedule, we're good!
- Otherwise, we'll try again.

## Details

**Honor Code:** The Skidmore Honor Code is the main governing policy of this class. Learn it. Know it. Live it.

See <http://www.skidmore.edu/advising/integrity/index.php> for details.

**Attendance:** Show up. Miss more than 3 classes and I *reserve the right* to fail you. Miss the first day and I *reserve the right* to drop you from the class and admit someone on the wait-list.

**Lateness:** Work presented late without prior notice will receive a o. If something is going to be late get in touch with me. I reserve the right to give late work whatever penalty I feel is appropriate.

**Extra Credit:** I don't offer 'extra credit.'

**Plagiarism:** *Any* act of plagiarism will result in a failing grade for the course and whatever procedures / processes I am obligated to undertake on behalf of the department & college. I take this pretty seriously. If you're not sure if something is plagiarism, **ask**.

ADA: Services and accommodations are available to students covered under the Americans with Disabilities Act. If you have any visual, perceptual, or physical challenges that might result in the need for some form of accommodation I am more than willing to help you help yourself. Contact me and/or Student Academic Services

[http://www.skidmore.edu/academic\\_services](http://www.skidmore.edu/academic_services) for assistance.

Slack: Generous swaths of slack shall be cut to those who exhibit respect for the learning process and the class in general.

CYA Clause: This document subject to random changes at my discretion or via *vis major* — with proper notice in class / via email / BlackBoard / and/or carrier pigeon.

Warning:

In this class, you could be exposed, at any moment, *and without warning of its imminence* to: ideas, comments, imagery, sounds, 'feels', readings, people, and other things that you may find: shocking, offensive, absurd, annoying, racist, sexist, homophobic, discriminatory, or generally obnoxious.

This is called 'education.'

— AFTER J RAUCH

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Last updated: September 9, 2016