جامعة نيويورك أبوظبي

NYU | ABU DHABI

PSYCH-UH 2218: Language Science

Class 1: Introduction - Why study language as a science?

Prof. Jon Sprouse
Psychology

My name, your name

My full title and name is Prof. Jon Sprouse. But, we will be working closely together this semester, so you can call me "Jon". If that feels too informal, I am also ok with "Prof. Sprouse" or "Dr. Sprouse". But I don't require the title. I know that I am a professor — I have 16 years of memories doing it.

You all have been around for a bit, so you know this, but I want to say it out loud. I carry a bunch of privilege as a middle aged white professor - nobody ever questions my credentials. This makes it easier for me to be ok with using my first name. Other professors or administrators with PhDs may not be as lucky, so I recommend always using Prof. Lastname or Dr. Lastname when you first meet people at a university. They will tell you if it is ok to use their first name.

My pronouns are he/him. For some reason, the online systems (Brightspace and Albert) don't allow professors to add their pronouns. If I could upload them, I would. I think it is a terrific new feature of these systems that students can upload them, and I encourage you to do so.

Finally, the system also allows you to upload a pronunciation of your name. That is great too! If you do it, I will try my very best to learn them. And, next week, we will learn an alphabet that will help us write any pronunciation we want!

Goals for today

It is the first day, so let's ease in to the course gently. I have only three goals:

1. To get excited for studying language from a scientific point of view.

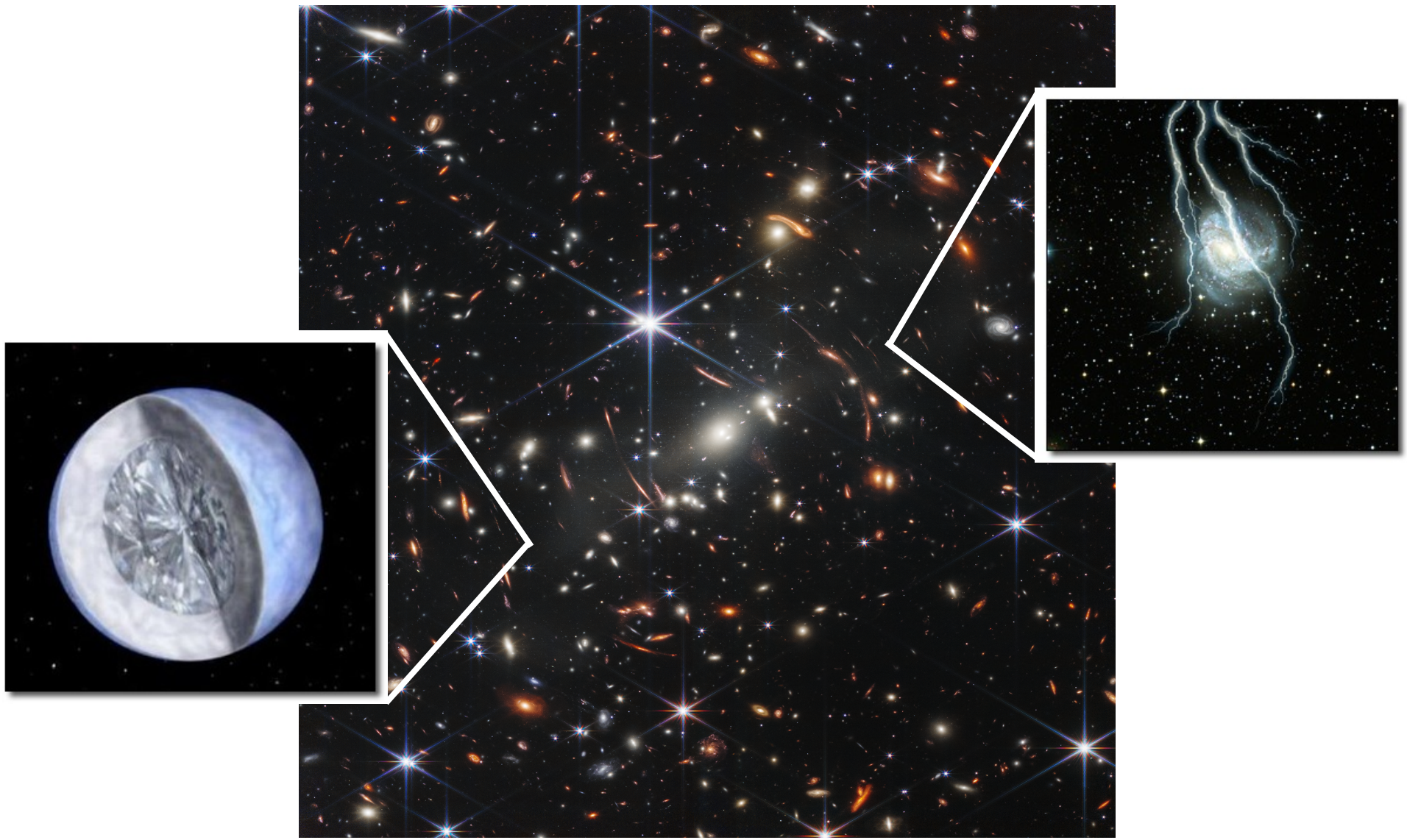
2. To explain the structure of the course.

3. To start getting to know each other!

Why study science?

Science allows us to understand the universe

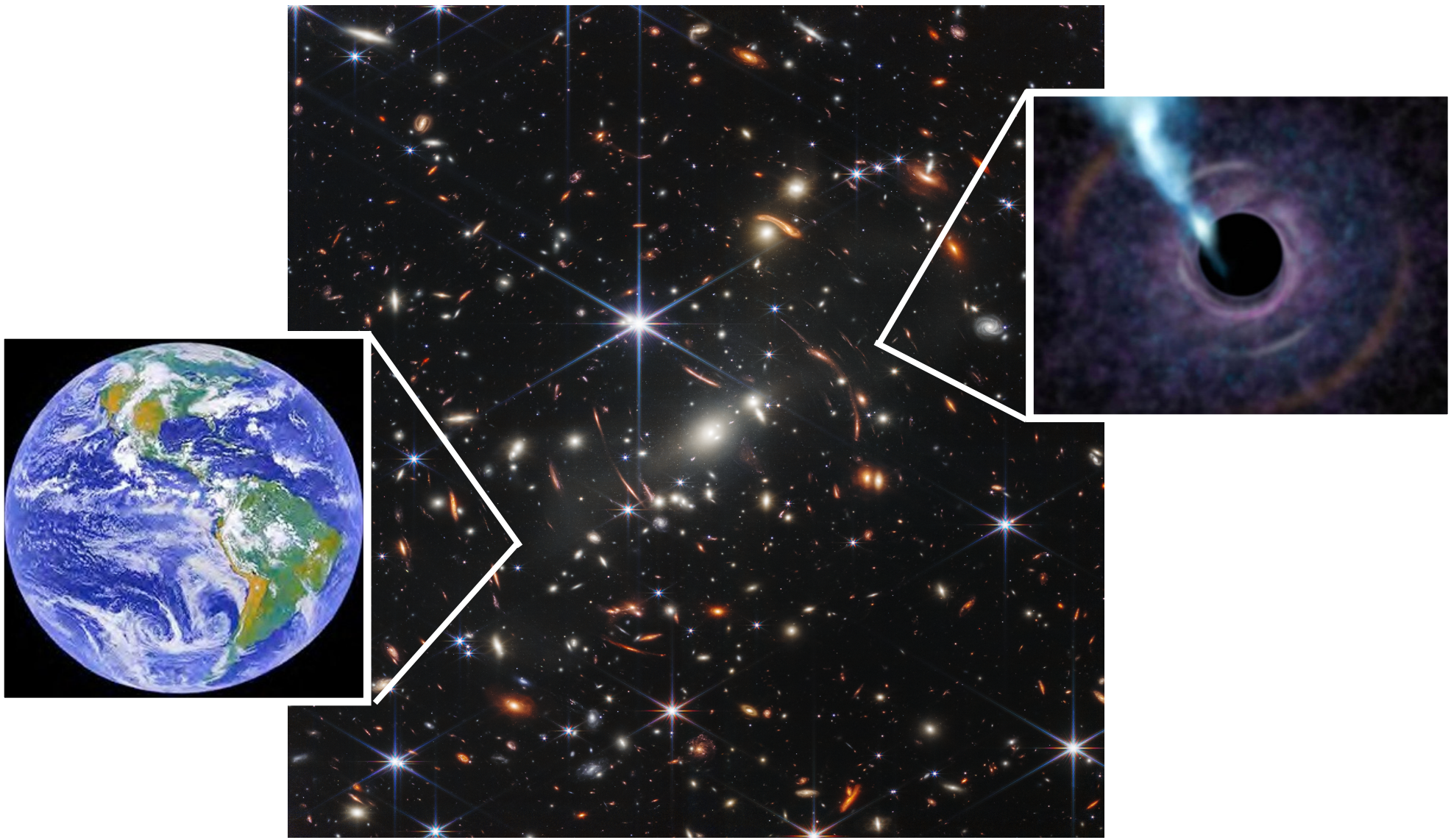
It is a method for systematically asking and answering questions.



Why study cognitive science?

Go big or Go home

If you are going to study something, why not study the most complicated object we have encountered in the universe?



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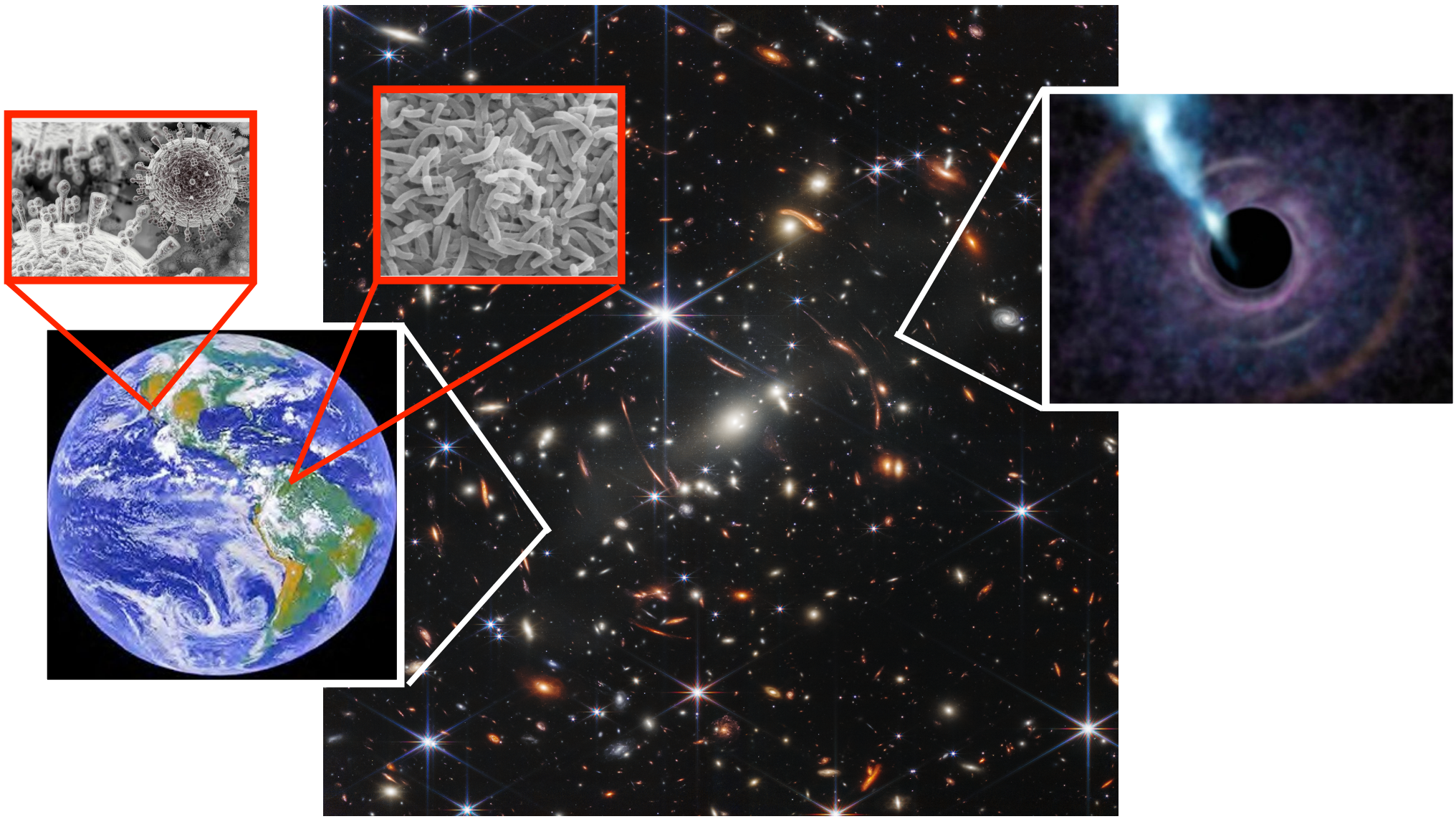
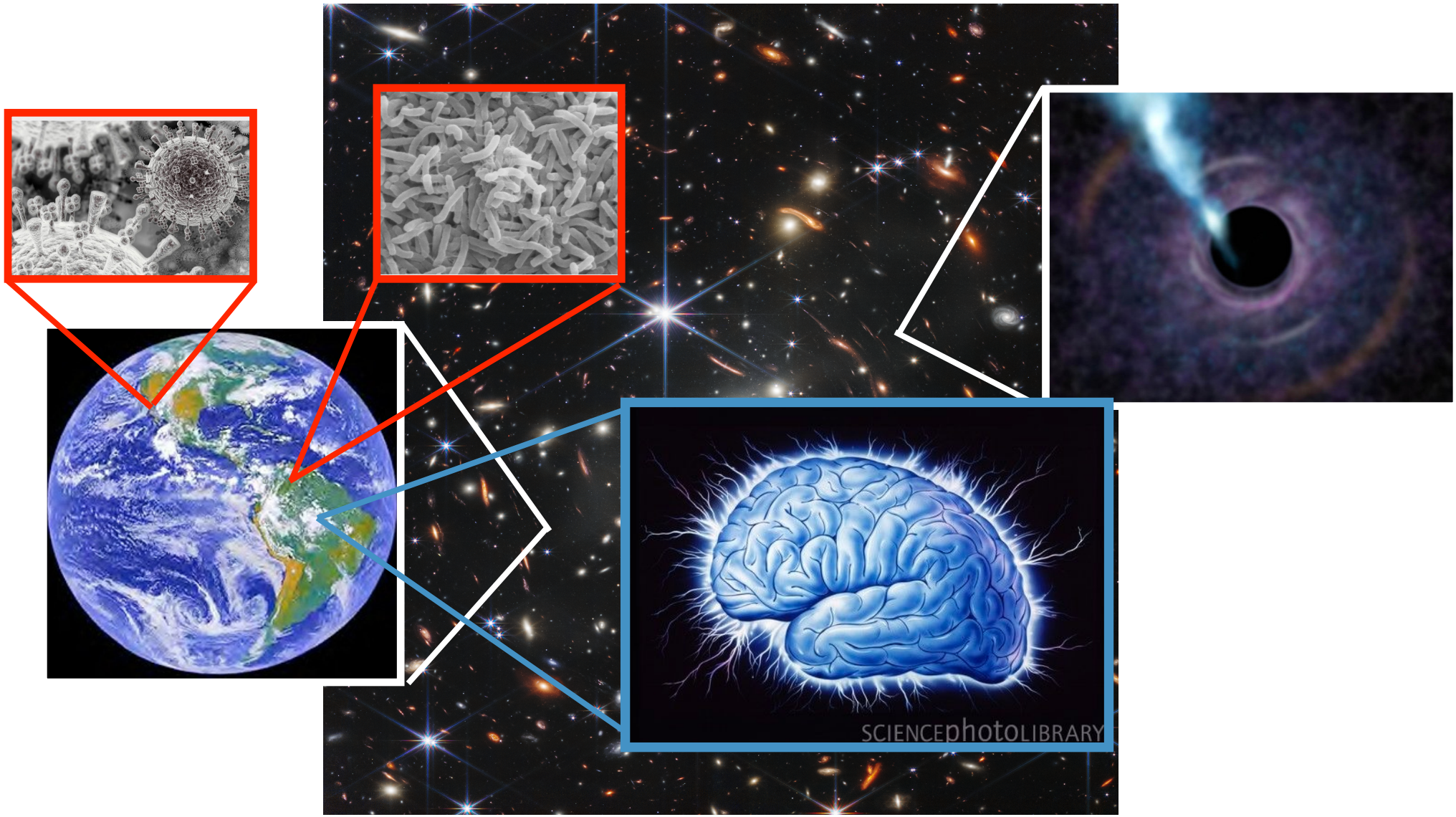


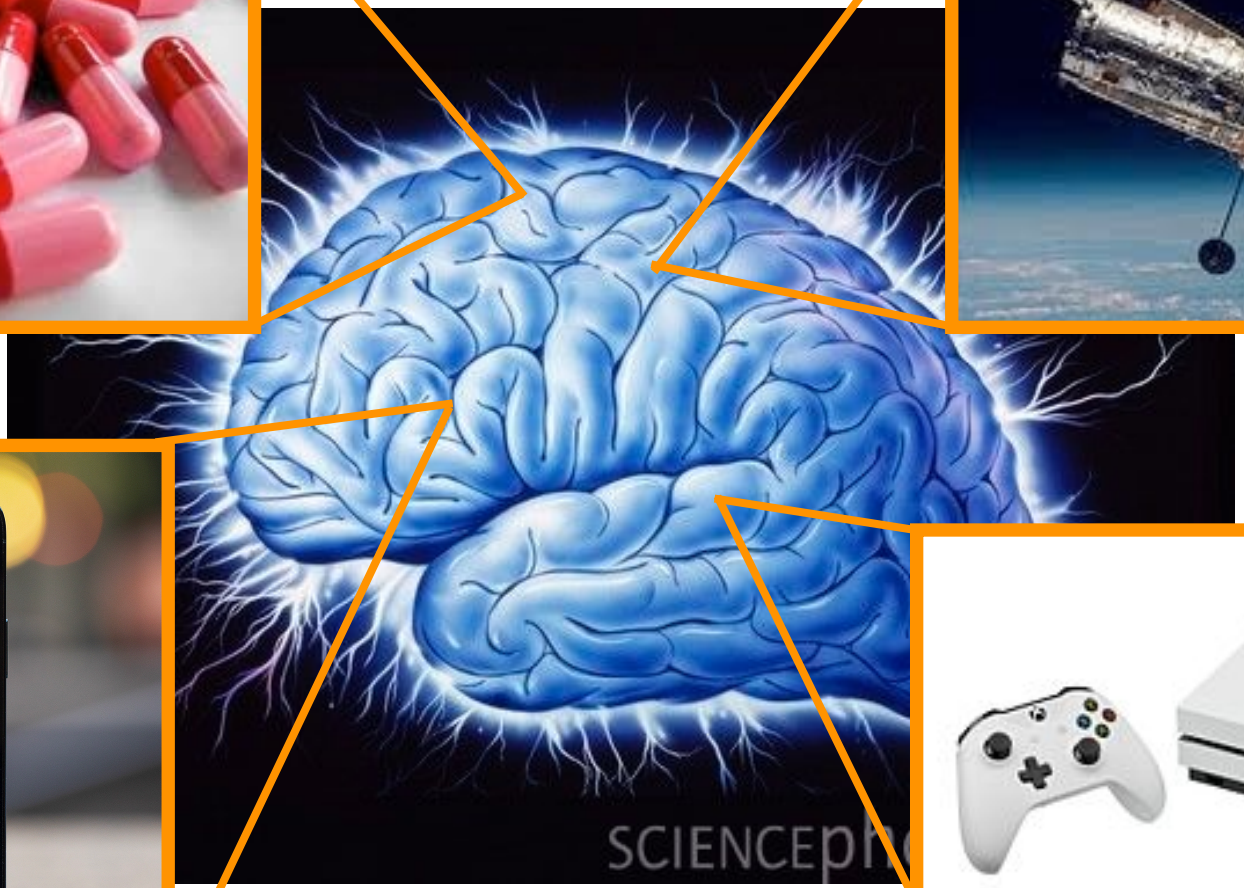
The human mind

The most complicated object we have discovered in the universe is the human mind… seriously!



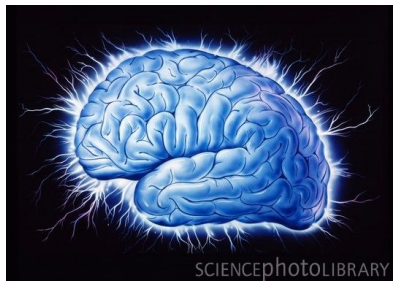
The complexity of the human mind can be seen in all we have achieved!

Including the process of science itself!



The challenge in studying the mind

Studying the mind requires creating “distance” between you and the ability



When we talk about the mind, what we really mean is a set of cognitive abilities.

It is easy to take those abilities for granted. They are a seamless part of our experience of existing. To truly study them, we have to interrogate that existence.

perception

memory

sensation

language

dreams

consciousness

free will

emotions

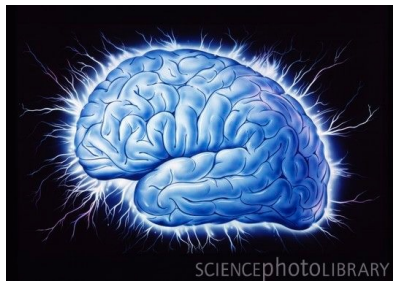
knowledge

logic

learning

decision making

You've been doing this in other Psych classes



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sensation

Take a look at an object near you. It has both shape and color. Those are two different pieces of information. How does your mind put those two properties together into a single "object"? How does your mind decide that two parts of the object "go together", but the object itself is distinct from other objects in your field of vision, which are also distinct pieces of information?

logic

learning

decision making

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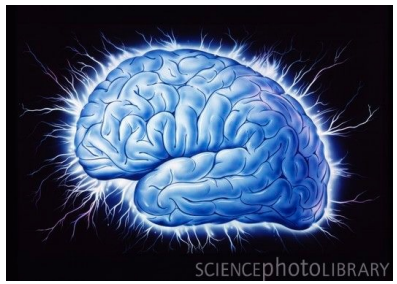

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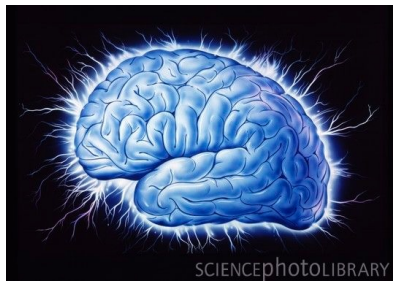
sensation

Think about your high school graduation. How did you find that memory out of all of the other memories that you have - i.e., how was it retrieved? How was that memory encoded in the first place? What information is encoded in that memory? (a lot, right?)

Think about what scissors are. That's a memory too. But a different kind - it is about the properties of a concept, not a specific object in the world. How did you find that memory out of all of the concepts you know? How as it encoded in the first place? What information is in that memory (also a lot, but different, right?)

decision making

You've been doing this in other Psych classes



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perception

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dreams

We make inferences (draw conclusions) both consciously and during learning. Are there rules to inference making in general? Are there rules to how our minds make inferences? Are the two sets of rules the same?

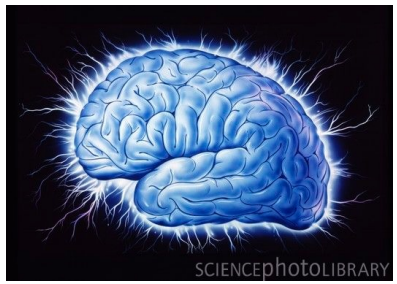
knowledge

logic

learning

decision making

This semester we will do it for language!



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perception

memory

sensation

language

What is a language? What does it mean to "know" a language? Are there constraints on the way language works?

free will

knowledge

emotions

logic

learning

decision making

The humanistic argument for studying language

Language is a critical cognitive ability

Think about human history. You probably see it as a steady progression of achievements…

But why is it that other relatively intelligent species, like other primates, haven't shown this type of progress?

They show the ability to learn to use tools, and even show some creativity with those tools, but in millions of years, they haven't built anything like we have…

Part of the answer is that we can transmit non-genetic knowledge

Genetic transmission:

100% of (typically developing) members of the species will have this knowledge.

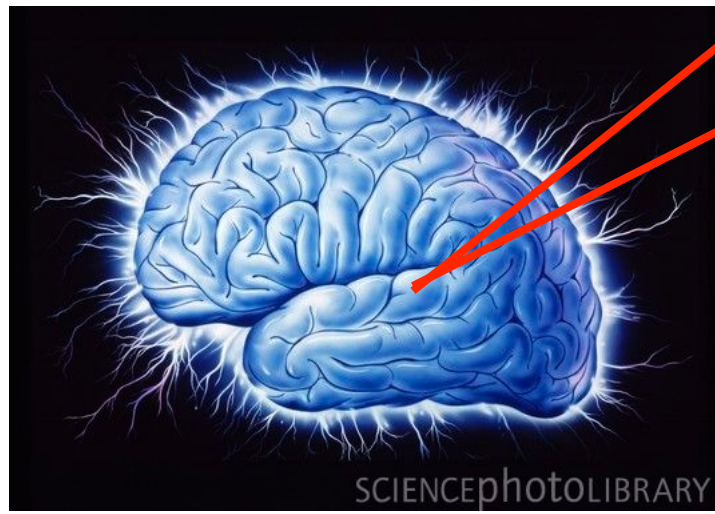
Innate abilities like walking

Non-genetic transmission:

Only those exposed to the knowledge will have it.

Language itself is a form of **genetically transmitted knowledge**. We will see this throughout the semester. But we can use it to **transmit non-genetic** information! No other species that we have encountered can transmit as much complex information as we can. (We will look at other species toward the end of the semester after we know more about humans!)

Language is critical to what it means to be human!



Language

Language allows us to share knowledge with each other.

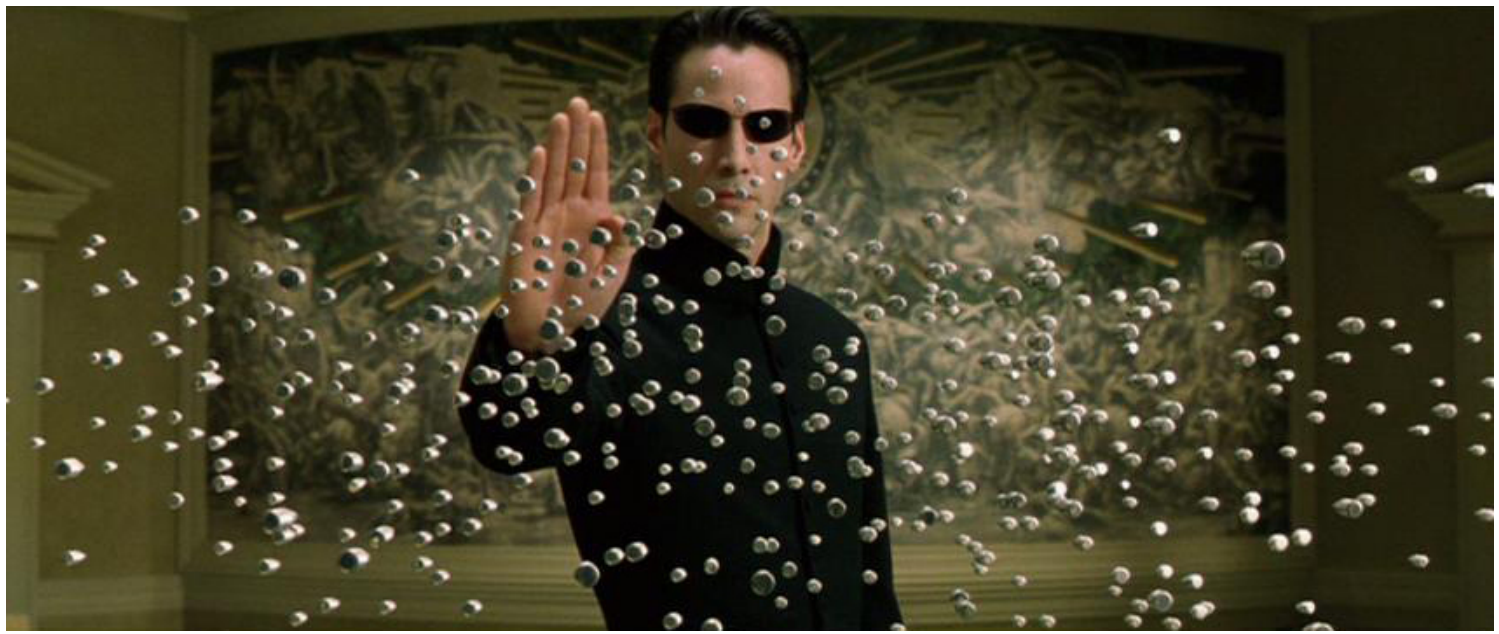
So if you are going to study one facet of the mind, why not language!

The cognitive science argument for studying language

The mind is structured

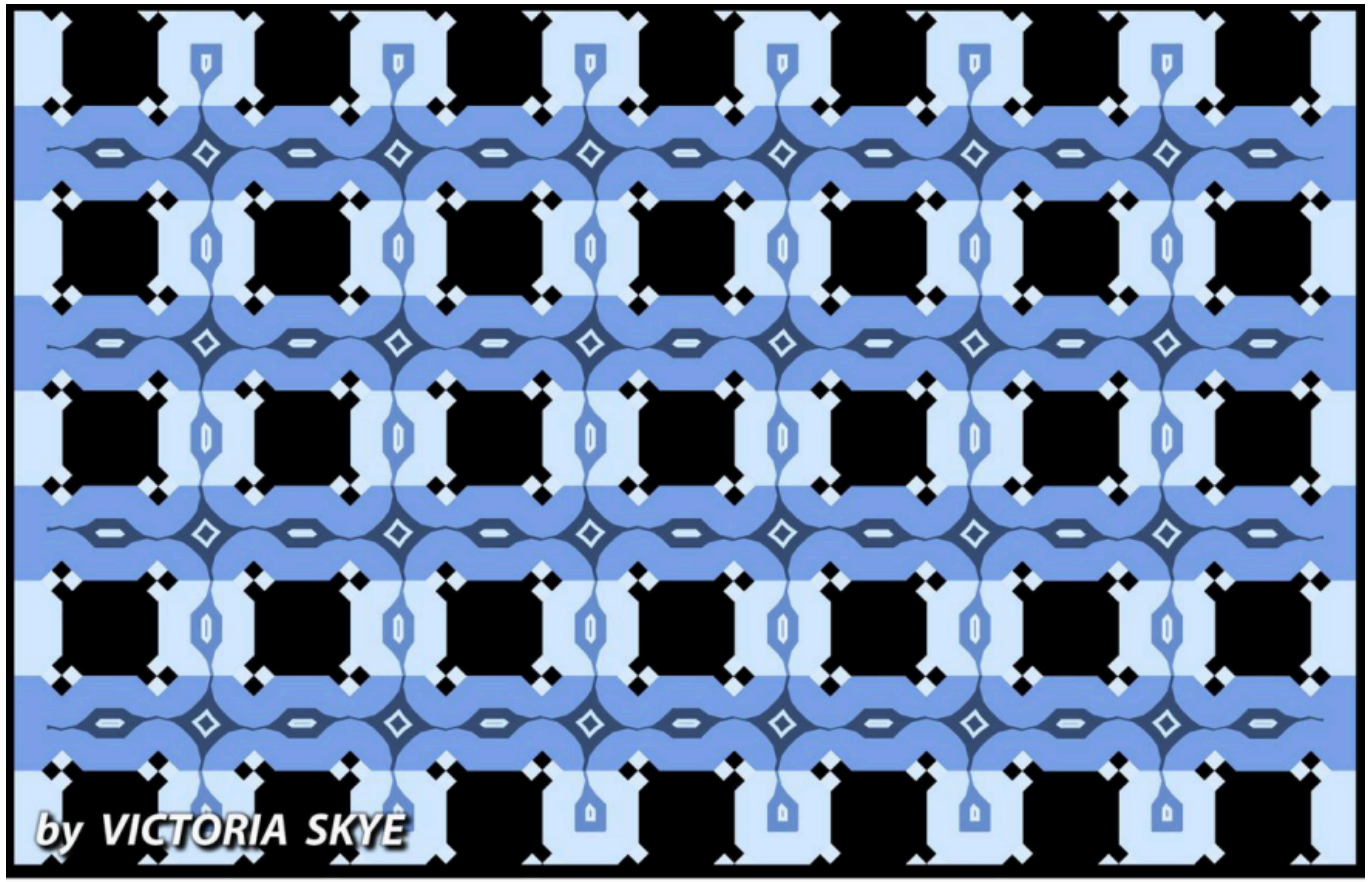
When we say that the mind is structured, what we mean is that each cognitive ability works in a very specific way.

This may seem like a boringly obvious thing to say, but really think about it for a minute. Why should it be the case that cognitive abilities each only work in one specific way? Why can't they work in lots of different ways? Or any way that we want? Why can't we consciously change the way our minds work?



Structure is constraint, it is limitation. Our minds are the most impressive things in the universe (so far), but they only work a certain way.

The lines are parallel

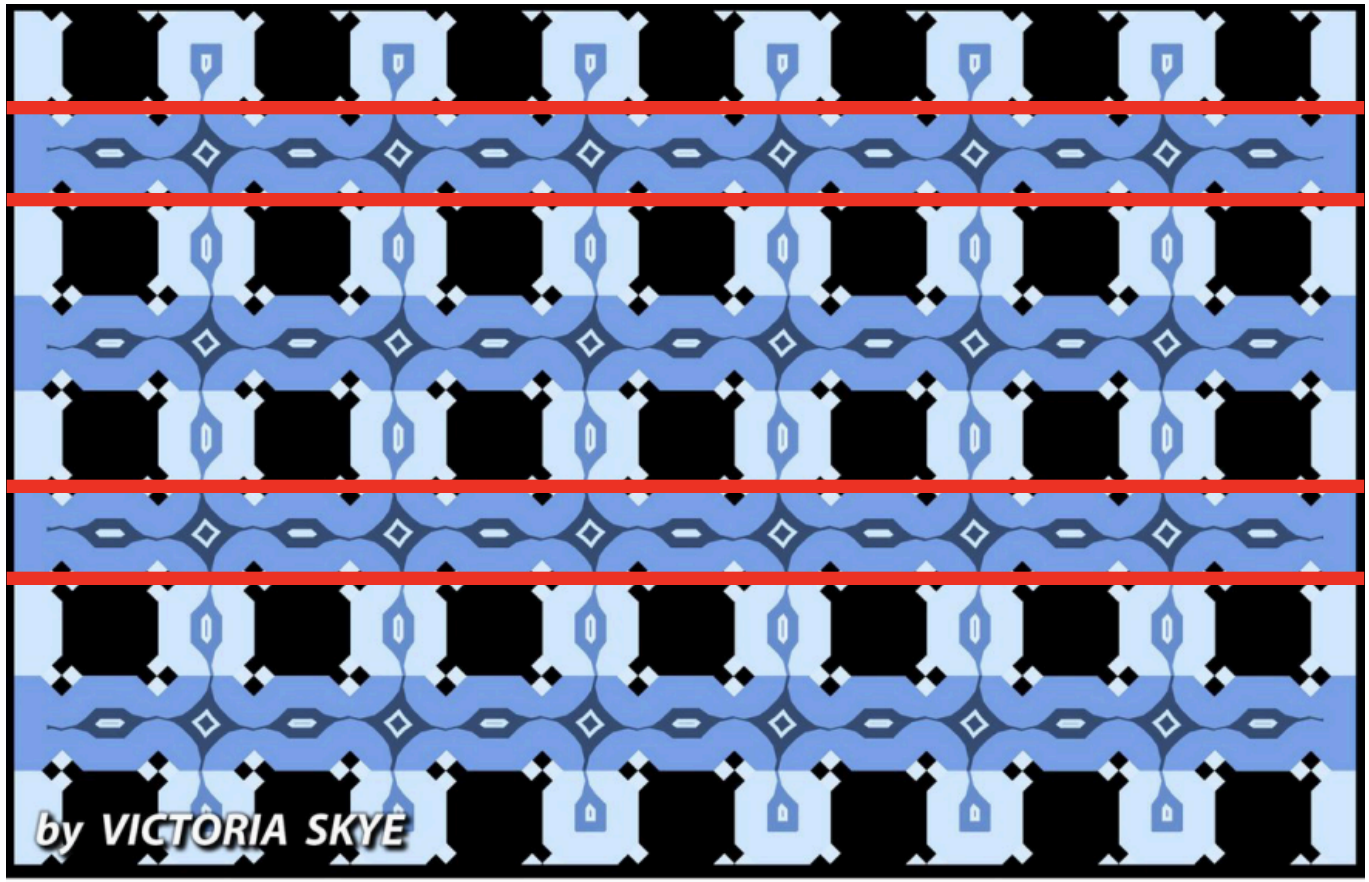


CAFE WALL OPTICAL ILLUSION

Do the horizontal bars look like they bend and are at an angle?
Look again, because they dont bend. They are straight and in parallel rows.
The alternating target patterns, rows and colors all combine to trick your brain.

I can tell you that the lines are parallel, but no matter how hard you try, you can’t see them that way! That is because your visual system is structured!

The lines are parallel



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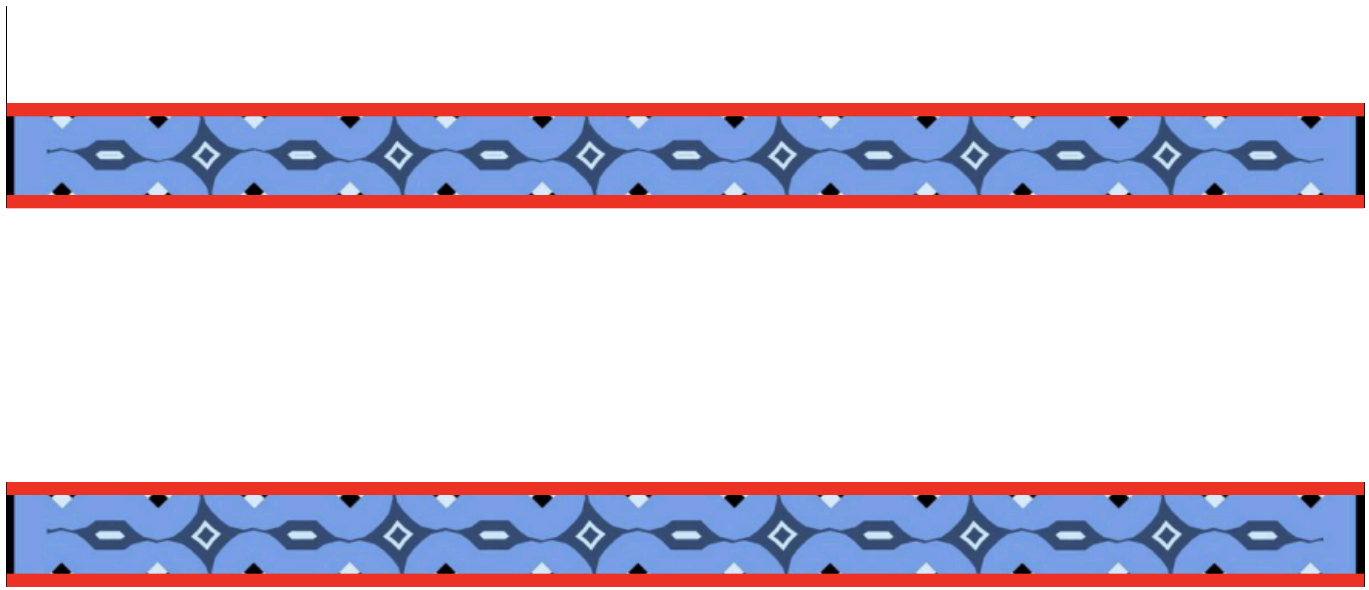

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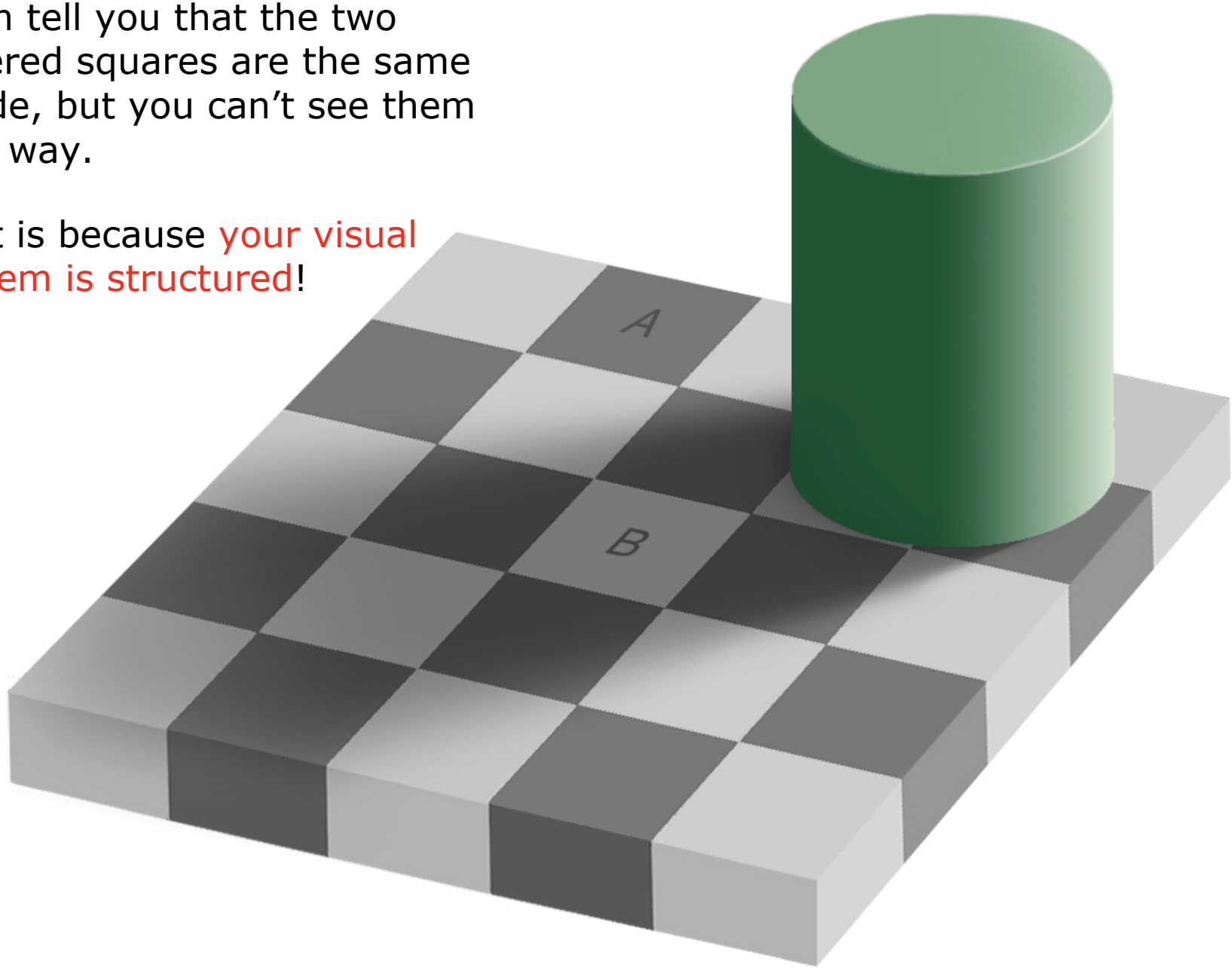
The two squares are the same shade

I can tell you that the two lettered squares are the same shade, but you can't see them that way.

That is because your visual system is structured!



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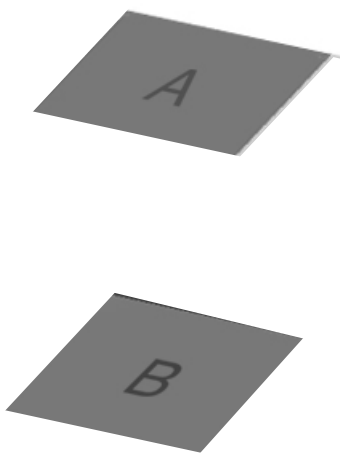


More about optical illusions

Here is a website maintained by a vision scientist with interactive demonstrations of over 140 optical illusions, along with explanations for those that vision scientists have figured out.

https://michaelbach.de/ot/

In cognitive science, we want to explore that structure

Structure is the very essence of the mind. We want to understand that structure, and in doing so, better understand our own minds.

1. How is a given cognitive ability structured?

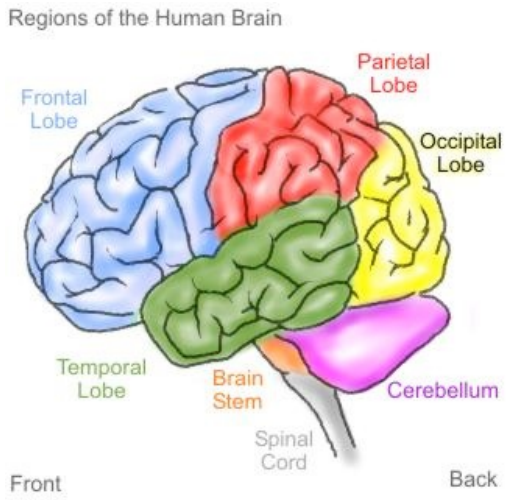
2. How did that structure get into our minds?

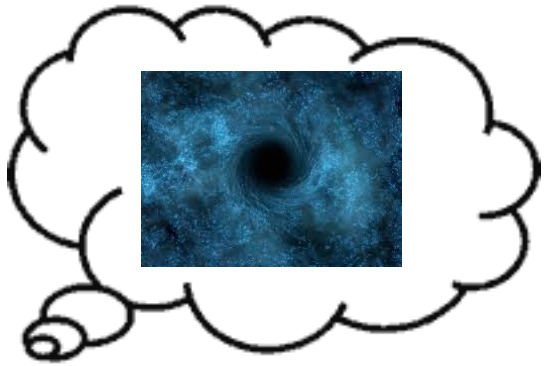
3. What are the consequences of that structure for human life?

We can ask all three questions for language!

The set of cognitive abilities that we collectively call "language" perform complex computations to convert between a physical signal (sound or visual signs) and a complex meaning (and vice versa)!

sound waves





meaning
(e.g., "avoid the blackhole")

We can ask how that system is structured, how that system is acquired, and how our understanding of that system impacts our lives. We will see what this looks like, at least a bit, when we look at the schedule in the next slides!

The structure of this course

Week	Date		Topic	Reading	Assignment
Preliminaries					
1	8/30	W	Introduction		
2	9/04	M	What is the object of study?	Language Files 1	
Phonology: the mental representations of "sounds"					
	9/06	W	IPA and Articulatory Features	Language Files 2	
3	9/11	M	Acoustic Phonetics		
	9/13	W	Phonemes and Allophones	Language Files 3	
4	9/18	M	Phonological Rules		
	9/20	W	Phonological Analysis		
Morphology: the mental representations of "words"					
5	9/25	M	Morphology 1	Language Files 4	
	9/27	W	Morphology 2		PS 1 due
6	10/02	M	Lexical access	Language Files 9.5	
	10/04	W	Writing systems	Language Files 15	
Exploring phonology and morphology					
7	10/09	M	Language disorders	Language Files 9.2	
	10/11	W	Morphological analysis		
	10/16	M	No-class - Exam equivalent		
			Fall Break		
8	10/30	M	No-class		
Syntax: the mental representations of "sentences"					
	11/01	W	Categories and infinity	Language Files 5	PS 2 due
9	11/06	M	Constituency		
	11/08	W	X-bar theory and theta theory		
10	11/13	M	Movement and cross-		
Language Acquisition					
	11/15	W	The logical problem of	Language Files 8	
11	11/20	M	Case studies		
	11/22	W	The critical period for	Language Files 12.3-12.4	
12	11/27	M	Sign languages	Language Files 2.7	
The application of a scientific theory of language in the 21st century					
	11/29	W	No class – Legislative day =		
13	12/04	M	Language Diversity	Language Files 10, 12.6	PS 3 due
	12/06	W	Language Prejudice	Language Files 11.3	
14	12/11	M	Language and Thought	Language Files 11.2	
	12/13	W	Animal communication	Language Files 14	
	12/20	W	PS 4 Due		PS 4 due

We will begin this week by figuring out what it even means to study language as a cognitive science.

Then we will spend the first chunk exploring the structure of language as a cognitive system.

Then we will ask how that system could be acquired.

Finally, we will apply our cognitive theory of language to a number of issues in broader life.

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This course has 4 graded problem sets (in lieu of exams!).

And each is due at least one week after the unit is over. That should allow you to work on it during the unit and after the unit is over.

This class does not have recitations, but for the phonology, morphology, and syntax units I have included a day when we will work together on the problem sets!

Please **let me know asap** if any of these deadlines conflict with other major work you have. We can adjust these if we need to!

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Even though we have take-home assignments rather than exams, I added days off around fall break as if we had a midterm exam.

The reason for these are twofold. First, if we filled them with new content, it would defeat the purpose of moving the exams into problem sets. It would actually increase the workload (more content).

Second, I have been told that the midterm workload is heavy around fall break. That defeats the point of fall break. We also will end up with an assignment due after we return, so I think this helps to make it not the first day back!

COVID Accommodations

First and foremost, I will stream and record every lecture through Zoom (with a link on Brightspace).

Any illness with symptoms that overlap with COVID (cold, flu, etc) is potentially disruptive to members of the class if it is spread. Even non-covid illnesses create burdens - testing, preventative isolation, etc. So I'd like to ask everyone in the class, including me, to help prevent the spread of any respiratory illnesses as much as possible.

To that end, I'd like to ask everyone (including me) to join class remotely if we ever experience any symptoms, and to only return once symptoms have cleared and COVID testing is negative. Similarly, I'd like to ask anyone with a close contact with someone who is COVID positive to attend class remotely until the incubation window has passed (follow university guidance on this).

To help facilitate this, I am suspending the course attendance policy. Attendance will not factor into your grade at all. There will be no limit to the number of days that you can miss because of symptoms, contacts, etc. I trust you to manage this flexibility in a way that both protects the class and facilitates your education.

Readings

The primary textbook for this class is called **Language Files**. It is a great introductory textbook for the field of linguistics. It has content that goes beyond what we can cover in a one semester course - there is probably upwards of 3 semesters worth of material! Please feel free to read more in it if you find it interesting!

In general, the lecture slides for the course will be self-contained. You could, in principle, get all of the course content from the lecture slides. I do this because you paid for my time, so I create the content from primary sources. If students had to pay for textbooks, this would also save money! The textbook serves as a second source for you. It is like having two teachers - me and the authors of the textbook!

But, given that NYUAD generously supplies textbooks, I thought it could be nice to have a second source for you. It is like having two teachers - me and the authors of the textbook!

I will also provide some supplemental readings on Brightspace for various topics in the course. These will typically be articles or book chapters from the field. You don't have to read these, but I want to provide them for some topics so you can go deeper into the field on your own if you want!

Grades

The grade weights are as follows:

Activity Detail	Percentage	Due
Participation	10%	—
Problem Set 1	22.5%	09/27
Problem Set 2	22.5%	11/01
Problem Set 3	22.5%	12/04
Problem Set 4	22.5%	12/20

And the grade distribution is:

Letter	Min	Max
A	93	100
A-	90	92
B+	87	89
B	83	86
B-	80	82
C+	77	79
C	73	76
C-	70	72
D+	67	69
D	63	66
D-	60	62
F	0	59