

March 15, 2016

- Bizarre behavior - is this guy a creep? Midlife crisis? Genetic defect?
- Behavior is a nuanced interaction between nature, nurture, etc...

Q. What do these have in common?

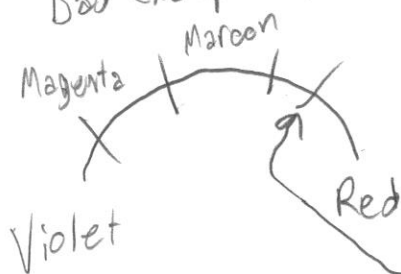
- Having period
  - Eating a lot of junk food
  - Having brain tumor
  - Taking anabolic steroids
- } - Hormones?

A. - All used successfully in courts of law to explain behavior of a murderer

- Amygdala + tumor = uncontrollably violent.
- Dan White (S. Fran history) used "TWINKIE DEFENSE" to justify murdering the

Two key ideas in this class

- Sometimes stuff going on in body can influence brain
- Sometimes, what's going on in your head impacts your body
- We want to understand not just human behaviour, but **ABNORMAL + SOCIAL**
- Messy complicated ∴ → We use **CATEGORIES** to simplify things
- Ex. How long is this line? 12 inches? 11, but you compared it to "RULER-SIZE"
- Ex. Under 4 min. mile = IMPRESSIVE
- Bad example - Painter uses **ELEVEN** COLORS! → GREAT ARTIST...?!! Nope.



Continuum of color

We break continuums into categories, but people in other languages break that apart differently in diff. lang  
WHAT'S THAT, IN THE MIDDLE?

• We have words for  $\square \circ \triangle$  - CATEGORIES  
but not

## Problems w/ CATEGORIZATION

- What do you do with things that straddle categorical boundaries?
- What about things that sit in same "bucket", but aren't same:

Ex. Practice surgery on a bear → pear

- IF YOU PAY TOO MUCH ATTENTION TO CATEGORIES, YOU LOSE ABILITY TO DIFFERENTIATE SIMILAR STUFF
- Losing big picture by relying on categories

Ex. Phone numbers example on back

Q: What's next # in series?

4    14    23    34 → 4<sup>th</sup>    14<sup>th</sup>    23<sup>rd</sup>    34<sup>th</sup>

If you think about the world with a certain set of categories, this makes perfect sense -

A. Next is 42<sup>nd</sup>, because NY Subway stops, but we all thought it was some logical mathematical formula

• When you think in categories you

- UNDERESTIMATE differences
- OVERESTIMATE similarities
- LOSE big picture

} by focusing on {  
- SIMILAR BOX  
- BOUNDARIES  
- DETAILS

- Is a passing 66% really that different from a failing 65%?  
Yes, to a Stanford student failing w/ a 65. But really, not much.

## STRUCTURE OF CLASS

- Look @ behavior
- 1/2 second prior → NEURONS

↓ CORIT

- What stimulus occurred just before that synapse? (
- What, in fetal dev., caused that sensitivity? (FETAL DEVELOPMENT)
- Keep going back, examine ALL the influences

- There are no buckets, just convenient platforms for examining

• "We're not going to fall for categorical thinking!" ← **ARROGANCE**

- Plenty of famous, talented scientists have done!

These  
are  
not  
crappy  
4th-rate  
scientists!

• John Watson, 1912, Behaviorism → **REWARD & PUNISHMENT**  
"Control environment → doctor, lawyer, beggar, thief"  
but what about pathological malnourishment

• **Egos Moniz** (?), Frontal lobectomy - **NOBEL PRIZE**  
"Normal functioning relies on synapses - adjust synapses  
leads to cures & improve; no FAILURES" → VIA LOBOTOMY

• **Konrad Lorenz** - Ethology, imprinting on ducks  
Racial idea of populational purity, eliminate dregs  
of society via exterminating undesirables

- Yet they thought in **CATEGORICAL BUCKETS** and led to **TRAGEDY**

• Genes, hormones, environment, etc.

## THREE INTELLECTUAL CHALLENGES

1. Recognize that humans are just animals, nothing fancy  
Ex. Synchronizing menstrual flow (hamsters, Wellesley U. students.)  
It's all a question of pheromones...? Even US!
2. We appear to be just like all other organisms, but we do something totally unique, but with a similarity  
Ex. Chess tournaments make HEARTRATE behave like MARATHONS stimulated just by thought  
- We use our physiology to do extraordinary things  
(Ex. We experience stress for FICTIONAL CHARACTERS!)
3. When we do something no other animal out there does  
Ex. Casual, non-reproductive sex would be NOVEL & ALIEN to anim.  
Language use, certain interpretations of aggression, etc.  
UNPRECEDENTED

AND WHAT DOES BIOLOGY HAVE TO DO WITH IT?

## Course structure

- 1st 1/2 Examine all the different buckets
- 2nd 1/2 Examine behaviors while ripping apart buckets

- No pre-regs - we all need this
- Designed for having no bio background  
↳ ADDITIONAL CATCH-UP SECTIONS FOR PEOPLE w/ NO PATEL EXP.

- Lots of vocab - if you don't know it, go to CATAL-VP sections
- We are BEHAVIOR BIOLOGISTS ALL THE TIME
  - JURY / Family w/ depression/etc

• Go to any convenient sections

MIDTERM @ 1/2 way

FINAL @ end

• 5 min break @ middle of ez/class

• Assigned reading

• Book by SAPOLSKY

• "Chaos", James Gleick

Not every chapter  
 → - VERY CONTROVERSIAL  
 - DECONSTRUCTS SYSTEMS → FIX CLOCKS  
 - LIFE IS NOT UNDERSTANDABLE BY LOOKING AT COMPONENT PIECES

• Also, assigned reading online

- PAY ATTENTION TO WHETHER

- Whole paper

- Just abstract

- Detailed understanding

- META-ANALYSIS of BUCKW

• Handouts online, paper available

• See COURSEWORK site online

**ALL FACTS**

May 3 (Mon) @ 7:30

**5 Unit Course!**

Workload is mostly

MIDTERM @ EVENING, lecture that day will be REVIEW

• TA's - Dana/Will/Stephen/Patrick/Elena/Tom/Anthony/Nathan

**FINAL - June 4<sup>th</sup>**

**TESTS**

Multiple choice, short answer response

Midterm: Do you get basic bread

FINAL: Synthesize it all