
Welcome to DATA 151

I'm so glad you're here!

DATA 151: CLASS 12B

INTRODUCTION TO DATA SCIENCE (WITH R)

COMMUNICATING WITH DATA



ANNOUNCEMENTS

HOMEWORK REMINDER

Due this week:

- ***DUE 11/17 Project Milestone #6***
 - Relationships between two numeric variables
 - Linear regression
- ***CANCELLED***
 - ~~***DUE 11/17 HW #10: DC Correlation and Regression***~~



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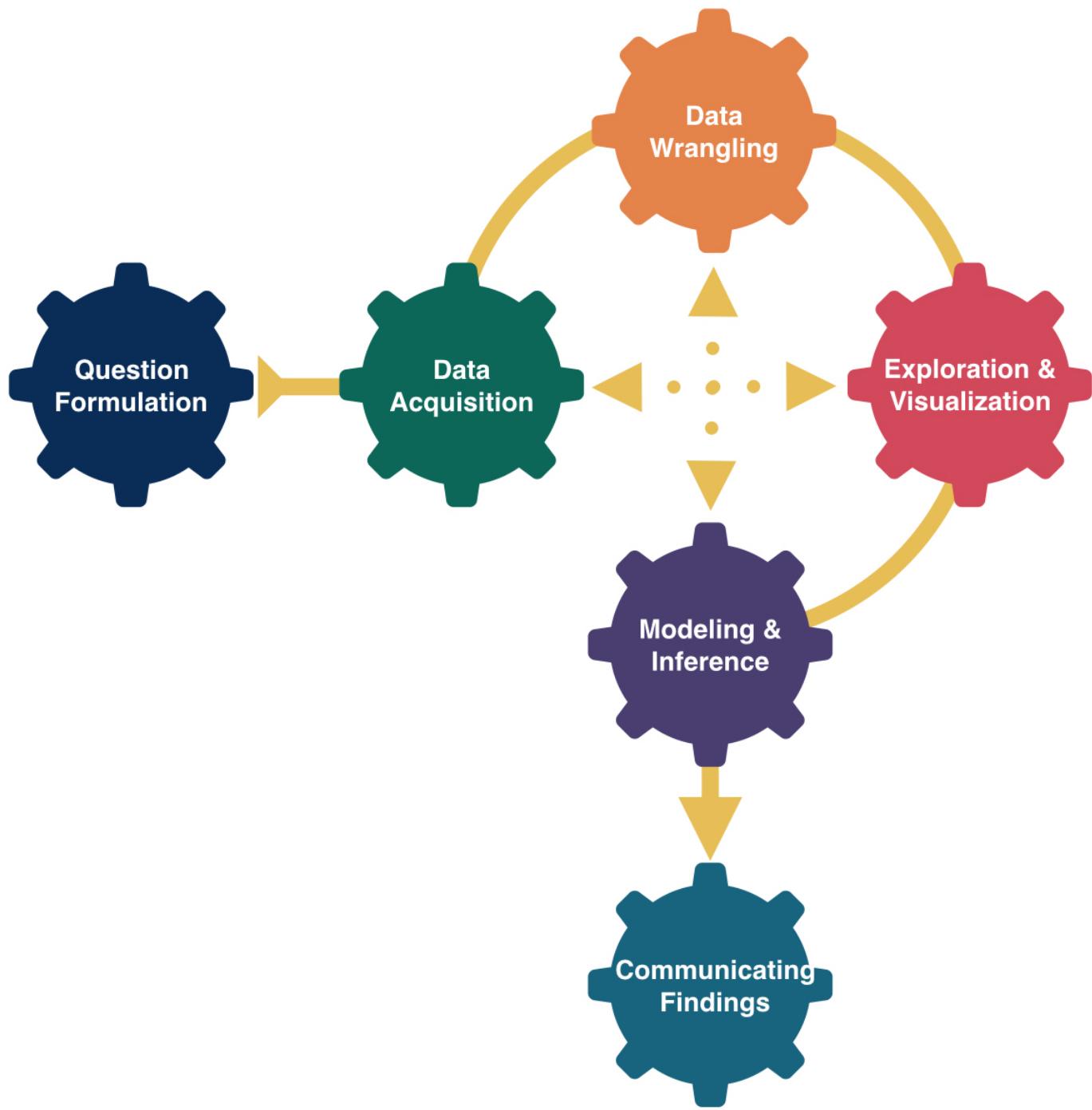
Pronouns (she/her/hers)



PRESENTATION BY ROCHELLE RAFN, MSDS



STORYTELLING WITH DATA





#1



#4



#2



#5

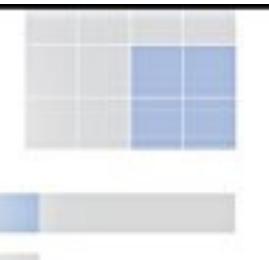


#3

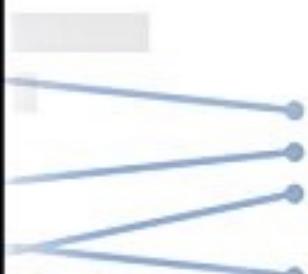


#6

TIPS FROM...



cole nussbaumer knaflic



	A	B	C
10%	22%	42%	
42%	36%	20%	
35%	17%	34%	
37%	29%	28%	
33%	30%	58%	
11%	25%	45%	



	A	B	C
Category 1	10%	22%	42%
Category 2	42%	36%	20%
Category 3	35%	17%	34%
Category 4	37%	29%	28%
Category 5	33%	30%	58%
Category 6	11%	25%	45%

storytelling with data

a data
visualization
guide for
business
professionals

210/

WILEY

EXPLORATORY VS EXPLANATORY ANALYSIS

- Exploratory Analysis
 - Covered in Foundations in DS
 - Shows your process
 - Looks for relationships and distributions in data
- Explanatory Analysis
 - Specific thing you want to explain
 - Specific story you want to tell

WHAT

Action

- *What do you need your audience to know or do?*

Mechanism

- *How will you communicate with your audience?*

Tone

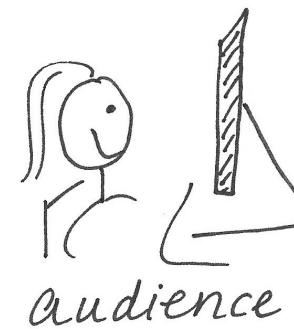
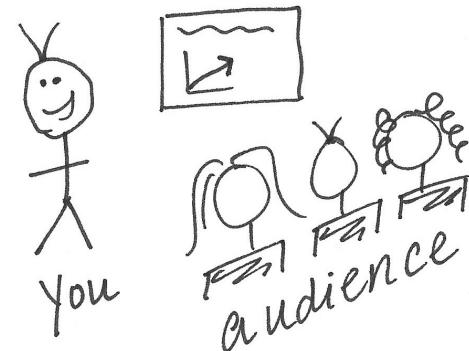
- *What tone do you want your communication to set?*

How

- *What data is available that will help make my point?*

WHAT

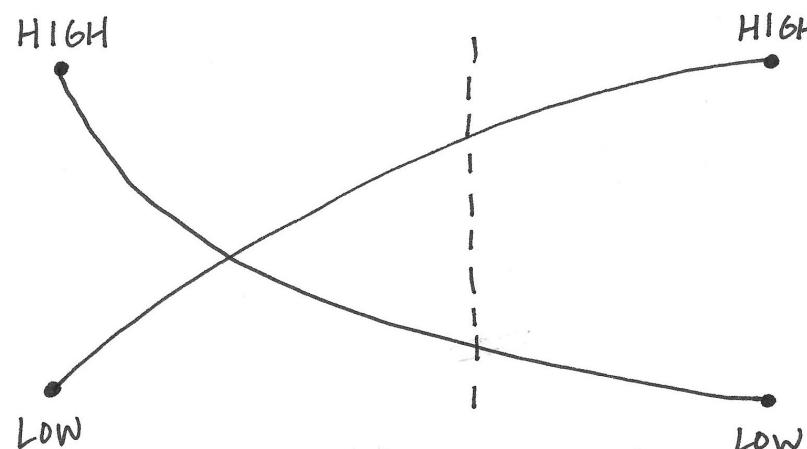
LIVE PRESENTATION WRITTEN DOC OR EMAIL



amount of
CONTROL
you have

level of
DETAIL
needed

The "SLIDEUMENT"



CONSULTING FOR CONTEXT

- *What background information is relevant or essential?*
- *Who is the audience or decision maker? What do we know about them?*
- *What biases does our audience have that might make them supportive of or resistant to our message?*
- *What data are available that would strengthen our case and do we need to proactively address them?*
- *What would a successful outcome look like?*
- *If you only had a limited amount of time or a single sentence to tell your audience what they need to know, what would you say?*

STORYBOARDING

STORYBOARDING

Visual outline of the content (rearrange and add and remove)

Sticky Notes:

- Brainstorm
- Edit
- Get feedback

Issue:

Kids have bad attitudes about science

Demonstrate Issue:
show student assignment grades
Over course of year

Ideas for overcoming issue,
including pilot program

Describe pilot program - goals, etc.

Show before & after survey data to demonstrate success of program

RECOMMENDATION:
pilot was a success
let's expand it
we need \$\$\$

LESSONS IN STORYTELLING

WHAT STORY IS THIS?

- Red Riding Hood (RRH) has to walk 0.54 mi from Point A (home) to Point B (Grandma's)
- RRH meets Wolf, who (1) runs ahead to Grandma's, (2) eats her, and (3) dresses in her clothes
- RRH arrives at Grandma's at 2pm, asks her three questions
- Identified problem: after third question, Wolf eats RRH
- Solution: vendor (Woodsman) employs tool (ax)
- Expected outcome: Grandma and RRH alive, wolf is not



Narrative



Engage



Visuals



Explain

CHANGE



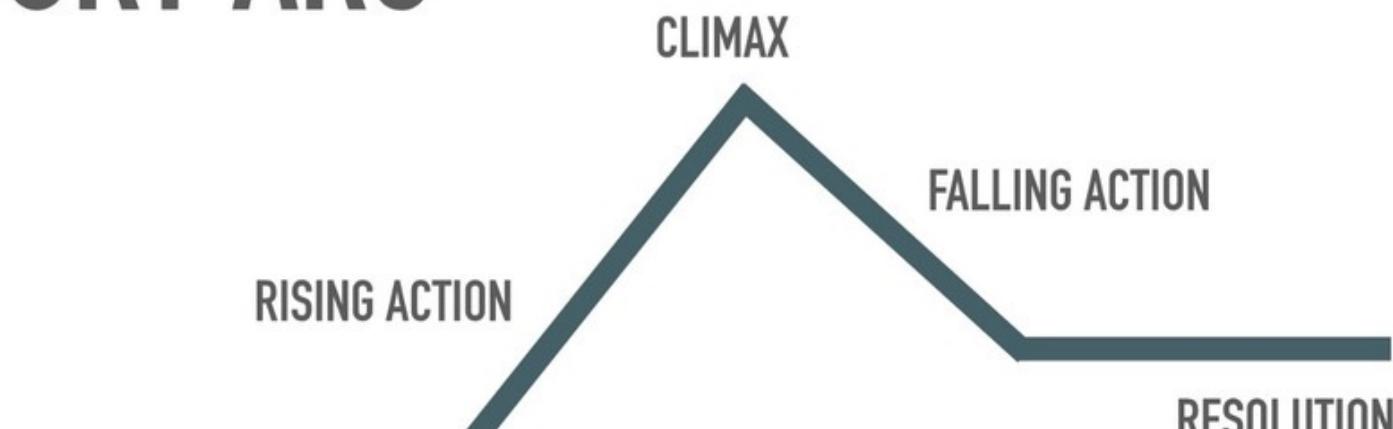
Enlighten



Data

ELEMENTS OF STORY

STORY ARC



BEGINNING

MIDDLE

END

ELEMENTS OF STORY

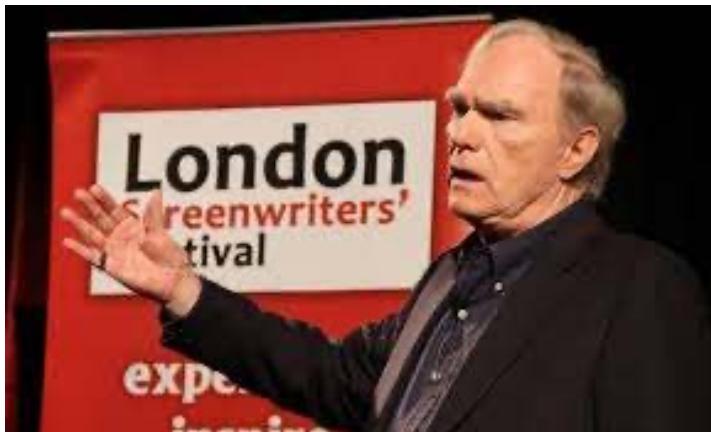
Take aways:

- Three act structure
 - Beginning
 - Middle
 - End
- Conflict
- Tension



**We can learn a lot about how
to present our (data) stories
from famous story writers**

HOW TO PERSUADE



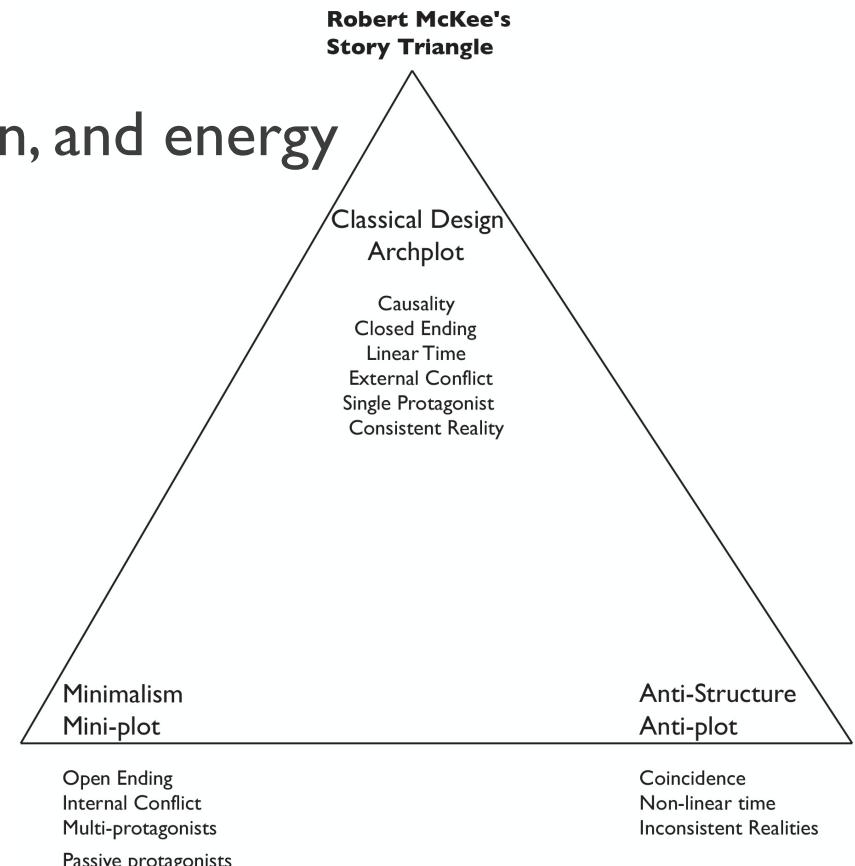
Robert McKee (writer/director/screen writing lecturer)

1. Rhetric → intellectual
2. Story → emotion, attention, and energy

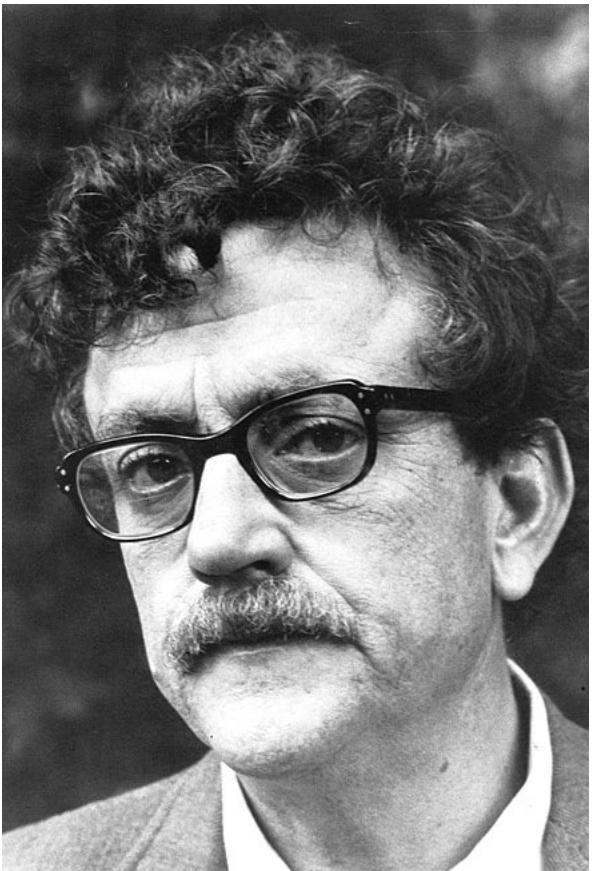
What is a story?

A story expresses how and why life changes

“Subjective expectation meets cruel reality”



HOW TO WRITE WITH STYLE



Kurt Vonnegut (author)

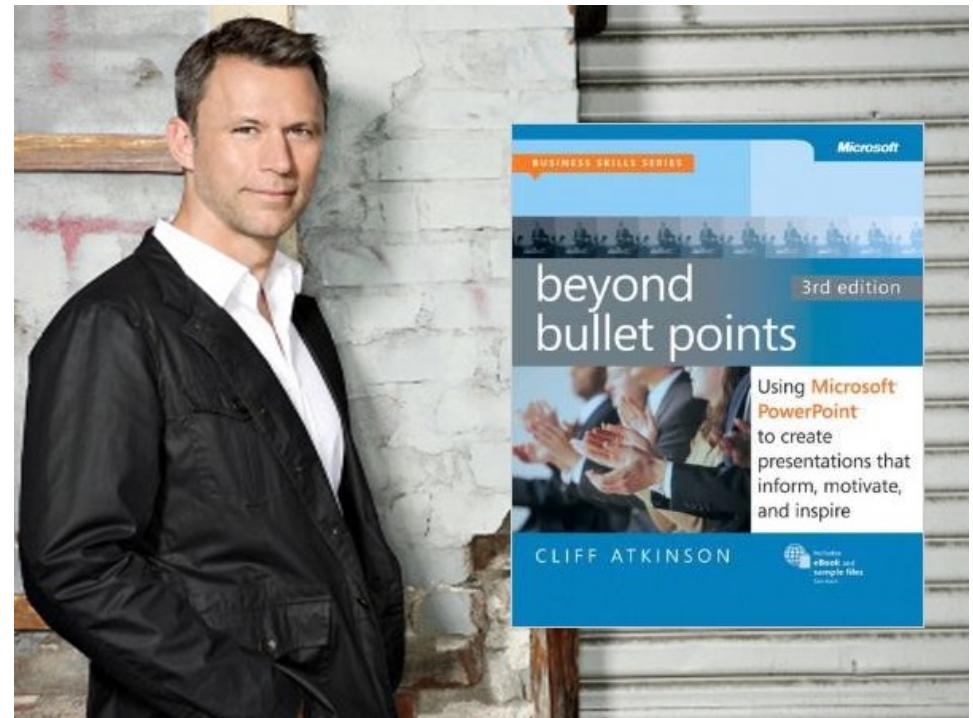
“How to Write with Style”

1. Find a subject you care about
2. Do not ramble, though
3. Have the guts to cut
4. Sound like yourself
5. Say what you meant to say
6. Pity the readers

BEGINNING: SETTING UP THE STORY

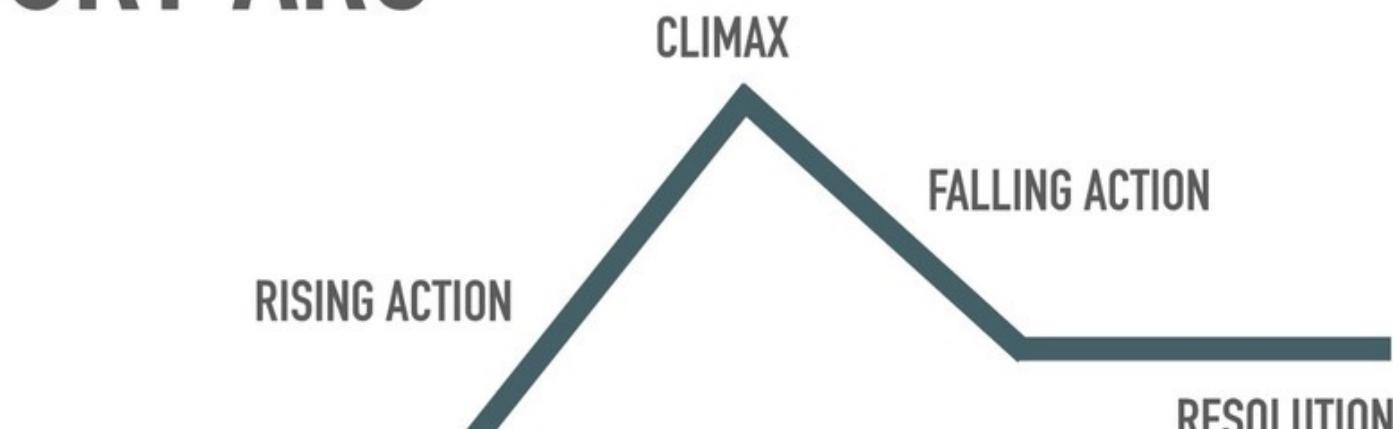
Cliff Atkinson ("Beyond Bullet Points" - author)

- 1. The setting:** When and where does the story take place?
- 2. The main character:** Who is driving the action?
- 3. The imbalance:** Why is it necessary, what has changed?
- 4. The balance:** What do you want to see happen?
- 5. The solution:** How will you bring about the changes?



ELEMENTS OF STORY

STORY ARC



BEGINNING

MIDDLE

END

The Karate Kid

1 balance



2 crisis



3 journey



4 climax



Back to the Future

1 balance



2 crisis



3 journey



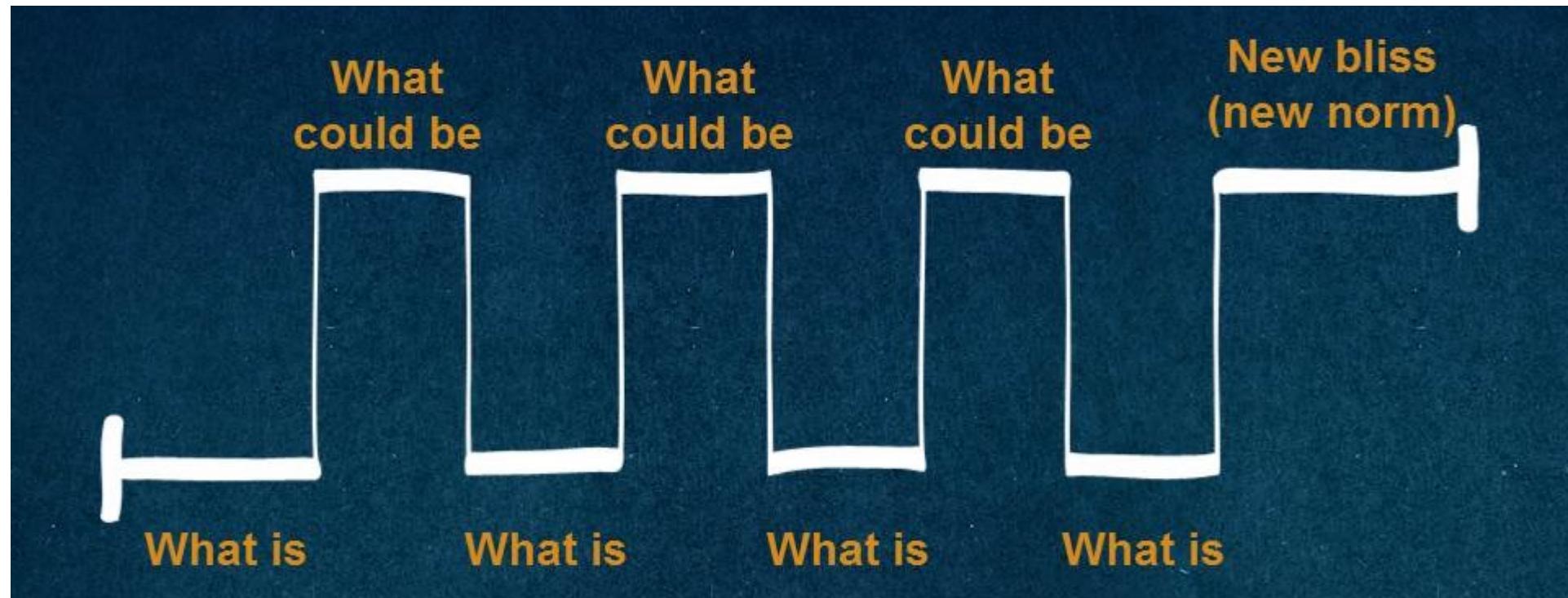
4 climax



SPARKLINES

Nancy Duarte ("Resonate" - author)

“The conflict what is and what could be”



MIDDLE:

1. Further develop the situation or problem by covering relevant background
2. Incorporate external context or comparison points
3. Give examples that illustrate the issue
4. Include data the demonstrates the problem
5. Articulate what will happen if no action is taken or no change is made
6. Discuss potential options for addressing the problem
7. Illustrate the benefits for your recommended solution
8. Make it clear to your audience why they are in a unique position to make a decision or drive action.

HOW TO END



CRITICAL THINKING

Flow: (Recall storyboarding)

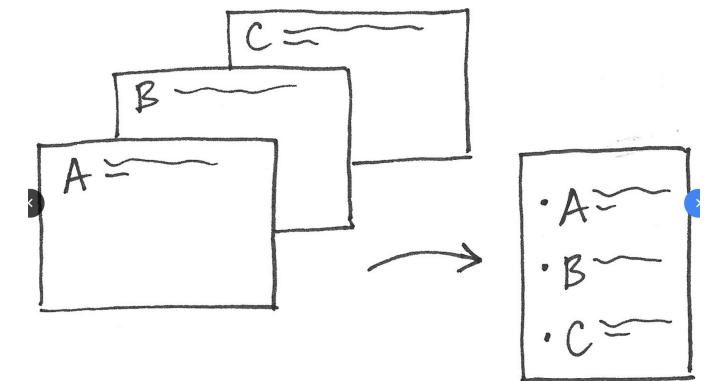
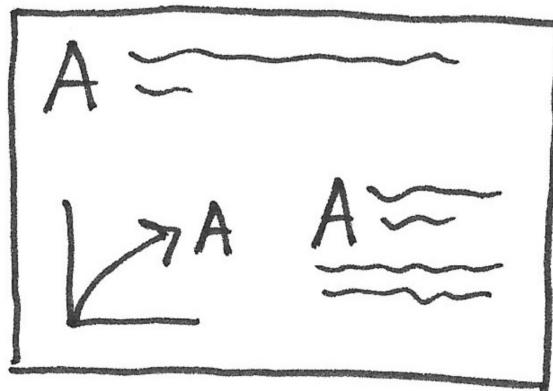
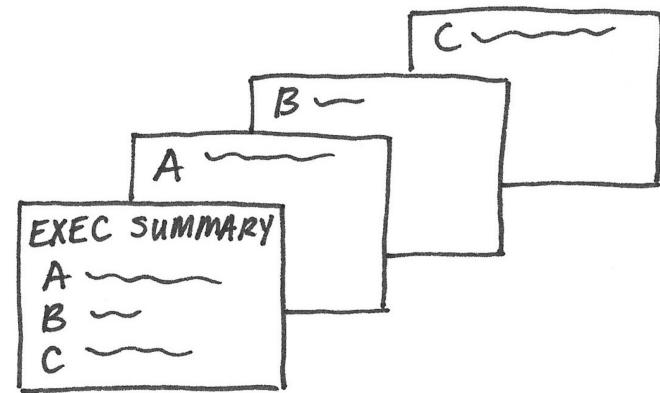
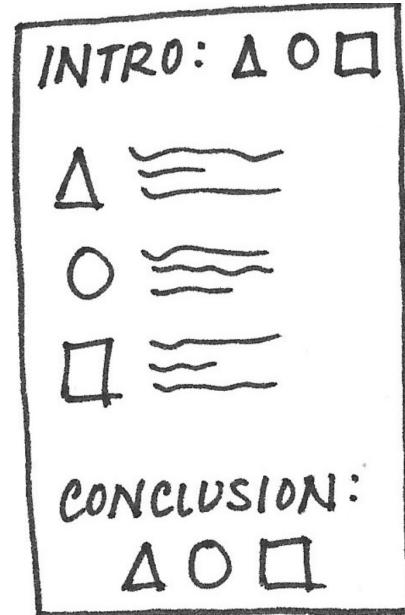
- Chronologically
- Lead with the ending

Power of Repetition

- Bingo, bang, bongo

Structure:

- Horizontal Logic
- Vertical Logic
- Reverse storyboarding



BUILDING YOUR STORY



STICKIES!



PRESENTATIONS

PRESENTATIONS

- **21 Presentations (~15 minutes each)**
 - **7 each day (the last three days of class)**
- Each presentation will be about 10 minutes
 - **Try storyboarding to organize your presentation**
- 5ish minutes for questions and discussion
- 1 minute for transition

PRESENTATIONS

**How can we be fair and randomly
generate a presentation order?**

PRESENTATIONS

USE R!!!!

PRESENTATIONS

```
> classGroups<-c(1:17, 19:22)
> randPres<-sample(classGroups)
> matrix(randPres, nrow=3)

 [,1] [,2] [,3] [,4] [,5] [,6] [,7]
[1,]    12    21    14    11     3    22     7
[2,]     6    20     1     2    13    17    19
[3,]    10    15     9    16     8     4     5
```

PRESENTATIONS – DAY I

- Group 12: Bontrager and Singh
- Group 21: Brar and Luther
- Group 14: Esneault, Fratzke, and Baker
- Group 11: Kozyk and Presson
- Group 3: Molina and Hernandez-Barron
- Group 22: Plax and Jones
- Group 7: Brainard and Wolf

PRESENTATIONS – DAY 2

- Group 6: Brush and Griswold
- Group 20: Dryer, Halberg, and Lyman
- Group 1: Garro and Paul
- Group 2: Bruhn, Garza, and Mochizuki
- Group 13: Mohr and Suarez
- Group 17: Hauck and Levin
- Group 19: Tuputala and Washington

PRESENTATIONS – DAY 3

- Group 10: Butler and Skelding
- Group 15: Kennedy and Thorsett
- Group 9: Antink and Severson
- Group 16: Bowler
- Group 8: Layton, Truong, and Williams
- Group 4: Higa, White, and Rabbanian
- Group 5: Fisher and Chastain