

# Storytelling with Data

## Module 1: Why Communication is Important to Applied Analytics

**Scott Spencer**

Faculty and Lecturer  
Columbia University



## Meet Your Professor

# Scott Spencer

## Past

### Doctor of Jurisprudence

Focus — analysis

### Master of Science, Sports Management

Focus — data science analytics

### Bachelor of Science, Chemical Engineering

Focus — numerical methods, statistical process control

## Present

### Columbia University

Faculty, lecturer in Applied Analytics

### Consultant, Data Scientist

*Climate change*

Bayesian, generative modeling the geospatial and temporal impact of sea level rise on property values

### *Professional sports*

Major-league baseball research and development for player performance and manager decision-making

## Future

Forthcoming monograph and literature review on quantitative persuasion amid uncertainty

Personal goal—Brad Pitt to act as me in Moneyball<sub>2</sub>

# Agenda

Introductions

Course Objectives

Feedback and Participation

Discussion on narrative in data analytics

Up Next Week

# Introductions

# Participation warmup. Let's start easy.

**Introduce yourself**, and tell your neighbor about a **recent analytics project** that you worked on or know.

Keep the story **concise**, say, five minutes.

# Course Objectives

# Course Objectives

Apply communication strategies for persuasive proposals, analyses, and presentations in the realm of applied analytics.

## Outline Deliverables

Develop written, oral, visual deliverables in multiple modalities for various audiences.

## Influence Stakeholders

Execute audience analysis, storytelling, and persuasive strategies to influence your stakeholders.

## Conduct Analyses

Analyze communication and behavior according to different professional and cultural variables.

## Manage Outcomes

Utilize active listening techniques to manage informed outcomes.

# And learn to effectively reach four key audiences.

**Technical Chief Analytics Officer**

Leads an organization's data analytics strategy, driving data-related business changes to transform company into a more analytics-driven one.

**Less-Technical Chief Marketing Officer**

Leads responses to changing circumstances; shapes products, sales strategies, and marketing ideas, collaborating across the company.

**Executive Chief Executive Officer**

Leads management of company; responsible for maximizing company value, high-level decisions on policy and strategy; drives change.

**Public Potential customers**

The most challenging audience to understand and develop persuasive messages.

# Feedback & Participation

# 90% of your grade will be comprised of:

**1**

Memo  
5%

Brief Proposal  
20%

**2**

Storyboard  
5%

**3**

Critique of Published  
Data Visualization  
5%

Infographic  
25%

**4**

Persuasive  
Presentation  
25%

Giving In-person  
Presentation Feedback  
5%

Ongoing data analysis of your project

**Participation is an important  
10% of your grade.**

**We recognize  
that...**

**Some of you may be shy.**

**Some of you may be  
hesitant to speak in class.**

**English may not be your  
first language.**

**Some of you may come from  
cultures with different modes  
of communication.**

# Participation is critical: *to participate is to learn.*

## Opportunity to practice

Much like a programming language or other skill, you cannot learn or effectively employ the tools of communication without practice.

## Practice adds value

When **each of us** participates, all **benefit** from exposure to more varied experiences and understandings. Not participating hurts the group.

## Ways of participating

Your participation will require that you ask and answer questions **in class** and in our **chatroom**, defending your point of view, and respectfully challenging the point of view of others.

And we – instructors *and* your peers – will ensure **feedback** on participation and assignments is **constructive**.

If there are any disabilities that prevent you from participating or being reasonably successful, please contact **Disability Services**.

[health.columbia.edu/disability-services](http://health.columbia.edu/disability-services)

# Discussion on narrative in analytics

*From the “minimum” readings*

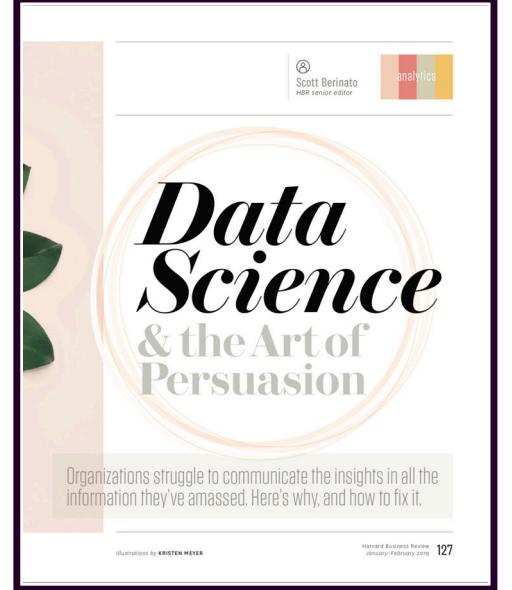
# Objectives as context for readings

- 1 Explain the need for communication skills in applied analytics.
- 2 Discuss communication as a differentiator.
- 3 Consider how storytelling helps when communicating about data.

# Data Science & the Art of Persuasion

*Berinato*

Scott is senior editor at Harvard Business Review. **Their audience:** “Harvard Business Review readers have power, influence, and potential. They are senior business strategists who have achieved success and continue to strive for more. Independent thinkers who embrace new ideas. Rising stars who are aiming for the top.”



## Value in analytics requires communication

For an analytics project to create value, the team must first ask smart questions, wrangle the relevant data, and uncover insights.

Second, it must figure out—and communicate—what those insights mean for the business.

## Qualities needed in an analytics team

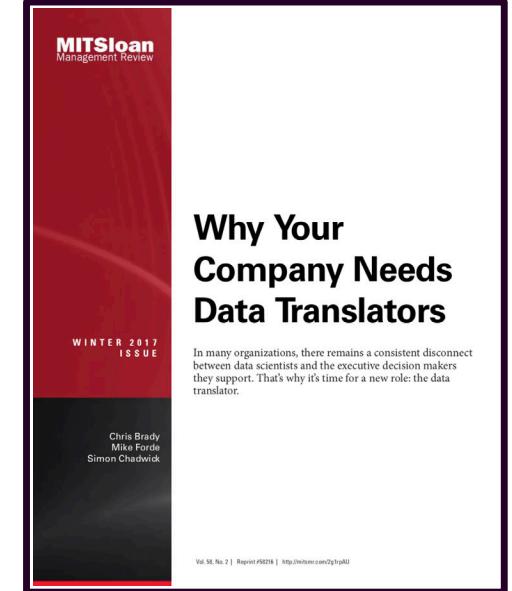
A good data science team needs:

- project management**
- data wrangling**
- data analysis**
- subject expertise**
- design**
- storytelling**

# Companies need data translators

## *Brady & co-authors*

The three authors are professors and consultants focusing on sports management. Their **data** are qualitative, gathered from workshops and meetings. MIT Sloan Management Review's **audience**: "37% of MIT SMR readers work in top management, while 72% confirm that MIT SMR generates a conversation with friends or colleagues."



## Interpretation gap

An “interpretation gap” exists between data scientists and the executive decision makers they support.

## Data translators bridge the gap

They should bridge the gap, address data hubris and decision-making biases, and find linguistic common ground.

## Domain experts can fill this role

Subject-matter experts should be taught the quantitative skills to bridge the gap because it is easier to teach quantitative theory than practical, business experience.



# Companies need data translators

## *Brady & co-authors*

The three authors are professors and consultants focusing on sports management. Their **data** are qualitative, gathered from workshops and meetings. MIT Sloan Management Review's **audience**: "37% of MIT SMR readers work in top management, while 72% confirm that MIT SMR generates a conversation with friends or colleagues."

### Develop a Common language

### Build better communication habits

### Bridge the gap by honing skills

Senior management do not all speak the language of analysts. Decision makers seek clear ways to receive complex insights. Plain language, aided by visuals, allow easier absorption of the meaning of data.

Begin with questions, not assertions.

Use analogies and anecdotes that resonate with decision makers.

Business knowledge

Analytics knowledge

Speak the truth

Constant curiosity to learn

Create accessible questions & answers

High standards & attention to detail

Self-starters

# Questions for Discussion

---

Have you noticed a data translation gap?

Does a data translator role make sense?

Should the data translator be a data scientist, a subject matter expert, a combination, or someone else?

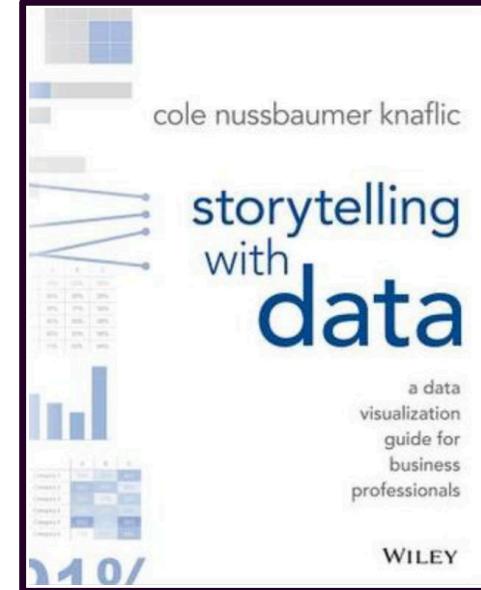
What suggestions do the author have for a data translator?

What views do Berinato and Brady share? How do they differ?

# Storytelling with data

*Knaflic*

The author is a consultant focused on visual displays. Her experience arose from human resources in Google where she applied theory learned as a student of Yale's Edward Tufte.



## Her audience

Her audience is a **general** audience:  
"anyone who needs to communicate  
something to someone using data."

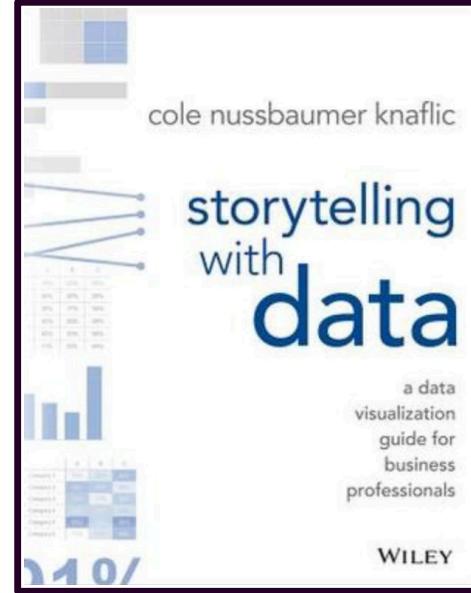
## Her approach to storytelling

- Understand data context
- Choice of appropriate visual display
- Eliminate clutter
- Focus audience attention
- Think like a designer
- Tell a story

# Storytelling with data

## Knaflic

The author is a consultant focused on visual displays. Her experience arose from human resources in Google where she applied theory learned as a student of Yale's Edward Tufte.



## Please approve the hire of 2 FTEs

to backfill those who quit in the past year

### Ticket volume over time



Data source: XYZ Dashboard, as of 12/31/2014 | A detailed analysis on tickets processed per person and time to resolve issues was undertaken to inform this request and can be provided if needed.

# Questions for Discussion

---

Are there elements of a business narrative in her graphic?

What components of her approach do you see?

# Why were those the minimum?

**Learn to write  
by reading**

This course is especially challenging, because we must write what we know (data analytics) **and** learn to convey it persuasively. We must learn both.

**The challenge to  
write what you  
know**

Commonly, data analytics projects require multiple skills and ideas. We need to know what those are in the context of a current project well enough to explain them.

**The challenge to  
explain  
it well**

Meet this challenge by ~~reading~~ studying good writing. We will guide you to additional resources, beyond the minimum. It's up to you to study them and share what you learn with your peers.

# Art, Data, and Storytelling



# Questions for Discussion

---

What were the **data** the analysts worked with?

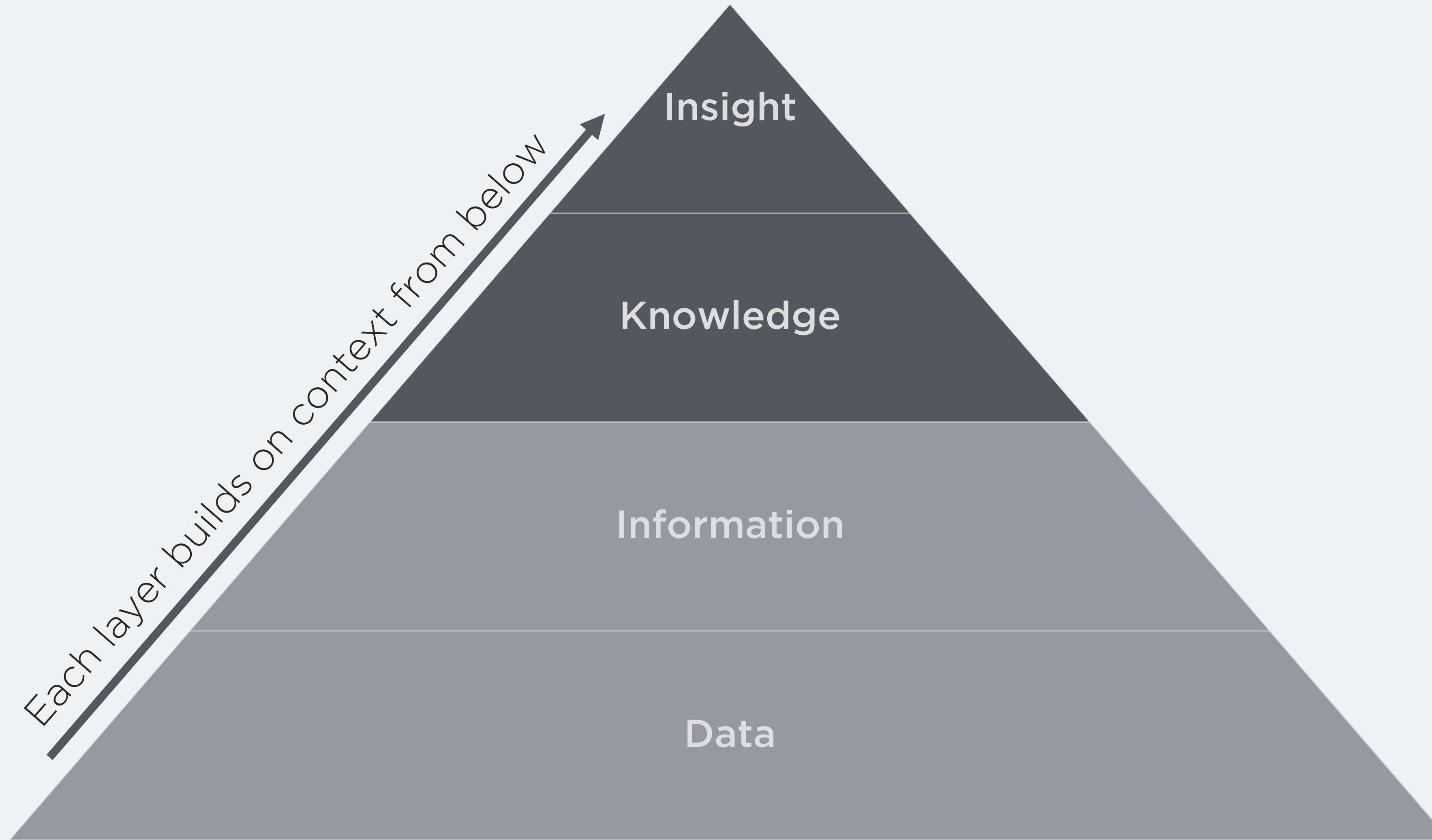
How specific were their explanations of **project scope and methods**?

Who may have been their **audience**?

Assuming the audience, appropriate **detail**?

What made this a **story**?

# The insights of story depend on broader context.



# Overview of Class Modules

Business  
Writing

Persuasion

Audience  
Analysis

Storytelling

Storyboards

Effective  
Visuals\*

Infographics

(Non)verbal  
communication

Presentations

# For Next Week, Module 2:

## Agenda next week

Review future assignments  
Discuss case study examples  
Components of a data analytics project  
Finding data  
Data visualization

## The minimum

**Spencer, Scott.** “Scoping a Data Analytics Project.” [ssp3nc3r.github.io](https://ssp3nc3r.github.io) , 3 Jan. 2019.

Read to consider a high level overview of considerations that may go into a data analytics project.

**Caldeira, Joao et al.** “Improving Traffic Safety Through Video Analysis in Jakarta, Indonesia.” NeurIPS, 2018.

Read to see how—and in what detail—they describe the data analytics project in the abstract versus in the body. What were their choices to include and exclude? How did they structure the sentences and connect the ideas? What did this data analytics paper share with *The Next Rembrandt*, and how does it differ?

**Columbia University Writing Center — register for an account:** <https://columbia.mywconline.net>

As Cuba Gooding Jr.  
was told,

***Help me help you!***

**Got it!**

What was an interesting takeaway  
from the readings or this lecture, either  
from the Professor or your peers?

**Let's get  
on with it.**

What are you most looking  
forward to in the lectures to come?

# Questions?

See you  
next week!

