

# 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

**Consulting Data Scientist**  
**First Street Foundation**  
Bayesian, generative modeling the geospatial and temporal impacts of sea level rise on property values

**Consultant**  
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

(Minimum) Readings for Analysis

Up Next Week

# Introductions

# Participation warmup. Let's start easy.

Introduce yourself, and tell us 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

## Influence Stakeholders

## Conduct Analyses

## Manage Outcomes

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

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

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

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%

Infographic  
20%

**3**

Critique of Published  
Data Visualization  
5%

Persuasive  
Presentation  
20%

Giving In-person  
Presentation Feedback  
5%

**4**

Interviews as  
Storytelling  
10%

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 answer questions, defend your point of view, and respectfully challenge 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)

# Readings for Analysis

*The “minimum”*

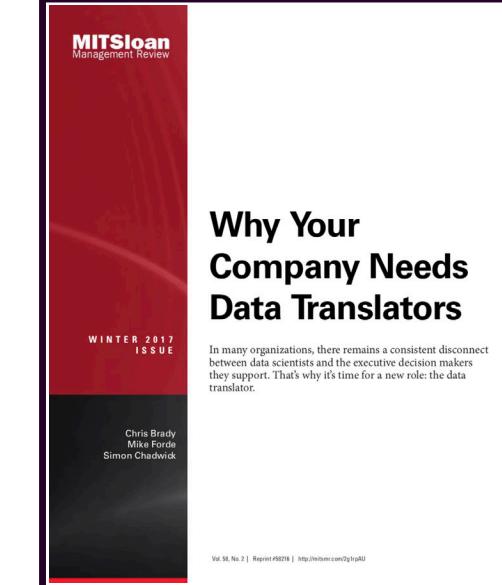
# Objectives as context for readings

- 1.** Explain the need for communication skills in applied analytics.
- 2.** Discuss communication as a differentiator.
- 3.** Appreciate the role of storytelling in communicating data.

# Companies need data translators

*Brady*

The three authors are professors and consultants focusing on sports management. Their data are qualitative, gathered from workshops and meetings.



## Interpretation gap

**Data translators bridge the gap**

**Domain experts can fill this role**

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

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

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.

# Questions for Discussion

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Have you noticed a data translation gap?

Does the data translator role make sense?

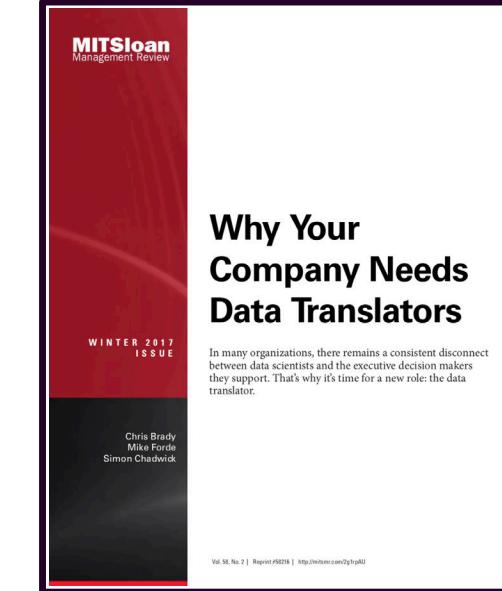
Should the data translator be a data scientist, a subject matter expert, a combination, or someone else?

What suggestions does he have for the data translator?

# Companies need data translators

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## 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.

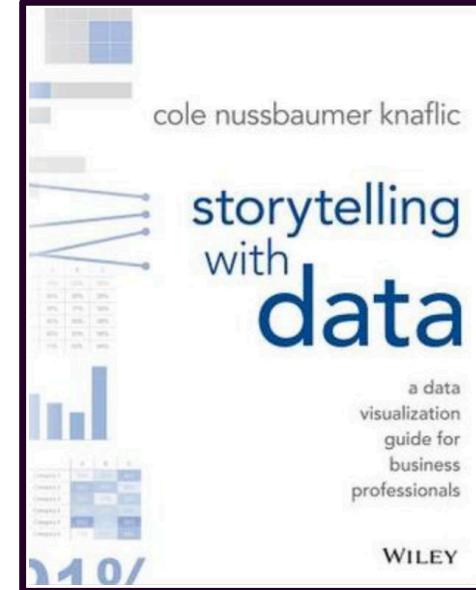
Begin with questions, not assertions.  
Use analogies and anecdotes that resonate with decision makers.

Business knowledge  
Analytics knowledge  
Speak the truth  
Constant curiosity to learn  
Create accessible questions & answers  
High standards & attention to detail  
Self-starters

# 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."

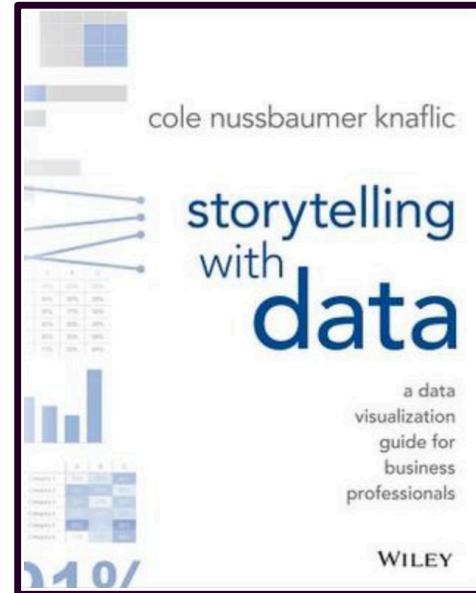
## Her approach to storytelling

- 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

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What elements of a business narrative do we find?

What components of her approach do you see?

# Why were those the minimum?

**Learn to write  
by reading**

**The challenge  
to write what  
you know**

**The challenge  
to explain  
it well**

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

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.

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

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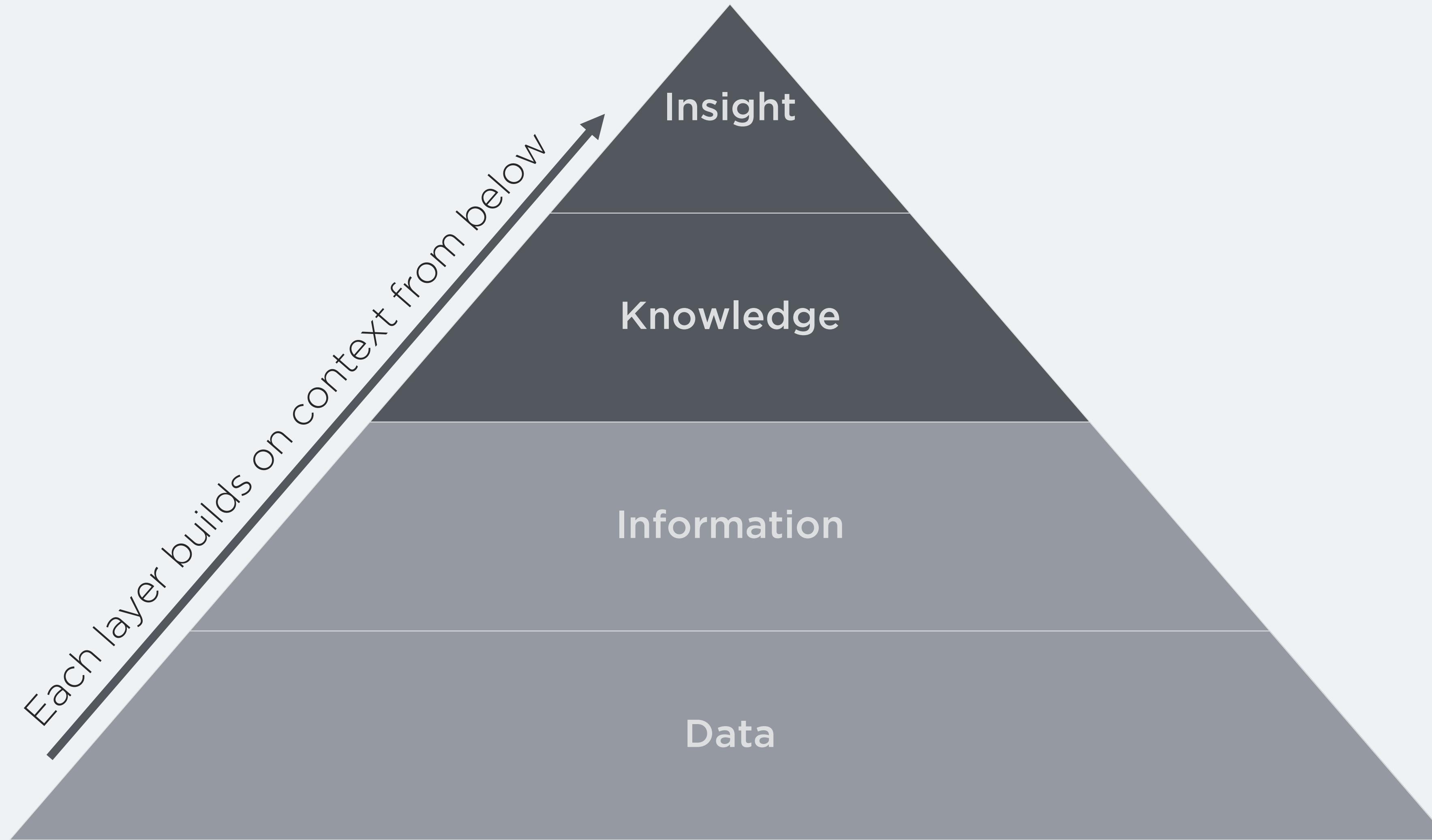
What were the data the analysts worked with?

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:

1. Agenda next week
  - Review future assignments
  - Discuss case study examples
  - Components of a data analytics project
  - Finding data
  - Data visualization
2. 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!**

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

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

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

# Questions?

See you  
next week!

