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$_2$

Meet Your Associate

Allen Hillery

Past

Customer Segmentation Manager
Verizon Wireless

Master of Science, Computer Information Systems
Baruch College

Bachelor of Engineering, Civil Engineering
The City College of New York

Present

Columbia University
Adjunct Associate in Applied Analytics

Writer and Editor
Nightingale, a Medium.com Publication

Consultant | Researcher | Contributor
Data Literacy Program for Underprivileged Communities
Blog Writer for topics on data visualization and literacy

Agenda

Introductions

Course Objectives

Feedback and Participation

Discussion of 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	2	3	4
Memo 5% Brief Proposal 20%	Storyboard 5%	Critique of Published Data Visualization 5% Infographic 25%	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.

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

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.

Participation is critical:

to participate is to learn.

Ways of participating

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

Points	Participation type
2	Actively attending class
1	Posting a good question in discussion
2	Posting a good answer in discussion
1	Posting answers to feedback questions

Good questions

A good question or answer shows thought beyond merely the contents of an individual reading. It places the reading and discussion into some kind of context.

Here are a few non-limiting examples. A good question may contemplate how to apply what we discuss or what we find in the readings to a concrete problem, how two points of view may be reconciled, or how ideas beyond the reading relate to our readings or discussions.

Scope of communication

“One cannot not communicate.”

— Paul Watzlawick, Psychologist

Watzlawick, Paul, Janet Beavin Bavelas, and Don D Jackson. *Pragmatics of Human Communication: a Study of Interactional Patterns, Pathologies and Paradoxes*. W. W. Norton & Company, 2017. Print.

Roles of narrative in analytics

From the “minimum” readings

Context for discussing 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.

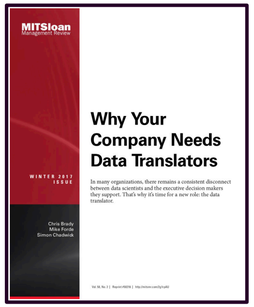
Second, it must figure out—and communicate—what those insights mean for the business.

Qualities needed in an analytics team

A good data science team needs:

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

Berinato, Scott. "Data Science & the Art of Persuasion." Harvard Business Review (2018): 1–13. Print.
HBR Advertising sales. Web. https://hbr.org/hbr-advertising-sales



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.

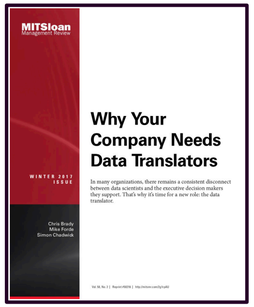
Data translators bridge the gap

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.

Brady, Chris, Mike Forde, and Simon Chadwick. "Why Your Company Needs Data Translators." MIT Sloan Management Review (2017): 1–6. Print.
MIT Sloan Management Review. Print Advertising Opportunities. https://sloanreview.mit.edu/advertise/print/



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Develop a Common language

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.

Build better communication habits

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

Bridge the gap by honing skills

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

Brady, Chris, Mike Forde, and Simon Chadwick. "Why Your Company Needs Data Translators." MIT Sloan Management Review (2017): 1-6. Print.
MIT Sloan Management Review. Print Advertising Opportunities. https://sloanreview.mit.edu/advertise/print/

Questions for Discussion

Can you think of **examples** of a data translation gap?

Does a data translator **role make sense**?

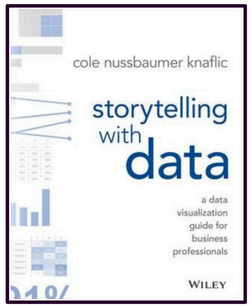
To **fill the role**, do you agree that the data translator must be a subject matter expert, or might a data scientist or someone else fill the role?

What **skills** do the author suggest for a data translator?

Are **views shared** between Berinato and Brady? Do they differ in advise?

A method for visual narrative

From the “minimum” readings



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**.

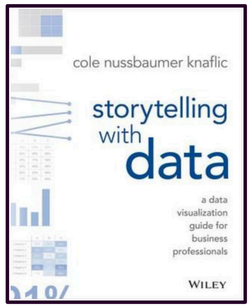
Her audience

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

Knaflic, Cole Nussbaumer. *Storytelling with Data*. Wiley, 2015. Print.



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.

Knaflic, Cole Nussbaumer. *Storytelling with Data*. Wiley, 2015. Print.

Questions for Discussion

What's the **context** of her graphic?

Does she tie data to some form of business **action**?

In what ways has she **focused** your attention?

Do you feel her graphic tells a **story**? If so, in what way?
If not, what do you feel is missing?

Art, Data, and Storytelling

ING et al. "The Next Rembrandt." 5 Apr. 2016. Web. https://www.nextrembrandt.com

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**?

Do you feel this is a **story**? Why or why not?

Why were those the minimum readings?

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.

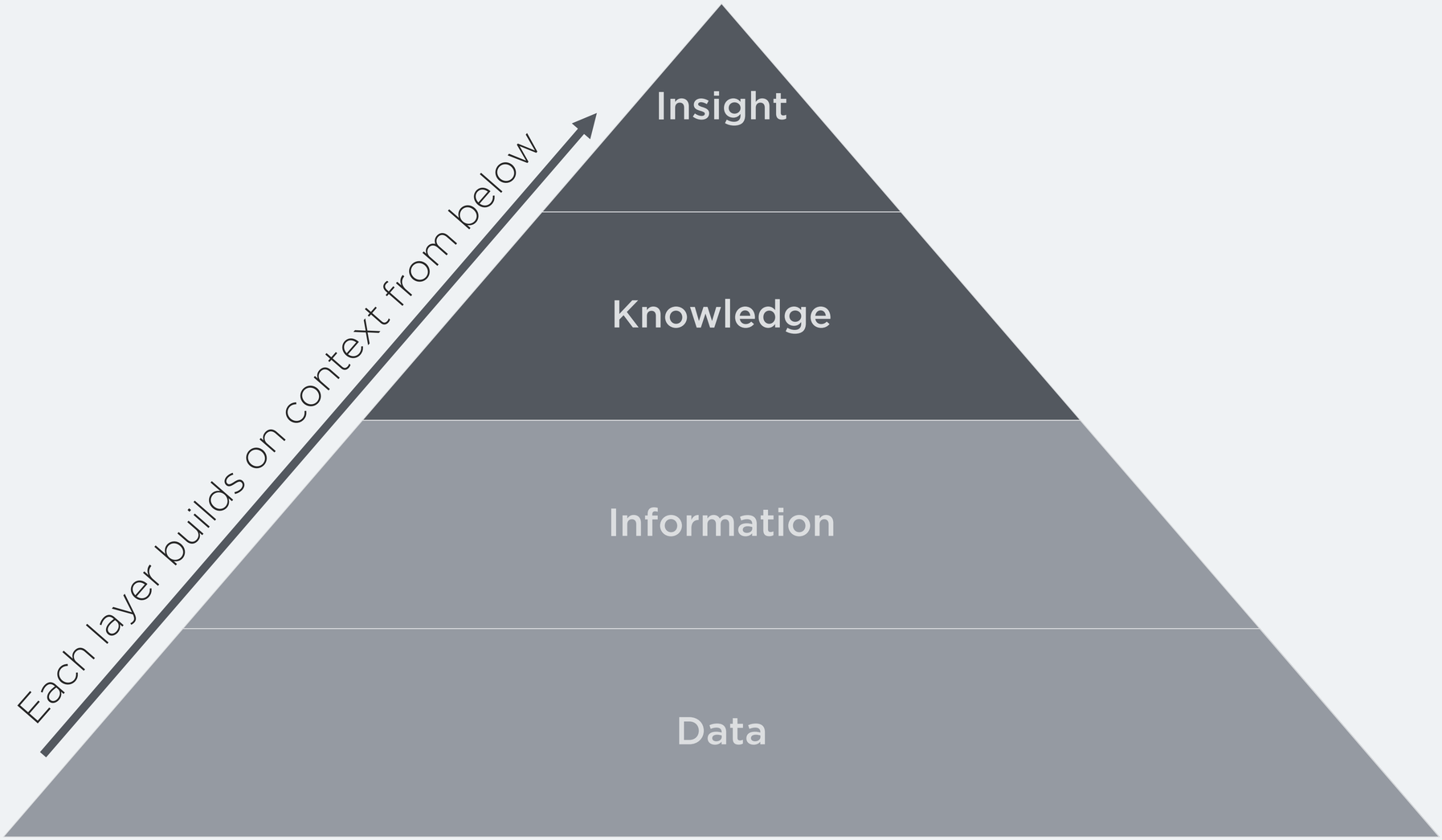
The challenge to write what you know

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.

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

* Note the perception or illusion of ghostly blobs that seem to appear at the intersections in the grid but only as long as one is not looking at them directly. We will also discuss visual perception.

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 , 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—tge authors 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 structure does 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!

Columbia University. Low Memorial Library