



Don't let data get in  
the way of a good  
story?

February, 2015

Mark Madsen

[www.ThirdNature.net](http://www.ThirdNature.net)

@markmadsen





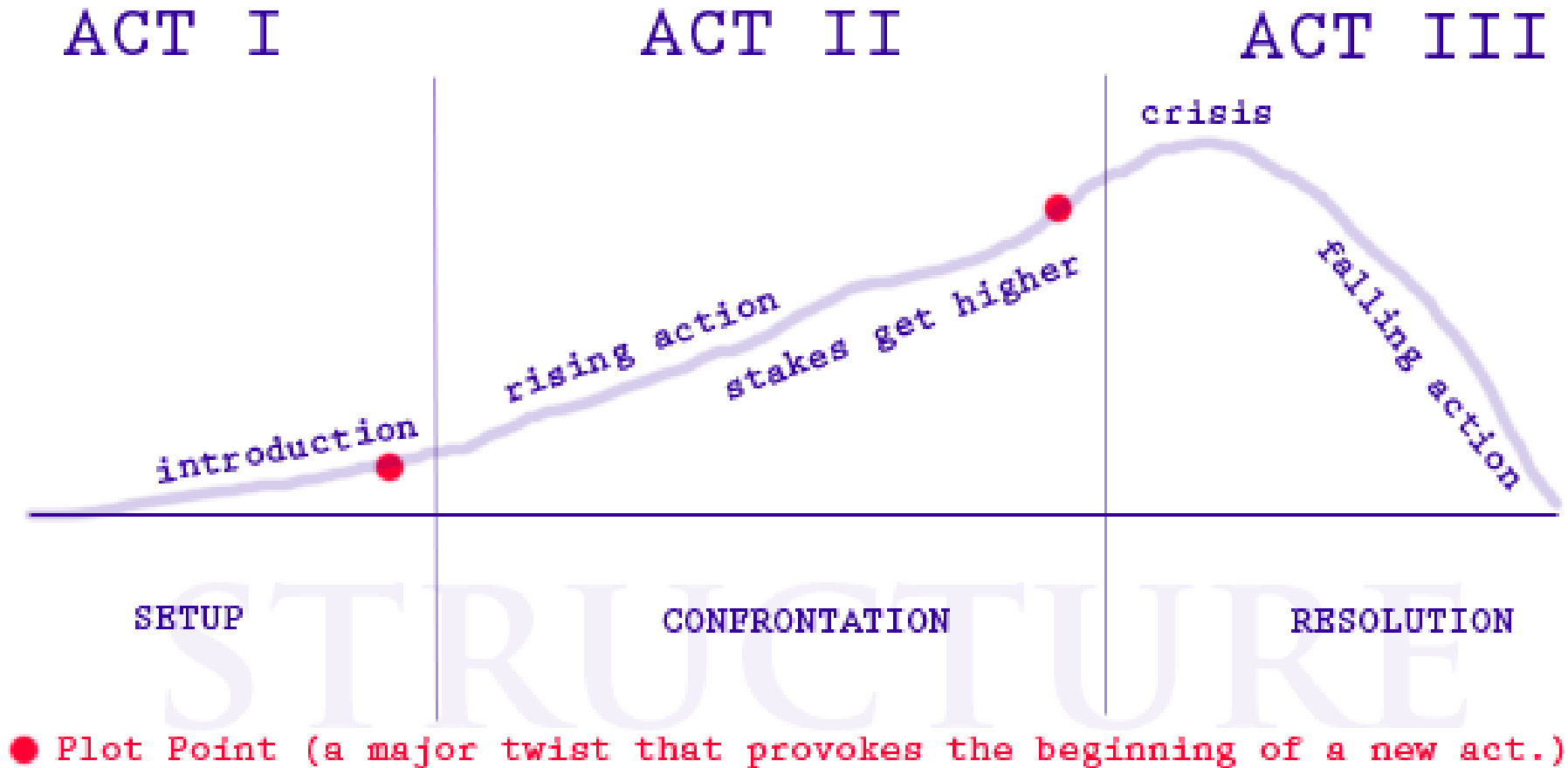
# The problem with bad framing



Leads to bad assumptions about use, inappropriate features, poor understanding of substitutability and the impacts it will have.

# “Story” often devolves to discussions about this

## The Three-Act Structure





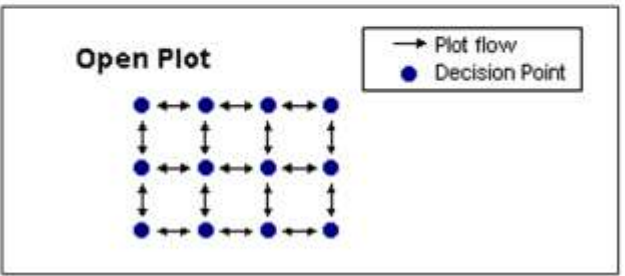
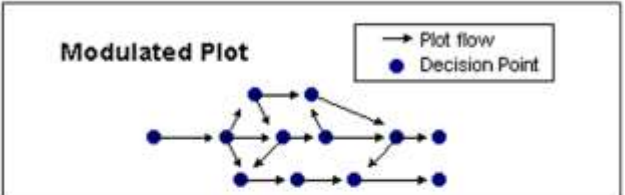
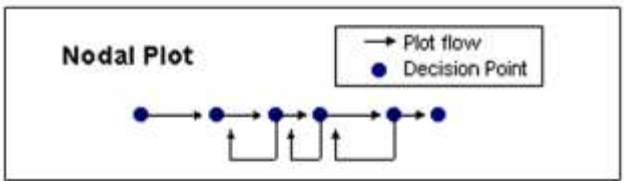
The Hero's Journey Structure (Wikimedia)



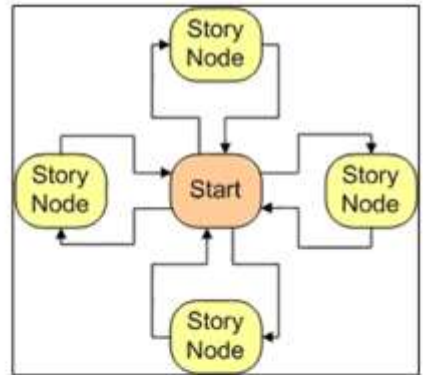
Plot Map for a Choose Your Own Adventure Story (Ragan)

There can be many structures, as many as there are tellers.

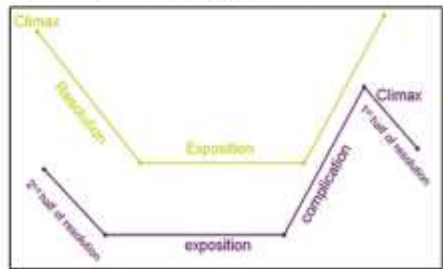
“Story” is one form of narrative, a specific sequence of events - what happens.



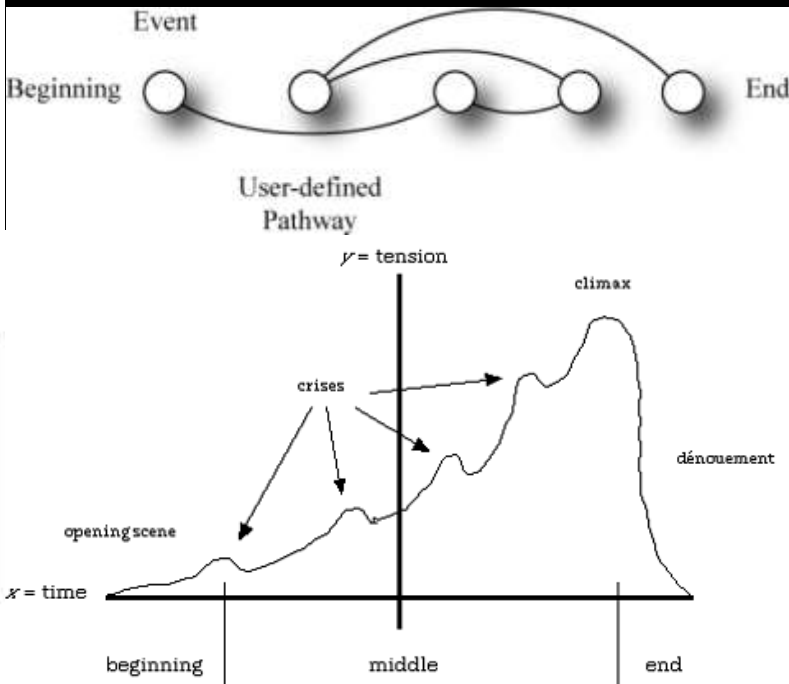
Alternative Plot Structures: Nodal, Modulated, and Open Plots (Meadows)



Petal Structure (Parise)



Flashback Plot Structure (Muliawan)





# Visuals vs words: a narrative, without story



# Borrowing from film: fabula and syuzhet, the story and the way it's told; similar to story and plot

3 DUNE



LES MAISONS MINÉURES SE LEVENT THE MINOR HOUSES STAND UP



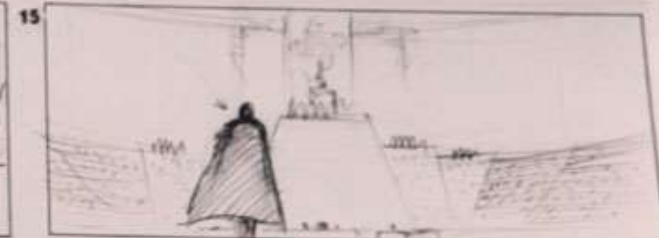
REACTION DES MAISONS MAJEURES... RUSSO-AMÉRICAINS REACTION FROM THE MAJOR HOUSES RUSSO-AMERICANS



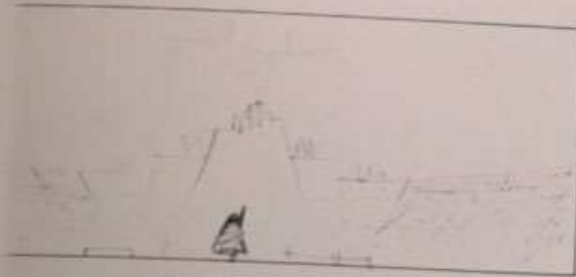
LETO : "JE DÉMENCE L'EXISTENCE D'UNE ORGANISATION QUI PAÏE LA CONTREBANDIÈRE DE L'ÉPICE" LETO : "I DECLARE THE EXISTENCE OF AN ORGANIZATION WHICH IS SMUGGLING SPICE"



LETO : AUCUNE DES MAISONS MINÉURES N'EST ÉCONOMIQUEMENT CAPABLE DE SE LIVRER À DE TELS FORFAITS ! \* APPLAUDISSEMENTS. LETO : NONE OF THE MINOR HOUSES IS IN THE NECESSARY ECONOMIC POSITION TO WORK OUT SUCH MISDEEDS ! \* APPLAUSE.



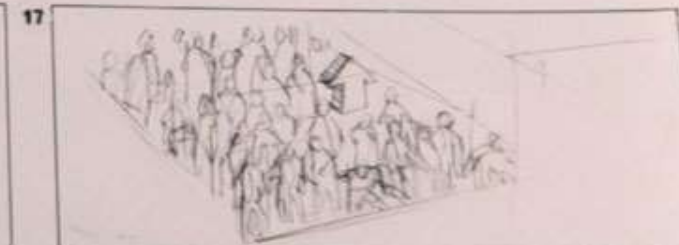
LETO SE DIRIGE AVEC DÉTERMINATION VERS LE CÔTÉ "RICHE" WITH DETERMINATION, LETO CROSSES TO THE RICH SIDE OF THE SENATE



SILENCE



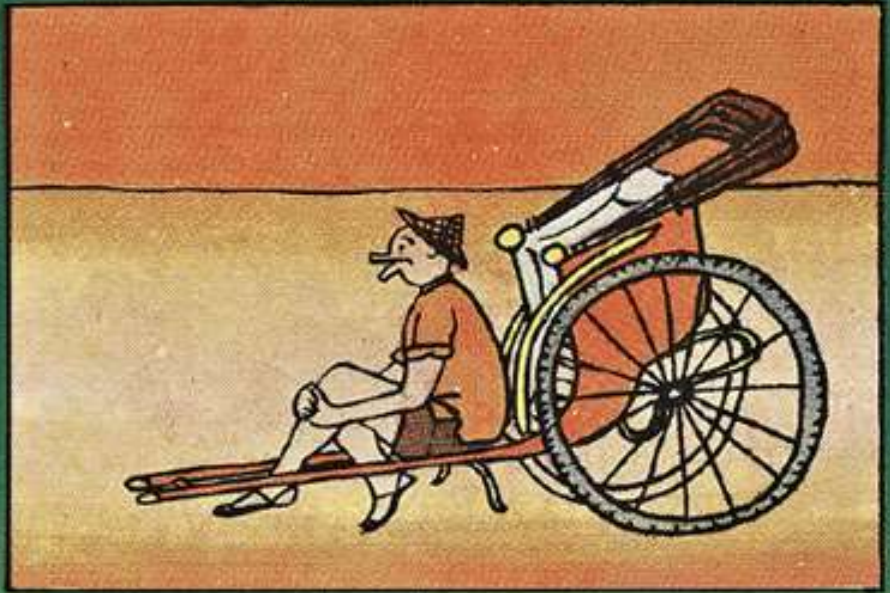
LETO : "CE NE PEUT ÊTRE QU'UNE MAISON MAJEURE." LETO : "ONLY A MAJOR HOUSE COULD DO THAT." CRIS DE PROTESTATION DES MAISONS MINÉURES ET APPLAUDISSEMENTS. CRIES OF PROTEST FROM THE MINOR HOUSES AND APPLAUSE.



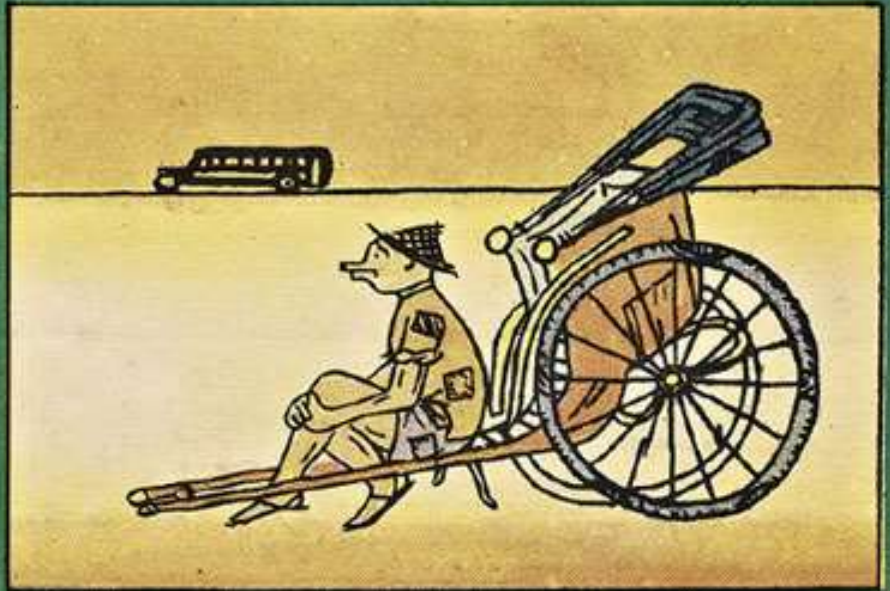
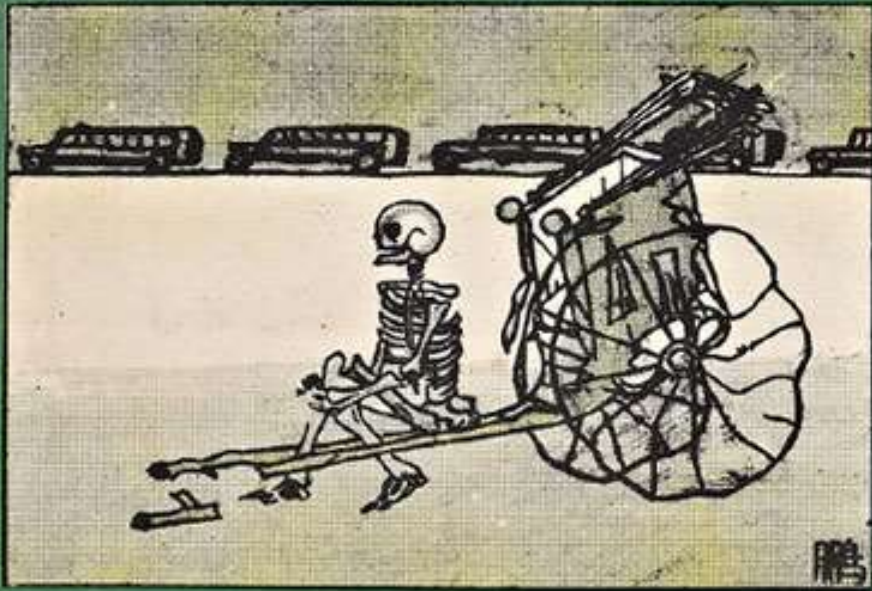
CRIS CONTINUS - LES RUSSO-AMÉRICAINS SE LEVENT CRIES CONTINUE - RUSSO-AMERICANS STAND UP







車的競爭！



余詠琳寫自廣州

*The purpose of a story is to raise your blood pressure, not your IQ.*

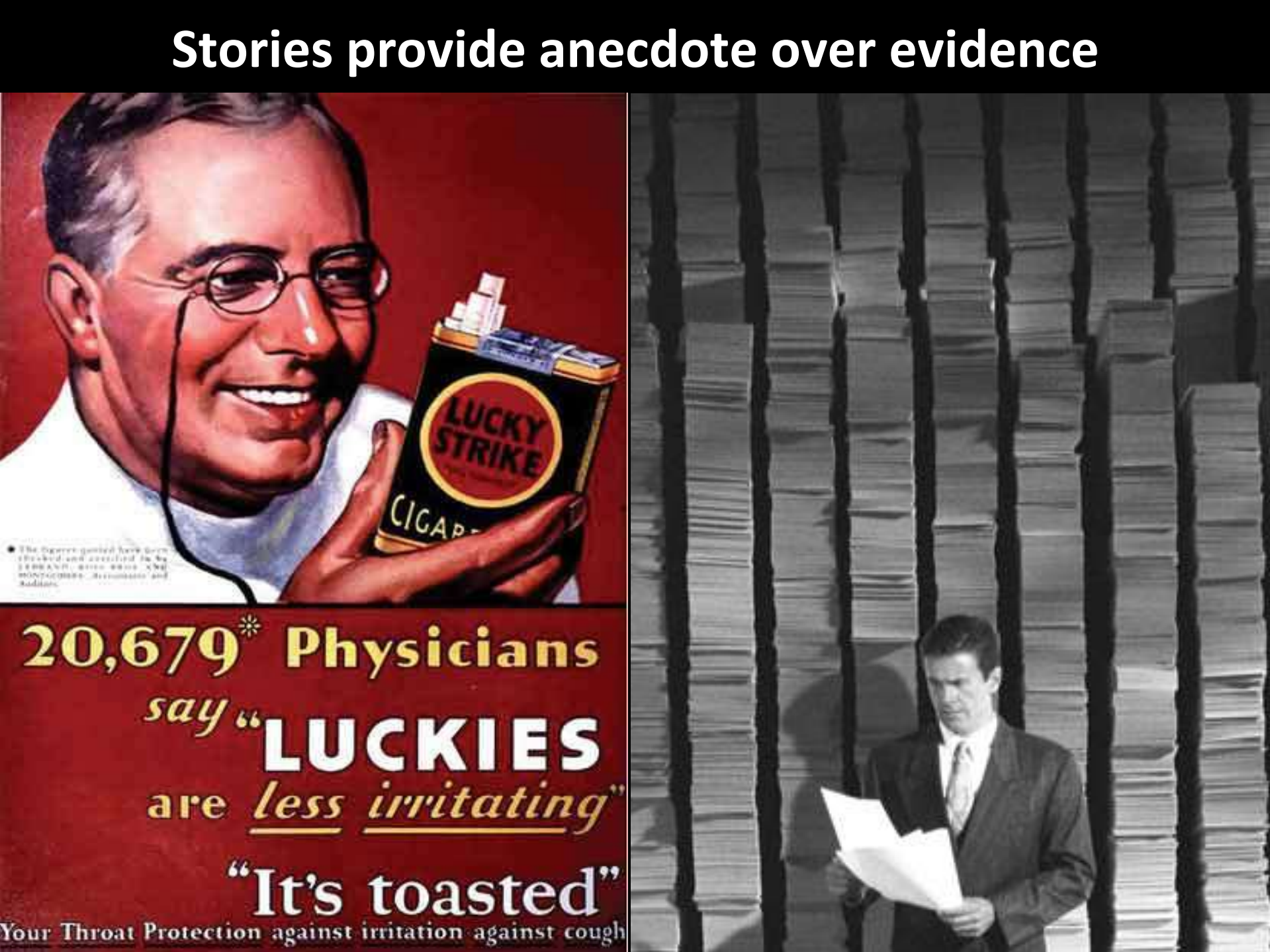


# Stories engage emotion vs engaging intellect

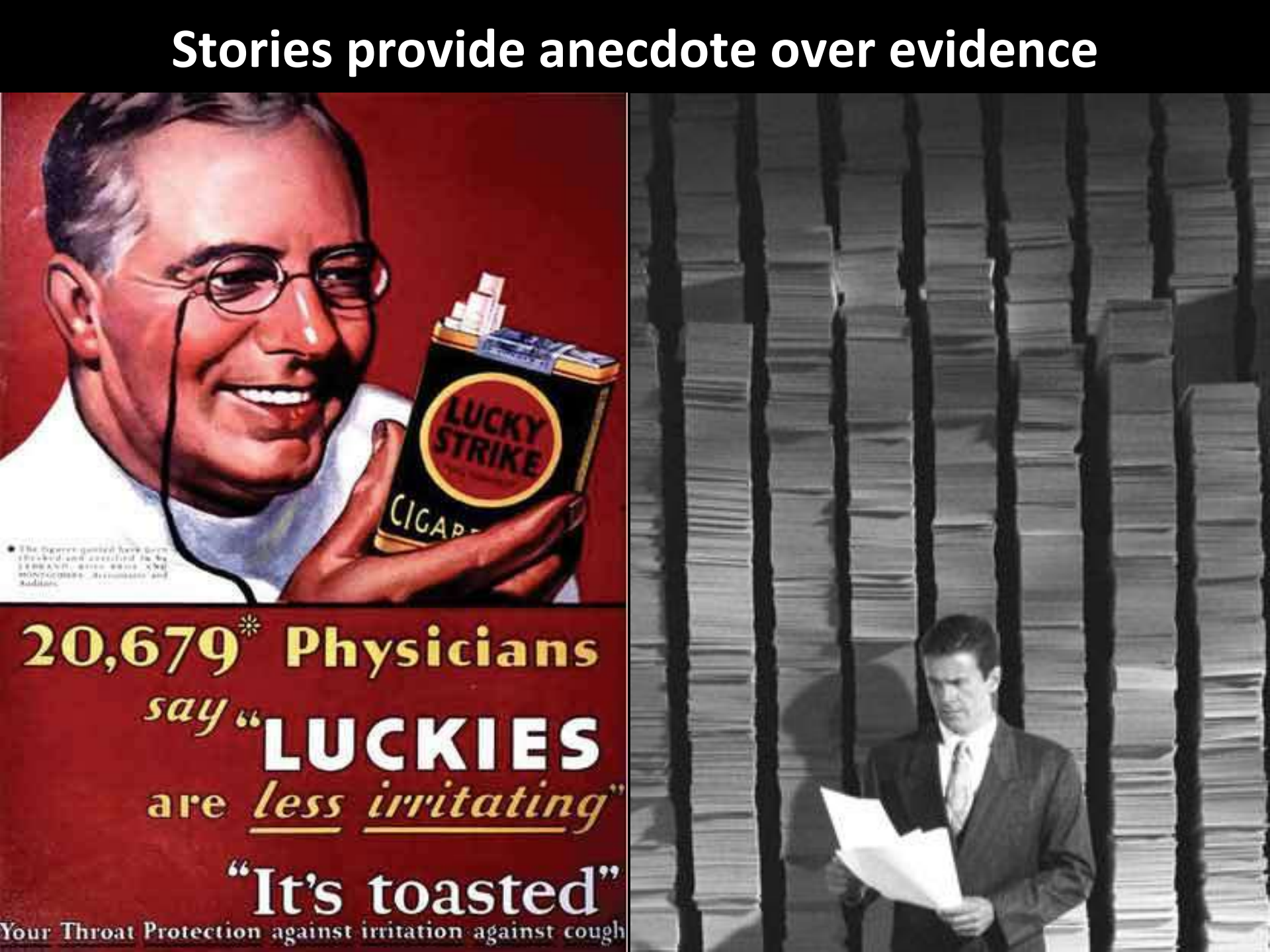




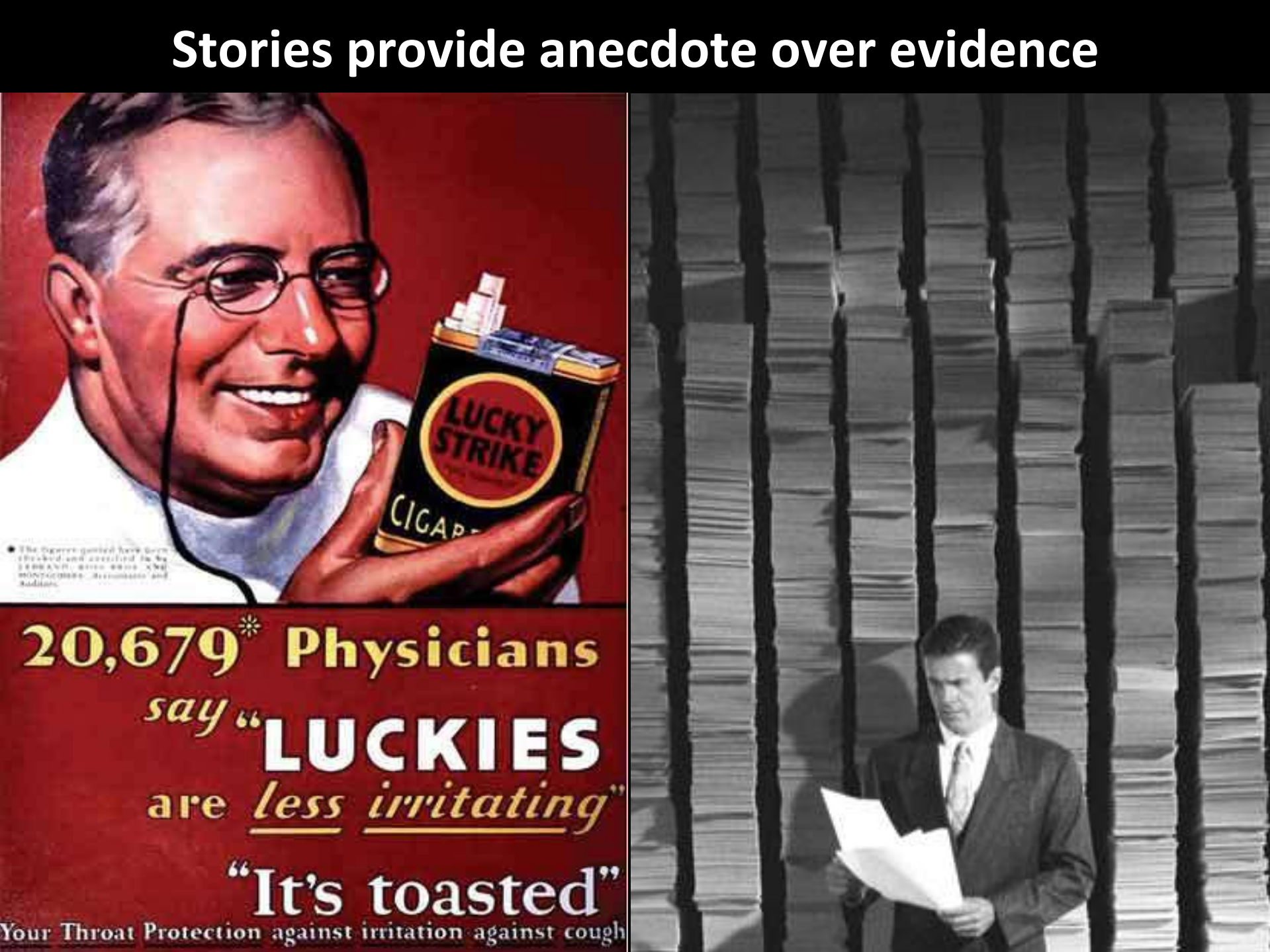
# Stories provide anecdote over evidence



Stories provide anecdote over evidence

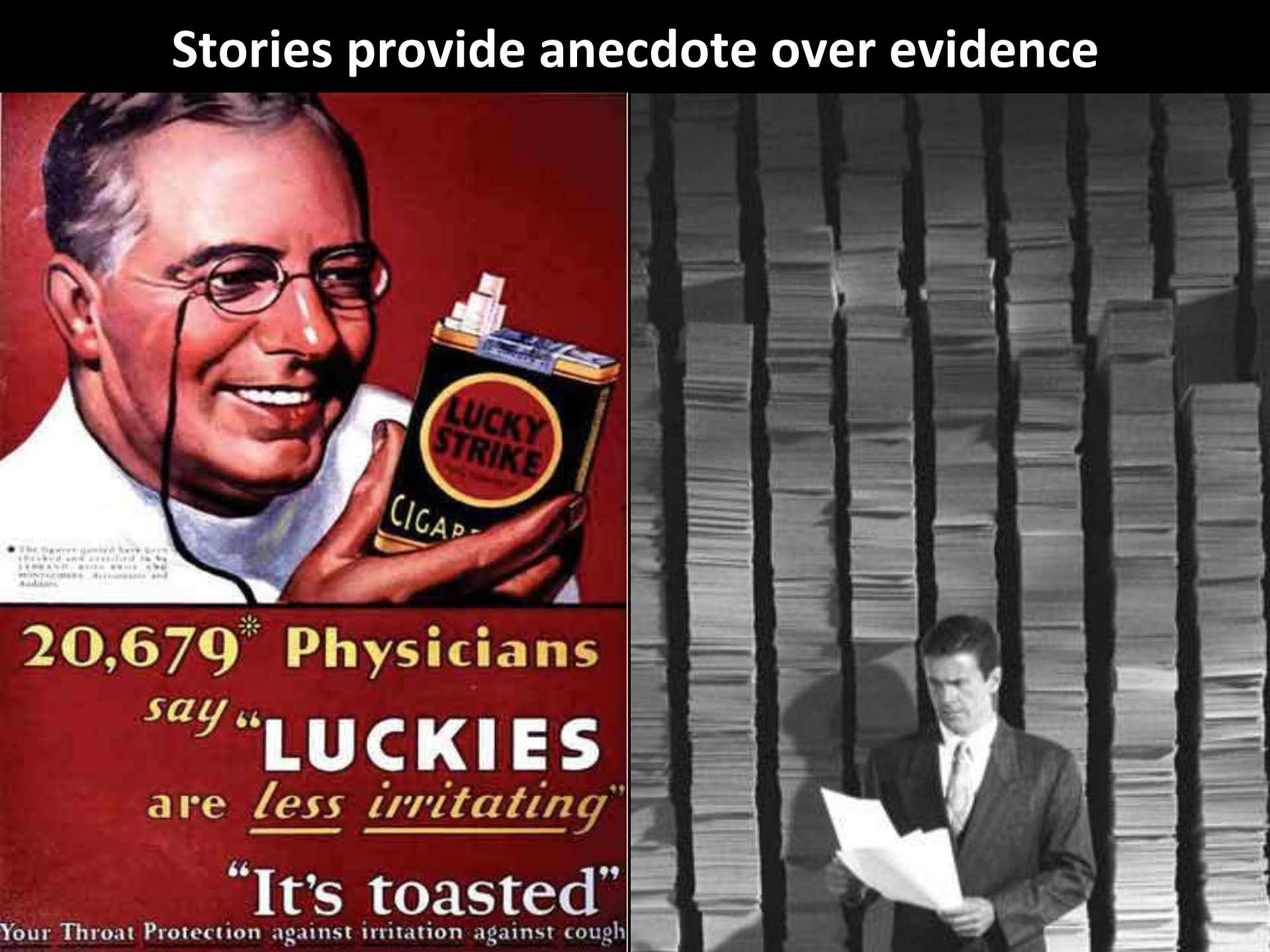


# Stories provide anecdote over evidence



Stories provide anecdote over evidence

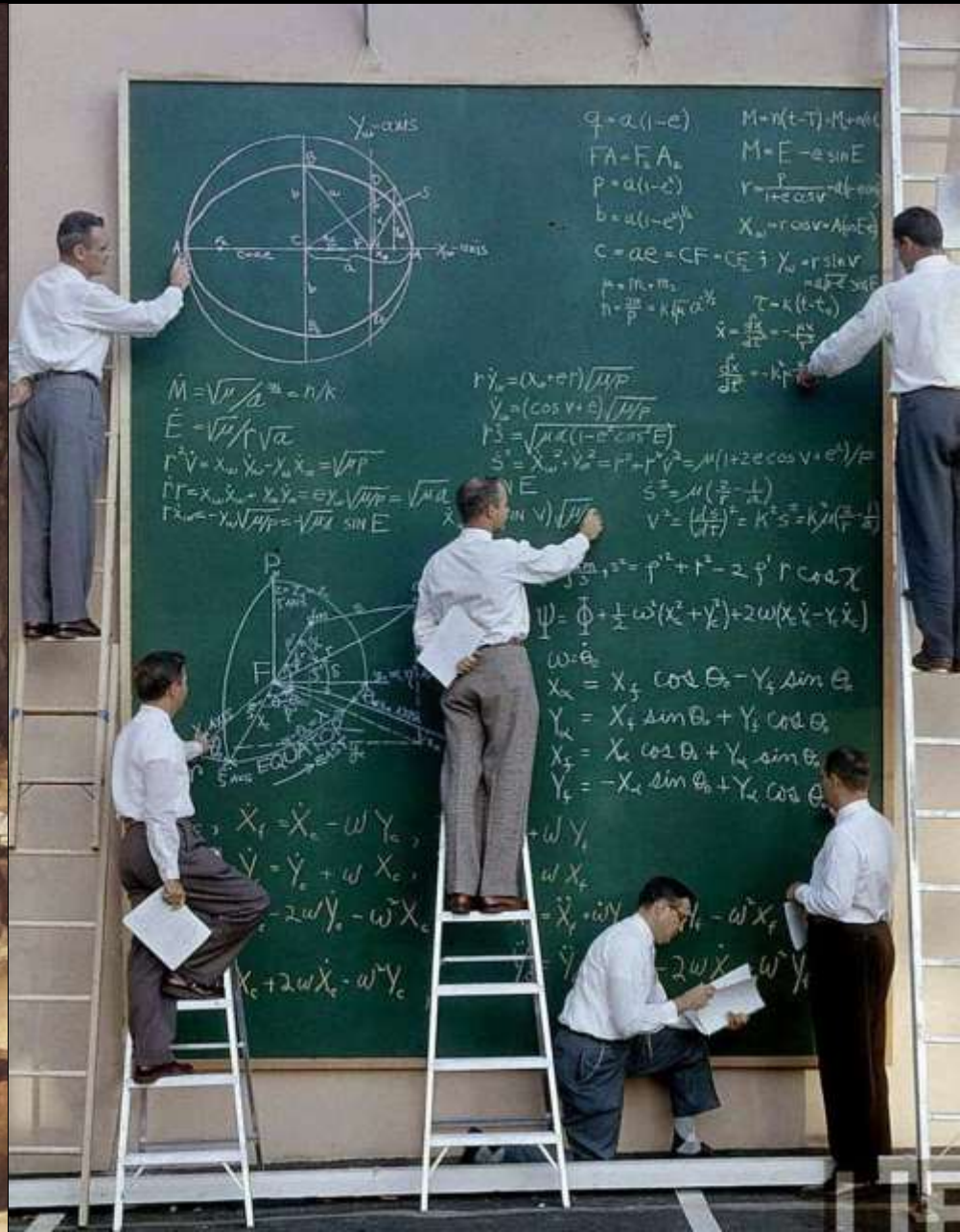
# Stories provide anecdote over evidence



Stories provide anecdote over evidence

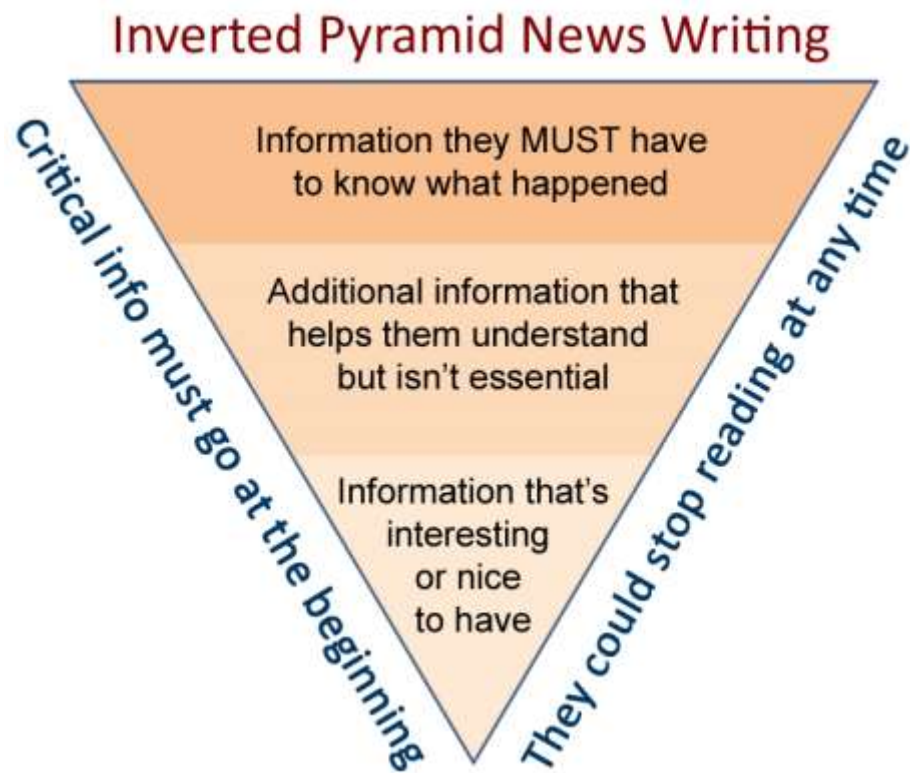


# Emotion and anecdote over intellect and evidence?





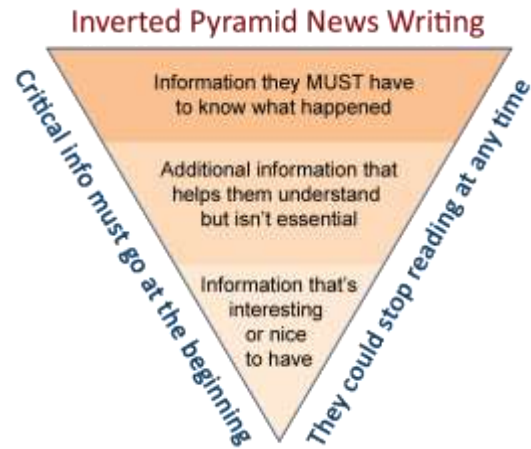
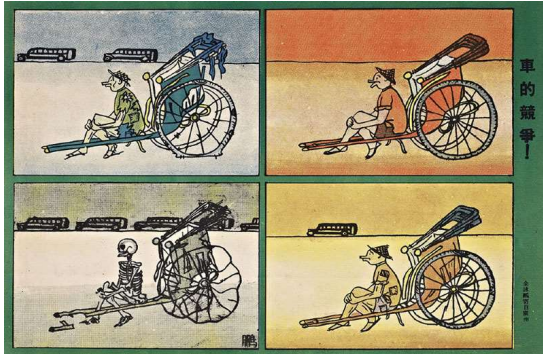
# There are other narrative structures we could use that aren't story, and may serve better in a work context



## *Academic paper*

<b>Abstract</b> The purpose and conclusion
<b>Introduction</b> Broad topic to specific focus of paper
<b>Methodology</b> (primary) or <b>Background, Review of Literature</b> (secondary)
<b>Results</b> (primary) Unbiased reporting of the experimental results
<b>Argument, Critique, or Discussion</b> The main discussion, interpretation of results
<b>Conclusion</b> Significance of claim, complications, futures
<b>Citations</b>

# You have a choice in structures and forms



<b>Abstract</b> The purpose and conclusion
<b>Introduction</b> Broad topic to specific focus of paper
<b>Methodology</b> (primary) or <b>Background, Review of Literature</b> (secondary)
<b>Results</b> (primary) Unbiased reporting of the experimental results
<b>Argument, Critique, or Discussion</b> The main discussion, interpretation of results
<b>Conclusion</b> Significance of claim, complications, futures
<b>Citations</b>

Story-driven

*Drama, emotion*



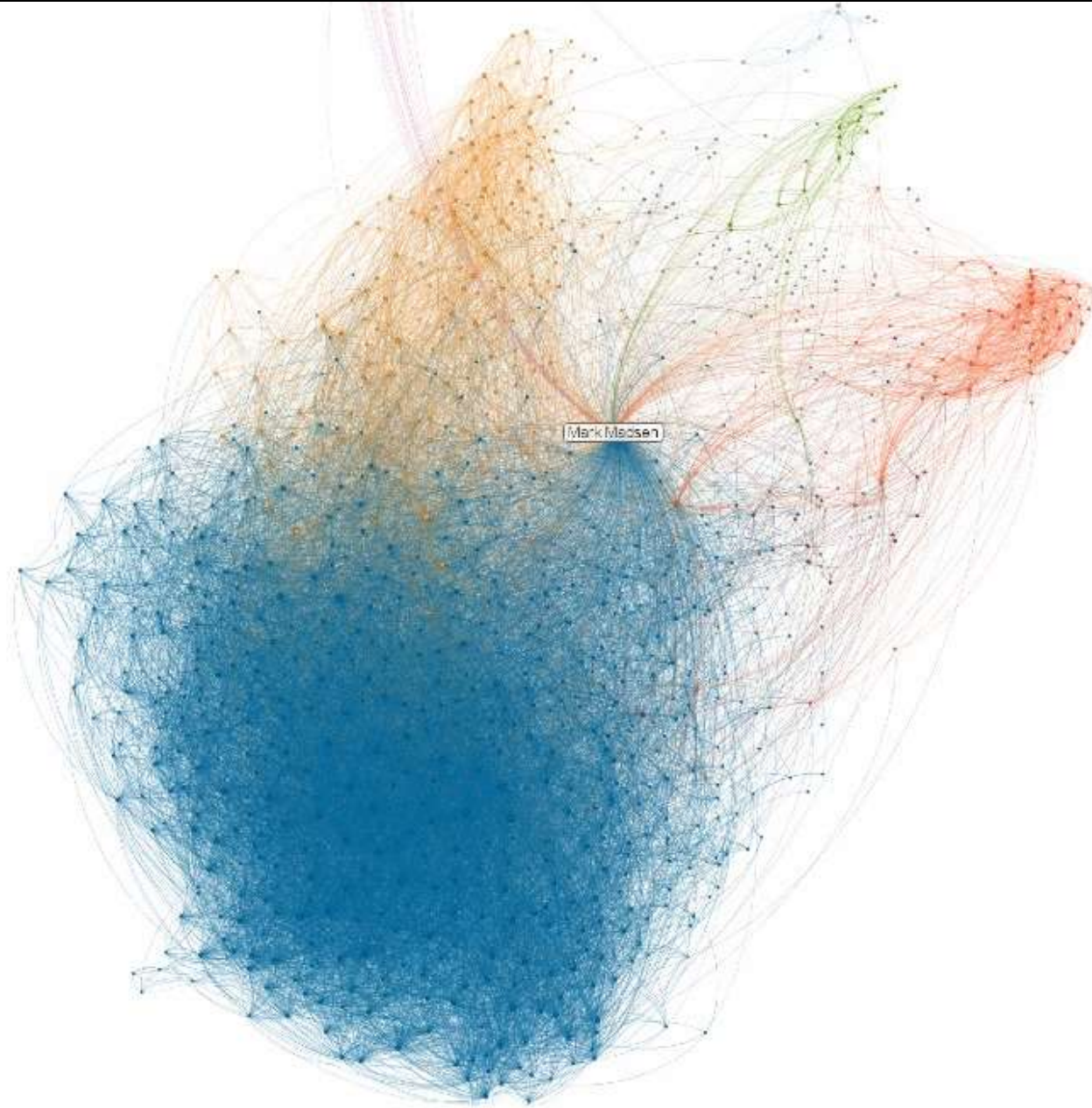
*Interest, anecdote*

Data-driven

*Facts, process*



# You are an unreliable narrator



This shows the slow change of culture and practice.

There are two opposing conclusions one could draw after analyzing this, depending entirely on your perspective.

# Story #1: the data warehouse market takes over



Do new stuff with old things



## Story #2: the big data market takes over



Do old stuff with new things



**A problem that doesn't  
seem like a problem:**

Storytelling gives priority  
to authoritative, definitive  
voicing.

You are the giver,  
everyone else is the  
receiver, all the  
information comes from  
you, personally.





日本最初の  
ベニス国際映画祭グランプリ  
アカデミー外国映画賞  
受賞作品

黒沢明  
監督作品



## 藪の中 (Rashomon)

Recall that stories are a sequence of events told in a particular order and way.

There are many stories for any situation, not just one, and they are subject to many human frailties.

Reality is consensual, not objective.

The solution is generative, via discourse.

大映映画

撮影  
宮川一夫

橋本忍  
黒沢明

脚本  
芥川龍之介

原作  
本間文子  
千秋実  
加東大介  
上田吉郎

森雅之  
志村喬  
京マチ子  
三船敏郎

λόγος



# Audience mediates your choice of narrative structure



# The context of the communication matters too





# Where should you start?

“The beginning is the most important part of the work.” – *Plato*

*“In the Kamigata area they have a sort of tiered lunchbox they use for a single day when flower viewing. Upon returning, they throw them away, trampling them underfoot. The end is important in all things.”*

— Tsunetomo Yamamoto, Hagakure, 1716

The top level goal is to *effect change* (or the opposite) by communicating data or insight from the data.

1. Define the change you want.
2. Work from this to your goal or intent in communicating.
3. From this, decide what narrative and techniques will work best for your intent, audience and content.



# Understanding human sensemaking will help make it actionable

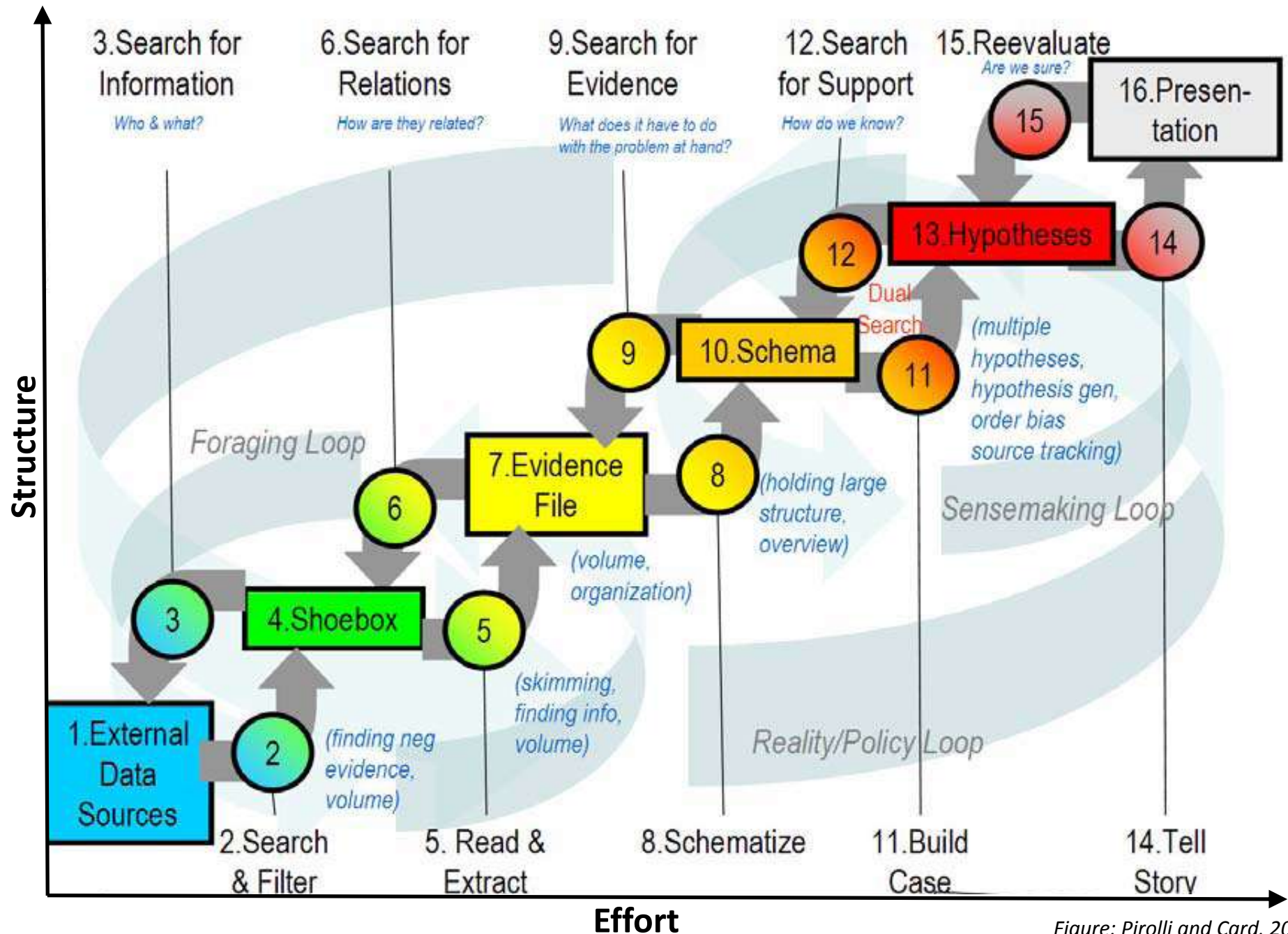


Figure: Pirolli and Card, 2005

# Goal and Intent

To explore and understand:

- to interpret the data and the models
- to reason and build shared understanding – learning causes and effects

To inform and explain:

- to inform – here is an answer
- to explain the data and interpretation – here is how this works
- to educate / teach – here is how you can learn this

To convince and decide:

- to prompt someone to take action
- to communicate the truth\*
- to convince others that this interpretation is the right one
- to make a decision or choose a course of action



# In practice...

When communicating, you are at the intersection of:

- Your goal
- The type of audience
- The goals of the people in that audience
- The context in which they participate

There is a formula, just remember:

**“I want to <X> the audience of <Y> in the <Z>”**

where:

<X> is your goal, <Y> is the type of audience, and <Z> is format in which you will interact with them.

**For example: presenting findings to a large group**





# Techniques vary by context. For example, meaningless charts and formulas are effective

## Charts Are Persuasive

Researchers compared the share of people persuaded by a verbal description of a drug trial with the share of those persuaded when a chart adding no new information was included.

### Proportion of people who were persuaded by the information



Source: "Blinded With Science: Trivial Graphs and Formulas Increase Ad Persuasiveness and Belief in Product Efficacy" by Aner Tal and Brian Wansink

This presentation is I'm using charts\*  $P = \sum_{i=1}^n a_i x_i$  more persuasive because

*\*see the references*

## SECONDS - FRAMES - FEET

Storyboarding is a verb.  
It's important to focus on  
the process, not on the  
product.

We spend too much time  
infatuated with product,  
not enough with why.





**For example: getting people to decide and act**



# It's hard to get people to take ownership

Debating 2014 P AUTOCOSTYB

Rørhøler

5.44  
Ar 307.500  
Dec 15.400



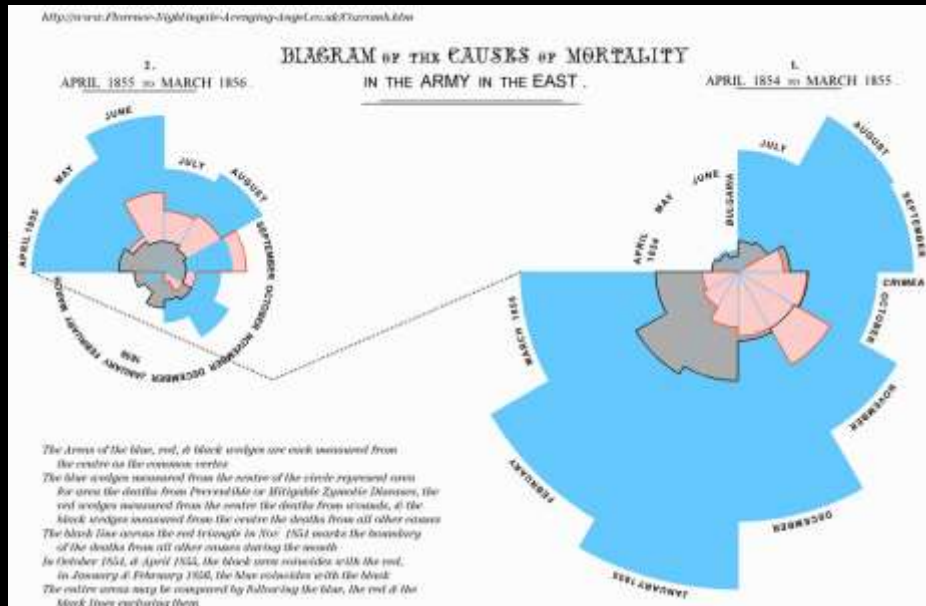
Item	Ar	Dec
Rørhøler M - 76mm Straight cut	99,-	78.600
Rørhøler double pipe 2x75mm	199,-	49.500
Rørhøler XS - 51 mm	99,-	42.800
Rørhøler M - 76 mm Angle cut	99,-	72.600
Rørhøler Justerbar Bøjet 76 mm	199,-	59.000

44 thansen.dk

What if you want them to take ownership and do something other than eat doughnuts in meetings?

This is an important part of many analyst's jobs.

Not "nice story, when can you get that to me" but "I'll take it from here".

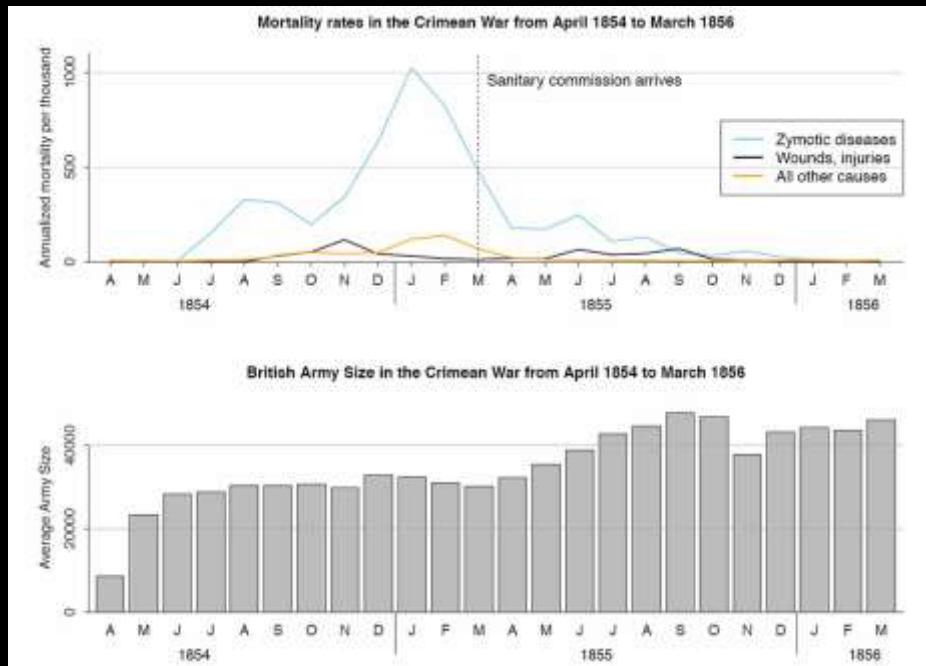


# Which viz is better?

There is an easy first segmentation in your audience: are they analysts, or consumers of analysis?

Statistical graphics and classic visualization says the latter.

Visuals to communicate and visuals to understand, or to explore data vs explain data, will lead to different requirements, driven by different goals.





## How we develop best practices: survival bias



“A story has no beginning or end: arbitrarily one chooses that moment of experience from which to look back or from which to look ahead.”

— Graham Greene, *The End of the Affair*

# References

Understanding Comics, The Invisible Art, Scott McCloud, 1993

Story and Discourse: Narrative Structure in Fiction and Film, Seymour Chatman, 1980

Visualizing Statistical Mix Effects and Simpson's Paradox, Zan Armstrong and Martin Wattenberg, 2014

Infovis and Statistical Graphics: Different Goals, Different Looks, Andrew Gelman and Antony Unwin, 2012

The Sensemaking Process and Leverage Points for Analyst Technology , Peter Pirolli, Stuart Card, 2005

Blinded Me with Science: Trivial Graphs and Formulas Make Ads More Persuasive, Brian Wansink, Public Understanding of Science, September, 2014

The nonsense math effect, Kimmo Eriksson, Judgment and Decision Making, Vol. 7, No. 6, November 2012, pp. 746–74





SOME RIGHTS RESERVED

# CC Image Attributions

Thanks to the people who supplied the creative commons licensed images used in this presentation:

meeting CC 7023561195\_f30a5d0281\_z.jpg -

[https://www.flickr.com/photos/j\\_benson/7023561195/](https://www.flickr.com/photos/j_benson/7023561195/)

meeting execs CC.jpg - <https://www.flickr.com/photos/dpstyles/4835354126/>

presentation big screen big room CC.jpg - <https://www.flickr.com/photos/101268966>

# About the Presenter

Mark Madsen is president of Third Nature, a technology research and consulting firm focused on business intelligence, data integration and data management. Mark is an award-winning author, architect and CTO whose work has been featured in numerous industry publications. Over the past ten years Mark received awards for his work from the American Productivity & Quality Center, TDWI, and the Smithsonian Institute. He is an international speaker, a contributor to Forbes Online and on the O'Reilly Strata program committee. For more information or to contact Mark, follow @markmadsen on Twitter or visit <http://ThirdNature.net>



# About Third Nature



Third Nature is a research and consulting firm focused on new and emerging technology and practices in analytics, business intelligence, information strategy and data management. If your question is related to data, analytics, information strategy and technology infrastructure then you're at the right place.

Our goal is to help organizations solve problems using data. We offer education, consulting and research services to support business and IT organizations as well as technology vendors.

We fill the gap between what the industry analyst firms cover and what IT needs. We specialize in product and technology analysis, so we look at emerging technologies and markets, evaluating technology and how it is applied rather than vendor market positions.

