

123.078 Scientific seminar communication

The cognitive style of PowerPoint
by Edward R. Tufte

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cognitive adjective

formal

related to the process of knowing, understanding, and
learning something

- *cognitive psychology*

Source: Longman Dictionary of Contemporary English

Edward Tufte

Background He was born in 1942, graduated from Stanford in statistics in 1964. In 1968 he completed his PhD dissertation in political science (Yale).

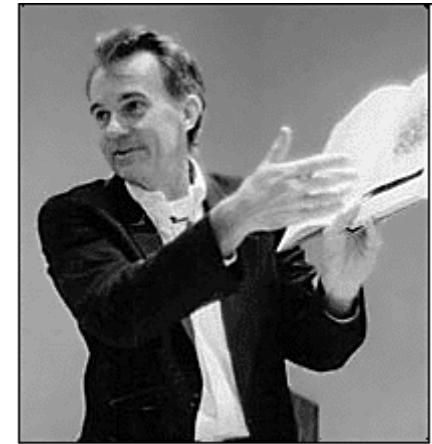


PHOTO COURTESY OF EDWARD TUFT
Edward Tufte

Academic work

1968-1982 taught courses at Princeton University in political economy and data analysis.

1982-1999 Professor at Yale University, where he taught courses in statistical evidence, information design, and interface design.

Books He writes, designs, and self-publishes his books on analytical design, which have received more than 40 awards for content and design. He's written 7 books including *Visual Explanations*, *Envisioning Information*, *The Visual Display of Quantitative Information*, *Data Analysis for Politics and Policy*, and the most recent *Beautiful Evidence*.

The cognitive style characteristics of the standard default PP presentation

- Foreshortning of evidence and thought
- Low spatial resolution of Slides
- Intensely hierarchical single-path structure
- Breaking up narratives and data in slides
- Preoccupation with format not content
- Incompetent designs for data graphics and tables
- Commercialism that turns information into sales pitch and presenters into marketeers

The Hierarchical Bullet List Dilutes Thought

Let's consider these major objectives from a standard 5-year strategic plan:

- Increase market share by 25%.
- Increase profits by 30%.
- Increase new-product introductions to ten a year.

What does it mean exactly?

Market Share → Profits → New-product development

Profits → New-product development → Market share.

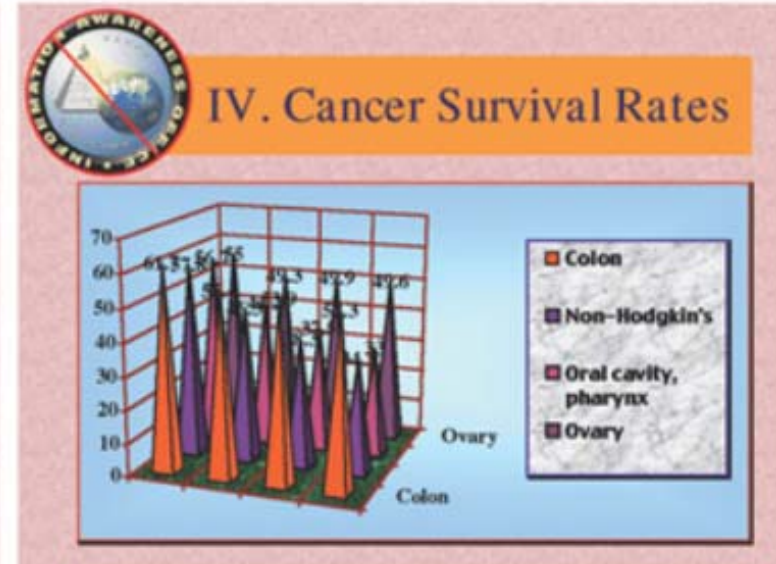
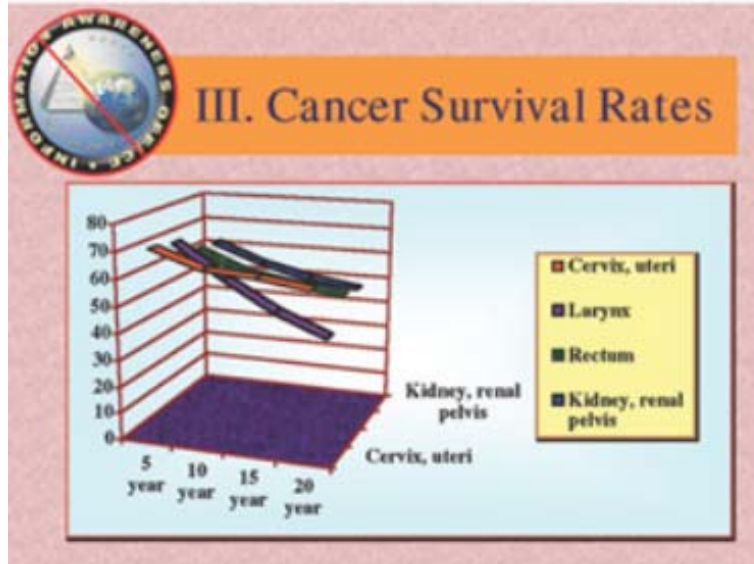
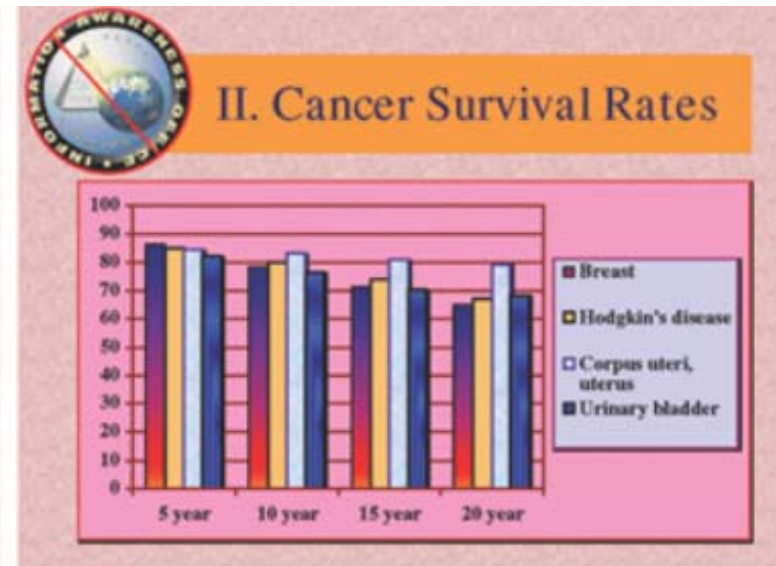
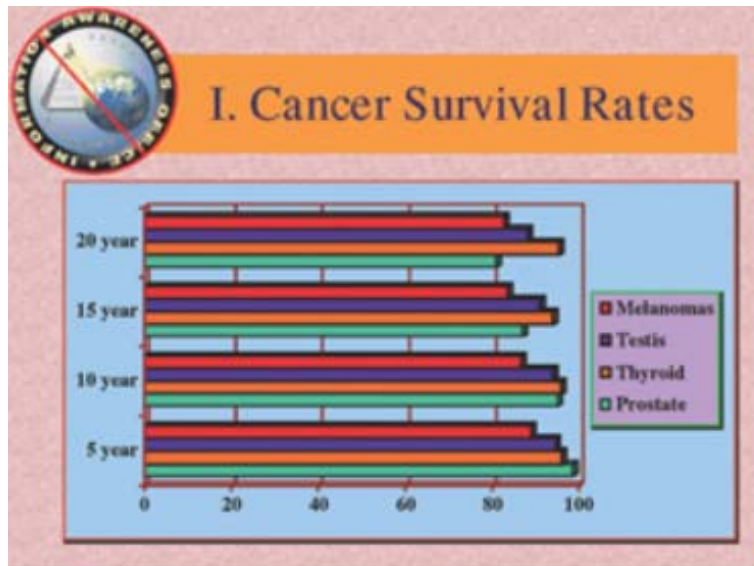
Cancer site	Relative survival rate, % (SE)			
	5 years	10 years	15 years	20 years
Oral cavity and pharynx	56.7 (1.3)	44.2 (1.4)	37.5 (1.6)	33.0 (1.8)
Oesophagus	14.2 (1.4)	7.9 (1.3)	7.7 (1.6)	5.4 (2.0)
Stomach	23.8 (1.3)	19.4 (1.4)	19.0 (1.7)	14.9 (1.9)
Colon	61.7 (0.8)	55.4 (1.0)	53.9 (1.2)	52.3 (1.6)
Rectum	62.6 (1.2)	55.2 (1.4)	51.8 (1.8)	49.2 (2.3)
Liver and intrahepatic bile duct	7.5 (1.1)	5.8 (1.2)	6.3 (1.5)	7.6 (2.0)
Pancreas	4.0 (0.5)	3.0 (0.5)	2.7 (0.6)	2.7 (0.8)
Larynx	68.8 (2.1)	56.7 (2.5)	45.8 (2.8)	37.8 (3.1)
Lung and bronchus	15.0 (0.4)	10.6 (0.4)	8.1 (0.4)	6.5 (0.4)
Melanomas	89.0 (0.8)	86.7 (1.1)	83.5 (1.5)	82.8 (1.9)
Breast	86.4 (0.4)	78.3 (0.6)	71.3 (0.7)	65.0 (1.0)
Cervix uteri	70.5 (1.6)	64.1 (1.8)	62.8 (2.1)	60.0 (2.4)
Corpus uteri and uterus, NOS	84.3 (1.0)	83.2 (1.3)	80.8 (1.7)	79.2 (2.0)
Ovary	55.0 (1.3)	49.3 (1.6)	49.9 (1.9)	49.6 (2.4)
Prostate	98.8 (0.4)	95.2 (0.9)	87.1 (1.7)	81.1 (3.0)
Testis	94.7 (1.1)	94.0 (1.3)	91.1 (1.8)	88.2 (2.3)
Urinary bladder	82.1 (1.0)	76.2 (1.4)	70.3 (1.9)	67.9 (2.4)
Kidney and renal pelvis	61.8 (1.3)	54.4 (1.6)	49.8 (2.0)	47.3 (2.6)
Brain and other nervous system	32.0 (1.4)	29.2 (1.5)	27.6 (1.6)	26.1 (1.9)
Thyroid	96.0 (0.8)	95.8 (1.2)	94.0 (1.6)	95.4 (2.1)
Hodgkin's disease	85.1 (1.7)	79.8 (2.0)	73.8 (2.4)	67.1 (2.8)
Non-Hodgkin lymphomas	57.8 (1.0)	46.3 (1.2)	38.3 (1.4)	34.3 (1.7)
Multiple myeloma	29.5 (1.6)	12.7 (1.5)	7.0 (1.3)	4.8 (1.5)
Leukaemias	42.5 (1.2)	32.4 (1.3)	29.7 (1.5)	26.2 (1.7)

Rates derived from SEER 1973–98 database (both sexes, all ethnic groups).¹²
 NOS=not otherwise specified.

Table 4: **Most recent period estimates of relative survival rates, by cancer site**

Source: Hermann Brenner, "Long-term survival rates of cancer patients achieved by the end of the 20th century: a period analysis," *The Lancet*, 360 (October 12, 2002), 1131-1135.

The same data presented in PP default-designs



Source: The Cognitive style of PowerPoint

Powerpoint Stylesheets

Instructional Computing Facility

Guidelines for Preparing Slides

Instructional Computing Facility

Harvard School of Public Health

Instructional Computing Facility

Use Simple Tables to Present Numbers

	Use Tables	For Your Numbers	But Not too Many
This row	10	90	100
This row	0.6	0.4	1
This row	1	2	3
That row	1	2	3

Try not to make footnotes too small

Harvard School of Public Health

Source: www.cs.tau.ac.il/

Instructional Computing Facility

Use the 6 X 6 rule:

6 lines of text
6 words per line

Harvard School of Public Health

Jane said, „Here is a ball.
See this blue ball. Sally.
Do you want this ball?”
Sally said, „I want my ball.
My ball is yellow.
It is a big, pretty ball.”

Powerpoint does Rocket Science?

During the launch of shuttle Columbia, seconds after liftoff a 760 gram piece of foam insulation broke off from the liquid fuel tank, hit the left wing, and broke through the wing's thermal protection.



The only evidence of a possible problem was a very brief video showing that something hit the wing somewhere.

To help NASA officials assess the threat, Boeing Corporation engineers quickly prepared 3 reports, a total of 28 PowerPoint slides, dealing with the debris impact.

Review of Test Data Indicates Conservatism for Tile Penetration

- The existing SOFI on tile test data used to create Crater was reviewed along with STS-87 Southwest Research data
 - Crater overpredicted penetration of tile coating significantly
 - Initial penetration to described by normal velocity
 - Varies with volume/mass of projectile (e.g., 200ft/sec for 3cu. In)
 - Significant energy is required for the softer SOFI particle to penetrate the relatively hard tile coating
 - Test results do show that it is possible at sufficient mass and velocity
 - Conversely, once tile is penetrated SOFI can cause significant damage
 - Minor variations in total energy (above penetration level) can cause significant tile damage
 - Flight condition is significantly outside of test database
 - Volume of ramp is 1920cu in vs 3 cu in for test

BOEING

Source: The Cognitive style of PowerPoint

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Source: The Cognitive style of PowerPoint

Based on reports high-level NASA officials decided that the Columbia was safe and and, furthermore no additional investigation was necessary.

On February 1, 2003 Space Shuttle Columbia disintegrated over Texas during re-entry into the Earth's atmosphere, with the loss of all seven crew members.

Tufte's thoughts on presentations:

- Show up early
- Start with what the problem is, who should care and why, and then what your solution is.
- A must—Give everyone a piece of paper (high resolution)
- Transfer information—without it, why have the meeting?
- Never apologize for yourself. Distracts from content, impacts credibility.

- We can do a lot better than overheads – low resolution, leaves no traces, bullets = sloppy thinking
- Tufte’s view of PowerPoint: “Watching a PowerPoint presentation is like viewing a school play—it is loud, slow and simple.”)

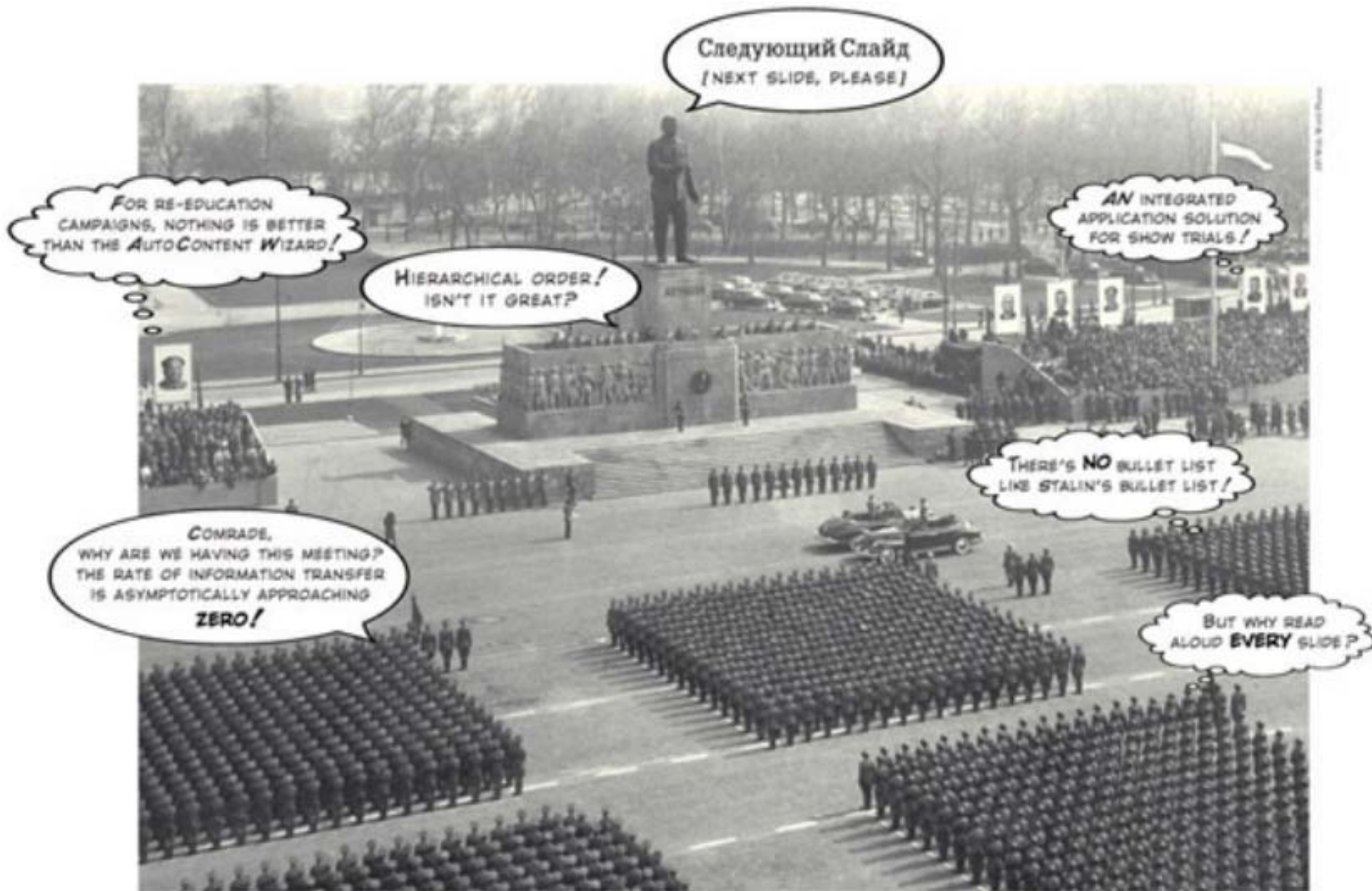
- To explain complex concepts, go from the particular to the general to the particular. Put the message in a context.
- Your audience deserves respect—don't use the “keep it simple stupid” principle

- Don't patronize or distrust readers.
- Say what you think.
- Use humor to change the pace, make it memorable,
allows hyperbole.

Bibliography

E. Tufte, The Cognitive style of PowerPoint

<http://www.edwardtufte.com/>



Military Parade, Stalin Square, Budapest, April 4, 1956. Photograph by AP/Wide World Photos

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