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Numbers

Patrick Barry

*“I like the generosity of numbers.”*¹

— Mary Cornish, “Numbers” (2007)

*“My relationship with statistics changed when I became one.”*²

— Paul Kalanithi, *When Breath Becomes Air* (2016)

Numbers can be numbing. Depend too much on them to make your case, pitch your product, or tell your story, and you risk losing your audience. As Jay Conger put it in *The Necessary Art of Persuasion*, an article published in the *Harvard Business Review* in 1998 and later collected in the journal’s *Must Reads* book on communication, “[o]rdinary evidence . . . won’t do. We have found that the most effective persuaders use language in a particular way. They supplement numerical data with examples, stories, metaphors, and analogies to make their positions come alive.”³ This strategic use of language, Conger observed, “paints a vivid word picture, and, in doing so, lends a compelling and tangible quality to the persuader’s point of view.”⁴

I explain this idea to my law students by offering the following bit of advice: if you are going to use some statistics as you argue or present, try to “un-numb the numbers.”

¹ Mary Cornish, *Numbers* (May 30, 2018), <https://www.loc.gov/poetry/180/008.html>.

² Paul Kalanithi, *When Breath Becomes Air* 134 (2016).

³ Harvard Business Review et al., *HBR’s 10 Must Reads on Communication* 82 (2013) (reprinting Jay A. Conger, *The Necessary Art of Persuasion*, Harv. Bus. Rev., May–June 1998, at 84, 92).

⁴ *Id.*

Below are some examples of lawyers' and other professionals' doing that well.

A. Texas

We'll start with the basic move of putting a large and sometimes difficult-to-comprehend number in perspective. One hundred ninety million acres sounds like a lot of land. But without a reference point, it is tough to know just how much space that actually covers. So when Justice Antonin Scalia wrote the majority opinion in *Summers v. Earth Island Institute*,⁵ which involved the right to challenge U.S. Forest Service regulations, he compared 190 million acres to something much more vivid and recognizable: the state of Texas.

"The national forests occupy more than 190 million acres," he wrote, "an area larger than Texas."⁶

The sentence wasn't a throwaway line. It was actually central to the Court's decision in that case. Finding that the Earth Island Institute lacked standing to even bring its claims, Scalia pointed out that the alleged injury involved one institute member's extremely vague plans to visit various national forests in the future. "There may be a chance, but it is hardly a likelihood, that [the member's] wanderings will bring him to a parcel about to be affected by a project unlawfully subject to the regulations," Scalia explained.⁷ "Indeed, without further specification it is impossible to tell *which* projects are . . . unlawfully subject to the regulations."⁸

The Texas comparison made Scalia's analysis much more concrete and memorable. In his view, the Earth Island Institute was

⁵ 555 U.S. 488 (2009).

⁶ *Id.* at 495.

⁷ *Id.*

⁸ *Id.*

essentially basing its claim for relief on the chance that one of its members would someday stumble across a certain parcel of land while wandering around a space the size of Texas. That's not nearly enough to trigger standing, given that the required harm in this context needed to be "actual or imminent."⁹ "Accepting an intention to visit the national forests as adequate to confer standing to challenge any Government action affecting any portion of those forests," Scalia wrote, summing up the case, "would be tantamount to eliminating the requirement of concrete, particularized injury in fact."¹⁰

What the Texas visual did was to put the issue of the case in perspective. It gave it shape and dimensions. Too often we neglect this important step, especially if we have expertise in a particular field. We wrongly assume that our data and statistics will be self-explanatory. We don't realize that in many cases, these numbers can be unhelpfully numbing.

B. Aspirin, Bicycles, and Fighter Jets

An expert who doesn't make this mistake is my office neighbor at the University of Michigan Law School, Nicholson Price. Besides a law degree, Price has a Ph.D. in biological sciences. The combination could lead to some dense, jargon-heavy writing. But Price does an admirable job of making his many scholarly papers as readable as they are rigorous. One in particular, which he co-authored with Arti Rai of Duke University School of Law, is a good example of how the importance of un-numbing the numbers extends beyond dealing with big numbers; it also arises when dealing with small numbers, or at least small-scale objects. Like atoms.

Here is the paper's opening paragraph:

⁹ *Lujan v. Defenders of Wildlife*, 504 U.S. 555, 564 (1992).

¹⁰ *Summers*, 555 U.S. at 496.

Most drugs are small. Aspirin, for instance, is made up of just 21 atoms. Small drugs like aspirin provide the majority of global revenue for brand-name drug companies. But finding new small-molecule drugs keeps getting harder, and generic drug manufacturers are quick to compete with brand-name firms once patents expire. As a result, drug companies are increasingly turning to very large drugs: biologics produced by living cells. In terms of size and rough complexity, if an aspirin were a bicycle, a small biologic would be a Toyota Prius, and a large biologic would be an F-16 fighter jet.¹¹

That last sentence — about bicycles, Priuses, and fighter jets — does a great job communicating a comparison that many readers might otherwise find difficult to grasp, especially if they have never heard of “biologics.” Price and his coauthor don’t dumb their material down. They enhance it by making it more vivid and accessible. They add value by using their rhetorical imagination.

We’d all benefit from developing that skill.

C. Justice as Translation

I tried to stress this point about imagination when I ran a workshop in Price’s patent-law class one semester. We were trying to get the students to understand that at the heart of “un-numbing the numbers” is a core lawyerly skill: the skill of translation.

Another Michigan Law faculty member, James Boyd White, has even argued that the act of translation is at the very center of law. His 1994 book *Justice as Translation* lays out an elegant case for the deep parallels between translating a text and conducting yourself as a lawyer. Both give you a chance to learn a different language. For lawyers, this might mean learning the language of a

¹¹ W. Nicholson Price II & Arti K. Rai, *Manufacturing Barriers to Biologics Competition and Innovation*, 101 Iowa L. Rev. 1023, 1024 (2016).

client, the language of a contract, or the language of a whole new practice area.

Both also help you see the gaps in your own language, particularly while trying to capture somebody else's words or experience. As a result, you are continually faced with an important ethical test: are you willing to take responsibility for the interpretive choices you make?

These and other insights prompted one reviewer of *Justice as Translation* to suggest that, solely on the strength of the book, "James Boyd White should be nominated for a seat on the Supreme Court."¹²

The ambitions that Price and I had for the patent-law workshop were considerably more modest. We simply wanted the students to understand the mechanics of a certain kind of translation: putting numbers in context.

In this way, we were following the lead of Chip Heath of Stanford University and Dan Heath of Duke University, who devote a significant portion of their best-selling book *Made to Stick* to the problem of communicating statistics. "Since grade school," they write, "we've been taught to support our arguments with statistical evidence. But statistics tend to be eye-glazing. How can we use them while still managing to engage our audience?"¹³

The Heath brothers don't offer any failproof formula. Nor do I think one exists. But the strategies they identify go a long way toward helping people deliver numbers a little less numbingly. The next two sections of this essay, "Relationships" and "Human Element," summarize their approach.

¹² James Boyd White, *Justice as Translation* back cover (1994).

¹³ Chip Heath & Dan Heath, *Made to Stick: Why Some Ideas Survive and Others Die* 141 (2007).

D. Relationships

The first step is to remember that statistics are “rarely meaningful in and of themselves. Statistics will, and should, almost always be used to illustrate a *relationship*. It’s more important for people to remember the relationship than the number.”¹⁴

Price’s aspirin analogy is a great example. The critical point is not that the size of aspirin is just 21 atoms. The critical point is the relationship between the relatively small and simple structure of aspirin and the much larger and more complex structure of biologics. So long as readers understand that relationship, so long as they keep Price’s three images in their heads — a bicycle (aspirin), a Toyota Prius (small biologic), and an F-16 fighter jet (large biologic) — they’ll be fine.

Or take a different example, this time from another writing pair — Barry Nalebuff, who teaches at the Yale School of Management, and Ian Ayres, who teaches at Yale Law School. In *Why Not?*, Nalebuff and Ayres make the point that driving a car is “one of the most dangerous things we do.”¹⁵ To support this claim, they cite two statistics: “In the United States there are 24 million auto accidents each year and 2.3 million people injured.”¹⁶ But then, instead of citing a third statistic, at least in number form, they skip to a much more memorable relationship: “The number of auto fatalities is the equivalent of a 737 plane crash every day.”¹⁷

It’s a common move: taking a big, tough-to-comprehend death toll and trying to put it in more concrete, memorable terms. Here’s how Civil War historian Allen Guelzo does it in *Gettysburg*, after acknowledging that numbers don’t fully capture the experience of that epic battle. He’s describing the

¹⁴ *Id.* at 143.

¹⁵ Barry Nalebuff & Ian Ayres, *Why Not? How to Use Everyday Ingenuity to Solve Problems Big and Small* 106 (2003).

¹⁶ *Id.*

¹⁷ *Id.*

losses endured by General Robert E. Lee and the Confederates. “Any way the numbers are piled, . . . the results were equivalent to a historic catastrophe. Even if one takes the lowest mark, the Army of Northern Virginia suffered something comparable to two sinkings of the *Titanic*, the 2001 attacks on the World Trade Center and the Pentagon, ten repetitions of the Great Blizzard of 1888, and two Pearl Harbors. Or, if percentages provide more clarity, the Confederates at Gettysburg sustained two and a half times the losses taken by the Allied armies in Normandy from D-Day through August 1944.”¹⁸

Guelzo then adds that anyone who has doubts about the impact of Gettysburg need only consult a letter that a Confederate soldier wrote to his sister soon after the battle ended. “The campaign is a failure,” the soldier lamented, “and the worst failure that the South has ever made.”¹⁹

E. Human Element

Guelzo’s inclusion of the soldier’s letter aligns well with the second strategy that the Heath brothers suggest: “contextualize [statistics] in terms that are more human, more everyday.”²⁰ As an example, they offer the following sentences, which have slightly different wording but convey the same core information:

1. Scientists recently computed an important physical constraint to an extraordinary accuracy. To put the accuracy in perspective, imagine throwing a rock from the sun to the earth and hitting the target within one third of a mile of dead center.
2. Scientists recently computed an important physical constraint to an extraordinary accuracy. To put the accuracy in perspective, imagine throwing a rock from New York

¹⁸ Allen C. Guelzo, *Gettysburg: The Last Invasion* 444–45 (2013).

¹⁹ *Id.* at 445.

²⁰ Heath & Heath, *Made to Stick* at 143.

to Los Angeles and hitting the target within two thirds of an inch of dead center.²¹

“When different groups evaluated the two statements,” they explain, “58 percent of respondents ranked the statistic about the sun to the earth as ‘very impressive.’ That jumped to 83 percent for the statistic about New York to Los Angeles.”²² The reason for this discrepancy is that “[w]e have no human experience, no intuition, about the distance between the sun and the earth. The distance from New York to Los Angeles is much more tangible.”²³

The same could be said about Price’s aspirin analogy. In fact, the idea of adding a human element to your statistics nicely complements the idea of establishing a memorable relationship. The two strategies are not mutually exclusive. A final example, from the energy company Opower, shows this well.

F. Opower

The story of Opower has been told in many places, including a case study published by the *Harvard Business Review*.²⁴ The best account for our purposes comes in *Invisible Influence* by Wharton’s Jonah Berger — if only because Berger himself does such a great job of un-numbing key numbers when giving it.

Berger begins by outlining Opower’s basic approach, which uses social influence to help people reduce their energy consumption. The company’s founders, David Yates and Adam Lasky, got the idea from an experiment conducted in San Marcos, California, by renowned psychologist Robert Cialdini and a team

²¹ *Id.* at 143–44.

²² *Id.* at 144.

²³ *Id.*

²⁴ Amy J.C. Cuddy et al., *OPOWER: Increasing Energy Efficiency Through Normative Influence (A)*, *Harv. Bus. Rev.*, Sept. 14, 2010.

of graduate students. Just telling people that they would save money by using less energy in their homes didn't work very well. Nor did appeals to protecting the environment or being a responsible citizen. What worked was highlighting social norms. "When surveyed, 77% of your neighbors use fans instead of air-conditioning to keep cool in the summer," the successful appeal read. "Turn off your air conditioning and turn on your fans."²⁵ People who received that message, Berger explains, "decreased their energy use significantly. And this reduced consumption persisted even weeks after they received the last appeal. Simply telling people that their neighbors were saving energy led them to conserve more themselves."²⁶

Keeping this study and Cialdini's other work in mind, the Opower founders teamed with a number of utility companies to change the information that consumers received in their energy bills each month. No longer would a bill show just contextless data about the number of watts you used since your last payment. Now it would show your consumption relative to similar households in your neighborhood. The company figured out how to un-numb the numbers in a way that actually changed people's behavior — for the better.

Berger shares the specifics:

These programs lead people to reduce their energy consumption by around 2 percent. For a given person, this decrease may not seem huge, but aggregated across the country the impact is staggering. Since their launch, Opower's programs have helped save more than 6 terawatt-hours of energy. That's 6 trillion watt-hours, or the equivalent to taking all the homes in Alaska and Hawaii,

²⁵ Jonah Berger, *Invisible Influence* 202 (2016). See also P. Wesley Schultz et al., *The Constructive, Destructive, and Reconstructive Power of Social Norms*, 18 *Psychol. Sci.* 429 (2007).

²⁶ Berger, *Invisible Influence* at 202.

more than 2.1 million people, off the power grid for an entire year.²⁷

No wonder software giant Oracle acquired the company in 2016 for over \$500 million.²⁸ Opower's ingenuity can really help one of the most important numbers of all: the bottom line.

²⁷ *Id.* at 203 (footnotes omitted).

²⁸ Joshua Jamerson, *Oracle to Buy Utilities-Software Maker Opower for \$532 Million* (May 2, 2016), <https://www.wsj.com/articles/oracle-to-buy-utilities-software-maker-opower-for-532-million-1462195622>.