

# The Promise and Perils of Numbers in Negotiation and Mediation

By Jennifer K. Robbennolt

Numbers arise in myriad ways in negotiation and mediation. Offers and demands almost always include numbers: dollar amounts, interest rates, inflation figures, or percentages. Agreements (and alternatives to them) are often framed in similar terms. Even parties' aspirations, bottom lines, and thoughts about a deal's fairness are usually expressed in numerical terms.

Numbers are clearly useful for negotiators and neutrals in crafting options, evaluating proposals, and generating persuasive arguments. But numbers also present challenges, potential problems so big that wise mediators and negotiators will think carefully about how to make the most of numbers' promise without falling prey to their perils.



## The Promise of Numbers

Numbers can be illuminating and compelling. Negotiators (and mediators) invariably make predictions about the likelihood of future outcomes, outcomes such as a court's ruling on a motion, winning or losing in court, consummation of a deal, and so on. These likelihoods are commonly expressed numerically in terms of probabilities. Potential outcomes, such as a damage award, the value of a deal, or the value of stock options, are also often quantified. And the expected value of a particular outcome is formulated as a mathematical function of its likelihood and magnitude.

Transaction costs such as lawyers' fees, the dollar value of delays, or the costs associated with going to mediation are often put in numerical terms. Negotiations, deals, or settlements that unfold over time often involve numbers associated with time, including the time value of money, inflation, interest rates, and risk assessments. The substance of the negotiation will determine the relevance of particular numbers. Medical cases, for example, might involve quantitative information about prognosis, chances of recovery, efficacy of treatment, likelihood of side effects, and more; employment cases may turn on statistical analysis of discrimination; and numbers about market share might be central to a case involving antitrust.

Persuasion and problem-solving may involve numerical arguments. Negotiators may seek (and mediators may recommend looking to) objective quantitative information. They might consider an appraisal; some set of comparables (other products, verdicts in similar cases, the salary offered to another job candidate); safety or environmental standards; engineering specifications; or data about replacement

costs, “blue-book” values, market price, or depreciation. How many neutrals, after helping parties negotiate away most of their differences and edge close to agreement, have urged the parties to step back, look at the small numbers gap that divides them, and “split the difference?”<sup>1</sup>

All of these numbers can be useful decision-making tools. Getting hard data about a matter in dispute may reduce ambiguity and, potentially, the bargaining range. Focusing on numerical information may help negotiators resist common biases in judgment, such as overreliance on a general impression of how well an example fits a particular category — its *representativeness* — or on anecdotes that may or may not be characteristic of a broader pattern.<sup>2</sup> Numbers can create focal points, salient reference points that can facilitate settlement.<sup>3</sup> Numbers might be used to “calibrate” the information that is being provided to the negotiator. For example, to calibrate the information that different real estate agents are giving you about the value of your home, you might ask them to provide information about the original listing prices and final selling prices of the last 10 houses they sold.<sup>4</sup>

## The Perils of Numbers

Dealing with numbers can be difficult for many negotiators and mediators. As psychologist Ellen Peters has pointed out, “numbers can be difficult to evaluate because they are abstract symbols, and context changes their good/bad meaning ....” She notes the wildly varied interpretations we can give one number in three different instances: 9 degrees Fahrenheit, \$9 billion, and a 9% chance of a tsunami.<sup>5</sup> Working with numbers (such as dollar amounts) that fall on an unbounded scale can be especially difficult.

Even choosing which numbers to entertain can be fraught. The *confirmation bias* is a tendency to look for, pay attention to, and more readily accept information (including numbers) that confirms an existing belief or preference while disregarding information that is less congenial.<sup>6</sup> And when the information is amenable to differing interpretations, it is likely to be interpreted differently by different parties to the negotiation in ways that are conducive to their respective positions and in ways that can even cause greater disagreement.<sup>7</sup>

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In addition, many numbers in negotiation do not come out of thin air. Someone has made a decision about how to measure a particular concept, how to collect the data, what comparisons to make or highlight, and how to present the data.<sup>8</sup> Describing, for example, the “average” house price in a particular neighborhood using a *mean* (what many people think of as an “average”) or a *median* (the middle value) might convey different information. Imagine a neighborhood with a large number of relatively modest houses but a few disproportionately expensive ones. Those expensive houses will result in a higher mean, as compared to the more typical, lower, median home value. It can be difficult to sort out where particular numbers come from, their validity and reliability, and what other potentially important numbers are not part of the conversation.

One of the most discussed ways in which numbers can distort decision-making is how our numerical judgments can be influenced, or *anchored*, by other numbers that are at the front of our minds. Available numbers can provide benchmarks for our estimates even when they are irrelevant to the judgment or estimation task at hand. In one classic study, for example, people’s estimates of the number of African countries in the United Nations were influenced by a number generated by spinning a wheel of fortune.<sup>9</sup> In negotiation, judgments can be influenced by initial offers or demands, negotiator aspirations or reservation prices, information (accurate or not) about other cases, and constraints such as insurance policy limits or statutory damage caps.<sup>10</sup>

Another commonly described distortion is the effect of *framing* a choice as a loss or a gain. Specifically, people tend to be risk-averse toward moderate- to high-probability gains but risk-seeking toward moderate- to high-probability losses. Thus the same numerical information, presented differently, can

result in strikingly different decisions.<sup>11</sup> Imagine the following situations:

- You are a plaintiff in a lawsuit. You have been offered \$48,000 to settle. You (or your attorney) estimate that at trial you have a 50% chance of winning \$100,000 and a 50% chance of receiving nothing.
- You are a defendant in a lawsuit. You can settle the case for \$48,000. You (or your lawyer) estimate that at trial you have a 50% chance of losing and paying \$100,000 and a 50% chance of winning and paying nothing.

In each case, would you choose to settle or go to trial? Most people would accept the settlement in the first case (choosing the certain gain of \$48,000 rather than gambling on a gain of \$100,000). In contrast, most people would opt to go trial in the second example (choosing to risk paying \$100,000 rather than the definite loss of \$48,000).<sup>12</sup>

A variety of additional phenomena can also make working with numbers challenging. For example, as Gary Belsky and Thomas Gilovich point out in *Why Smart People Make Big Money Mistakes — and How to Correct Them*, we have a tendency to “categorize and treat money differently depending on where it comes from, where it is kept, or how it is spent,” a quirk of *mental accounting* that means that different dollars are treated as having different values. Thus we tend to think of and spend differently a \$100 gift, a \$100 tax refund, \$100 in salary, or \$100 in “house money” at a casino.<sup>13</sup>

People also have difficulty understanding the effects of inflation and compounding interest. The *money illusion* involves confusing dollars with buying power. In addition, *bigness bias* inclines us to focus our attention on big numbers to the neglect of smaller ones, even though small losses or gains can become substantial when they add up over time. To see the problem, consider two identical investors who contribute \$50 a month to a mutual fund that earns 10% per year. The first began contributing at age 21 and contributed for 8 years, investing \$4,800; the other started contributing at age 29 and continued for 37 years, investing \$22,200. Which investor would you expect to have more money in the investment account at age 65? One might be tempted to think

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that the investor who contributed \$22,200 (and now has \$217,830) would have more money in the account at age 65 than the other investor would at the same age. But it turns out that the first investor, whose total contributions were much smaller but had more time to grow, will have accumulated more money (\$256,650) than the investor who contributed more but whose contributions had less time to grow.<sup>14</sup>

The precision of a number also has an effect on how it is perceived and used. For example, there is a tendency to perceive round numbers as being bigger than precise numbers of approximately the same magnitude.<sup>15</sup> In addition, researchers have found that more precise first offers tend to be perceived as better reasoned and act as more “potent” anchors than do round numbers of similar size.<sup>16</sup> And there is a tendency to be more influenced by the left-hand digits in a number than by the numbers on the right side, a finding that helps explain why \$.99 pricing is so common.<sup>17</sup>

## Numeracy

All of this is complicated by the fact that people, even highly educated people, differ in their level of understanding of and comfort with numbers, a construct known as *numeracy*.<sup>18</sup> Highly numerate people understand and tend to use numbers and numerical concepts (such as number lines, measurement, time, mathematical calculations, size comparison, and ratios such as fractions or percentages) to facilitate

decision-making. Those higher in numeracy may get a richer “gist” from numerical information than those lower in numeracy, and they are more inclined to seek out numerical information, tend to think more critically about numbers and their validity, and are likely to draw more accurate affective meaning from numerical data.<sup>19</sup>

In contrast, those who are less numerate experience less comfort with numbers, are more trusting of information that is presented in a verbal or narrative format than they are of information that is presented via numbers, and are more likely to be influenced by non-numerical information such as mood or emotion. Low numeracy can make people more vulnerable to psychological heuristics and is, not surprisingly then, associated with various biases in how risks and benefits are perceived.<sup>20</sup>

Thus people with differing degrees of numeracy may prefer and pay attention to different kinds of information and use or interpret the same numerical information differently. In addition, there is evidence that people who are lower in numeracy are less likely

than those high in numeracy to desire more shared decision-making, exhibiting more comfort with a more passive role instead.<sup>21</sup>

### Dealing with Numbers

Given the benefits and perils of numbers, the challenge for negotiators and mediators is to make good use of numbers without falling prey to their pitfalls. To this end, negotiators and mediators would be well served to have basic training in how to work with numbers, paying particular attention to where numbers come from: How were concepts defined? How were the numbers generated? Are there alternative numbers that might also be useful?<sup>22</sup>

Broadening the range of information on which to focus can help blunt the distorting influence of particular anchor points or frames. For example, experimental data suggests that focusing on other numbers — such as the negotiator’s own goals, the counterpart’s reservation price, or the counterpart’s alternatives — can moderate the anchoring effect of a first offer.<sup>23</sup> Similarly, negotiators can consider



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numerical information in different frames or with different degrees of precision.

Mediators or other advisors can also help ensure that useful numbers are considered by negotiators and take steps to help to make numbers manageable for negotiators, recognizing that individuals will come to the numbers with differing levels of numeracy. Drawing focus to the most important data, ordering or framing the data in useful ways, suggesting useful comparisons, tailoring complexity to level of numeracy, and combining numbers with descriptive labels may reduce the cognitive demands of numerical information, aid comprehension, and facilitate the effective use of numbers. Asking questions about the sources, validity, and reliability of numbers, as well as the degree of uncertainty associated with them, can help negotiators realistically assess them. Augmenting numerical information with appropriate visual representations of the data, including graphs or tables, can also be helpful, but it is important to pay attention to the ways different presentations can influence understanding.<sup>24</sup>

Because numbers can facilitate agreement by providing objective parameters for deals, helping negotiators resist certain kinds of judgment errors, and providing focal points for discussion, negotiators and neutrals would do well to think about the ways in which numerical information can be introduced into negotiations and mediation sessions. But negotiators and mediators must also take steps to make sure that they deal with numerical information appropriately, using it in ways that enhance decision-making rather than allowing it to derail the negotiation, feed into judgment biases, or be misused in other ways.

Understanding what numbers might be useful in a negotiation, where those numbers come from, and how to present numbers in effective ways is crucial for any effective negotiator or mediator. ■

## Endnotes

1 See David M. Messick, *Equality as a Decision Heuristic*, in *PSYCHOLOGICAL PERSPECTIVES ON JUSTICE: THEORY AND APPLICATIONS* 11 (Barbara A. Mellers & Jonathan Baron eds., 1993) (explaining the perils of “splitting the difference”).

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3 THOMAS C. SCHELLING, *THE STRATEGY OF CONFLICT* (1960).

4 DEEPAK MALHOTRA & MAX H. BAZERMAN, *NEGOTIATION GENIUS: HOW TO OVERCOME OBSTACLES AND ACHIEVE BRILLIANT RESULTS AT THE BARGAINING TABLE AND BEYOND* 151-152 (2007).

5 Ellen Peters, *Beyond Comprehension: The Role of Numeracy in Judgments and Decisions*, 21 *CURR. DIR. PSYCHOL. SCI.* 31, 31 (2012).

6 Raymond S. Nickerson, *Confirmation Bias: A Ubiquitous Phenomenon in Many Guises*, 2 *REV. GEN. PSYCHOL.* 175 (1998).

7 George Loewenstein & Don A. Moore, *When Ignorance is Bliss: Information Exchange and Inefficiency in Bargaining*, 33 *J. LEGAL STUD.* 37 (2004).

8 See generally JOEL BEST, *DAMNED LIES AND STATISTICS: UNTANGLING NUMBERS FROM THE MEDIA, POLITICIANS, AND ACTIVISTS* (2001).

9 Amos Tversky & Daniel Kahneman, *Judgment Under Uncertainty: Heuristics and Biases*, in *JUDGMENT UNDER UNCERTAINTY: HEURISTICS AND BIASES* 3 (Daniel Kahneman et al. eds., 1982).

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11 Amos Tversky & Daniel Kahneman, *The Framing of Decisions and the Psychology of Choice*, 211 *SCIENCE* 453, 453 (1981).

12 JENNIFER K. ROBBENOLT & JEAN R. STERNLIGHT, *PSYCHOLOGY FOR LAWYERS: UNDERSTANDING THE HUMAN FACTORS IN NEGOTIATION, LITIGATION, AND DECISION MAKING* 88-89 (2012).

13 GARY BELSKY & THOMAS GILOVICH, *WHY SMART PEOPLE MAKE BIG MONEY MISTAKES AND HOW TO CORRECT THEM: LESSONS FROM THE*

LIFE-CHANGING SCIENCE OF BEHAVIORAL ECONOMICS 33-34 (1999).

14 *Id.* at 107-111, 121-123.

15 Manoj Thomas et al., *The Price Precision Effect: Evidence from Laboratory and Market Data*, 29 *MARKETING SCI.* 175 (2010).

16 Chris Janiszewski & Dan Uy, *Precision of the Anchor Influences the Amount of Adjustment*, 19 *PSYCHOL. SCI.* 127 (2008); see Malia F. Mason et al., *Precise Offers Are Potent Anchors: Conciliatory Counteroffers and Attributions of Knowledge in Negotiations*, 49 *J. EXPERIMENTAL SOC. PSYCHOL.* 759 (2013).

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18 Isaac M. Lipkus & Ellen Peters, *Understanding the Role of Numeracy in Health: Proposed Theoretical Framework and Practical Insights*, 36 *HEALTH EDUC. & BEHAV.* 1065 (2009); Peters, *supra* note 5, at 31. Numeracy has been studied primarily in the context of medical and financial decision-making. For one discussion of numeracy and legal decision-making, see Arden Rowell & Jessica Bregant, *Numeracy and Legal Decision Making*, 46 *ARIZ. ST. L.J.* 191 (2014).

19 Lipkus & Peters, *supra* note 18; Ellen Peters et al., *Numeracy & Decision Making*, 17 *PSYCHOL. SCI.* 407 (2006); Valerie F. Reyna & Charles J. Brainerd, *Numeracy, Ratio Bias, and Denominator Neglect in Judgments of Risk and Probability*, 18 *LEARNING & INDIV. DIFF.* 89 (2008).

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21 Mirta Galesic & Rocio Garcia-Retamero, *Do Low Numeracy People Avoid Shared Decision Making?* 30 *HEALTH PSYCHOL.* 336 (2011).

22 For accessible materials on understanding numbers see, e.g., JEFFREY KATZER et al., *EVALUATING INFORMATION: A GUIDE FOR USERS OF SOCIAL SCIENCE RESEARCH* (1998); ROBERT M. LAWLESS et al., *EMPIRICAL METHODS IN LAW* (2010).

23 Galinsky & Mussweiler, *supra* note 10.

24 Lipkus & Peters, *supra* note 18; Peters, *supra* note 5.



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