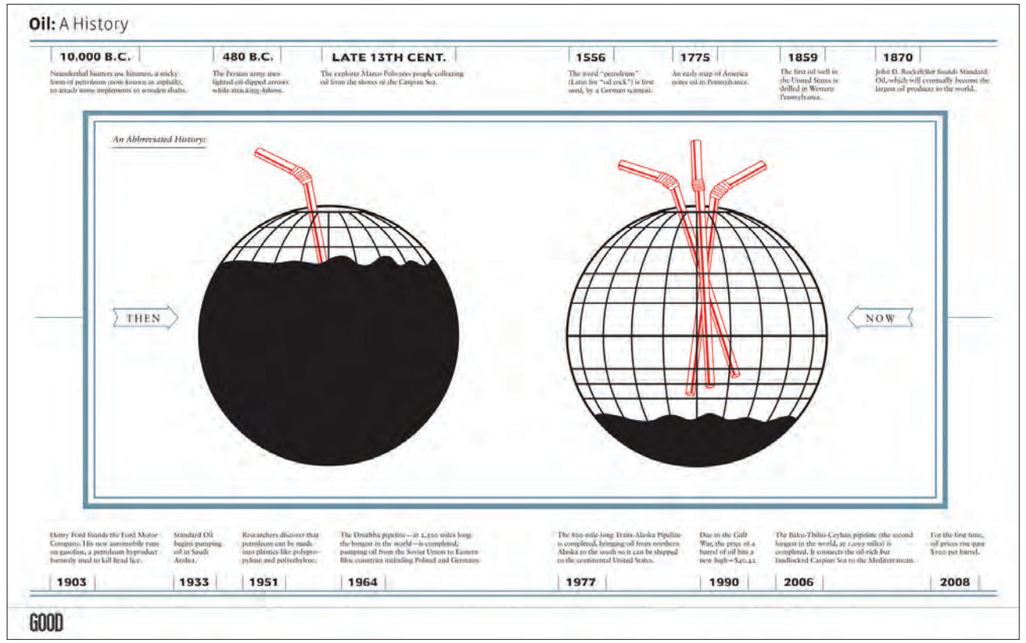
BY JESS SAND



DISCIPLINES

INFORMATION OVERLOAD

Once relegated to academic textbooks and snooze-inducing PowerPoint slides, information graphics are suddenly everywhere. Here's what you need to know to create effective infographics in an information-saturated world.

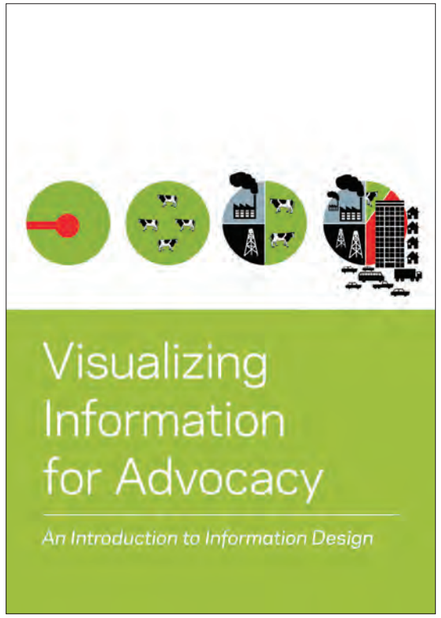
Interactive polling graphs are de facto on the nightly news. Starbucks customers are greeted with poster-sized charts explaining the health care system over their morning lattes. Everyone, it seems, is producing infographics to explain the world around us.

But there's a lurking danger behind the growing dependence on information design to interpret this overflow of data. In fact, the very thing that makes the infographic such an attractive medium for deriving meaning—its exactitude, its ability to represent large data sets, its inherent purposes of elucidation and clarification—can quickly turn into manipulation, depending on who's producing it. This is particularly true now that the lines between education, editorial and entertainment have become blurred. Luckily, designers have a suite of powerful tools at their disposal to combat this.

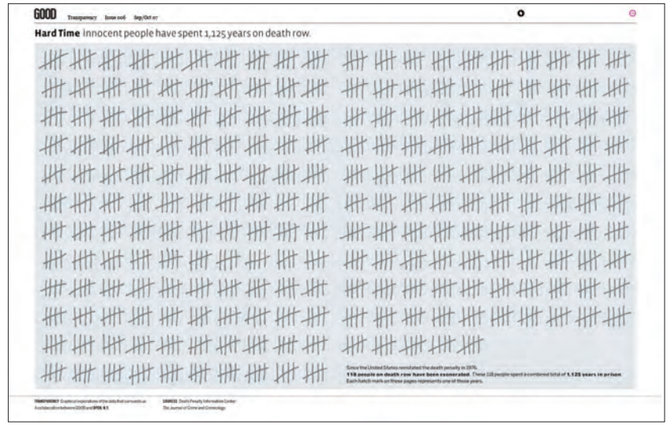
UNDERSTANDING OUR WORLD

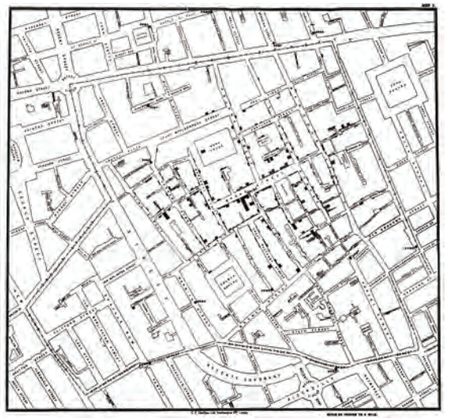
Not surprisingly, the infographic's rise in popularity follows fast on the heels of an information glut. Advanced technology, including computers, has allowed humans to immediately capture, store and analyze huge amounts of information. According to a recent Pew/Internet poll, approximately 73% of American adults now rely on the internet to access this

GRAPHIC COURTESY OF GOOD MAGAZINE



VISUALIZING INFORMATION FOR ADVOCACY
This 43-page primer by John Emerson and Tactical Tech teaches information design basics to nonprofits and advocacy organizations. Available at Tacticaltech.org/infodesign.





MAPPING CHOLERA
John Snow's data map helped identify the source of an 1854 cholera outbreak in London.

ESCAPING EXECUTION
Since the U.S. reinstated the death penalty in 1976, 118 prisoners have been exonerated. This striking illustrative graphic by GOOD Magazine and Open, N.Y. depicts each year spent on death row by these freed prisoners.

information, which is an all-time high. We're so inundated by data, in fact, that we desperately need a filter for the noise. Infographics allow us to quickly make sense of the political, societal and global complexities that bombard us on a daily basis.

John Emerson, a New York City-based designer and author of the booklet "Visualizing Information for Advocacy," points out that "designers are sometimes curators of—or crafting algorithms to curate—the stories in the data." These stories form our worldview, one based on our right to access information. But this access depends on accurate data; our understanding of the world is only as reliable as the information we get.

So the graphic designer becomes a filter of this data, arranging it in a visual form to be used by real people to understand their world in meaningful ways. Traditionally, we've turned to information from editorial publications, advocacy groups, and institutions like schools and government for such data. But when the corporate coffee shop provides education about immigration and the economy, it's time to recognize that the graphic designer plays a critical role in information analysis. "The point of analytic design," said information design guru Edward Tufte in a 2004 interview, "is to assist thinking." Given what's at stake, it's up to graphic designers to assure their visual analysis is both honest and accurate.

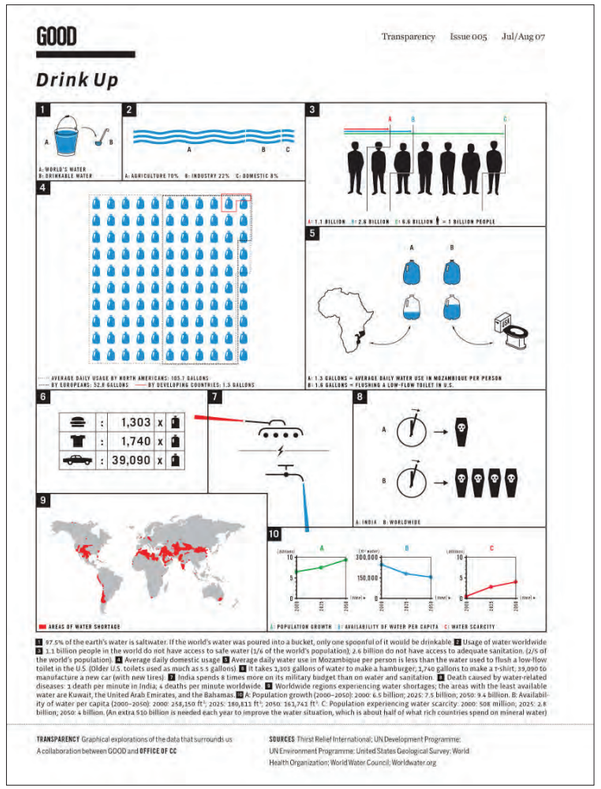
SAVING LIVES

In 2007 there were an estimated 281 billion gigabytes of data on the internet alone. By itself, each individual bit of data amounts to nothing more than a single grain of sand. It's what we do with this data that matters. Infographics gave meaning to our world long before computers, of course. Students of Tufte may recall his description of a particular evening in 1854, when a deadly cholera epidemic swept through London's SoHo neighborhood, killing several residents.

Within three days, almost 200 people were dead. Within 10 days, more than 500. Little was known about the cause of the outbreak; medical theory at the time assumed that cholera was an airborne illness. But Dr. John Snow had a hunch that cholera was transmitted by contaminated water rather than air. As the epidemic spread unchecked, Snow paid a visit to the city's General Register Office, where he gathered the locations of the cholera deaths, then sketched out each and every death over a map of London. When he was done, a dramatic pattern had emerged.

On Snow's map, at the corner of Broad Street and Cambridge Street—surrounded by dozens of darkened rectangles, each depicting an individual death—was

INDIVIDUALS AND CONFLICT
This interactive timeline by John Emerson tracks the impact of the Israeli-Palestinian conflict on individual lives.



A DROP IN THE BUCKET
GOOD Magazine and the Office of CC used a variety of visual tools to tell the story of water consumption throughout the world. Office of CC is an Amsterdam-based design company made up of Chris Vermaas and Chin Lien-Chen.

a water pump. The concentration of deaths around this particular pump revealed it as the source of the outbreak. His map was clear enough to convince the town to remove the pump's handle, and within days the number of cholera deaths dropped dramatically. Snow's graphic representation of the outbreak gave public leaders a new way to understand the information. Without the map, there would have been little evidence of the true cause of the disease, and thousands more would likely have died. Data, Snow demonstrated, is meaningless without form.

So how does a designer know what form to give his graphic? Snow began with good data, a practice recommended to this day by seasoned information designers like Steve Duenes, graphics director for The New York Times. "The graphic's mission is determined by the data in the same way that a story is written based on information the reporter has gathered," Duenes says. "If you don't find interesting or complete information, no amount of design virtuosity will make up for that." Good data comes from reliable sources, is up to date, uses consistent units of measurement and is, above all, complete.

THE SHAPE OF A DATA-DRIVEN STORY

Duenes' advice to let the nature of the information lead the design is echoed among his colleagues. Charles Blow, who once held Duenes' position at The Times and is now the paper's visual op-ed columnist, says he won't start designing an infographic until he sees the data. "When I see the data, I can see immediately how it should work," he says.

The information designer must therefore have a large repertoire of graphic formats from which to draw. Blow encourages information designers to constantly add to that repertoire. "You have to build a library of forms in your head, hundreds and hundreds of graphical forms, and when you study those forms, think about what data went into them and how wide the range of the data is," he says. This way the designer can easily recognize the story the data is telling him, rather than forcing his own interpretation onto it and potentially obscuring its true meaning.

HIDDEN DANGERS

Like all graphic design, information graphics derive their meaning from an arrangement of visual cues. In "Visual Explanations," Tufte suggests that "clarity and excellence in thinking is very much like clarity and excellence in the display of data. When the principles of design replicate the principles of thought, the act of arranging information becomes an act of insight."

In information design, less is almost always more—more communicative, more meaningful, more powerful. Tufte points out that less (and, therefore, more) can be achieved using multi-functional elements. Force a single dot, line or word to communicate more than one meaning, and the viewer spends less time interpreting and more time understanding. Or, as Blow puts it, "Start with the least amount of strokes."

Even Blow, whose op-ed role at The Times behooves him "to not be objective," is careful to avoid factual distortion or misrepresentation. "It's very easy to twist statistics and make the charts say whatever you want them to say," he says. "That impacts the credibility of the text, and the column as a whole. It impacts my credibility, it impacts the credibility of the newspaper." This twisting of statistics occurs most often in relation to a graphic's scale, or when making adjustments for considerations like inflation. "You can adjust data to death," he warns, so do so with care.

When faced with such decisions, it can be helpful to return to the graphic's guiding story to determine the design approach. In addition to the sheer quantity of information, you must thoughtfully consider issues of scale, contrast and typography to produce an effective and responsible data graphic (see "7 Practical Tips" for details). When the designer forgets to apply this kind of methodical thinking to a graphic, it leads to what Blow calls acts of beautiful confusion—heavily designed graphics that focus more on aesthetics than meaning. "They look amazing to me, but I have no idea how to read them," he says.

DESIGNING FOR IMPACT

Beautiful confusion may be an inevitable side effect now that information design's popularity has caught up to the technology available to create it. But there's another trend that relies on simplicity and elegance, rather than bells and whistles, to further meaning and engage the audience. The most obvious example of this might be GOOD Magazine, with its regular Transparency section devoted to "a graphical exploration of the data that surrounds us." Casey Caplowe, GOOD's creative director, says that when you take the time and energy to synthesize complex information, you can learn amazing things.

Caplowe readily admits that the magazine takes an "artistic, sometimes risky or experimental approach to it. And sometimes we succeed and sometimes we fail." But, he adds, "This is not just about how you simplify things, it's about how you communicate effectively." This is born out by the fact that the Transparency section is the most well-known, and commented on, section of the magazine.

This kind of engagement, of course, is often what leads to action. This was the goal of Tactical Tech, a non-governmental organization working to empower human rights activists through technology, when they called on John Emerson to produce "Visualizing Information for Advocacy," a 43-page primer written for nonprofits and social advocates.

Executive director Stephanie Hankey says, "So much hard-earned, evidence-based campaigning work goes to waste when it's dulled by poorly designed charts and graphs, and buried at the back of obscure reports." "Visualizing Information for Advocacy" teaches social advocates how to design infographics that effectively communicate the human impact of the data being illustrated. The booklet aptly demonstrates how sound design principals help an infographic resonate with the viewer.

In today's world of unending information and cross-over media, these principles of responsible representation hold true for any infographic. But as with Snow's cholera map, the results can sometimes mean life over death. When citizens literally put their lives at risk to collect data about human trafficking, for example, the chart that ultimately displays that data takes on new significance to readers, who might then be more inclined to donate money, volunteer, change their worldview or simply bear witness themselves. HOW

Writer and designer Jess Sand is the founder of San Francisco-based Roughstock Studios. www.roughstockstudios.com

CHARLES BLOW NEW YORK CITY www.nytimes.com
CASEY CAPLOWE LOS ANGELES www.good.is
STEVE DUENES NEW YORK CITY www.nytimes.com
JOHN EMERSON NEW YORK CITY www.backspace.com
STEPHANIE HANKEY BRIGHTON, UK www.tacticaltech.org
NATHAN YAU LOS ANGELES www.flowingdata.com

7 PRACTICAL TIPS

What makes a responsible infographic? Here are seven ideas.

1. **Collect good data, then get to know it.** You don't have to be a math whiz to build effective data graphics, but you do need to have a grasp on the information you're handling.

2. **Find the appropriate form.** "Infographics should tell a story, but the designer has to let the data tell it," says Nathan Yau, author of the information design blog Flowing Data (www.flowingdata.com).

3. **Consider every detail.** Avoid beautiful confusion, or what info design guru Edward Tufte calls chartjunk, by removing superfluous visual elements. In his book "The Visual Display of Graphic Information" Tufte writes, "The same ink should often serve more than one graphical purpose."

4. **Make the text earn its keep.** Legendary typographer-poet Robert Bringhurst reminds us that "typography exists to honor content." So choose your labels carefully, place them for maximum effect and make them pull double-duty.

5. **Use color wisely.** Color adds an entire additional layer of meaning, which means it isn't always necessary.

6. **Get interactive.** Online graphics allow users to delve into a dataset in ways that print won't. "Instead of just analyzing and distilling large amounts of information," says Steve Duenes, graphics director of The New York Times, "we can offer all of the data to readers, so if there is something specific they are looking for, they can find it."

7. **Test and test again.** The real mark of a successful infographic is if the reader can understand it. Designer John Emerson advises designers to "verify it with experts, show it to a sample audience. Revise accordingly. Evaluate and iterate."