

## APPLIED THEORY

### SUMMARY

- ◆ **Expands the definition of visual ethics by alleging that displays of injuries and fatalities are pitiless depictions of statistics**
- ◆ **Promotes the view that technical communicators should adopt a humanistic ethic of visual communication**

# Cruel Pies: The Inhumanity of Technical Illustrations

**SAM DRAGGA AND DAN VOSS**

Illustrations such as pie graphs, line graphs, bar graphs, diagrams, drawings, and photographs occur widely in technical publications. Virtually every teacher and textbook advises writers to incorporate such illustrations whenever possible. A rapid rise in the international distribution of information also encourages technical communicators to substitute pictures for words or at least to reinforce words with pictures. And more and more every day, technological innovations make doing so both quicker and easier.

The discussion of ethics in technical illustrations, however, focuses chiefly on issues of deception or distortion (that is, telling lies). This focus on graphic lies creates a limited understanding of the ethics of visual display. As a result, in certain rhetorical situations—especially in the reporting of human fatalities—conventional illustrations offer inhumanity as though it were objectivity.

This article will therefore address the following:

- ◆ Review the existing research to define the prevalent treatment of the ethics of visual communication in the field and determine where it may be lacking
- ◆ Explain the implications of introducing a broader, more humanistic view of ethical illustrations
- ◆ Demonstrate the need for this humanistic view by looking at a sampling of conventional graphic images
- ◆ Explore possible techniques for humanistic illustration

### A LIMITED DEFINITION OF THE ETHICS OF VISUAL COMMUNICATION

In the existing research on the ethics of visual communication, the definition of ethics is almost always linked to distortion and deception. For example, in "Ethics and

graphic design," TyAnna K. Herrington (1995), explains that "readers bring less sophistication, and thus less skepticism, to the comprehension of graphic representation" (p. 153), and are therefore especially susceptible to visual displays that mislead and manipulate readers by disguising "the whole truth" (p. 156).

Similarly, in "Ethics and visual rhetorics: Seeing's not believing anymore," Nancy Allen (1996) discusses the "visual trickery" available to technical communicators, citing such techniques as the suppression of the zero point in line graphs and the use of disproportional pictographs (pp. 90–92). Sam Dragga's (1996) U.S. survey on the ethics of information design offers seven brief scenarios for subjects to judge; however, each scenario focuses exclusively on issues of deception.

In *The visual display of quantitative information*, Edward R. Tufte (1983) declares "graphical excellence requires telling the truth" (p. 53). He offers a formula for calculating the "lie factor" (p. 57) and denounces "lying graphics" (p. 77). The remaining characteristics of graphical excellence, however, hinge exclusively on efficiency of communication. In both *Envisioning information* (1990) and *Visual explanations* (1997), Tufte further defines the ethics of visual communication, but the treatment is still limited to issues of accuracy and validity.

In *Elements of graph design*, Stephen M. Kosslyn (1994) addresses visual ethics by explaining and exemplifying 25 ways to avoid graphic distortions and deceptions (pp. 207–235).

In *Designer's guide to creating charts and diagrams*, Nigel Holmes (1984), a leading practitioner of the picto-

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graph, moves toward a wider definition of visual ethics as he encourages artists to exercise a "sense of decency" (p. 77) by avoiding biased or offensive pictorial images. However, in his detailed discussion and illustrations, Holmes maintains the traditional focus on graphic distortion (pp. 166–177).

Paul Martin Lester's *Visual communication: Images with messages* (1995) also advises communicators to repudiate biased messages (either racist or sexist) in such pictorial illustrations as diagrams and photographs. In discussing the ethics of statistical display, however, he focuses exclusively on graphic distortion or deception.

Textbooks in business and technical communication either limit their discussion of the ethics of visual communication to graphic deception (for example, Anderson 1999; Killingsworth and Palmer 1999; Krizan and others 1999; Lannon 2000; Pfeiffer 2000; Reep 2000; Woolever 1999), or address both graphic deception and biased pictorial images (Allen 1998; Gerson and Gerson 2000; Locker 2000; Markel 2001).

And in their textbook *Ethics in technical communication: Shades of gray*, Lori Allen and Dan Voss (1997) illustrate "lying with graphics . . . photographs . . . [and] multimedia" in their chapter on honesty (pp. 75–78), but their chapters on social responsibility and cultural sensitivity miss the opportunity to address the need to humanize impersonal graphics.

All the works cited, as well as others, have made valuable contributions to the body of knowledge on the ethics of visual communication, but they focus almost exclusively on accuracy and honesty versus misrepresentation and deception. This approach is useful and important, but insufficient. Indeed, we do a genuine disservice to students, clients, colleagues, and the public if we allow this limited definition of the ethics of visual communication to persist in the writing, teaching, and research we do as technical communicators. We need instead to broaden our understanding of this important subject by studying and developing a variety of techniques that will bring humanity to technical illustrations.

A promising start on that broader understanding is Paul Dombrowski's *Ethics in technical communication* (2000). Discussing the extraordinary situation of the Nuremberg racial laws of 1935, Dombrowski specifically addresses the inhumanity of a technical diagram used by the Nazis to classify individuals according to their racial heritage: "The subject being examined for racial determination is categorized in the same way a laboratory animal might be, very neutrally and without regard to feelings such as compassion or common humanity" (p. 109). To communicate ethically, we will need to develop a genuine sensitivity to the human implications of the statistical graphics created and used every day under ordinary circumstances.

## A HUMANISTIC ETHIC OF VISUALS

It has been over 20 years since Carolyn Miller (1979) encouraged us to perceive technical communication as a humanistic field. In all that time, we've essentially allowed the verbal component of communication to carry the entire weight of that humanistic orientation.

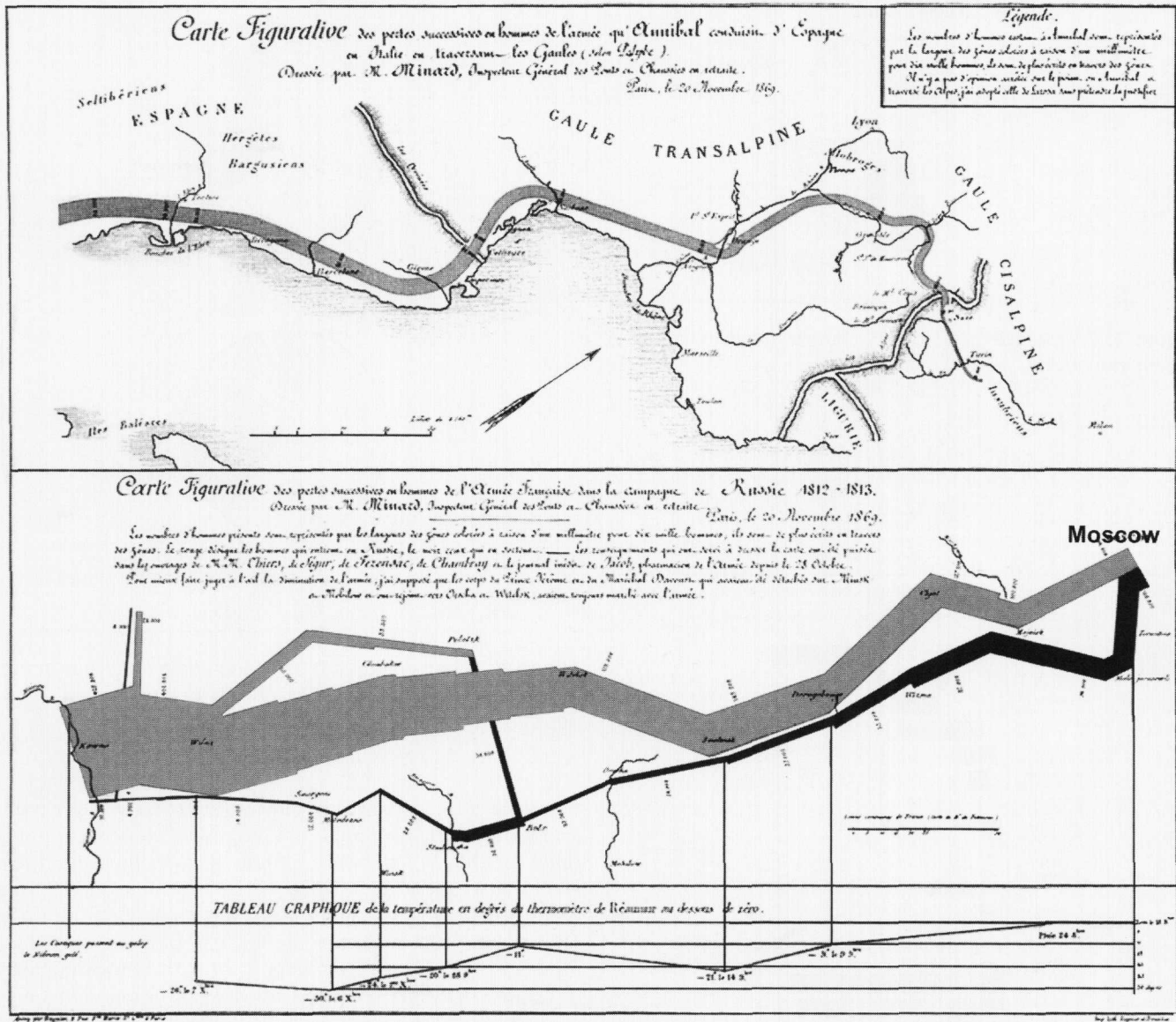
We must recognize the equal obligation of the visual component to support and to promote a humanized and humanizing understanding of technical subjects. In brief, ethical visuals must be as humanistic as ethical words.

Consider, for example, Charles Joseph Minard's diagram of Napoleon's invasion of Russia (Figure 1). According to this diagram, Napoleon starts the military campaign with 422,000 soldiers, reaches Moscow with only 100,000, and leaves Russia with only 10,000. Often praised by designers such as Edward Tufte as the ideal graphic display for its conciseness and efficiency, this illustration is nevertheless a cruel depiction. Nowhere in this visual display is the slightest indication that the subject being illustrated represents the slow dying of 412,000 human beings. It could as easily depict the number of rifles or bullets used in Napoleon's futile effort to conquer Russia. We don't see the *people*, and we don't see their anguish.

By omitting the human misery caused by that military campaign, the illustration could be said to constitute a distortion of the reality that escapes the statistics. The graphic isn't so much deceptive, however, as it is plainly inhumane—insensitive or indifferent to the human condition it depicts. It is a graphic that exhibits the "ethic of expediency" (Katz 1992).

As Ben Barton and Marthalee Barton (1993) have demonstrated with geographical maps, as Beverly Sauer (1994, 1996) has shown with diagrams of mining disasters, and as Kathryn Henderson (1999) has revealed with computer graphics in design engineering, technical illustrations are never objective representations of reality, but socialized constructions of multiple subjective interpretations of available filtered evidence. And as Charles Kostelnick (1998) has explained, the design of a statistical display is influenced or socialized by specific visual conventions, by disciplines such as statistics and engineering, by empirical research on visual perception, by communications research emphasizing simplicity and efficiency, and by the esthetic choices of artists (pp. 474–477).

None of the major socializing influences encourages a humanistic ethic. The earliest practitioners of such graphic displays were trained as scientists, statisticians, and engineers: for example, J. H. Lambert (1728–1777) was a scientist and mathematician; William Playfair (1759–1823), a political economist; Charles Minard (1781–1870), a civil engineer; and Michael Mulhall (1836–1900), a geographer and statistician. The isotypes of the social scientist Otto Neurath (1882–1945) exemplify pictorial design subjected

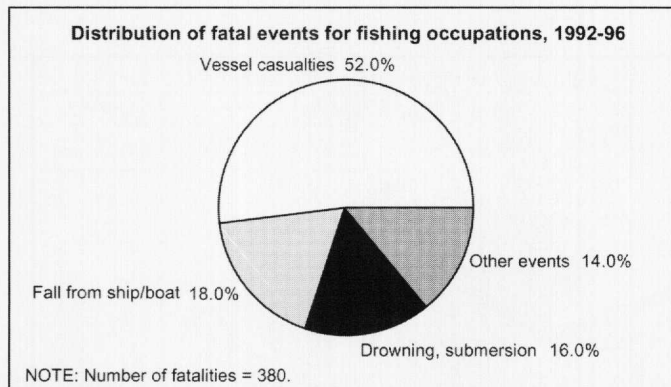


**Figure 1.** Minard's oft-praised diagram of Napoleon's 1812–1813 invasion of Russia dramatically depicts the campaign but starkly understates the human price tag. By permission of the Collection Ecole Nationale des Ponts et Chaussées—France (Fol 10.975/1Si013; Isaye@enpc.fr, <http://www.enpc.fr>).

to both empirical rigor and positivist notions of a universal iconic language. According to Tufte, himself a professor of statistics and political science, "design reasoning must correspond to scientific reasoning" (1997, p. 53). The statistician William S. Cleveland, prizing efficiency and ignoring ethics, espouses "a scientific basis for graphing data" (1994, p. 221). Even the graphic artist Nigel Holmes (1984) never acknowledges that the inclusion of pictorial images within

a visual display is a choice that might be motivated by humanistic or ethical considerations: to Holmes, the objective of a pictograph is simply to make statistical information accessible and engaging to the audience.

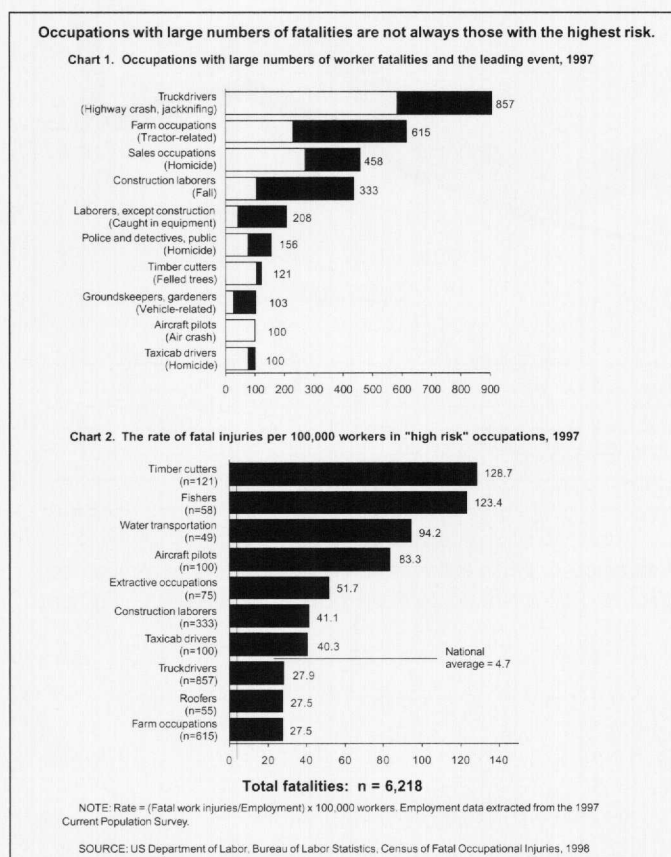
We have thus incorporated within the humanistic field of technical communication a technique of visualizing information without adapting that technique to the humanities, without fully humanizing it.



**Figure 2.** A cruel pie graph depicts human fatalities in the fishing industry.

### A SAMPLING OF CRUEL PIES

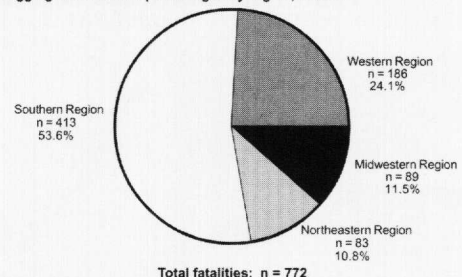
Consider a pie graph from *Issues in labor statistics* (U. S. Department of Labor 1998), depicting the loss of 380 human lives in the fishing industry (Figure 2). While the



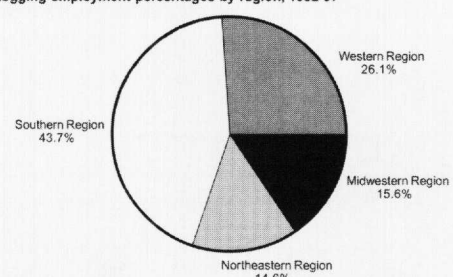
**Figure 3.** A pair of cruel bar graphs coldly displays human fatalities in various industries.

**Fatal occupational injuries occurring in logging and timber cutting occupations by region and employment share.**

**Chart 3. Logging fatalities and percentages by region, 1992-97**



**Chart 4. Logging employment percentages by region, 1992-97**



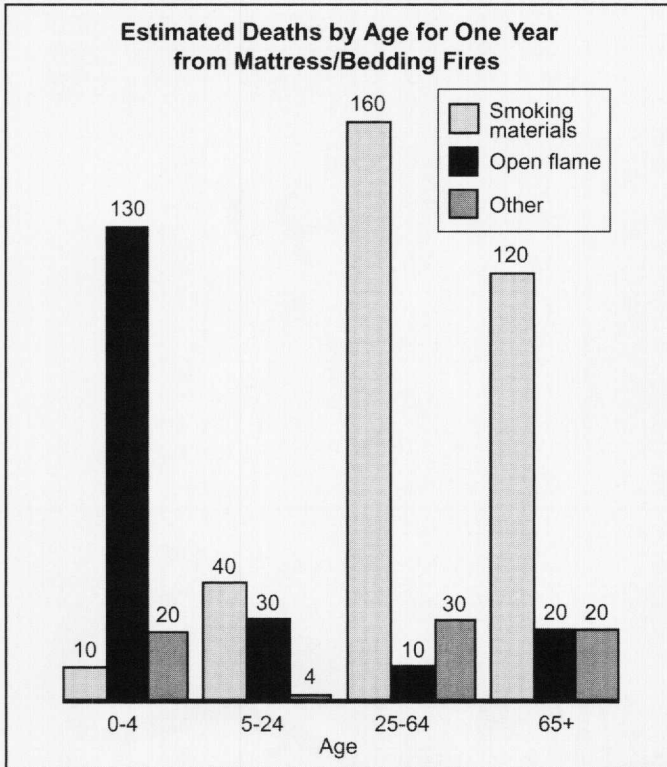
NOTE: Data includes supervisors. Regions are based on the Bureau of Census' regional designations. See technical note for additional information.

SOURCE: US Department of Labor, Bureau of Labor Statistics, Census of Fatal Occupational Injuries, 1998

**Figure 4.** A cruel pie graph depicting human fatalities in the logging industry is designed identically to a pie graph depicting employment in the logging industry.

words accompanying this illustration specify such tragic accidents as "being pulled overboard by a hook caught in one's clothing" or "being caught in winches and other machinery," the visual display conveys none of this horror. Nowhere does it illustrate the drownings, hypothermia, electrocutions, and impalements that plague the fishing industry—the genuine dangers to human beings engaged in this occupation. To depict this loss of human lives with a conventional pie graph shows a considerable insensitivity to the victims and their survivors.

Or consider a pair of bar graphs depicting the number of fatalities per 100,000 workers in various occupations (Figure 3). The visuals come from the article "Logging is perilous work" in a 1998 issue of *Compensation and working conditions* by Eric F. Sygnatur, an economist in the Office of Safety, Health, and Working Conditions of the U. S. Bureau of Labor Statistics. Here the untimely deaths of human beings killed on the job in the most gruesome ways imaginable—mutilated by highway accidents, incinerated in airplane crashes, crushed by falling objects, eviscerated by industrial equipment—are illustrated almost casually according to graphic conventions. Nowhere but in the accompanying words is the anguish of this subject explicit.

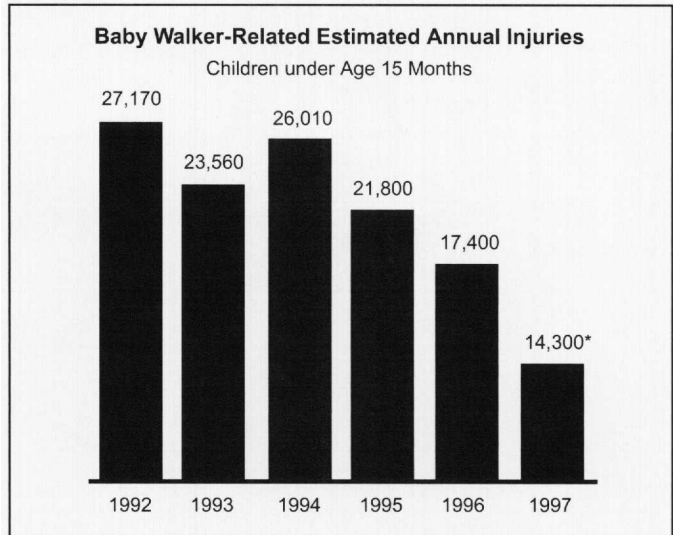


**Figure 5.** A cruel column graph offers an emotionless tally of human fatalities from bedding fires.

The visual display allows this technical information to appear ordinary and virtually unavoidable—facts just like all other facts—nothing special, nothing different.

Later in the same report, two identically designed pie graphs appear on the same page: one depicts human fatalities in the logging industry while the other displays the level of employment in the same industry (Figure 4). In essence, the graphic shows workers killed and workers employed: visually, both phenomena are identical. The alert reader will conclude that the percentage of fatalities in the logging industry, by region, approximately parallels the number of people engaged in each region in that high-risk occupation. Nowhere are the statistics given the humanity of flesh and blood, remaining instead two corresponding slices in a pair of look-alike pie graphs.

Consider also a column graph (Figure 5) from a 1998 issue of *Consumer product safety review* (U. S. Consumer Product Safety Commission 1998a). An emotionless display of the number of people killed in their beds by mattress and bedding fires, this conventional but cruel graphic shows green-visored indifference to the human suffering implicit in the grisly immolations it depicts. About the only difference between it and Figure 4 is that here the bodies



**Figure 6.** A cruel column graph grimly tabulates injuries to babies while leaving the victims themselves invisible.

pile up vertically instead of being buried side-by-side in the pie-sliced segments of a circular graveyard.

Or consider a similar column graph (Figure 6), again from a 1998 issue of *Consumer product safety review* (U. S. Consumer Product Safety Commission 1998b). Here the terror of babies in walkers tumbling down stairs—suffering injuries as serious as skull fractures and concussions in the process—is neutralized by a series of conventional columns that could as easily display the number of baby walkers manufactured in the specified years. Again, nothing here shows the special subject that is on display. The graph offers only a pitiless depiction of human misery.

Again and again in such visual images, people are deprived of their humanity and objectified for purposes of statistical manipulation. Such images are the visual equivalent of referring to human beings as “which” instead of “who”—a minor grammatical error but a potentially serious ethical failure.

### POSSIBLE SOLUTIONS

The implication is not that technical communicators ought to start using grisly photographs of dead, dying, and disfigured human beings. However, we do need to consider ways to humanize the visual display of information, such as using appropriate pictographs or superimposing bar graphs and line graphs on photographs or drawings of pertinent human subjects. In *Visual explanations*, for example, Tufte (1997) offers us his picture of the ideal hospital record (pp. 110–111), including a series of statistical graphs visually displaying a patient's



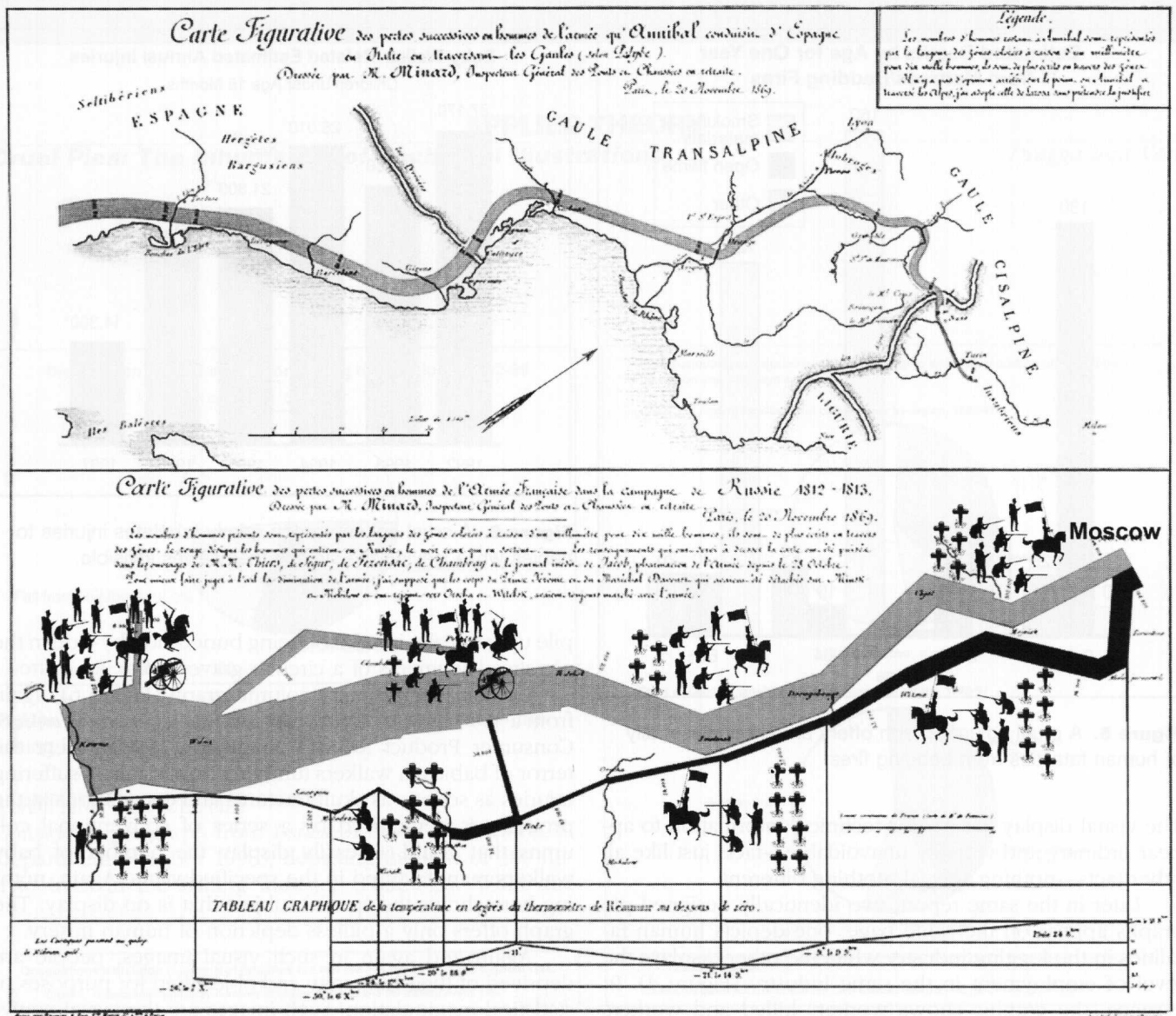


Figure 7. Pictographs could humanize Minard's depiction of Napoleon's casualties.

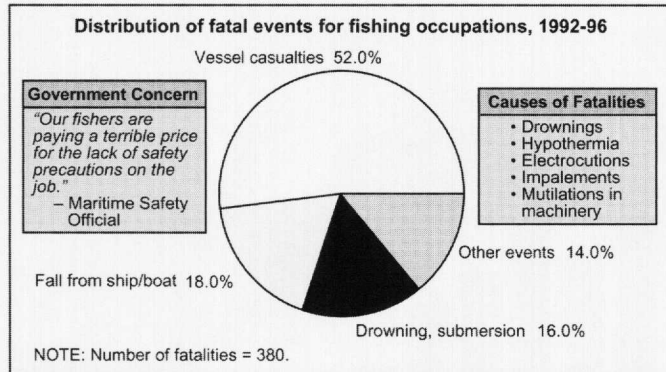
vital information:

... 24 small images depict laboratory readings, medicines, and x-rays. ... A common horizontal time-scale, strongly emphasizing recent events, orders the flow of data. On the vertical scale, all measurements are referenced to normal limits ... ; the most recent reading is shown both numerically and graphically (in red).

As efficient or expedient as this medical record might be, the obvious omission is a photograph of the patient—a

photograph that would emphasize his or her humanity and serve as a visible reminder of the real individual incompletely characterized by impersonal medical statistics. Privacy considerations would prohibit publishing such photos to personalize medical articles (unless the patient signed a release authorizing such use), but including photos with internal medical records would at least emphasize the human dimension for healthcare professionals, who almost of necessity are often inured to suffering.

We might also strive to achieve a "hybrid literacy" (Stroupe 2000, p. 609) or "semantic fusion" (Horn 1998, p.

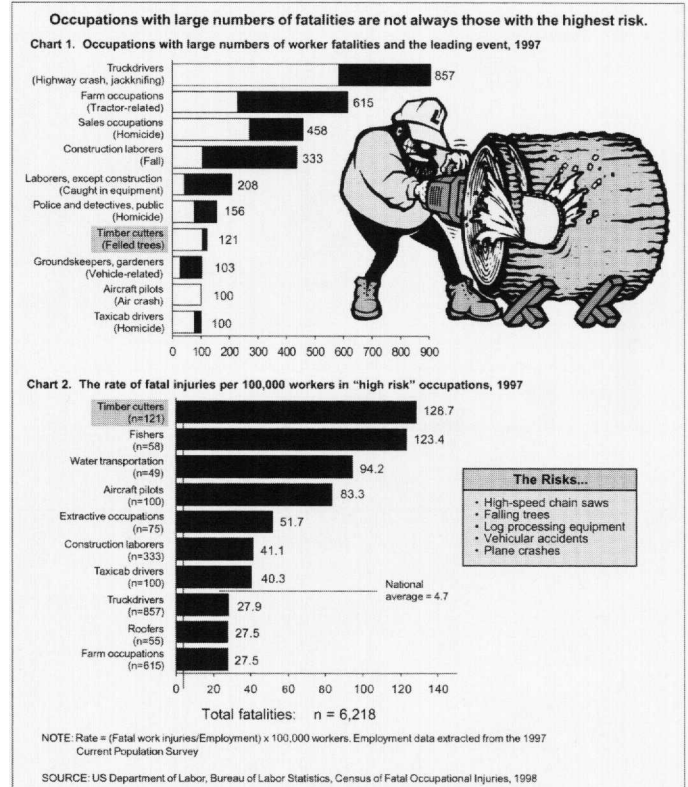


**Figure 8.** Semantic fusion uses words to show the human suffering implied by the chilling statistics on fatalities in the fishing industry.

97) of verbal and visual components, genuinely integrating words and pictures instead of simply juxtaposing the two on the page or screen. The cruel illustrations we have discussed, for example, are physically and psychologically separated from the pertinent words that detail the human condition of their subject. We must read the paragraphs and view the figures (or vice versa) as consecutive actions, and consciously link the two messages. If technical communicators did this linking for their audiences—integrating verbal and visual information within a single display that is “mutually illuminative” (Stroupe 2000, p. 622)—a truly ethical communication might occur. A cruel graphic could thus be mitigated by a conspicuous fusion with humanizing words.

To illustrate how ethically conscious technical communicators could introduce the human element into the visual equation, consider potential approaches that could improve the cruel graphics discussed earlier. Figure 7 suggests an iconic solution to the illustration depicting the attrition of Napoleon's forces during his ill-fated invasion of Russia: the addition of pictograph soldiers that change into small burial crosses in proportion to the shrinking army and its mounting casualties. True, the pictographs are *statistically* redundant with the diminishing width of the line—but they are not *emotionally* redundant. In fact, they add the vital element that was missing—the human beings who constitute the fatality figures.

Semantic fusion offers an effective means of humanizing the graphic depicting fatalities in the fishing industry without resorting to gruesome photographs or drawings (Figure 8). By listing the most prevalent causes of fatalities in the box on the right and highlighting a quote by an industry representative expressing concern about the problem in a facing box on the left, the illustrator flanks the stark pie graph with elements that exhibit sensitivity and compassion.

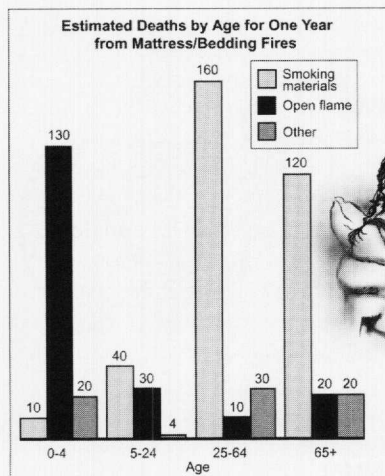


**Figure 9.** The drawing shows the lumberjack; the words tell what can happen; the graphs tell how often it has happened.

In the similarly impersonal figures on the fatalities in the logging industry, a bar chart could be given a human face by adding a picture of a lumberjack at work (mercifully leaving the mutilating accidents to the reader's imagination), plus a list of the leading risks that cause the fatalities (Figure 9). As for the pie graph on that subject (Figure 4), given that its sole mission is apparently to tell us that where there are more trees, there will be more lumberjacks, and where there are more lumberjacks, more lumberjacks will die in accidents, probably the best solution is to add the graphic itself to the fatality list.

To add a human dimension to the graphic on casualties from mattress/bedding fires, options would include photography, iconography, or a cartoon. The former would risk being morbid, and the latter could trivialize a serious subject. But handled deftly, a cartoon with a serious treatment can fuse the deadly statistics with a dramatic reminder of the leading cause of those statistics (Figure 10).

Finally, the sternest test might be finding a sensitive yet effective way of adding flesh and bone to the graphic representation of infant injuries resulting from accidents involving baby walkers and stairs. Surely we would never



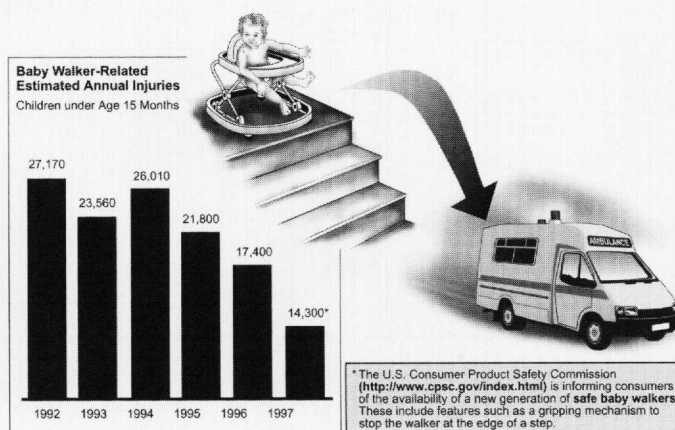
**Figure 10.** A bed, a person, and a cigarette put flesh, blood, and tragic foolishness behind the cold statistics.

seriously consider depicting a toddler toppling down a flight of stairs. However, a potential solution is placing a picture of a baby in a walker at the top of the stairs in the eye-capturing upper right position in the chart and beneath it a graphic of an ambulance (Figure 11), leaving the cause-effect relationship for the reader to infer. A footnote offers a lead on safer baby walkers with features that prevent stairway accidents, further humanizing the graphic and at the same time exhibiting commendable social responsibility.

There might not be an appropriate graphic or text/graphic solution for every case of an inhumane illustration. It is therefore also important to keep in mind that, though technical communicators are typically encouraged to incorporate visuals, using no graphics would be clearly superior to displaying cruel graphics.

Several objections might potentially be raised to adopting a humanistic ethic and including humanizing images within a graphic display: it would be unnecessary, unscientific, and distracting; it would complicate the visual, or violate conventions and theoretical principles of design. Yes, it would. And that's the whole point. A humanistic ethic would require us to perceive sensitivity and efficacy as at least equally important, as reciprocal and recursive influences on the design of visual communication.

Critics might also question *how much* humanizing of graphics is enough to be ethical. The answer is determined by rhetorical analysis of the audience, specifically its sensitivity to the humanistic implications of the graphic display. In a big city hospital with hurried doctors and harried nurses, for example, a photograph of the patient might be a crucial addition to his or her medical record; in a village clinic, however, such humanizing information might be



**Figure 11.** Injuries to babies demand more than bars on a graph.

gratuitous because the doctors and nurses already know their patients personally.

Obviously, the humanizing of visual communication offers no assurance of ethical messages. Commercial and political propaganda, for example, is filled with human images but nevertheless often manages to serve the malicious, the vicious, and the nefarious. The humanizing of graphics is a necessary but itself insufficient condition of a humanistic ethics of visual communication.

Technical communicators, schooled in rhetoric and trained in the humanities, are in a unique position to help raise the level of ethics in the visual display of technical information. We know how to adapt the technical to the human. We have hitherto focused such efforts on verbal communication, making technical language more readable, more usable, more suitable for human beings. It is time to bring a similar conscience—a similar humanity—to the creation of visual communication. **TC**

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