Shocking Numbers and Graphic Accounts: Quantified Images of Drug Problems in the Print Media*

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This paper examines how journalists and graphic artists in the national print media used statistical results from annual surveys of student drug use to construct quantified claims about a cocaine epidemic and other drug problems in 1986 and in subsequent years. Editorial and creative decisions entailed in transforming modest yearly changes in time-series data into a dramatic graphic image of "a coke plague" early in 1986 are reconstructed. The changing character of quantified images in the print media during the summer and fall of 1986 provides additional insights into how the rise and decline of a media "feeding frenzy" altered the claims-making activity of media workers. Finally, a recent case of the construction of a "new" drug problem on the eroding foundation of the cocaine epidemic is presented. The paper concludes with a discussion of how competitive conditions in the journalistic arena affect the production and distortion of quantified images of drug problems.

Since 1975, the Monitoring the Future project at the University of Michigan Institute for Social Research (ISR) has been conducting annual surveys of drug use and attitudes in representative samples of high school seniors in the United States (Johnston, O'Malley, and Bachman 1991). Reports released from this project in 1986, which presented time-series data from 1975 to 1985, received extensive coverage in the mass media. Much of this publicity focused on the "disturbing finding that *cocaine* use increased among seniors in 1985" (Johnston, O'Malley, and Bachman 1986:13) following a period of little or no change in sample estimates of prevalence from 1979 to 1984.

Our purpose here is to show how media workers used this and other findings from the ISR surveys of high school seniors and older cohorts to construct quantified images of a "drug crisis" in 1986. We examine some of the products of journalistic and artistic work—statistical and graphic representations of drug problems which appeared in national print media—to gain insight into the labor process through which raw materials from the ISR reports were crafted into "plagues" and other icons of antidrug crusades. Our constructionist analysis of this historical episode departs from earlier efforts to adjudicate the "objective reality" of the 1986 drug crisis (see Goode 1989; Jensen, Gerber, and Babcock 1991; Reinarman and Levine 1989). Instead, we focus on the empirically verifiable correspondence between numbers contained in the ISR reports—sample estimates of points and trends in the prevalence of drug use—and reproductions of those numbers in the mass media. This strategy allows us to move beyond Best's (1989) analysis and refutation of baseless "statistical claims" about missing children. Given the known statistical properties of the survey data reported by Johnston, O'Malley, and Bachman (1986), we can use quantitative criteria such as tests of significance and measures of distortion to assess the shocking numbers and graphic accounts that media workers constructed from the ISR estimates.

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The Media Epidemic of 1986

Media coverage of drug problems generally, and cocaine use specifically, reached epidemic proportions in 1986. Although similar in some ways to earlier "drug crises" (Musto 1987), an unprecedented and well-documented "feeding frenzy" of drug coverage emerged by the middle of 1986, an election year, as the electronic and print media, the president and Congress, and other claims makers competed for audiences, voters, and ownership of this issue (Diamond, Accosta, and Thornton 1987; Kerr 1986b; Shoemaker 1989).

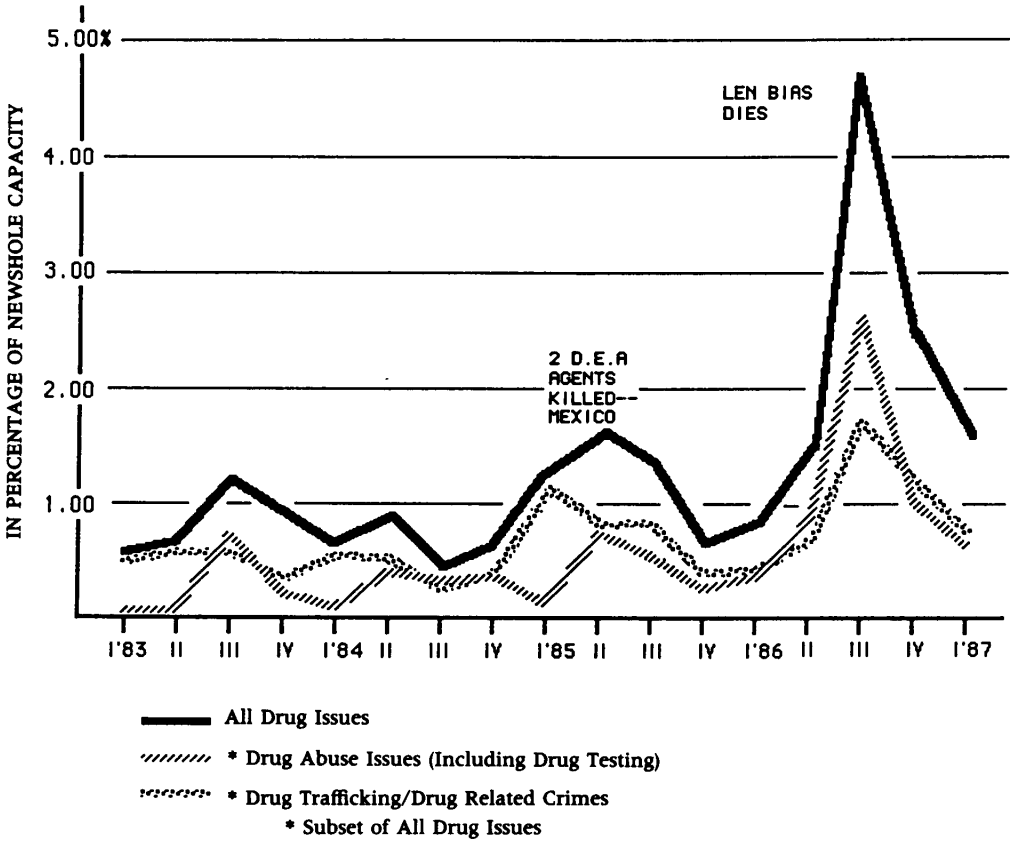


Figure 1 • ***Media Coverage of Drug Issues, 1983-1987***

Source:
Merriam 1989:23. Reprinted by permission of Lawrence Erlbaum Associates. Copyright 1987 by The Conference on Issues & Media, Inc.

Merriam (1989:23) provides an especially clear picture of this media epidemic in his descriptive analysis of the National Media Index. Figure 1 shows his plot of the proportion of space and time devoted to drug issues by television network news, weekly news magazines, and five major newspapers from 1983 to 1987. Until 1985, coverage of drug issues rarely exceeded 1 percent of the total space and time in the news media. Drug stories, mainly concerned with trafficking and crime, received a greater share of total coverage in 1985; but, as Merriam points out, this was merely a "foothill for the mountain of drug coverage that was to come" (1989:24). Starting from less than 1 percent of total coverage in the first quarter of

1986, coverage of all drug issues eventually consumed nearly 5 percent of the space and time in the national media during July, August, and September. As noted in Merriam's graph, the peak of the media epidemic immediately followed a classic drug "horror story" (Johnson 1989): the death of basketball star Len Bias on 19 June, which was attributed to cocaine ingestion. More specifically, four weeks after Bias's death, coverage of drug abuse issues (apart from trafficking and crime) accounted for 3.2 percent of total space and time in the national media (Merriam 1989). By the final quarter of 1986, the media epidemic subsided somewhat, but attention to all drug issues still amounted to 2.4 percent of news coverage by network television, news magazines, and major newspapers.

Based on an extensive search of several media data bases, Reese and Danielian (1989) found important differences in the timing and relative contributions of various national news media to coverage of cocaine issues during the 1986 "drug crisis." In contrast to coverage of cocaine issues by network television and the *New York Times*, which peaked during the summer months of 1986, the number of pages in *Newsweek* and *Time* on cocaine and "crack" reached its highest level in March. A large share of this early news magazine coverage came from a seven page cover story in the 17 March issue of *Newsweek*, "Kids and Cocaine: An Epidemic Strikes Middle America." Kerr links this important, precedent-setting article to the concern of Richard M. Smith, the editor-in-chief of *Newsweek*, about the growing "drug crisis" and his feeling of responsibility "as an editor . . . to put the drug problem in a larger context than we had in the past" (1986b:B6).

Following Smith's editorial design, the team of correspondents, feature writers, photographers, and graphic artists who worked on the 17 March issue produced a dramatic account of a frightening epidemic: "In cities and suburbs all across the nation, a generation of American children [is] increasingly at risk to the nightmare of cocaine addiction" (Newsweek 1986a:58). For the most part, this story was assembled with conventional journalistic material on the personal troubles of individuals, such as vignettes ("A Cheerleader's Fall—and Rise") and photographs of teenage victims. It cited expert testimony on the psychopharmacological powers of crack cocaine ("almost instantaneous addiction") and pessimistic reports from the front-line of the drug war (" 'We have lost the cocaine battle,' Los Angeles police detective Frank Goldberg says flatly" [1986a:60]). However, to lend authority and substance to their epidemiological rendition of the "larger context" of the cocaine problem, senior writer Tom Morganthau, graphic artist Christoph Blumrich, and their co-workers turned to the research of Johnston and his associates at the ISR.

The ISR Time Series, 1975-85

The 1986 annual report of the ISR surveys of high school seniors from 1975 through 1985 was not released until July (Halloran 1986). *Newsweek* "scooped" the other national media with results from this time series and an interview with Johnston in the 17 March article. As the final ISR report would show (and *Newsweek* noted in passing), prevalence estimates for most illicit drugs had steadily declined since the late 1970s—although Johnston, O'Malley, and Bachman (1986:13) pointed out that the downward trend in overall drug use "appears to have halted" in 1985. Nevertheless, the staff of *Newsweek* saw the potential for a "plague" in the ISR estimates of cocaine use.

In Figure 2 we use the simple line graph preferred by Johnston, O'Malley, and Bachman (cf. 1986:58) to present the ISR trend results for three measures of cocaine prevalence among high school seniors from 1975 to 1985. First, all measures of prevalence reflected "a dramatic and accelerating increase in popularity" of cocaine from 1976 to 1979—followed by a period of "little or no change in any prevalence statistics" from 1979 to 1984 (1986:48). However, from 1984 to 1985, Johnston and his colleagues noted statistically significant and "disturbing"

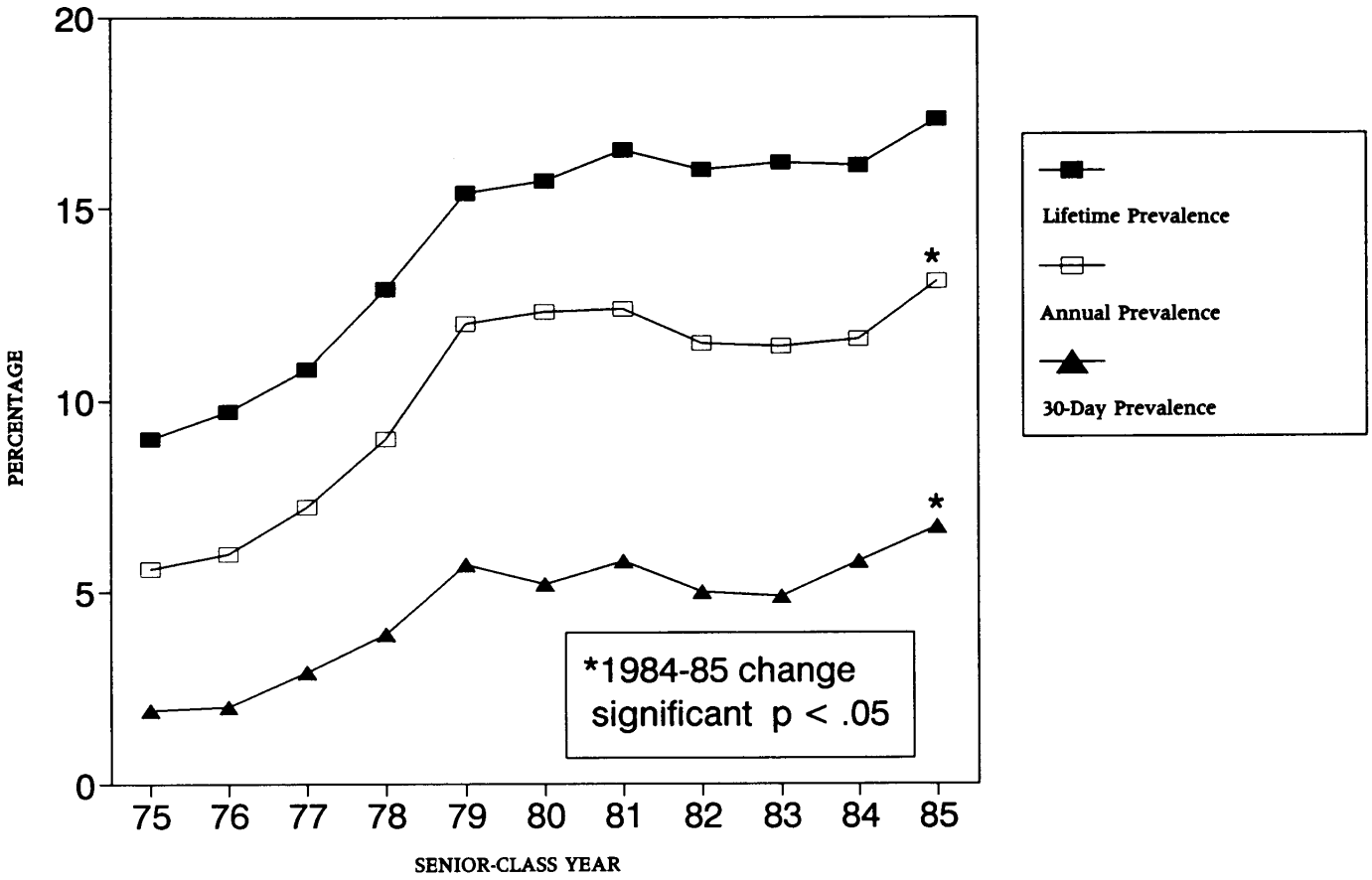


Figure 2 • ***Trends in Lifetime, Annual, and 30-Day Prevalence of Cocaine Use***

Source:
Johnston, O'Malley, and Bachman 1986.

increases in their estimates of 30-day (used in the last 30 days) and annual prevalence (used in the last 12 months). On the other hand, their most inclusive estimate of cocaine use—lifetime prevalence (ever used)—did not show a significant change in 1985, remaining essentially stable since 1979.

The *Newsweek* "Coke Plague"

To align the ISR time series with the master metaphor of the 17 March issue—the national "epidemic" of cocaine use—the media workers at *Newsweek* faced two major dilemmas. First, as Best points out, claims makers and the media "tend to use big numbers when estimating the scope of a social problem" (1989:21). Yet, the statistically significant change in 30-day prevalence or "current use" that Johnston, O'Malley, and Bachman (1986:13) highlighted in their report provided a relatively "little" number: 6.7 percent of high school seniors in 1985. Although the figures for lifetime prevalence offered the biggest numbers, this particular estimate did not yield a statistically significant change from 1984 to 1985. Setting aside this technical difficulty, *Newsweek* followed the claims maker's rule of thumb—"big numbers are better than little numbers" (Best 1989:32)—and focused on lifetime prevalence in the 17 March issue and subsequent articles on the "drug crisis" (Newsweek 1986b; Smith 1986).

Second, whereas Johnston, O'Malley, and Bachman documented a dramatic increase in cocaine use from 1976 to 1979, this in itself was hardly newsworthy seven years later. In fact, these early changes dwarfed the yearly fluctuations in prevalence estimates from 1980 to 1985. The staff of *Newsweek* grasped both horns of this dilemma by incorporating the shocking numbers from the 1970s into the text of the 17 March article while using graphic techniques to highlight the threat of more recent changes in lifetime prevalence. Figure 3 shows the final product of this work: *Newsweek's* graphic account of "A Coke Plague."

The text immediately adjacent to this graph in the *Newsweek* "Kids and Coke" feature story reads as follows:

> There is simply no question that cocaine in all its forms is seeping into the nation's schools. An annual survey conducted by the Institute of [sic] Social Research at the University of Michigan shows the percentage of high-school seniors who have ever tried cocaine has nearly doubled in the past 10 years, from 9 percent to 17.3 percent (chart) (1986a:63).

The quantified image of "doubling" in the text, where the referent to the full 1975-85 time series is left implicit, reinforces the visual impact of the recent, upturned spike in the "plague." Note also the textual forecast within the graph which projects this spike toward an even bigger number in the near future: "Within the next two years, more than 20 percent of high-school seniors may have tried cocaine." Even the label, "cocaine usage," is put to work, transforming lifetime prevalence into a more active, ongoing condition.

In Figure 4 we reconstruct the "Coke Plague" by tracing the creative steps of Blumrich, *Newsweek's* graphic artist. Panel A displays the original construction site—the 1975-85 ISR time series for lifetime prevalence of cocaine use. In Panel B we show the heavy "editorial deletions" that Blumrich had to make to prepare the foundation for his graphic account. First, he obliterated the historic increase in lifetime prevalence during the 1970s by censoring the first half of the ISR time series from 1975 to 1980. Then, he cut away over four-fifths of the original foundation for the remaining portion of the time series by trucating the 1980-85 data at the lofty level of 15 percent. In effect, these initial stages of construction removed over 95 percent of the information from the ISR time series on lifetime prevalence.

Panel C illustrates an intermediate stage of construction which increased the intensity of the "Coke Plague." By setting the Y-axis to a finer scale and focusing closely on the residue of his editorial deletions, Blumrich transformed statistically nonsignificant fluctuations in the ISR estimates of lifetime prevalence from 1980 to 1985 into striking peaks and valleys.

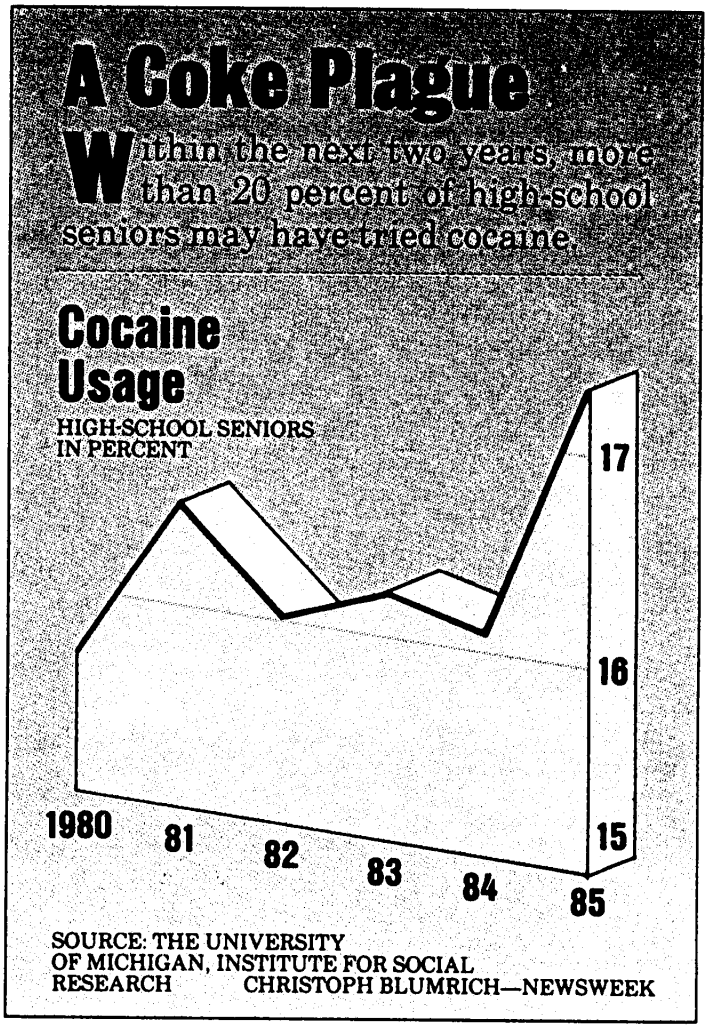
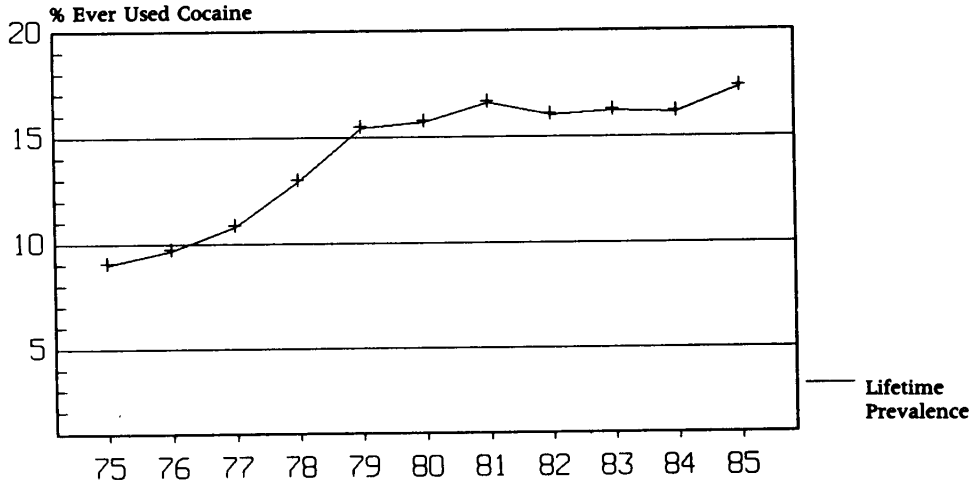


Figure 3

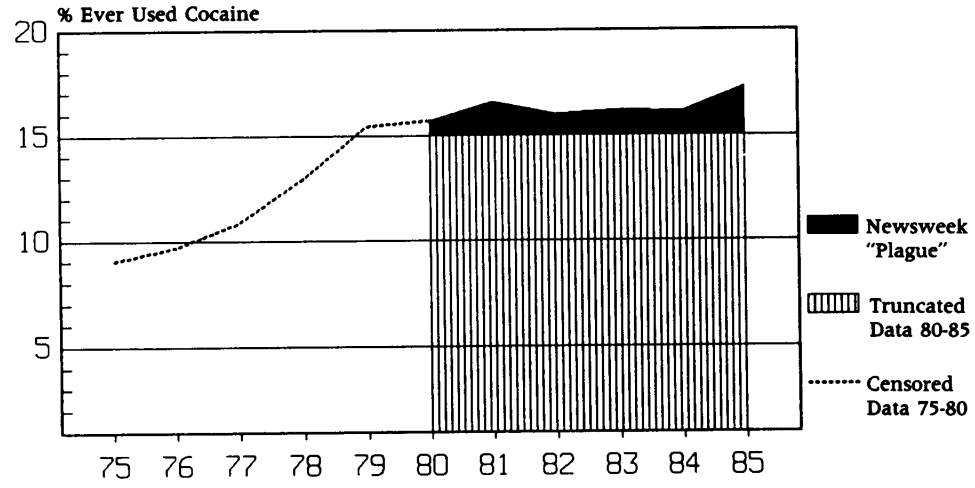
Source:
Newsweek 1986a:63, Christoph Blumrich. Reprinted by permission.

We reconstruct some of the final stages of Blumrich's creative labor in Panel D. With the addition of color, the illusion of depth, and the name of an ancient terror, he completed his job of transfiguring a series of six numbers into a tangible and threatening social fact. Through Blumrich's compelling graphic account, *Newsweek* readers could literally *see* the menacing, three-dimensional entity that was "seeping into the nation's schools."

Editor-in-chief Smith (1986:15) drew upon this image for the title of a special editorial in the 16 June issue of *Newsweek*, "The Plague Among Us," in which he expressed his pride with the "Kids and Cocaine" issue and his concern with a drug "that 1 of every 6 of our teenage youngsters will have sampled before senior-prom night in high school." This editorial also marked the debut of a thematic logo, "The Drug Crisis," which highlighted coverage of this putative epidemic for several years as *Newsweek* implemented Smith's plan "to cover it as a



A. ISR Time Series for Lifetime Prevalence of Cocaine Use



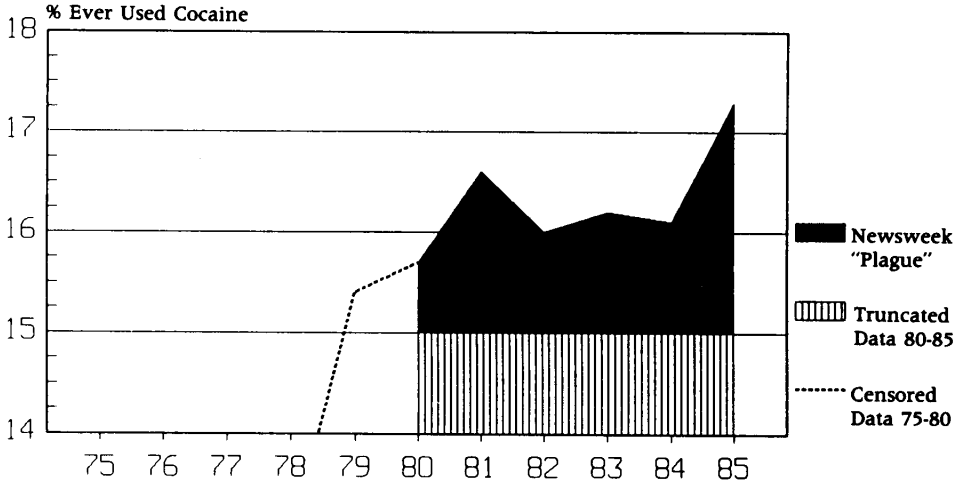
B. Newsweek Editorial Deletions

Figure 4 • ***Reconstruction of "A Coke Plague"***

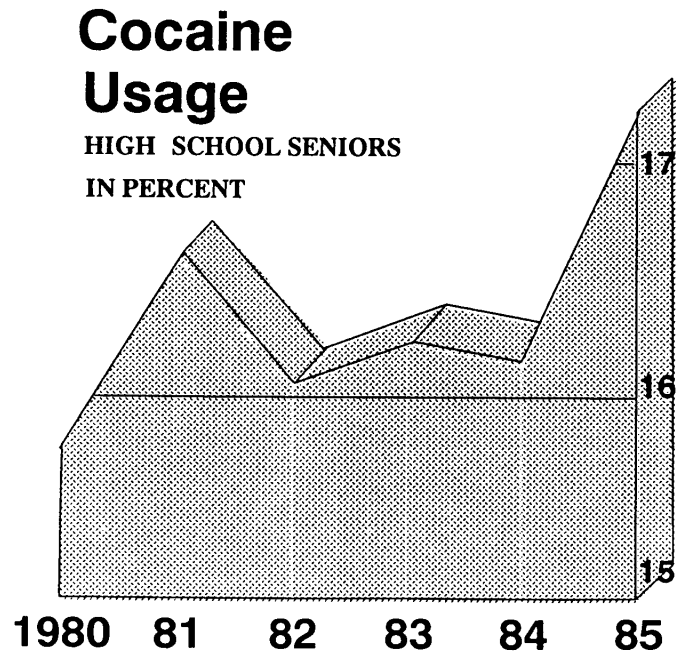
crisis, reporting it as aggressively . . . as we did the struggle for civil rights, the war in Vietnam and the fall of the Nixon presidency" (1986:15).

Other Images of the ISR Time Series

We searched 1986 issues of *Newsweek*, *Time*, and *U.S. News & World Report* as well as the *New York Times*, *Washington Post*, and *Chronicle of Higher Education* for other quantified images of drug problems constructed from the ISR time series. The final 1986 report, which Johnston and his associates released on 7 July at the peak of the media epidemic, included for the first



C. Rescaling Intensifies "Plague"



D. Final Stages of Construction

Figure 4 • ***Reconstruction of "A Coke Plague" (Continued)***

Source:
Johnston, O'Malley, and Bachman 1986; Newsweek 1986a:63.

time follow-up data from panels of college students and other young adults. The print media devoted extensive coverage to a limited set of findings contained in an ISR press release, whose headline read: "U-M study indicates cocaine use remains high on American college campuses, while other drug frequency is down" (University of Michigan 1986). To document these trends, the press release presented one table from the 1986 report (Johnston, O'Malley, and Bachman 1986:182) showing 1980-85 estimates of annual prevalence for a variety of drugs from the college panel data. A reasonably faithful reproduction of this table in a 8 July *New York Times* article (Halloran 1986) included an essentially stable series of percentages for the annual prevalence of cocaine use:

1980	1981	1982	1983	1984	1985
17%	16%	17%	17%	16%	17%

Yet, the eye-catching headline over Halloran's article offered a more dynamic interpretation of this flat line of numbers than did the ISR press release: "Student Use of Cocaine Is Up as Use of Most Other Drugs Drops."

Similar versions of the annual prevalence table appeared in the *Washington Post* (Russell 1986) and *Chronicle of Higher Education* (Meyer 1986), but the headlines over these articles highlighted a shocking estimate of lifetime prevalence reported in the 7 July press release: "By the end of their fourth year of college, roughly 30 percent of all students will have tried cocaine" (University of Michigan 1986). This lifetime estimate was rounded up to "One-Third of College Students" in the 8 July *Washington Post* headline and "1 in 3 College Students" above the 16 July *Chronicle of Higher Education* story, and it was mentioned at some point during July or August in virtually all of the print media we examined (Halloran 1986; Newsweek 1986b; U.S. News & World Report 1986a). In contrast, only one of these articles (Russell 1986) cited the relatively low figure for 30-day prevalence of cocaine use among college students—"one in 14 (7 percent)"—which also appeared in the ISR press release (University of Michigan 1986). Despite the prominence of the shocking number of "1 in 3 College Students" in media coverage during the summer of 1986, Johnston, O'Malley, and Bachman did not include separate estimates of lifetime prevalence of cocaine use among college students in their final report (1986:201-232)—only 30-day and annual prevalence.

The surge of shocking numbers during the summer of 1986 reached an apex in August when Kerr incorporated the following claim into his *New York Times* account of the "Rising Concern on Drugs":

> A continuing survey by the University of Michigan Institute for Social Research found that 10 percent of the high school seniors who graduated in 1975 had used cocaine. In 1985, *40 percent of the graduating seniors* had at least tried the drug (italics added, 1986a: A28).

The 7 July ISR press release did state that "nearly 40 percent of all high school graduates have tried [cocaine] by age 26 or 27" (University of Michigan 1986:1), a finding based on follow-up data from young adults who had graduated in 1976 (cf. Johnston, O'Malley, and Bachman 1986:150). We do not know if Kerr simply misread this statement while preparing his story, but we can be sure that his inference of a ten-year quadrupling of cocaine use among high school seniors created rising concern among many readers of the *New York Times*.

Although the media epidemic continued through September, there were clear signs of change in the nature of this coverage and the quality of quantified images of drug problems. A shift toward a more reflective and occasionally critical posture was signalled by William Safire's 11 September essay in the *New York Times* (1986) on "The Drug Bandwagon," in which he observed that "news magazines have been conducting a circulation-building war on drugs for months." Less than a week later, the cover of *Time* (15 September 1986) featured a special report on "Drugs: The Enemy Within" with a lead article on "America's Crusade." This piece raised the possibility that the "press and politicians may be guilty of hyping the drug crisis"

and used Musto's (1987) historical work to show that "the U.S. periodically launches antidrug crusades" (Time 1986:61). More to the point of our analysis, the article noted that since 1978 the "percentage of high school seniors [who] smoked marijuana every day . . . has dropped by half" and that "even cocaine use has evened out" (Time 1986:62). Finally, we see some revealing differences between the *Newsweek* "Coke Plague" and the graph that Joe Lertola prepared for this issue of *Time* from the ISR time series (Figure 5).

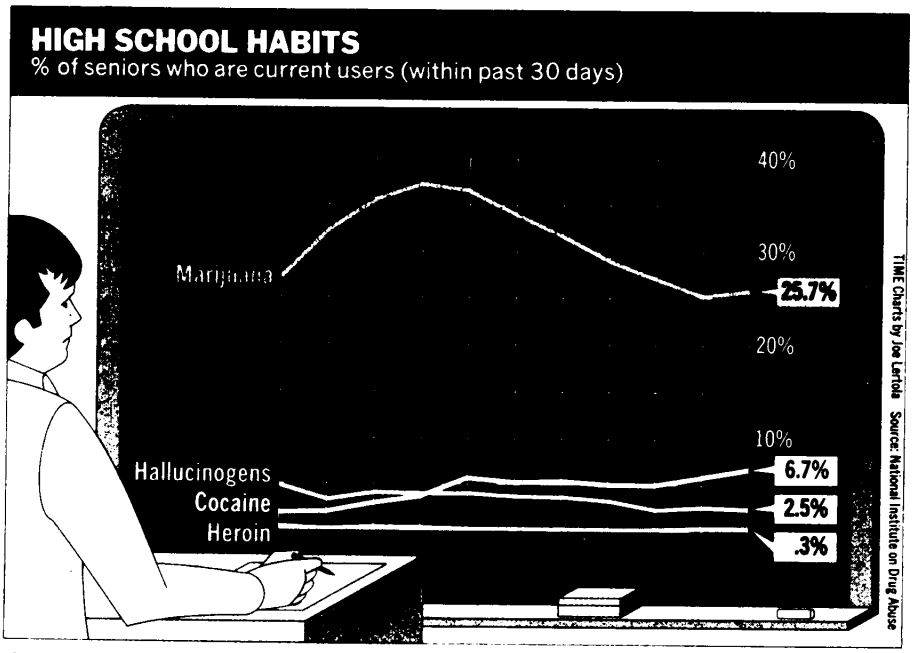


Figure 5

Source:
Time 1986:64, Joe Lertola. Copyright 1986 Time Inc. Reprinted by permission.

Although it is certainly arguable whether figures on 30-day prevalence can sustain the title image of "High School Habits," it is noteworthy that this graph neither censors nor truncates the ISR percentage estimates from 1975 to 1985. Lertola's inclusion of marijuana prevalence in this graph not only calls attention to the long-term decline in ISR estimates for this drug, but it also provides a distinct contrast to the much lower and flatter trends for cocaine, hallucinogens, and heroin. Most interesting, perhaps, is Lertola's use of embellishments or "chart junk" (Tufte 1983): The academic scene of a student reading from the flat surface of a blackboard invites us to reflect on *our* act of reading and reminds us that these are "only numbers."

A very similar graph titled "Shifting Habits" appeared just two weeks later in a *U.S. News & World Report* article which raised the question, "War on drugs: More than a 'short-term high'?" (29 September 1986). Using annual prevalence figures from 1975 to 1985, an anonymous graphic artist contrasted incremental changes in cocaine, tranquilizer, and heroin use with a much higher, parabolic trend-line for marijuana use that literally goes "off the chart" in 1979. In addition, the text of this article drove home the following point about the "drug crisis":

> The antidrug frenzy in Washington notwithstanding, there is little evidence to support alarmist

> claims. Indeed, reliable data show some forms of drug use declining, while others have remained flat. Only cocaine use . . . is up [but] it's barely a blip on the statistical screen (1986b:28).

In little more than half a year, the quantified image of a "Coke Plague" had shrunk to a mere "Statistical Blip."

Back to the Future: *Newsweek's* Recycled Crisis

As we noted earlier, the media epidemic declined precipitously during the last three months of 1986, with drug stories virtually disappearing from the major news magazines by the end of that year (Reese and Danielian 1989). Reinarman and Levine (1989:120-21) have already commented on a brief spate of "skewed reporting" in February 1987, when figures from the 1986 ISR high school survey were released to the press. While the familiar estimates of lifetime, annual, and 30-day prevalence of cocaine use all showed slight decreases, the *New York Times* (Kerr 1987) highlighted a similarly slight increase in daily prevalence (i.e., used on 20 or more occasions in the preceding 30 days). Interestingly, in his own commentary on "American's Drug Problem in the Media," Johnston (1989) cites this same prevalence estimate—which entailed only 0.4 percent of approximately 15,200 seniors in the 1986 sample—as evidence of a "real cocaine crisis" during that year.

However, toward the end of 1987, even *Newsweek* seemed ready to make a grudging withdrawal from its aggressive campaign on the "drug crisis" in a brief story written by Mark Miller, "Drug Use: Down, But Not in the Ghetto" (23 November 1987). Miller portrayed the long-term declines in ISR estimates of marijuana prevalence as "preliminary . . . signs of progress among middle-class teens" (1987:33). More importantly, his account of the recent ISR estimates for cocaine provided only a faint echo of the "Coke Plague" and a substantial revision of its two-year forecast of a growing epidemic:

> Cocaine use by high-school seniors rose to 17.3 percent in 1985, a U.S. record, and dropped only slightly in 1986. . . . Lloyd Johnston, a Michigan survey researcher, predicts that the 1987 high-school survey will chart a growing disenchantment in cocaine use (1987:33).

Having touched on this "good news," in which the ISR probability sample is narrowly framed as "middle-class teens," Miller devoted most of his article to the "bad news . . . that crack . . . is now deeply entrenched in the ghetto" (1987:33).

As the "good news" of decreasing cocaine prevalence, including "crack," flowed unrelentingly from the ISR surveys through the late 1980s (e.g., Berke 1989), the print media generally turned to more reliable sources of shocking numbers such as the Drug Abuse Warning Network (DAWN) reports of medical room emergencies or State Department estimates of worldwide cocaine production (e.g., Newsweek 1988; New York Times 1989; Sciolino 1989, 1990). However, the media's growing disenchantment with the cocaine problem was epitomized by contributing editor Larry Martz's article in the 19 February 1990 issue of *Newsweek*: "A Dirty Drug Secret: Hyping Instant Addiction Doesn't Help." Although Martz did not mention any specific cases, his disclosure of the "dirty little secret about crack" struck close to home:

> As with most other drugs, a lot of people use it without getting addicted. In their zeal to shield young people from the plague of drugs, the media and many drug educators have hyped the very real dangers of crack into a myth of instant and total addiction (1990:74).

Martz also turned the "big number" strategy against the image of a national epidemic by pointing to a steep decline of "50 percent, from 5.8 million to 2.9 million" in the National Institute on Drug Abuse's household survey estimates of monthly users of cocaine in 1985 and 1988 (NIDA 1989). Even though the editorial staff of *Newsweek* segregated Martz's "Ideas"

piece from hard news and buried it in the back pages, it still read like an epitaph for the "Coke Plague" and other spawn of the media epidemic.

Yet, just two years later, *Newsweek* came back with an especially stunning illustration of how the "good news" of declining prevalence estimates can be recycled as "bad news" of a new "drug crisis." The 3 February 1992 issue included a report on "The New Age of Aquarius," whose headline proclaimed that "LSD . . . is turning on a new generation of American teenagers." Lead writer Jean Seligmann reinforced this theme with statistical observations from the ISR surveys:

> Though far more teenagers still resort to liquor or marijuana, the use of LSD is *rising alarmingly*. In 1990 and 1991, for the first time since 1976, annual surveys by the University of Michigan and the National Institute on Drug Abuse found more high-school seniors had used LSD than cocaine in the previous 12 months (italics added, Newsweek 1992:65).

Seligmann's quantified image of a recent and "alarming rise" in LSD relative to the well-known cocaine problem leaves it to the reader's imagination to fill in the missing data from 1976 to 1990. In Figure 6, we offer a more explicit and uncensored account of the trends in annual prevalence that link the original "Age of Aquarius" with the 1990s.

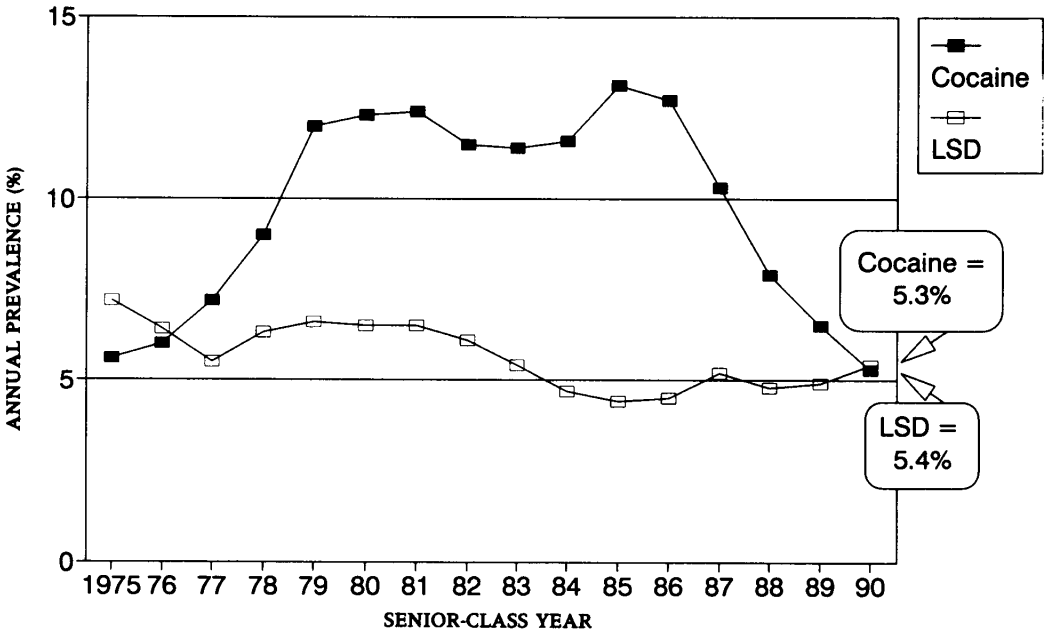


Figure 6 • ***Percentage of High School Seniors Who Used Cocaine or LSD within the Last 12 Months***

Source:
Johnston, O'Malley, and Bachman 1991.

The critical implications of our graphic account of how *Newsweek* recycled a dying epidemic should be clear. It seems almost gratuitous to add that the decrease from 1989 (6.5 percent) to 1990 (5.3 percent) in the annual prevalence of cocaine use among high school seniors was statistically significant ($p < .01$), whereas the corresponding increase for LSD from 4.9 percent to 5.4 percent was within the range of sampling error. In his 16 June 1986 editorial, Smith had noted that *Newsweek's* very first cover story on drugs "dealt with LSD, then the

drug of choice of flower children" (1986:15). And so, in fabricating this fantastic image of an emerging "drug crisis," his current staff truly "jumped back to the future."

Discussion and Conclusion

Consistent with Spector and Kitsuse's (1977:75) occupational approach to the study of claims-making activity, we have examined the journalistic and artistic products of "people who work in . . . the process of creating" drug problems. This exhibition of numerical and graphic reproductions of the ISR time series displays, at least indirectly, the skills, choices, and routine practices of the media workers who constructed these quantified images. In particular, our own archeological reconstruction of the *Newsweek* "Coke Plague" demonstrates the potential complexity and transformative power of this creative process.

Again, our purpose here is not to enter the arena of claims making and the familiar debate over the "reality" of the 1986 "drug crisis"—e.g., "Social construction or objective threat?" (Goode 1989); "Is it real or is it Memorex?" (Johnston 1989). That is, we are not concerned about population parameters estimated by Johnston, O'Malley, and Bachman, but with uses of the ISR statistical estimates per se by media workers. From this standpoint, we might consider another question: Did journalists and graphic artists "lie" about those statistics? Even though Tufte (1983:54) argues that preoccupation with the question of statistical and graphical integrity has stifled intellectual progress in the study of data graphics, this question bears on some broader issues in our study of the claims-making activities of media workers.

We can start with the *Newsweek* "Coke Plague." In truncating the ISR time series at the 15 percent level and rescaling the Y-axis to intensify yearly changes, Blumrich followed the classic blueprint for a "Gee-Whiz Graph" in Huff's *How to Lie with Statistics* (cf. 1954:65). Tufte (1983:56-57) provides a more formal way of assessing how much distortion—how big a "lie"—resulted from these operations in his first principle of graphical integrity and his measure of its violation:

> The representation of numbers, as physically measured on the surface of the graphic itself, should be directly proportional to the numerical quantities represented. . . . Violations of the first principle constitute one form of graphic misrepresentation, measured by the
>
> $$\text{Lie Factor} = \frac{\text{size of effect shown in graphic}}{\text{size of effect in data}}$$

Let us use the crucial (albeit nonsignificant) increase from 16.1 percent in 1984 to 17.3 percent in 1985 to calculate Tufte's Lie Factor for the "Coke Plague." First, when this annual increase of 1.2 percent is divided by the actual 1984 baseline of 16.1 percent, the size of the effect in the ISR data stands at a relatively modest 7.4 percent change. However, the scale in the graph is truncated at the level of 15 percent. Thus, the 1984 baseline shown in the "Coke Plague" is *not* 16.1 percent but, rather, a much smaller 1.1 percent. In relation to this truncated baseline, an increase of 1.2 percent amounts to a 109.1 percent change from 1984 to 1985. The Lie Factor is simply the ratio of the effect in the graph over the effect in the data:

$$\text{Lie Factor} = \frac{\text{effect in "Coke Plague"}}{\text{effect in ISR data}} = \frac{\text{109.1\% change}}{\text{7.4\% change}} = 14.7$$

This result is intriguing because it is virtually identical to the degree of distortion in a *New York Times* graph that Tufte (1983:57-58) selected as an "extreme example" of graphic misrepresentation (Lie Factor = 14.8).

The "Coke Plague" also violates Tufte's second, qualitative principle of graphical integrity: "Clear, detailed, and thorough labeling should be used to defeat graphical distortion and ambiguity" (1983:56). Far from defeating distortion, labels within the graph and the ambiguous reference to "doubling" in the text add conceptual energy to the ominous image of a growing epidemic. Judged against Tufte's principles for "telling the truth about the data," it is evident that Blumrich and his co-workers told the readers of *Newsweek* a story which stretched the "true" numbers in the ISR report considerably.

Yet, if Blumrich's "Coke Plague" lacked graphical integrity, it made a vital contribution to the thematic integrity of *Newsweek's* coverage of "Kids and Cocaine" with its concrete, visual representation of the social facticity of this national epidemic. As the graphic artist for this major project, Blumrich's job was neither to report—nor to distort—the findings of the ISR surveys, but to make the hard reality behind "abstract statistics" (Smith 1986) more accessible to the readers of *Newsweek*. The numbers from the ISR survey authenticated his work of art; he could in truth say, "I'm not making this up." But, along with the reporters, writers, and photographers who worked on this issue, Blumrich had to edit, polish, and interpret his source material to get at the real story of a growing epidemic. In form and content, his graphic account of "A Coke Plague" was ultimately faithful to this journalistic design.

The "Kids and Cocaine" issue was a well-coordinated and highly successful venture into the journalistic arena of social problem definition (Hilgartner and Bosk 1988). Editor-in-chief Smith's early decision to put the cocaine "problem in a larger context" with a thematic issue on a "national epidemic" was influential in setting the agenda for subsequent coverage of this story in *Newsweek* and among its competitors (Kerr 1986b:B6; Reese and Danielian 1989). From his own account of this project, it appears that Smith (1986) took an unusually strong and active role in the planning and execution of work on the cocaine problem. Although Gans notes that journalists often describe news organizations as "militaristic," he points out that news magazine executives at the level of editor-in-chief rarely exercise their potential control over the story selection and production process (1979:84-85). Yet, Smith's (1986) editorial statement reflected his personal command of drug statistics and of *Newsweek's* mission to cover "The Plague Among Us"—a title which acknowledged the editor-in-chief's special pride in Blumrich's skillful contribution to this operation. In introducing a distinctive graphic trademark, "The Drug Crisis," Smith staked his organization's proprietary claim to the discovery of an "epidemic . . . as pervasive and as dangerous in its way as the plagues of medieval times" (1986:15).

As other news organizations rushed to cover the epidemic, their fevered pursuit of this story through the summer of 1986 retraced the outline of Blumrich's plague (cf. Figures 1 and 3) and reproduced on a much grander scale the competitive dynamics which Fishman (1978) found in his analysis of a local media "crime wave." Blumer's (1971) characterization of social problems as collective behavior provides an apt description of the labor process among media workers during this period of focused competition over the drug crisis. As he noted, knowledge about putative conditions—such as the ISR estimates of drug prevalence—"may be ignored, distorted, or smothered by other considerations . . . in the process of collective definition which determines the fate of social problems" (1971:305). Indeed, "other considerations" seemed to prevail during the media "feeding frenzy," and we found ample evidence of media workers snatching at shocking numbers from an ISR press release, smothering reports of stable or decreasing use under more ominous headlines, and distorting the cocaine problem to epidemic proportions as high as 40 percent of high school seniors. In contrast to the more deliberate, thematically integrated quality of Blumrich's work, the heavy-handed and sometimes shoddy images during the summer of 1986 reflect a labor process that was itself distorted by competitive pressures in the journalistic arena.

Our comparison of college panel data contained in the 7 July ISR press release (University of Michigan 1986) with those that Johnston and his associates (1986) chose to include in their

final report indicates that these researchers delivered a special order of lifetime prevalence estimates to meet the heavy demand for "big numbers" in the media marketplace. Just as Fishman (1978) observed that media crime waves depend on the supply of thematically relevant incidents from law enforcement agencies, the construction of shocking headlines about "1 in 3 College Students" during the summer of 1986 depended on the provision of numbers that could be used as instances of an "epidemic." It is important to note that media workers largely ignored smaller numbers from the college data that appeared in both the ISR press release and the final report—the annual and 30-day prevalence estimates that Johnston, O'Malley, and Bachman treat as indicators of "active use" (1986:16). Thus, the production of quantified claims at the peak of the media epidemic depended both on a supply of suitable materials by the ISR researchers and on an internal labor process through which the highest estimates were extracted and refined into shocking numbers.

The media epidemic of the "cocaine summer" became the story in September. Taking a new tack, *Time*, *U.S. News & World Report*, and some newspaper columnists seemed to grant *Newsweek's* claim to the "drug crisis," and then to show how this claim had been abused through "hype" and political misappropriation. Working under this condition of counterissue competition, graphic artists created images of the ISR time series that conformed fairly well to Tufte's (1983) standards for graphical integrity. But, here too, we should not lose sight of Blumer's (1971) point that the uses and representations of such knowledge are always contingent on other considerations in the process of collective definition. The "honest" design of the graphs of drug "habits" in September 1986 issues of *Time* and *U.S. News & World Report* reinforced textual claims that the cocaine epidemic was only a "statistical blip" and that the "real story" behind the crisis was yet another U.S. crusade against drugs.

In the meantime, Smith and his staff were clearly reluctant to relinquish their claim to the "drug crisis." Miller's (1987) article placed the declines in the ISR time series within a middle-class ghetto, and directed attention to the plague that was still roaming freely in the streets of the inner city. Even Martz's (1990) belated entry into the counterissue market had less to say about the role of the media in "hyping" the cocaine problem than about limitations in the survey data that had betrayed predictions of a growing epidemic. Above all, the recent image of an "alarming rise" in LSD which was erected on the eroding foundation of the "Coke Plague" shows that the prospectors at *Newsweek* are still at work. We suspect that Seligmann and her colleagues were put on the trail of the "New Age of Aquarius" by advance information of a flat trend that was announced in a 27 January 1992 press release from the ISR (University of Michigan 1992). After commenting on dramatic declines in prevalence estimates for cocaine and other drugs, Johnston noted that "one drug which bears watching is LSD, since use of it has not declined among seniors since the early 1980s" (University of Michigan 1992:4). Rather than waiting and watching, the staff of *Newsweek* went to work on the numbers and, in virtually no time at all, produced a new and "alarming" drug problem.

Media distortion of research findings may not be fresh news in the field of social problems. However, we question whether analysts who dispose of this material by debunking statistical claims or reducing media coverage to political propaganda have fully explored its sociological potential. We find ample grounds for the claim that media workers "lie"; but we have also tried to understand the creative choices and skills that are entailed in the fabrication of these distorted images of drug problems. Moreover, by attending to systematic variations in the nature and degree of distortion in media workers' products, we have attempted to gain insight into organizational and competitive conditions that affect this labor process. Although our work sheds no light on what "really" happened to drug use in 1986, we think it offers a sociologically pertinent account of how media workers used drug data to construct the social reality of a national epidemic.

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