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A New Political Truth: Exposure to Sexually Violent Materials Causes Sexual Violence, by
Anthony D'Amato,* 31 Wm and Mary L. Rev. 575-605, Spring 1990

Abstract: The Meese Commission gave this nation a new political truth that in years to come will undoubtedly play an important role in federal or state efforts to restrict or suppress speech having pornographic content. Legislators, policymakers and the general public will quote and rely upon the Commission's key finding that exposure to sexually violent materials "bears a causal relationship" to acts of sexual violence, unaware that the principal drafter of the Report played down this confidence in a separately published academic essay.

Tags: Pornography, Sexual violence, Meese Commission, Attorney General's Commission on Pornography, Schauer, First Amendment, Freedom of speech, Suppression of speech

[pg575]** The Meese Commission gave this nation a new political truth that in years to come will undoubtedly play an important role in federal or state efforts to restrict or suppress speech having pornographic content. In 1986, the Report of the Attorney General's Commission on Pornography reached a "unanimous and confident" conclusion: "[S]ubstantial exposure to sexually violent materials as described here bears a causal relationship to antisocial acts of sexual violence and, for some subgroups, possibly to unlawful acts of sexual violence." FN1 The key phrase is "bears a causal relationship." It is an extraordinarily significant claim, a milestone in the history of the first amendment. Busy courts, lacking time to scrutinize the evidence and considering the Report an authoritative finding by a Presidential Commission, may cite it as evidence in cases involving the suppression of speech. The rhetorical power of the Commission's use of causality is underlined by considering that if the Commission had employed the term "correlation," its finding would have been humdrum. A "correlation" might simply signify that people who are predisposed to committing acts of sexual violence also enjoy seeing sexually violent materials. Such an unnewsworthy finding would hardly have justified the ballyhoo and expense associated with Meese's effort.

Instead, the finding of a *causal* relationship may, in years to come, encourage legislators, policymakers and bureaucrats who want to restrict access to sexually violent materials. FN2 They will cite [pg576] the Commission's finding of causality as a *fact*, without need of further proof.

Because the Commission's finding was the result of a political process and not, strictly speaking, a legal process, lawyers may underappreciate its significance, and law journals may discount its importance. But a "finding" of a "commission" is apt to carry considerable weight with courts that despair of listening to "expert witnesses" on the question of whether exposure to the sexually violent materials complained about *causes* acts of sexual violence that are outside the protection of the first amendment. Courts may conclude that if such exposure actually causes acts of sexual violence, the materials themselves are outside the scope of the first amendment. FN3 Hence, examining the Commission's reasoning to see whether its "finding" is intellectually and morally supportable is of critical importance. This Article undertakes that examination.

How did the Commission justify its finding of "causation"? One searches its Report in vain; nothing indicates what "causation" means or whether any of the vast amount of cited evidence, mainly scientific papers, actually supports a finding of causation. FN4 To be sure, the

Commissioners *voted* that there was causation.FN5 But their Report does not clearly reflect that they knew what they were voting about.

One person knew—Professor Frederick Schauer, the drafter of the Commission's Report.FN6 He presented the justification for "causation" [pg577] in an independently published article.FN7 Professor Schauer's article exemplifies the highest form of legal scholarship: clarity, conciseness and confidence. Inasmuch as his article draws on many recondite scientific and philosophical discussions of causation, it may be hard reading for legislators or researchers interested in whether exposure to sexually violent materials causes sexually violent behavior. I suspect that most people will simply note the existence of Professor Schauer's article—perhaps even glance through it—and assume that he in fact proved that which he said he proved.

If that happens, then in my judgment an important political truth will have been created out of thin air, for Professor Schauer's article, as I shall now demonstrate, utterly fails to prove the Commission's key finding on causality.FN8

[pg578] I

The Commission's conclusion may be expressed as an "if-then" statement: IF someone is exposed to sexually violent materials, THEN that person will be more likely to commit acts of sexual violence.FN9 But this formulation has the defect of being a counterfactual proposition, for we cannot know what the exposed person would have done later in the absence of exposure. Thus, the proposition must be expressed in terms of a group of people: IF a group of persons is exposed to sexually violent materials, and a control group is not so exposed, THEN the former group will go on to commit more acts of sexual violence than the control group. The analytical question thus becomes: How can we know whether this proposition is true?

The proposition can be expressed in symbols as follows: A.B C. Or using words and letters, IF A and B, THEN C. If we assign to each of these letters truth or falsity, we find that in seven out of the eight possible combinations the proposition is true, and in only one of them is it false:

	A	B	C	A.B C
1	True	False	True	True
2	False	True	True	True
3	False	False	True	True
4	True	False	False	True
5	False	True	False	True
6	False	False	False	True
7	True	True	True	True
8	True	True	False	False

Of the first six of these items on the "truth table,"FN10 items 4, 5 and 6 are not asserted by the Commission nor by Professor Schauer.[pg579] Their contention, to the contrary, is that the incidence of sexually violent behavior rises in the group that is exposed to sexually violent materials.FN11 But items 1, 2 and 3 are often implicit in many of the assertions and contentions sprinkled throughout these two sources. This is particularly the case when only one of the A or B values is known and the other is unknown or unstated. The problem with items 1 through 6 is that they do not express causal statements at all, and hence, apart from acknowledging the work that they are sometimes doing implicitly in the Commission's Report, I will not discuss them further.

Items 7 and 8 can be read as expressing causal statements. In the case of item 7, however, if A, B and C are true, the statement that the combination of A and B caused C does not necessarily follow. No necessary causal link exists because the truth of C can be due to a cause other than A and B. Item 8 thus becomes the most perspicuous; IF 8 is true, THEN we have falsified the Commission's causal statement. FN12 IF, on the other hand, item 8 should turn out to be false, THEN we would be on our way to proving the truth of the Commission's conclusion even though further steps would have to be taken.

Therefore, checking out the truth or falsity of item 8 is the first step of any sound approach to assessing the impact of sexually violent materials in our society. Yet it is a step that Professor Schauer refuses to take. He explains:

[T]he researcher would have to expose people to a factor that was hypothesized to cause sexual violence, and would then have to sit back while members of the stimulus group, if the hypothesis were correct, actually committed acts of sexual violence. No responsible researcher could allow this to happen. FN13

In short, Professor Schauer dismisses the one sure way to falsify the Commission's thesis by citing the imperatives of moral responsibility. [pg580] The moral rhetoric would be convincing if it told the complete story. The fact is, however, the Commission had a readily available way to check out item 8.

The Commission cited numerous psychological experiments performed in various universities in the late 1970s involving hundreds, if not thousands, of college students.FN14 These experiments consisted of exposing students to sexually violent materials, and then testing their responses to questions or assertions about their attitudes. FN15 Because the Commission cites these experiments to prove that exposure to sexually violent materials results in an increased proclivity to commit acts of sexual violenceFN16—a proposition I will examine in detail later in this Article—neither the Commission nor Professor Schauer could now maintain that what the students saw was not the kind of sexually violent materials the Commission had in mind in reaching its conclusion. Thus, we have a clear case of a large group of students who were exposed to precisely the kind of sexually violent materials that the Commission cited in its key conclusion.

An unobtrusive measure FN17 of the truth or falsity of item 8 was thus available to the Commission. It merely had to obtain the names of the students who participated in the psychological experiments and compare the public records of their subsequent social behavior

with the public records of a control group of their classmates who did not participate in the experiments. The names would be available to the Commission because the Commission would not need to know the individual responses students gave in the tests held after they were exposed to the sexually violent materials; it would need only the names of the students who participated to some degree in the experiments. These names would be easily available, without any privacy problem, from the universities and the professors who conducted the tests. The names of a control group of classmates who did not participate in the experiments also could be obtained from the universities. Most of the subsequent addresses of the students could be acquired from the [pg581] universities' alumni offices. Then, only the simple matter would remain of checking police records in the towns and cities where those students live, as well as files of the national police and the FBI, to see whether a statistically significant greater number of subsequent arrests occurred for crimes involving sexual violence among the tested students as compared with the control group. The cost of researchers going to the various towns and cities involved and checking police files—perhaps with the authority of the Office of the Attorney General—would not be very high; the Commission might even obtain all the results by telephone. Certainly any cost would be well within the \$400,000 that Congress budgeted for the Commission.FN18

It is hard to understand why this procedure for possibly falsifying the Commission's key conclusion went entirely unmentioned in the Commission's Report and in Professor Schauer's defense of the Commission's work. A revealing footnote in Professor Schauer's essay, however, illustrates the Commission's psychological disdain for real world testing. He cites Barry Lynn of the American Civil Liberties Union who "quipped that if exposure to depictions of sexual violence causes those exposed to commit acts of sexual violence, then why didn't the commissioners commit such acts?"FN19

Professor Schauer immediately cried foul: "The answer to Lynn's silly question, of course, is that his question incorporates an absurd view of causation never even hinted at by the Commission, however effective a one-liner for mass media consumption it might be."FN20 But Mr. Lynn is certainly right in saying that if anyone was exposed to the sexually violent materials the Commission described, it was the Commissioners themselves. Surely they are not magically exempt from the laws of causation that they themselves are willing to enact for society at large. Thus, Professor Schauer's statement that Lynn has "an absurd view of causation" is not true. To be sure, the number of Commissioners—eleven—is probably too small to result in even one of them being so affected by exposure to the materials as to engage in sexually violent behavior. If there were a large enough number of Commissioners, however, [pg582] Lynn would be correct in asserting that if the Commission's finding were true, we should begin to observe antisocial behavior in one or more of the Commissioners themselves. It is important to note that the only legitimate excuse for Professor Schauer to cry foul is that eleven Commissioners is not the same as eleven thousand Commissioners, and not that Lynn's notion of causation is "absurd." Yet Professor Schauer appears unwilling to look at any real world evidence that might falsify the Commission's key conclusion.

II

Although the procedure I described in the preceding section could have falsified the Commission's key conclusion of "causal relationship," neither the Commission nor Professor

Schauer made any suggestion along those lines. But apart from the question of falsification, can any verification procedure establish a causal relationship? For a long time following David Hume's deconstruction of the notion of causation, scientists and philosophers lacked a good statement of what such a procedure might be.FN21 Hans Reichenbach provided the answer in 1956. Let us review briefly what Hume argued and what Reichenbach supplied.

David Hume (cited by Professor Schauer, but not for this point) first deconstructed the notion of causation in 1739, pointing out that our only empirical evidence of a cause is a high degree of correlation.FN22 We have no internal knowledge, Hume said, that A actually causes B; all we know is that whenever we see an instance of A, it is followed regularly by an instance of B. We might simply be seeing a high degree of correlation when we see B following A. For example, if I see the color of a person's right eye (A), I can predict the color of that person's left eye (B), then look and see what that color is and be right nearly all of the time. But that high degree of correlation does not mean that A caused the color of B. If autumn [pg583] regularly precedes winter, this occurrence does not mean that autumn causes winter. There used to be a theory that if the dress designers in Paris lower the hemline on skirts, the stock market soon will fall; if skirts are made shorter, the stock market will rise. I heard a similar theory to the effect that a rise in the level of Lake Michigan predicts a forthcoming bull market, and a decline in the water level predicts a bear market. But we lack confidence that rising skirts or rising water levels cause rises in stock market prices—a lack of confidence that is proven by our unwillingness to bet our last dollar on the market the next time Parisian dress designers raise hemlines.FN23 Hume concluded that no amount of observation of regularities in the physical world can ever establish what was, to him, the wholly metaphysical notion of "causation."FN24

Yet on a common sense level, people have continued to use the term "causation" even after Hume's demonstration. Many people believe that when the occurrence of two items are highly correlated, the one that comes first in time is the cause of the other.FN25 Many popular superstitions have arisen as a result of noticing correlations—baseball players are notorious for their "good luck" charms, and primitive societies believed that human sacrifices brought on needed rain because the sacrifices seemed to "work"[pg584] once or twice in the past. How can we tell when there is a real causal relationship instead of a Humean correlation?

Hans Reichenbach introduced the principle of intervention, which he called the "mark" principle.FN26 The principle, stated simply, is that if you have an event C and another event E, C is a cause of E if you intervene in the process by making a little change or jiggle in C, and then you observe a little change or jiggle in E.FN27

Reichenbach's demonstration of causality captures the term's everyday meaning. People know, for example, that stepping on a car's brake pedal tends to slow the car down. To be sure, as a matter of theory, a car might slow down even if one does not apply the brakes, and in some cases applying the brakes might not slow the car down (we then look for a defect in the braking mechanism). The reason we are so secure in our belief that applying the brakes slows the car is not the mere fact that the car usually slows down when we apply the brakes, but rather our unconscious application of Reichenbach's mark principle: A little increase of pressure on the brakes results in a little change in the car's speed, and a little decrease in pressure on the brakes, or taking one's foot off the brake pedal entirely, also results in a little change in the car's speed.

By jiggling the brakes, we can be supremely confident that the observed changes in the car's speed are due to the jiggling.

Of course, countless similar everyday examples give us a well-formed and powerful idea of causation. Our notion of causation is essential to our ability to act rationally. We easily distinguish causation from correlation: When something seems to be correlated with something else in our daily lives, but we know that there is no [pg585] physical connection between the two things, we call it a coincidence. We generally do not act on the supposition that coincidences will repeat themselves—we would regard such behavior as superstitious—but we almost invariably act on the basis of our conviction of cause and effect.

The critically important question we should ask of the Commission's work is whether it supports causation or merely correlation. If the Commission had concluded merely that exposure to sexually violent materials is *correlated* with acts of sexual violence, the conclusion might be interpreted as saying only that those who commit acts of sexual violence are more likely to enjoy viewing depictions of such acts. Moreover, because "correlation" includes the concept of "negative correlation," such a finding might even be interpreted to stand for the proposition that exposure to sexually violent materials reduces the incidence of subsequent antisocial behavior compared to what that behavior would have been in the absence of exposure. In other words, viewing depictions of such acts might act as a "safety valve" in satisfying the impulses of some viewers who might otherwise go out and commit those acts.FN28 As we have seen, however, the Commission opted for the powerful claim of "causal relationship." What I shall argue in the rest of this Article is that Professor Schauer supports and justifies that finding of causal relationship by arguments that prove, at the most, only a correlation. He impermissibly makes the huge jump from correlation to causation with evidence of only correlation, citing no evidence at all that supports causation.

III

Professor Schauer in a footnote reveals his awareness of the gap between causation and correlation. In the text of his essay, Professor Schauer suggests that a 17-year-old's parents might justifiably oppose her spending a weekend with a 23-year-old regular reader of *Hustler Magazine*, "assuming they would otherwise permit their daughter to go away for a weekend with a twenty-three-year-old."FN29 Their justification, of course, does not depend on whether reading *Hustler Magazine* causes sexually violent behavior or is [pg586] merely correlated with such behavior; in either case the parents might oppose their daughter's weekend adventure. Professor Schauer then adds:

In this last example, of course, the magazines read might have no causal effect whatsoever but still be evidence of an inclination towards sexual violence manifested in but not caused by the magazine reading. That is precisely why to me almost all of the correlational evidence in this area is worthless, in both directions. FN30

Here Professor Schauer is precisely right. Unfortunately, when he cites certain controlled experiments that the Commission relied upon, he appears to have forgotten what he said about the *Hustler Magazine* example.

The Commission relied on the reports of certain controlled experiments to support its key finding of a causal relationship between exposure to sexually violent materials and subsequent sexually violent behavior.FN31 In those experiments, researchers exposed university students to depictions of sexual violence, and then elicited their reactions.FN32 The experimenters obtained the students' reactions in the form of answers to questionnaires, measurements of "arousal" levels and measurements of "aggressive behavior" on a Buss aggression machine.FN33 These three types of reactions, all short term responses to depictions of sexual violence, are the only "behavior" that exposure to those depictions may have caused. The real behavior we are interested in—subsequent antisocial behavior—was never measured.

Professor Schauer and the Commission, however, take it on faith that a causal relationship exists between these reports of student reactions and the subsequent behavior of those students. For instance, if a large number of male students report that their attitudes toward rape changed in the direction of approving rape after seeing a movie about rape, the Commission believes that it is only common sense that some of these students will commit acts of sexual violence that they would not have committed had they not seen [pg587] the movie. The Commission's key conclusion rests on this leap of faith.FN34

Even if we concede for the moment the Commission's assumption that students' responses to psychological experiments correlate positively with how they will behave subsequently—an assumption the Commission relies upon, but at the same time Professor Schauer hedges FN35—there is good reason to question the validity of the actual responses.

Of the three types of student responses, one can be dismissed and the other two merged. The one that can be dismissed is the measurement of "arousal," which the professors measured by the students' self-reports plus "physiological penile tumescence."FN36 These measures led straight-faced scientists to the earth-shattering revelation, among others, that students "had higher penile tumescence scores when viewing a victim-aroused rape portrayal compared to a portrayal showing victim abhorrence."FN37 Whatever the conclusion, the reaction of "arousal" does not produce, but at most is only correlative with, subsequent antisocial behavior. People who enjoy such depictions may be people who enjoy committing acts of sexual violence. Nothing at all suggests, however, that an experimental subject who reacts positively to such depictions will then commit acts that he otherwise would not have committed absent [pg588] the exposure to sexually violent materials in the course of the experiment.FN38

The other two responses—answers to a questionnaire and pressing a button that "shocks" another person—are roughly equivalent to each other. Most college students who are "tested" by the Buss aggression machine are fully aware—from the opening weeks in any Introduction to Psychology course, or from information from fellow students—that there are no real "electric shocks," and that the person ostensibly receiving such shocks is simply a confederate of the experimenter. Thus, there is no real difference between a student's answer of "strongly agree" to a questionnaire and that student's pressing the "shock" button of a Buss aggression machine. The only people fooled by Buss machine scores are newcomers to social science, nonstudent laypersons who are used as experimental subjects, and perhaps a few commissioners on a few prominent governmental commissions.

Here is one of the statements used to elicit student responses, whether of the Buss machine sort or the paper questionnaire, and quoted by the Commission: Women who get raped while hitchhiking get what they deserve.FN39 Let us assume that a student who has been exposed to depictions of sexually violent material answers "strongly agree" to a questionnaire or pushes the "shock" button on the Buss aggression machine. What caused the student to give that answer or press that button? The Commission assumes that exposure to sexually violent materials caused the behavior. I contend instead that more plausible candidates explain the student's response.

First, it is well known that subjects of experiments are inclined to deliver the responses the experimenter is looking for, and correlatively the experimenter is apt to "interpret" responses to justify his or her desired result. No great intellectual acumen is required for college students to realize that the experimenter is trying to come up with evidence that watching sexually violent movies produces [pg589] a change in viewers' attitudes. Such students might well respond that they are now more favorably disposed toward sexual violence.FN40 Indeed, the phenomenon of subjects guessing and then confirming the experimenter's hypothesis is called "experimenter demand effect."FN41

Second, the very setting up of the "controlled experiment" produces a bias in its results. In the real world, people voluntarily choose whether to see sexually violent materials; presumably those who like such materials seek them out, and the others do not. In the college experiments, however, many of the students who are the experimental subjects would not have voluntarily chosen to watch such depictions of sexual violence. The very fact that they are exposed to those depictions may result in feelings of disgust. Their reaction might well be a desire to outlaw all such degrading movies so that no one can ever see them. Thus, they might choose the "strongly agree" response on the rape questionnaire so as to help produce experimental results that can be used as a justification for censorship.

Third, the gap between the laboratory and the outside world—calling into question the validity of all such laboratory experiments in psychology—is summarized by Professors Linz, Penrod and Donnerstein: "[O]utside the laboratory violence is not sanctioned, but inside the laboratory aggression is condoned, even encouraged, after the subject has viewed violent material"FN42

Fourth, a college student reading the above statement about rape—reminiscent of the worst "authoritarian personality" clichés that have been thoroughly discredited in the literature—might be so negatively impressed by the hard hat wording of the question as well as its inherent ambiguity (does the question attempt to elicit a positive attitude toward rape or a negative attitude toward [pg590] hitchhiking?) that he might well conclude that a dumb question deserves a dumb answer, and press the "shock" button.

Finally, although the experimenter assures us that in his particular experiment so many students answered thus-and-so, other unreported experiments may well exist in which the students answered differently. Suppose twenty experiments are conducted, and nineteen reach null results. Journals would be inclined to publish only the paper that reports positive results because academic reputations are built on publishing "interesting" and positive results. Thus, if

one out of the twenty experiments reaches positive results, and it is the only one that is published and subsequently cited by the Commission, the claim of statistical significance in the population studied by the one experiment should be diluted to insignificance by the nineteen experiments that reached null results.

Naturally, the foregoing account of "perverse" causes of students' response behavior cannot be exhaustive; human ingenuity is capable of contaminating experimental data and confounding experimenters at every turn, especially when experiments purport to measure psychological states. The fact that the Commission regards experimental evidence as the best social science evidence available does not mean that it is good social science evidence. The amorphous nature of the subject matter—how do we know that a particular film shown to students portrays an approving attitude toward sexual violence when some negatively impressed viewers might see it as portraying only bad acting?—is yet another reason to be skeptical of these experiments. The significant danger that the "cause"—depictions of sexual violence—does not produce the "effect"—students' responses to questionnaires and Buss aggression machines—should compound our skepticism about whether that alleged effect in turn produces sexually violent behavior.

IV

Despite Hume's deconstruction and Reichenbach's mark principle, and Professor Schauer's own awareness of the gap between correlation and causation, the major move in Professor Schauer's essay is to regard correlation as *some evidence* of causation.FN43 Indeed, [pg591] the Commission itself states in its final Report that "the fact that correlational evidence cannot definitively establish causality does not mean that it may not be some evidence of causality, and we have treated it as such."FN44 Given that Professor Schauer drafted the Commission's Report, we should not be surprised to find a one-to-one correlation between the Commission's approach to causation and Professor Schauer's. The tricky word in the Commission's sentence is "definitively." Correlational evidence cannot *definitively* establish causality. In fact, as Hume showed, substitution of the word "ever" would be more accurate: Correlational evidence cannot *ever* establish causality.

Contrary to the Commission's statement, correlational evidence can never constitute non-infinitesimal evidence of causality. At most, when we find a correlation we might look for additional evidence, the best being Reichenbach's mark test, to see whether causation exists. Certainly causation is not present unless correlation also is present, so we are justified in examining instances of correlation to see whether causation exists. If all we have is correlation, however, then I claim that the chance of also having a causal relationship is infinitesimal. Trillions of correlations surround us that we never even think of as possible instances of, or evidence for, causation. Just to give an idea of the vast number of examples, consider these: The fact of my keeping my furniture inside my house being correlated with the fact that millions of other people keep their furniture inside their houses does not mean my behavior caused their behavior. The fact that the book I am holding has a cover and is correlated with the covers on millions of other books does not mean the presence of my cover caused the presence of the other covers. The fact that if I drop a book and its motion in a downward direction is correlated with the behavior of a book dropped by a person in another city does not

mean the motion of my book caused the motion of the other book.FN45 The fact that [pg592] the green leaves I see on the tree outside my window are correlated with greenness in leaves of trees all over the world does not mean the tree outside my window caused the color in all the other trees; and as the leaves turn to gold and then to brown, the fact that the autumnal correlation is repeated in millions of other trees does not mean any one tree caused the color change in the others. In short, just about everything we see and experience is correlated with millions, if not billions, of similar events, yet in only a very few of these is a causal process at work. Finding two things to be correlated is a far cry from evidence that the two things bear a causal relationship to each other.FN46 That is why, without further information of a Reichenbach type, we may find that even though a reader of *Hustler Magazine* enjoys both reading about sexual violence and behaving in a sexually violent way, we cannot conclude that his decision to read caused his behavior or that his behavior caused his decision to read.

Exactly how Professor Schauer employs the mistaken notion that correlation constitutes some evidence of causation is important to analyze. He does this implicitly in a discussion of whether smoking is a cause of lung cancer:

If it is the case that in a population of non-smokers 16 out of 1,000 individuals will contract lung cancer at some time in their lives, and if it is the case that in an otherwise identical population 93 individuals who smoke will contract lung cancer, both scientists and ordinary people would say that cigarette smoking caused 77 cases of lung cancer (although we do not know which ones), and that cigarette smoking is a cause of lung cancer, even though the probability that even a smoker will contract lung cancer is still less than .1.FN47

[pg593] Professor Schauer is wrong in attributing the above conclusions about causation to scientists. A good scientist would reach no such conclusion, as I will now argue.

Suppose that sometime in the future scientists discover two chromosomes that hitherto had escaped detection. The A chromosome gives an individual a propensity to smoke, and the B chromosome gives an individual a propensity to develop lung cancer. Suppose the scientists find further that the greatest likelihood is that individuals will have only the A chromosome, that a minority of individuals will have the A and B pair, and that an even smaller minority will have only the B chromosome. Let us apply these likelihoods to Professor Schauer's illustration. There are 2,000 individuals total, and 1,000 are smokers and 1,000 are nonsmokers. We assume that the first 1,000 have the A chromosome and the second 1,000 do not. The total number of people who are both smokers and develop lung cancer is ninety-three; hence ninety-three persons have both the A and B chromosomes. Finally, the total number of people who have only the B chromosome is sixteen; they develop lung cancer even though they do not smoke. What, then, causes lung cancer? Clearly the B chromosome. The A chromosome has nothing to do with it. To be sure, there is a greater likelihood that any given person will have the A-B pair of chromosomes than that a person will have just the B chromosome. Yet it is clearly fallacious under my hypothetical to subtract sixteen from ninety-three and conclude that the A chromosome caused cancer in seventy-seven persons or even in one person. Professor Schauer's example, and many similar to it, proves only correlation and does not prove causation.

However, two objections can be made to the preceding proof. First, Professor Schauer carefully specified that the two groups of 1,000 persons were "identical" in everything other than smoking or nonsmoking. Hence, my positing of a different distribution of chromosomes in the two groups violates his "identical" postulate. Of course, one must add that only the B chromosome violates his "identical" postulate, because if the two groups are different in whether they smoke, then no "extra" difference is present in finding that smokers have the A chromosome and nonsmokers do [pg594] not.FN48 Yet the selective inclusion of the B chromosome and the exclusion of the A chromosome already suggest that the initial postulate of "identical" is imaginary, a point I shall take up in a moment. If we look at only the B chromosome, however, Professor Schauer will be justified in pointing out that only sixteen B chromosomes are in the first group of 1,000 people, while ninety-three B chromosomes are in the second group, and that this fact makes the two groups non-identical in respects other than smoking.

Let me first make a minor rejoinder to this point. The statistical improbability, though certainly not impossibility, of sixteen cases in one group of 1,000 and ninety-three cases in another similar group does not prove Professor Schauer's conclusion that smoking causes lung cancer. Rather, under my hypothetical, it proves the much less interesting point that the B chromosome has a chemical or enzyme affinity for the A chromosome such that the B chromosome is more likely to show up paired with the A chromosome than to show up alone. The B chromosome pairs up with the A chromosome in ninety-three cases and shows up alone in only sixteen cases. The behaviors that we observe, smoking and lung cancer, are simply the macro-effects of chromosomal affinities.

My more important rejoinder is that Professor Schauer's "identical" postulate is a purely imaginary construct. One thousand persons clearly cannot be identical to 1,000 other persons in every exact respect except in whether they smoke.FN49 The difference between a smoker and a nonsmoker is never just the difference that one smokes and the other does not.FN50 The smoker's lifestyle will be different in many respects from the nonsmoker's just because [pg595] of the difference in smoking behavior. The smoker may do different things, go to different places, sit in different sections of restaurants and airplanes, or meet a different group of people, perhaps those who also smoke. Some or all of these lifestyle differences might turn out to be the causative factors in an increased incidence of lung cancer.

Also, smoking possibly gives people a propensity toward certain specific behavior that itself is the direct cause of lung cancer. Suppose that smokers have a propensity to drink a lot of tap water while nonsmokers drink bottled or distilled water. Maybe such a difference, like the B chromosome, will later be found to be the "cause" of lung cancer. If so, the Surgeon General's warning on a pack of cigarettes ought to be replaced with a warning that "if you smoke, don't drink tap water." Yet until someone suggests asking smokers about what kind of water they drink, we can never know whether smoking or drinking tap water causes lung cancer. Until someone thinks about asking that question, we say the two groups are in fact "identical." In short, Professor Schauer cannot attack my proof on the ground that I am talking about speculative factors that later could turn out to be causative elements, because it is always true that at any moment in scientific history further factors may be found and that normal science proceeds only on the basis of the questions it considers worth asking. To say that

smoking causes lung cancer is to say only that, at this date, smoking is the most plausible candidate given the kinds of questions that scientists have thought to ask of the test population so far. FN51 When a better candidate is found as the result of asking a novel question, such as tap water or B chromosomes, people no longer will talk about smoking as a cause of lung cancer. And this is precisely my point, and indeed Hume's point two centuries ago: Professor Schauer's statistics do not prove causation at all—whether regular causation or probabilistic causation—but rather point only to what scientists are now measuring (whether people smoke) and the correlations scientists are turning up. Future scientists might well [pg596] measure something entirely different, such as whether people drink tap water or have B chromosomes.

A second possible objection to my argument is that it is moot if the public really believes that statistics such as those in Professor Schauer's illustration demonstrate that smoking causes lung cancer. In this sense, one can say that Professor Schauer has used the term "cause" in the way it is empirically understood by the public, or its "dictionary" definition.

I will not try to get around this objection by adopting the position of the American Tobacco Institute that "cause" has not in fact been found. Technically, the Institute is right. "Cause" has not been shown in the only way that it rigorously can be—namely, by applying Reichenbach's mark principle.FN52 In fact, the public is right in accepting the proposition "if you smoke you are more likely to get lung cancer." Yet the public is right for reasons other than those contained in the bare statistics of Professor Schauer's illustration. We must go outside the statistics for additional evidence that more is going on between smoking and lung cancer than mere correlation. Recall that earlier we dismissed longer skirts as a cause of a stock market crash and rising levels of Lake Michigan as a cause of a bull market because even though we were faced with correlations, we doubted that there was any possible connection between the asserted cause and effect. FN53 In Reichenbach's terms, we cannot pull out of a bear market by bribing Parisian dress designers to raise hemlines. We do know, however, of a very plausible connection in the case of smoking: The hot smoke goes into the very tiny blood sacs in the lungs; the smoke is a foreign substance, an irritant; and, other voluminous experiments and reports have demonstrated that body cells subjected to repeated irritation and stress are more likely to develop cancer. So much evidence of a direct causal relationship is present that we have a high degree of confidence in saying that the degree of reported correlation between smoking and lung cancer—a degree reflected in the statistics [pg597] Professor Schauer gives in his illustration—is due in fact to the existence of a causal relationship.

In reaching this conclusion, we must subconsciously rule out hypotheses such as the A and B chromosomes in my previous illustration. I never claimed likelihood for the chromosome idea; my "proof" was entirely formal. I showed only that we cannot derive causation from Professor Schauer's example. While the A and B chromosomes may someday be found to exist and to play the role I assigned to them, that possibility seems entirely ad hoc and vanishingly small under present knowledge. Critically, we should note that the very fact that the possibility seems ad hoc and vanishingly small is only another way of saying that all of the presently available evidence points to smoking itself as a probabilistic cause of lung cancer.

I will accept the public belief that smoking causes lung cancer, for reasons additional and extrinsic to the mere correlational statistics that Professor Schauer mistakenly believes are

sufficient to prove causation. Of course, I concede that if anyone comes up with comparable evidence regarding exposure to sexually violent materials, I would accept the Commission's finding as to causal relationship. In any event, I do insist upon actual evidence; we cannot reach a finding of causation with respect to sexually violent materials by simply regarding the smoking example as a precedent, and hence looking for only correlational evidence. The smoking example does not help Professor Schauer justify use of the word "causation" when all that he has is evidence of correlation.

V

Professor Schauer's principal justification for the key finding of "causal relationship" is to construct an argument based on probabilistic causation.FN54 He argues that the Commission's finding of a "causal relationship" is one of probabilistic causation, and not of deterministic or one-to-one causation.FN55 A causally deterministic statement might be: "Anyone who is exposed to a depiction of sexual violence will subsequently commit an act of sexual violence that he would not have committed had he not seen the film." Everyone [pg598] knows that such a proposition is false. All the Commission is talking about, and all it can possibly be talking about, is probabilistic causation. Under probabilistic causation, the only statement that the Commission need prove is: "Exposure to depictions of sexual violence will result in some members of the audience subsequently committing acts of sexual violence that they would not have committed had they not watched the film."

So far I agree with Professor Schauer about probabilistic causation. But now we part company. I define "probabilistic causation" as differing from deterministic causation only in that under deterministic causation C causes E, whereas under probabilistic causation C causes an increase in the incidence of E. The fundamental notion of "cause" remains the same in both deterministic and probabilistic causation. We still need Reichenbach's mark test in both cases. Both deterministic and probabilistic causation differ completely from correlation. Under deterministic causation, if you jiggle C, you will observe a jiggle in E. Under probabilistic causation, if you jiggle C, you will observe a percentage change in the incidence of E. Both are entirely different from correlation, in which jiggling either of the items that are correlated with each other does not necessarilyFN56 produce a jiggle in the other item.

Professor Schauer employs an entirely different notion of probabilistic causation. His uses of the concept make clear that he defines it as *the probability that there is causation*.FN57 If we were to find a higher incidence of lung cancer among smokers than among nonsmokers, Professor Schauer would conclude that there is some probability that smoking causes cancer and thus that a probabilistic causal relationship is established. If we were to find a higher incidence of lung cancer among people who own hi-fi equipment, Professor Schauer also would have to conclude that a probabilistic causal relationship is established. If we were to find a positive correlation between people who prefer Picasso to Cezanne and people who commit acts of sexual violence, Professor Schauer would have to conclude that depictions by Picasso have a probabilistic causal [pg599] relationship to acts of sexual violence. Unless, of course, he concludes that committing acts of sexual violence is a probabilistic cause of preferring Picasso to Cezanne.

Let me illustrate our difference with some numbers. Suppose you have an experimental group of 1,000 persons and a control group of 1,000 persons, and you expose the experimental group to depictions of sexual violence. If we were to examine the subsequent behavior of both groups in society and find that the incidence of acts of sexual violence was ten percent higher in the experimental group than in the control group, I would be convinced that, within appropriate statistical degrees of freedom, the depictions were a probabilistic cause of about ten percent of the increased incidence of acts of sexual violence. Or to put the matter more numerically, I would be convinced, within a few percentage points of 100%, that the depictions caused an increased incidence of antisocial acts in an amount of about ten percent. Professor Schauer's view, on the other hand, is that if he is ten percent confident that the experimental group will commit more acts of sexual violence than the control group, probabilistic causation has been established. Surely this is another way of saying that, on the basis of very little evidence, Professor Schauer can find "causation" so long as he calls it "probabilistic causation." He should not be so confident at the ten percent level because that is another way of saying he is ninety percent unconfident.FN58

As an example of the misuse of the idea of probabilistic evidence, let me cite Professor Schauer's footnoted observation on the smoking-lung cancer issue: "Most people, and most scientists, are [pg600] willing to take correlational evidence of the relationship between smoking and lung cancer as some evidence that smoking causes lung cancer."FN59 This statement, in microcosm as it were, illustrates the main deficiencies of Professor Schauer's essay. First, assuming the statement is true, the fallacy is the same as the *Hustler Magazine* fallacy Professor Schauer used earlierFN60 but here seems to have forgotten. A 17-year-old's parents may justifiably oppose her going away for the weekend with a *Hustler Magazine* reader if there is any correlation at all between reading *Hustler Magazine* and committing acts of sexual violence. They do not have to know whether the reading causes the acts or the acts cause the reading. Similarly, for most people, if the media is full of information showing a high correlation between smoking and lung cancer, that is enough to discourage smoking. If we are talking about a life-threatening practice, waiting until scientists actually find evidence of causation before giving up that practice may not be wise.

Second, even if the public is willing to take correlations as some evidence of causation, that does not justify the Commission doing so also. The public, after all, is not well-informed about the evidence of smoking, and the media certainly has not done a good job of explaining what the evidence does and does not show. If you argue with a person on the street that smoking does not cause lung cancer, but is only correlated with a higher incidence of lung cancer, that person may look at you as if you are crazy. In short, the distinction between correlation and causation may not mean much in formalistic terms to the person on the street, but that is no excuse for the Commission to rely upon and replicate popular ignorance in its Report.

Finally, for all the reasons I suggested earlier in my analysis of Professor Schauer's smoking-cancer illustration, I cannot accept his statement that most people and most scientists are looking at [pg601] *correlational* evidence and finding that it supports causation.FN61 The evidence about smoking and lung cancer is far better than correlational, even approaching certainty in some studies that attempt to use Reichenbach's mark principle. Many studies that have set out to falsify the smoking-cancer relation have failed to do so, thus increasing our

confidence in the possibility of probabilistic causation. As I have suggested previously, however, the one study that could have falsified the Commission's key conclusion about its purportedly established "causal relationship" was never undertaken.FN62

VI

In the preceding section I argued that Professor Schauer mistakenly regards probabilistic causation as the probability that C causes E. What if he were to correct his error and accept my showing that probabilistic causation means that C causes an increase in the incidence of E? I argue here that such a substitution would weaken his case for a finding of "causal relationship."

To demonstrate this, I cite the difficulty with the notion of probabilistic causation known as "Simpson's paradox." FN63 The paradox is perhaps best explicated by an illustration given by Nancy Cartwright.FN64 Assume that smoking has a propensity to increase the incidence of heart disease. We can say, as shown earlier in this essay, that smoking is a probabilistic cause of heart disease.FN65 Now make two additional assumptions: first, that exercise has an even greater propensity to reduce the incidence of heart disease than smoking has in increasing it, and second, that most people in a given population who smoke also take up exercise. We then have Simpson's paradox, namely, people who smoke will live longer. This statement has the ring of paradox, which is Simpson's point.

One might hastily draw the conclusion that Simpson's paradox shows the very notion of probabilistic causation to be incoherent, for there will always be the possibility of a countervailing factor, in [pg602] this case exercise, that negates or even overcomes the supposed causative factor. FN66 But we have a good hunch that there is such a thing as probabilistic causation. For example, if I sprinkle grass seeds on the soil in my backyard, I would regard my action as the probabilistic cause of some grass coming up next spring. The grass did not spontaneously generate itself independently of my action. On the other hand, I am prepared for the possibility that no grass comes up. I would not draw the conclusion from the latter situation that planting grass seed never works; rather, I would look for more particularistic countervailing factors.

Professor Cartwright neatly demonstrates the reality of probabilistic causation by noting what happens if we look at two subpopulations in the smoking-exercise example.FN67 If we look at (1) all the people who exercise, or (2) all the people who do not exercise, then as to each of these subpopulations, anyone who smokes increases his or her risk of heart disease. In short, by holding the exercise factor constant, smoking remains a probabilistic cause of heart disease. But it all depends on isolating the two subpopulations.

The Commission's Report and Professor Schauer's defense of it do not even come close to isolating the relevant subpopulations. The Commission finds only that some intuitive correlation exists between exposure to pornography and committing antisocial acts. The lesson of Simpson's paradox shows how remote the Commission's finding is from supporting responsible legislation outlawing pornography. In the first place, even if there is a correlation between viewing pornography and committing antisocial acts, there is also a correlation between viewing pornography and not committing antisocial acts. Indeed, we need no

statistical surveys to demonstrate the obvious fact that in the United States the vast majority of people who view pornography do not commit antisocial acts. Second, what Simpson's paradox now tells us to ask is whether viewing pornography may actually deter the commission of antisocial acts. This is the "relieving" or "satisfying" function of [pg603] pornography—the observation that some people, by watching pornography, "get it out of their system" and therefore have no further desire to go out and actually do it. This factor may be operating in the same way as Professor Cartwright's example about smokers who have a high propensity to exercise. It may explain why so many more people watch pornography and do not commit antisocial acts than watch it and do commit such acts.

Such an explanation works, of course, only if we have begun with the proposition that viewing pornographic materials can have some effect on the propensity to commit or not to commit antisocial acts. Because that proposition itself is so difficult to prove, and because the Commission did not prove it, we may conclude that the notion of probabilistic causation not only does not help Professor Schauer reach his conclusion, as he thought it did, but actually increases the gap between the evidence he adduces and the conclusion he desires to reach.

VII

Professor Schauer's final rhetorical strategy is to soften his claim. He says that he is not confident enough about the "causal relationship" finding to lead him to support regulating sexually violent material in violation of current first amendment protection of such material.FN68 Nevertheless, he adds that he is confident enough in the finding "to justify constitutionally the regulation of that which must meet only a rational basis test . . .".FN69 If it seems difficult to understand what he means, he explains further: "If the question is whether there is sufficient evidence merely justifiably to assert the existence of the causal relationship, then the answer for me is 'yes,' and the answer for the Commission was 'yes' as well."FN70 What I understand Professor Schauer to be saying is that there is a distinction between being confident in a finding and being confident in a mere *assertion* of such a finding.

Professor Schauer's distinction reminds us of litigators who might *assert* that their client is not guilty yet lack personal confidence in their assertion. But is that the proper standard for a [pg604] scholar in a professional journal or a commissioner entrusted with a public duty to find facts? If an author asserts in writing that such-and-such is the case, is it fair for him or her to secretly lack confidence in that assertion? How is the reader expected to know about his or her mental reservation?

Professor Schauer's assertion of less than complete confidence in the Commission's key finding plays an important strategic role in his argument. His assertion facilitates his leap from probabilistic causation to the probability-that-there-is-probabilistic causation. To state my point of a preceding section in different words, applying the terms "deterministic causation" when we have a lot of evidence and "probabilistic causation" when we have little evidence is incorrect.FN71 We need the same degree of confidence to establish either deterministic or probabilistic causation, preferably by using Reichenbach's mark principle. The only difference between the two is that deterministic causation has a one-to-one relation between C and E, whereas probabilistic causation has a statistical relation between C and E. Professor Schauer

has no scientific justification for claiming that we can get by with a lesser degree of confidence if we want to find probabilistic causation. Yet that is the claim he ultimately makes by proclaiming that he has a mental reservation that justifies a distinction between having confidence in a finding of causality and the mere assertion of the existence of causality.

Undoubtedly, he knows that the stakes are very high. Showing "causation" is vastly more important to those who would restrict freedom of expression than showing mere "correlation." Similarly, showing "probabilistic causation" is extremely stronger than showing "probabilistic correlation." The Commission's finding, "bears a causal relationship," probably was highly gratifying to Attorney General Meese, who minced no words about his personal abhorrence of pornography.FN72

[pg605] CONCLUSION

Professor Schauer softened his article by hinting that the Commission asserted the mere existence of probabilistic *causation* because it lacked complete confidence in finding deterministic causation. In fact, the Commission's chosen alternative was no trifle; probabilistic causation is an explosive finding of great social significance. Moreover, the Commission said that its key conclusion was "unanimous and confident." Legislators, policymakers and the general public probably will be unaware that the principal drafter of the Report played down this confidence in a separately published academic essay. Rather, they will quote and rely upon the Commission's key finding that exposure to sexually violent materials "*bears a causal relationship*" to acts of sexual violence. If challenged, they will cite, probably without reading, Professor Schauer's learned article as justification for the "causality" finding, because the article, whatever else it is, is a Work of Scholarship. In our society that status itself seems to generate rhetorical power.

In this essay I have tried to show that Professor Schauer failed to justify the Commission's claim of causation. My conclusion is that the key finding of the Meese Commission bears a causal relationship not to truth but to political truth.

FOOTNOTES

*Professor of Law, Northwestern University. A.B., Cornell, 1958; J.D., Harvard, 1961; Ph.D., Columbia, 1968. The author was a consultant to the 1970 President's Commission on Obscenity and Pornography, which reached the conclusion that there was no causal relationship between exposure to sexually explicit materials and delinquent or criminal behavior.

**Numbers in the format pg575, etc. refer to the paging in the original article.

FN 1. U.S. DEP'T OF JUSTICE, FINAL REPORT: ATTORNEY GENERAL'S COMMISSION ON PORNOGRAPHY 326 (1986) [hereinafter REPORT].

FN 2. A team of federal prosecutors and law enforcement agents called the National Obscenity Enforcement Unit (NOEU) has been active in assisting local authorities with obscenity cases. According to a report in the trade publication *Variety*, "NOEU, which operates out of the

Justice Dept., was born out of recommendations made in 1986 by then-Attorney General Edwin Meese's Commission on Pornography. The Commission's Report concluded that there exists a causal affect between pornography and violent sex crimes." Stewart, *Smut out of Rut, Defying its Foes*, VARIETY, Jan. 17, 1990, at 36, col. 2.

FN 3. The courts can consider such speech unprotected under either the "falsely shouting fire in a theatre" rationale of Justice Holmes in *Schenck v. United States*, 249 U.S. 47, 52 (1919), or the "fighting words" doctrine established in *Chaplinsky v. New Hampshire*, 315 U.S. 568, 571-72 (1942).

FN 4. Three scientists upon whose experiments the Commission relied have already criticized the Commission for misusing their findings to support the conclusion of "causation." See Linz, Penrod & Donnerstein, *The Attorney General's Commission on Pornography: The Gaps Between "Findings" and Facts*, 1987 AM. B. FOUND. RES. J. 713 [hereinafter Linz].

FN 5. REPORT, *supra* note 1, at 325-26.

FN 6. Professor Schauer made his commitment to the Commission's findings clear in his personal statement:

Although I consider myself as moral as the next person, and more moral than most, I do not deceive myself into thinking that my appointment to this task was a function either of my own morality or of my ability to identify, to reflect, or to speak for the moral values of others. . . . [T]he world has no shortage of people who are looking to create or to accentuate divisions. It does need people who are willing to try to heal them, not by trying to persuade other people to adopt your point of view, but instead by reaching out and trying to understand theirs. We have tried to do this, and we have succeeded more than most.

REPORT, *supra* note 1, at 176, 178-79 (personal statement of Commissioner Frederick Schauer).

FN 7. Schauer, *Causation Theory and the Causes of Sexual Violence*, 1987 AM. B. FOUND. RES. J. 737.

FN 8. Because I challenge Professor Schauer directly, the reader may wonder why my article is not followed by his rebuttal. The explanation lies in the "publishing history" of this Article. I wrote this Article in September 1988 and submitted it to the same journal that published Professor Schauer's article, namely, *Law and Social Inquiry* (formerly the *American Bar Foundation Research Journal*), a journal of the American Bar Foundation. I suggested that the editors might want to send a copy to Professor Schauer and give him an opportunity to write a reply. The editors did so and informed me that Professor Schauer planned to send in a reply by January 1989. No further word having been received from Professor Schauer by April 1989, the editors decided to go ahead with the publication of my article standing alone. I then added a footnote consisting of the three sentences prior to this one. The editor in charge of my article said that the footnote was completely accurate and that I could add it to the article. Six weeks later, however, the managing editor of the journal, conceding the complete accuracy of the footnote, informed me that he would not publish the article with that footnote in it. (He gave no indication of appreciation of the irony involved in wanting to publish an article that criticizes

ensorship while simultaneously censoring its author.) As a result, I withdrew the article. I am informed that the editors of the *William and Mary Law Review* have extended an invitation to Professor Schauer to respond in this issue or at any future time, and that Professor Schauer has indicated the possibility that he may reply in the future.

FN 9. *See supra* text accompanying note 1.

FN 10. *See* L. WITTGENSTEIN, *PROTTRACTATUS* 127-29 (1971). For the origin and explanation of the truth table, see G. ANSCOMBE, *AN INTRODUCTION TO WITTGENSTEIN'S TRACTATUS* 23 (3d ed. 1967) and M. BLACK, *A COMPANION TO WITTGENSTEIN'S TRACTATUS* 216, 219 (1966).

FN 11. *See* Schauer, *supra* note 7, at 764-65, 767.

FN 12. According to Karl Popper's famous proposition, scientific knowledge advances upon the falsification of propositions. *See* K. POPPER, *CONJECTURES AND REFUTATIONS: THE GROWTH OF SCIENTIFIC KNOWLEDGE* 36, 40-41, 192, 243, 256 (2d ed. 1965); K. POPPER, *THE LOGIC OF SCIENTIFIC DISCOVERY* 40-42 (1959); F. SUPPE, *THE STRUCTURE OF SCIENTIFIC THEORIES* 166-70 (2d ed. 1977).

FN 13. Schauer, *supra* note 7, at 756 (footnote omitted).

FN 14. REPORT, *supra* note 1, at 977-88.

FN 15. *Id.* at 977-88, 1011-17.

FN 16. *Id.* at 324-26, 329, 1005-06.

FN 17. *See generally* E. WEBB, D. CAMPBELL, R. SCHWARTZ & L. SECHREST, *UNOBTRUSIVE MEASURES: NONREACTIVE RESEARCH IN THE SOCIAL SCIENCES* (1966).

FN 18. REPORT, *supra* note 1, at 1960.

FN 19. *See* Schauer, *supra* note 7, at 743 n.19.

FN 20. *Id.*

FN 21. The lack of such a statement, however, did not deter experimental scientists from using the notion of causation in their work, any more than the lack of understanding of the nature of the quantum effect deters practical scientists from working with elementary particles.

FN 22. *See* D. HUME, *An Abstract of a Treatise of Human Nature*, in *AN INQUIRY CONCERNING HUMAN UNDERSTANDING* 186-87 (1955).

FN 23. Of course, some people will have fun trying to postulate a causal mechanism. Rising headlines might signal a shortage of fabric, which might betoken a general rise in consumer

demand that includes a rise in demand for stocks. A higher level of Lake Michigan might suggest good rainfall that season, which could lead to lower agricultural costs, lower food prices, and hence a general rise in consumer contentment that could be reflected in optimism on Wall Street. The difficulty with these theories is that their opposites can also be articulated. For example, more rainfall might lower food commodity prices thus lowering the income of farmers, who then might have to liquidate stocks to raise cash.

FN 24. *See* D. HUME, *supra* note 22, at 186-91.

FN 25. Quantum theory has recently thrown into doubt the question whether a cause must precede its effect in time. The Alain Aspect experiments in France in 1982, applying Bell's inequality theorem to the early Einstein-Podolsky-Rosen speculation, proved that two quantum events spatially-temporally separated (by an "Einsteinian separation") nevertheless behave as if the later-in-time measurement causes the earlier proton-pairing. Because the notion of a cause preceding an effect is so ingrained in our thinking, philosophers and scientists who have worried about the Aspect result have thrown into doubt equally ingrained notions such as the "reality" of the universe or the assumption of locality in the way we measure spatial distances. *See generally* B. D'ESPAGNAT, *IN SEARCH OF REALITY* 39-50 (1983); R. PENROSE, *THE EMPEROR'S NEW MIND: CONCERNING COMPUTERS, MINDS, AND THE LAWS OF PHYSICS* 286-87 (1989).

FN 26. H. REICHENBACH, *THE DIRECTION OF TIME* 198 (1956) ("A mark is the result of an intervention by means of an irreversible process.").

FN 27. The example Reichenbach gives is putting a red lens in the path of a light beam. If A is a flashlight and B is the spot of light you see on a wall, then by "marking" the light beam with the red lens, you will observe that the spot on the wall turns red. The reverse can never be observed in positive time: There is not a "red light traveling from B toward a red glass inserted in the path," nor is it true that "this glass emits light waves of different colors which are added to the red beam in such a way that the resulting mixture is white and travels toward A." *Id.* This reverse process can never be observed "because the absorption of light in a red glass is an irreversible process." *Id.* at 198-99. Irreversible processes, of course, are defined by the second law of thermodynamics. The statistical improbability of an irreversible process, as described by Poincare, has recently been criticized as being too conservative; the improbability is of the order of correctly picking out a predesignated point on a line. *See* I. PRIGOGINE, *FROM BEING TO BECOMING* 165-97 (1980).

FN 28. *See* REPORT, *supra* note 1, at 940.

FN 29. Schauer, *supra* note 7, at 763.

FN 30. *Id.* at 763 n.56.

FN 31. *See supra* notes 14-16 and accompanying text.

FN 32. *See supra* note 15 and accompanying text.

FN 33. REPORT, *supra* note 1, at 1011-17.

FN 34. The "controlled experiments" are the only "hard" evidence that the Commission cited in support of its key conclusion. Professor Schauer concedes that this evidence in itself is not sufficient to support the Commission's conclusion. Schauer, *supra* note 7, at 765. However, I find no other evidence supporting the Commission's key conclusion in the Commission's Report or in Professor Schauer's essay. To be sure, many impressionistic claims are made throughout the Report and essay, and these I discuss below.

FN 35. Professor Schauer admits that "we see in many of the experiments in this area experimental effects only of attitudinal changes, or laboratory measures of aggression, and the connection between attitudes and behavior, or between laboratory aggression and actual behavior, is left largely for non-scientific assessment." Schauer, *supra* note 7, at 758. This is a bit like writing a detective novel involving an allegedly perfect crime, only to have the sleuth at the end say, "I'm sorry dear reader, but I can't figure out who did it." If Professor Schauer is attempting to justify scientifically the key finding of "causal relationship," he should not at the end of his argument take refuge in non-scientific assessment. If future public policy may turn on the Commission's key finding, the Commission had a responsibility to base its conclusion on more than introspection and intuition.

FN 36. REPORT, *supra* note 1, at 978.

FN 37. *Id.* at 982.

FN 38. Indeed, the tumescence scores showing that victim abhorrence is less exciting to the viewer suggest the opposite of the notion that rapists enjoy unwilling and resisting victims. If I were engaging in the same sort of intuitive "assessment" of evidence as the Commission, I might well leap to the conclusion that there is a *negative* correlation between viewing depictions of sexual violence and the commission of such acts.

FN 39. REPORT, *supra* note 1, at 1016.

FN 40. Even if researchers conduct the experiments "anonymously," college students know quite well from psychology courses or from their friends that the experimenter has an arsenal of surreptitious ways to identify the supposedly anonymous subjects.

FN 41. Linz, *supra* note 4, at 722.

FN 42. *Id.* In quoting this remark, I must make a reservation about the authors' use of the phrase "not sanctioned." This choice of words is poor because the authors could have left out the word "not" and meant precisely the same thing. The word "sanctioned" can mean either "approved" or "penalized."

FN 43. Schauer, *supra* note 7, at 767 n.65.

FN 44. REPORT, *supra* note 1, at 317.

FN 45. Interestingly, saying that "gravity" causes both books to fall may explain this example. As a scientific matter, however, the term "gravity" is a pure mental construct—of no greater explanatory power than the term "cause." The spatial region in which my book resides may well be curved, as described in Einstein's general theory of relativity. Even at this level of sophistication, however, one cannot say that the curvature of space causes my book to fall. At best, the falling book is evidence of spatial curvature.

FN 46. Except, of course, if we assume a deterministic universe in which everything that comes earlier in time causes everything that happens later. Even on that assumption—which quantum theory more or less demolished—causation loses all meaning and becomes a vacuous assertion because everything in the universe would be causally related to everything else. Thus, on such an assumption, exposure to depictions of sexual respect would be just as much a cause of antisocial behavior as would exposure to depictions of sexual violence.

FN 47. Schauer, *supra* note 7, at 753.

FN 48. If this point seems obscure, consider the following: The smokers are different from the nonsmokers in that one often sees members of the first group with smoke coming out of their mouths. Clearly, this should not be a difference between the two groups that would count as destroying the criterion of "otherwise identical" that Professor Schauer sets up.

FN 49. I am not making here the trivial point that every individual is unique. Rather, I accept the premise of aggregate population statistics that if the test population is large enough, the probability increases that unimportant differences among individuals will have a diminishing effect upon our degree of confidence in the statistical soundness of the hypothesis.

FN 50. I note my indebtedness here to a parallel argument contained in Nelson Goodman's classic proof that in any counterfactual assertion, all conditions other than the counterfactual one cannot possibly have been held the same. *See* N. GOODMAN, FACT, FICTION, AND FORECAST 13-15 (4th ed. 1983).

FN 51. It is still true that if smoking causes people to drink tap water and tap water causes lung cancer, and if scientists are totally unaware of the tap water factor, people would be well advised to give up smoking. Only in the future, when scientists uncover the hypothetical tap water factor, will people be able to go back to smoking and at the same time avoid lung cancer by not drinking tap water.

FN 52. Though it may be soon. If researchers are careful in collecting data that shows that cutting down on smoking reduces the incidence of cancer among smokers, and that increasing the amount of smoking increases the incidence of cancer among smokers, we may be very close to a Reichenbachian validation of the causation hypothesis.

FN 53. *See* Section II, *supra* pp. 582-85.

FN 54. Schauer, *supra* note 7, at 754, 767.

FN 55. *Id.* at 751-52.

FN 56. The word "necessarily" signals the fact that *some* correlation also involve causations; but if two things are *only* correlated and there is *no* causation, then jiggling one does not jiggle the other.

FN 57. *See* Schauer, *supra* note 7, at 753-54.

FN 58. Judging from the extremely hedged way in which Professor Schauer presents his defense of the Commission's conclusion, I think my figure of a 10% level of confidence that causation exists at all is rather accurate. Professor Schauer contends that the Commission's plausible speculation about causation is nothing less than what scientists, policymakers and judges do all the time. *Id.* at 767. I do not know what scientists he has in mind. I do not doubt that policymakers speculate about causation all the time; indeed, many of them make policies that flagrantly contradict the soundest evidence presented to them. As for judges, if they make plausible speculations about causation, they do so only because they must decide a case to one side or the other, and judges think it is fairer to decide in favor of the side in which the speculation is at least plausible than the side in which the speculation is implausible. None of these practices support the Pornography Commission's decision to do the same thing—unless someone held a political gun to the Commission's head to guarantee that it reached a finding of causation.

FN 59. *Id.* at 767 n.65. To be sure, Professor Schauer goes on to say that the correlational evidence regarding sexually violent material "is far less reliable," and that it "played no factor in [his] conclusions." *Id.* I agree that the evidence regarding sexually violent material is less reliable, but even if it were completely reliable, it would not support a finding of *causation*. As for Professor Schauer's assertion that such evidence played no factor in his conclusions, is not one of his conclusions his essay-long defense of the Commission's key finding about "causal relationship"?

FN 60. *See supra* notes 29-30 and accompanying text.

FN 61. *See* Section IV, *supra* pp. 590-97.

FN 62. *See* Section I, *supra* pp. 578-82.

FN 63. *See* Simpson, *The Interpretation of Interaction in Contingency Tables*, 13 J. ROYAL STATISTICAL SOC'Y 238 (series B 1951).

FN 64. *See* N. CARTWRIGHT, *HOW THE LAWS OF PHYSICS LIE* 23-24 (1983).

FN 65. *See* Section V, *supra* pp. 597-601.

FN 66. This point is related but not identical to my previous discussion of chromosomes A and B, and the tap water versus bottled water example. *See* Section IV, *supra* pp. 590-97. By making appropriate assumptions, we can defeat a claim of probabilistic causation by inventing an associated factor that works in the opposite direction.

FN 67. N. CARTWRIGHT, *supra* note 64, at 23-24.

FN 68. Schauer, *supra* note 7, at 763.

FN 69. *Id.* (footnote omitted).

FN 70. *Id.*

FN 71. *See* Section V, *supra* pp. 597-601.

FN 72. *See generally* N.Y. Times, Oct. 23, 1986, at A21 (quoting Meese as vowing to launch an "all-out campaign against the distribution of obscene material" and referring to pornography as the "cancer of obscenity").