The Asbestos Litigation Master Narrative: Building Codes, Engineering Standards, and "Retroactive Inculpation"

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> "Asbestos litigation is a quintessential example of the expansion of the scope of liability by retroactive inculpation"—Lester Brickman, *Lawyer Barons* (Cambridge University Press, 2011, 154).

Sociologist of science Sheila Jasanoff tells us that "A master narrative is a compelling and frequently repeated story about the way the world works that takes hold of our imaginations and shapes the ways in which we perceive reality, as well as our possibilities for collective action."[1] The asbestos litigation master narrative, versions of which are available on hundreds of plaintiff-firm websites, has been spectacularly successful in generating billions of dollars in revenue for plaintiffs, attorneys, and expert witnesses since 1973.[2] As of December 31, 2009, the US District Court E.D. Pa. MDL 875 (Multi-District asbestos Litigation) docket included 42,076 cases

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1. Jasanoff, "The Facts of the Matter."

2. Moser, "Jury Awards $200 Million; Largomarsino "N.J. Courts Upholds"; Simmons Browder, "Verdicts & Settlements"; Waters & Kraus, "Jury Awards $35.1 Million"; and Frank, "$12.8 Million Awarded." The case reported by Moser in 2010 was remanded for retrial later in the year. Medical expert witnesses have been the chief expert players in this litigation market, not always to the credit of the health professions. See, for example, Gitlin et al., "Comparison of 'B' Readers' Interpretations"; and Janower & Berlin, "'B' Readers' Radiographic Interpretations."

"consisting of 2,337,692 individual claims (all diseases)." In that year, there were a little over one thousand nine hundred new filings in state courts as well.[3] More than eight thousand entities have been named as asbestos defendants since 1976.[4] The RAND corporation found in 2005 "that 75 out of a total of 83 different [U.S.] industries in the SIC [Standard Industrial Classification] system at the two-digit level included at least one firm that had been named as an asbestos litigation defendant."[5] Christopher O'Malley quoted Lester Brickman in 2008 to the effect that

> no litigation in American history has involved as many individual claimants, been predicated upon the severity of injury, consumed as many judicial resources, resulted in as much compensation to claimants, compelled the number of defendant's bankruptcies, or been as lucrative to lawyers as asbestos litigation.[6]

The number of asbestos claims is not correlated with the incidences of mesothelioma and asbestosis. For example, more than forty thousand claims were filed in the period September 30, 2006–September 30, 2007, but there were only about two thousand five hundred cases of mesothelioma and about three hundred deaths from asbestosis per year in 2006.[7] Because mesothelioma was not separately classified as a reportable disease until 1999, we do not have reliable figures on its US incidence before that date. The reported mortality rate for this disease, however, is thought to have risen slightly between 1990 and 2005, but the rate per million population was stable, and may now be declining.[8]

As Cardozo Law School professor Lester Brickman correctly observes, most asbestos claims "were the result of defendant's retroactive inculpation for acts committed decades earlier that were not wrongful at the time."[9] I concur with Brickman in this but go beyond him in arguing here that the vast majority of current asbestos claims result, in fact, from past efforts to enable compliance by property owners and building contractors with building codes and

3. Asbestos Liability Risk Analysis Group, *Asbestos Claims and Litigation* (2008), 5.

4. Wylie, *Trial Lawyers Inc.*, 7.

5. Carroll, *Asbestos Litigation,* 81. Two-digit SIC codes are the second-highest level of aggregation in a classification system that can accommodate levels of detail to six digits.

6. O'Malley, Christopher J. "Breaking Asbestos Litigation's Chokehold," 1102.

7. U.S. Centers for Disease Control, "Worker Health Chartbook," Figure 3-2; Asbestos Liability Risk Analysis Group, *Asbestos Claims and Litigation* (2008), 4. The Asbestos Risk Group authors assert that their numbers almost certainly undercount new claims.

8. Bang,"Malignant Mesothelioma Mortality."

9. Brickman, *Lawyer Barons*, 153.

engineering standards at the Federal, state, and local levels that specified and approved asbestos in code-compliant assemblies. In many cases, the use of asbestos was required by law; no asbestos-free assemblies were approved in, for example, cathodic wrap for underground steel gas pipe, hot-air register insulating paper, and electrical insulation for conductors in switchboards.[10] There is still no equivalent-performance substitute for asbestos in high-temperature gaskets and some types of high-performance motor vehicle brakes.[11]

The asbestiform minerals are a group of naturally occurring silicates, of which three (chrysotile, crocidolite, and amosite) were widely used between the late nineteenth century and the mid-to-late 1980s for their resistance to heat, acid, alkalis, and electricity. Building codes across the United States included specifications for asbestos in building construction, electrical assemblies, plumbing, underground and process pipe, theater safety curtains, and dozens of other types of service.[12] Developed by the technical committees of about two hundred different US and international engineering and safety organizations, these standards continued to specify asbestos through the 1980s in approved assemblies for which alternative materials failed the tests specified in the standard.[13]

In effect, the tort law system that has supported asbestos litigation since 1973 drove much older and well-established building law, and the engineering standards incorporated into it, into a legal shadow from which it has yet to emerge, penalizing the makers and owners of products manufactured in compliance with construction regulations as negligent and characterizing all products that contained asbestos as "defective" and "unreasonably dangerous."[14] Historians will recognize this as an economically consequential case of the fallacy of presentism: the imposition of modern values on the past.[15] In 1987, Federal judge Christine Cook Nettesheim accurately characterized

10. For conductors in switchboards, see, for example, NFPA *National Electrical Code* (1971), 355 and 362; City of Chicago, *Building Code* (1991), 958 (Section 14-28-940). On asbestos paper, see Wisconsin, *Building Code*, 50 (Order 5215); New Orleans, *Building Code*, 37-4; Massachusetts, *State Building Code*: section 1118.51. On cathodic wrap, see note 14.

11. Steinetz, *Seal Technology,* 630-638; and Lauder, "Defence Force."

12. For theater safety curtains, see for example, Wisconsin, *Building Code*, 139; and Pennsylvania, *Regulations*, 874 (Section 37.322).

13. See, for example, Kusuda and Ellis. "Boiling Tests."

14. On the history of Anglo-American building law, see Walford, "Fires and Fire Insurance," 348-9.

15. Fischer *Historians' Fallacies*, 135-140; Wilson and Ashplant "Present-Centred History," and "Whig History," and Hunt "President's Column."

16. Johns-Manville Corporation et al., plaintiffs, v. United States, defendant, no. 465-83C, United States Claims Court, 13 Cl. Ct. 72 6 August 1987, 7.

the initial 1973 asbestos case, *Borel v. Fibreboard,* as "an icon of hindsight analysis."[16]

At no point in the forty-year history of asbestos litigation have any of the principal actors or commentators in the legal arena publicly raised the issue of asbestos in building codes and engineering standards. Attorneys on both sides of the bar, judges from county courts through the Supreme Court of the United States, and even the US Congress have hotly (and expensively) debated questions of liability, medical causation, conspiracy, and breach of warranty as if the built environment were unregulated, except for limits on asbestos fibers in the ambient air. Only two cases that I have been able to identify of the thousands of asbestos cases documented in LexisNexis have defense counsel raised building code issues. Although the defense was successful in both these cases, they seem to have had little influence on subsequent litigation. I shall have more to say of these cases in a later section.

Perhaps the most surprising elements of this improbable tale are the roles of the Occupational Safety and Health Administration (OSHA) and the US Public Health Service (USPHS). Although the regulations and publications of both agencies with respect to permissible exposure limits for asbestos in the air are consistently cited by plaintiffs, defendants, and judges, these agencies' specifications for asbestos in approved assemblies seem to have entirely escaped notice.[17] While for the most part these specifications are incorporated by reference into OSHA's and USPHS' rules and regulations (see table 1), at least one appears in the published texts of both the 1971 and the 1987 OSHA rules (see figure 1).

How could products based on OSHA- and USPHS-approved assemblies be regarded as "unreasonably dangerous"? How could defendants have missed such obvious defenses as building laws, engineering standards, and OSHA regulations? How could compliance with law be construed as negligence? It is as if all actors in the asbestos litigation drama were hermetically sealed into an historical world shaped entirely by the asbestos litigation master narrative. We turn now to the history and characteristics of this conceptual universe, which I shall call the asbestos tort box.

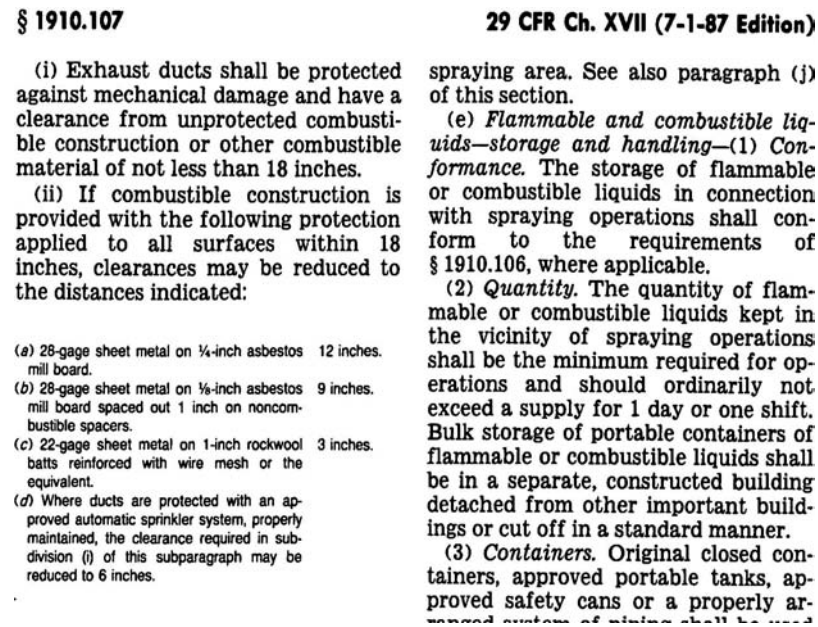
17. U.S. PHS, *Report*, 22-24, 27-28 and 91; and U.S. PHS *Minimum Requirements of Construction*, 45 and 47. For dust hazards, see Bloomfield, *Determination and Control of Industrial Dust*; U.S. OSHA, "Emergency Temporary Standards" and U.S. OSHA, "Title 29 Part 1910 Occupational Safety and Health Standards," 1987: 75-545.

Table 1 Specifications for asbestos incorporated by reference into OSHA rules and regulations

Standard	SDO	Title	OSHA 1971 29 CFR 1910 Section(s)	OSHA 1987 29 CFR 1910 Section(s)	Specification(s) for asbestos
	AAI-RMA	Specifications for Anhydrous Ammonia Hose	111	111	Fiber reinforcement of hose
	ACGIH	Industrial Ventilation 9th edition 1966	94		Heat shielding, air filters
ANSI Z21.30-1964	ANSI	Standard for the Installation of Gas Appliances and Gas Piping	264	265	Thermal insulation, heat shielding
ASA B31.1-1955	ANSI/ ASME	Code for Pressure Piping	106	21	Gaskets
USAS B31.1-1967	ANSI/ USAS	Standard Code for Pressure Piping	103, 104, 106, 218, 252, 261, 264	103, 104, 105, 252	Gaskets
ASME Boiler Code 1970	ASME	Boiler and Pressure Vessel Code Section VIII	103, 104, 106, 107, 110, 111, 168, 169, 261, 262	102, 103, 104, 106, 107, 110, 111, 169, 217, 261, 262, 263	Gaskets and seals
API/ASME Code 1951	API/ ASME	Unfired Pressure Vessels for Petroleum Liquids and Gases	110, 168	110	Gaskets and seals
ANSI B31.1-1967	USAS/ ASME	Fuel Gas Piping	106	261 (1968)	Gaskets
NFPA 11-1970	NFPA	Standard for Foam Extinguishing Systems	108	Appendix C	Porous asbestos tubes
NFPA 13-1961	NFPA	Standard for the Installation of Sprinkler Systems	107, 109, 159, 165a, 177	Appendix C	Underground pipe coating
NFPA 16-1968	NFPA	Standard for the Installation of Foam-Water Sprinkler Systems	N/A	160, 163	Asbestos–cement pipe lining
NFPA 20-1970	NFPA	Standard for the Installation of Centrifugal Fire Pumps	156	Appendices B and C	Asbestos–cement pipe
NFPA 22-1970	NFPA	Standard for Water Tanks for Private Fire Protection	156, 158	Appendices B and C	Joint packing, gaskets, roof covering
NFPA 24-1970	NFPA	Standard for Outside Protection	156, 177	Appendix B	Asbestos–cement pipe

Table 1 (*Continued*)

Standard	SDO	Title	OSHA 1971 29 CFR 1910 Section(s)	OSHA 1987 29 CFR 1910 Section(s)	Specification(s) for asbestos
NFPA 31-1968	NFPA	Standard for Installation of Oil-Burning Equipment	263	N/A	Thermal insulation, heat shielding
NFPA 33-1969	NFPA	Spray Finishing Using Flammable and Combustible Materials	94, 115	94, 99, 115	Heat shielding
NFPA 51b-1962	NFPA	Cutting and Welding Processes	253	253	Heat shielding
NFPA/NBFU 54-1969	NFPA/ NBFU	Installation of Gas Appliances and Gas Piping	110	265	Thermal insulation, heat shielding, asbestos–cement vents
NFPA 70-1968	NFPA/ ANSI	National Electrical Code (ANSI C-1-1968)	68, 94, 143, 177, 178, 309, 314, 320, 322, 330	N/A	Electrical insulation, asbestos–cement conduit
NFPA 70-1971	NFPA	National Electrical Code	N/A	66, 68, 94, 103, 110, 178	Electrical insulation, asbestos–cement conduit
NFPA 86A-1969	NFPA	Standard for Ovens and Furnaces: Design, Location and Equipment	108	108	Asbestos rope duct seals
NFPA 91-1961	NFPA/ ANSI	Blower and Exhaust Systems (ANSI Z33.1)	94, 107	94, 261, 265	Duct insulation, rope seals, asbestos–cement duct
NFPA 91-1969	NFPA	Standard for the Installation of Blower and Exhaust Systems	108	108	Duct insulation, rope seals, asbestos–cement duct
NFPA 96-1970	NFPA	Ventilation of Cooking Equipment	110	110	Thermal insulation
NFPA 203M-1970	NFPA	Manual of Roof Coverings	109	109	Roof coverings
NFPA 220-1969 (1961)	NFPA	Standard Types of Building Construction	103	103	Incombustible construction materials
NFPA 251-1969	NFPA	Fire Tests of Building Construction Materials	106	106	Asbestos–cement board and millboard, pads
CGA P-1	CGA	Safe Handling of Compressed Gases	101	102	Asbestos gloves



§ 1910.107 29 CFR Ch. XVII (7-1-87 Edition)

(i) Exhaust ducts shall be protected against mechanical damage and have a clearance from unprotected combustible construction or other combustible material of not less than 18 inches.

(ii) If combustible construction is provided with the following protection applied to all surfaces within 18 inches, clearances may be reduced to the distances indicated:

(*a*) 28-gage sheet metal on ¼-inch asbestos mill board.	12 inches.
(*b*) 28-gage sheet metal on ⅛-inch asbestos mill board spaced out 1 inch on noncombustible spacers.	9 inches.
(*c*) 22-gage sheet metal on 1-inch rockwool batts reinforced with wire mesh or the equivalent.	3 inches.
(*d*) Where ducts are protected with an approved automatic sprinkler system, properly maintained, the clearance required in subdivision (i) of this subparagraph may be reduced to 6 inches.	

spraying area. See also paragraph (j) of this section.

(e) *Flammable and combustible liquids—storage and handling*—(1) *Conformance.* The storage of flammable or combustible liquids in connection with spraying operations shall conform to the requirements of § 1910.106, where applicable.

(2) *Quantity.* The quantity of flammable or combustible liquids kept in the vicinity of spraying operations shall be the minimum required for operations and should ordinarily not exceed a supply for 1 day or one shift. Bulk storage of portable containers of flammable or combustible liquids shall be in a separate, constructed building detached from other important buildings or cut off in a standard manner.

(3) *Containers.* Original closed containers, approved portable tanks, approved safety cans or a properly ar-

Figure 1 Abestos duct insulation in OSHA rules and regulations, 1987, 29, CFR § 1910.107.

Thinking Inside the Tort Box: *Borel v. Fibreboard*

The stage was set for asbestos litigation by a development in legal liability theory, the *Restatement* (Second) *of Torts* in 1964, which asserted in § 402A that a product was "unreasonably dangerous" if "a reasonable man would not sell the product if he knew the risk involved." An entrepreneurial Texas plaintiff attorney, Ward Stephenson (1921–1973), took advantage of this opportunity by filing the first asbestos personal injury claims in December 1966. Although Stephenson lost this case at trial, five defendants settled out of court for a total of $75,000, setting a pattern of financial reward for plaintiffs and their counsel, independent of the merits of cases, that has persisted ever since. Stephenson's next case, that of Clarence Borel, went all the way to the US Supreme Court, creating the liability paradigm for all asbestos personal-injury suits thereafter. Stephenson died of cancer in September 1973, just after the Fifth Circuit affirmed the *Borel* verdict. Judge John Minor Wisdom (1905–1999), who wrote the opinion for the Fifth Circuit, summarized the case as follows:

> Clarence Borel, an industrial insulation worker, sued certain manufacturers of insulation materials containing asbestos to recover damages for injuries caused by the defendants' alleged breach of duty in failing to warn of the dangers involved in handling asbestos. Borel alleged that he had contracted the diseases of asbestosis and mesothelioma as a result of his exposure to the defendants' products over a thirty-three year period beginning in 1936 and ending in 1969. The jury returned a verdict in favor of Borel on the basis of strict liability. We affirm.[18]

Fibreboard and its codefendants sought certiorari from the US Supreme Court, which was denied on October 15, 1974. The court acknowledged that "insulation materials containing asbestos may be viewed as 'unavoidably unsafe products,'" which, under the Restatement, "are those which, in the present state of human knowledge, are incapable of being made safe for their ordinary and intended use." On this point the court asserted that

> As a practical matter, the decision to market such a product requires a balancing of the product's utility against its known or foreseeable danger. But . . . even when such balancing leads to the conclusion that marketing is justified, the seller still has a responsibility to inform the user or consumer of the risk of harm. The failure to give adequate warnings in these circumstances renders the product unreasonably dangerous.

All notes and references cited in this opinion and those of the lower courts are to tort law and to breach-of-warranty issues from contract law. The "decision to market" question was assumed to rest entirely with the manufacturer and/or seller; no reference is made to any form of regulation of the built environment except control of environmental dust levels. Although the Occupational Safety and Health (OSH) Act of 1970 is mentioned briefly in a footnote in the Supreme Court decision, the court asserts only that "The Act gave the Secretary of Labor the authority to establish standards for permissible concentration of airborne asbestos fibers."

That OSHA also specified and approved dozens of asbestos-containing assemblies, as the USPHS had done since the 1920s, was apparently unknown both to the defendants and to the courts. In effect, the "balancing" of risks and benefits leading to the "decision to market" had been made by consensus standards; local, state, and federal regulation; and administrative law, not by

18. 493 F.2nd 1076.

manufacturers, sellers, or consumers. None of this regulatory infrastructure, however, played a role in the decisions of any of the *Borel* courts. The only authorities cited by these courts, besides legal precedents, were those of medicine, industrial hygiene, and epidemiology. The plaintiff bar constructed the asbestos tort box, but it was the courts that sealed it shut.

Elements of the Asbestos Litigation Master Narrative

Within the box created by *Borel*, several major players soon appeared, whose combined efforts built the elaborate mythology that became the asbestos litigation master narrative. Ronald Motley, who had graduated from the University of South Carolina law school in 1971 and was working for the plaintiff law firm Blatt & Fales in Barnwell, South Carolina, received three asbestos cases referred to him by Tennessee attorney Paul Gillenwater. Gillenwater had read the *Borel* decision and lost no time in recruiting clients for what was to become the longest-running plaintiff bonanza in the history of American law.[19] Motley had initial success in settling cases for large sums in 1976, losing one case at trial to a medical state-of-the-art defense in 1977, but in the meantime he met and retained a young researcher, Barry I. Castleman, who had worked for the Baltimore County Division of Air Pollution since 1972 and who had coauthored an article on asbestos inhalation hazards in 1975.[20] Castleman was acquainted with Irving Selikoff, whose research on asbestosis epidemiology with union insulators at Mount Sinai Hospital in New York City was published in 1965, just in time to help fuel the expansion of asbestos litigation.[21]

Since the medical state-of-the-art had already been established in *Borel* as the principal battleground of asbestos litigation, Motley and Castleman set to work accumulating medical publications about asbestos inhalation hazards in all modern languages, carrying tall stacks of these documents into courtrooms in support of the arguments, paradoxically, that (1) defendants "knew or should have known" of the dangers of inhaling asbestos fibers, but somehow, (2) by a "conspiracy of silence," concealed this information from plaintiffs.

19. Senior, "A Nation Unto Himself," 36. Motley later became famous (or notorious) for the hundreds of millions his firm (now Motley Rice) made in asbestos, tobacco and lead paint litigation. See Brickman, *Lawyer Barons,* 195, 430 and 439-440 n.33.

20. Castleman et al., "Hazards of Asbestos for Brake Mechanics."

21. Selikoff, Churg, and Hammond, "Occurrence of Asbestosis among Insulation Workers."

Apparently, without questioning how the publication of more than five hundred articles supported an argument for a "conspiracy of silence," defendants and their counsel responded by retaining medical and industrial hygiene experts of their own. As in the case of lead paint litigation, defendants and their counsel even turned in desperation to historians to provide context for the use of asbestos, especially that of the Second World War. The author, a historian of technology, was recruited as an expert witness in one of these efforts, first in the early 1990s and then again in 2004. I shall have more to say of my litigation adventures in the Conclusions.

By the late 1970s, Barry Castleman had become a full time "environmental consultant," working as an expert witness for the asbestos plaintiff bar. His research became a book, *Asbestos: Medico-Legal Aspects*, first published by Harcourt in 1983, then reworked as a 1985 dissertation at Johns Hopkins University, with the support of Ron Motley's law firm.[22] Later editions of this work, renamed *Asbestos: Medical and Legal Aspects,* were coauthored with Stephen Berger. Now in its fifth edition, it was the first full articulation of the master narrative, providing the framework for hundreds of thousands of later asbestos cases in the United States. In complaints, the arguments based on it take the form of a series of claims of negligence, breach of warranty, and conspiracy to suppress information about the health effects of asbestos. It is not unusual for Castleman's book to be incorporated into the complaint by reference.[23] Journalist Paul Brodeur also played an important role by popularizing the tale in his 1985 *Outrageous Misconduct: the Asbestos Industry on Trial.* In the world of asbestos litigation, Brodeur's un-footnoted book is treated as if it were a reliable source, although his other works are generally dismissed by scholars and scientists as sensationalist journalism.[24]

22. Castleman, *Asbestos* (1985); Brodeur, *Outrageous Misconduct*, 139, 142, 149 and 216; and more recently, Castleman and Tweedale, "Turning the Tide."

23. Other significant contributors are David Egilman of Brown University, and Richard Lemen, formerly of the U.S. Public Health Service. See Hardy and Egilman, "Corruption of Occupational Medical Literature"; Egilman, "Researchers Should Talk to Workers"; Egilman and Reinert, "The Asbestos TLV" and "Origin and Development of the Asbestos Threshold Limit Value"; Lemen, "Asbestos Related Disease," "Introduction," and "Senate Hearing"; and Lemen and Bingham, "Case Study." See also McCulloch and Tweedale, *Defending the Indefensible*.

24. Brodeur, *Zapping of America*, *Currents of Death,* and *Great Power-Line Cover-up*; Berg, "Electromagnetic Radiation"; Rosenberg, "Review"; Herman, "Potential Hazards"; Desai, "Victims of Corporate Greed"; Page, "Review"; Tyler, "Review"; and Weinstein, *In Re: Joint Eastern and Southern District Asbestos Litigation*, 744ff.

Most of us are familiar with at least the broad outlines of the moral fable codified by Castleman. The following representative excerpts are from the Web site of the University of Sheffield's Department of Estates (2011):

> Asbestos has been used for more than 2,000 years. It was named by the Ancient Greeks. . . . The Greeks also noted its harmful biological effects. Even though the Greek geographer Strabo and (it is reputed) the Roman naturalist Pliny the Elder, both observed the "sickness of the lungs" in the slaves that wove asbestos into cloth, they were in such awe of asbestos' seemingly magical properties that they ignored the symptoms. . . . Asbestos use was brought back in the 1700s, but did not become popular until the Industrial Revolution during the late 1800s. It then began to be used as insulation for steam pipes, turbines, boilers, kilns, ovens, and other high-temperature products. Ancient observations of the health risks of asbestos were either forgotten or ignored.
>
> At the turn of the twentieth century, researchers began to notice a large number of deaths and lung problems in asbestos mining towns. In 1917 and 1918, it was observed by several studies in the United States that asbestos workers were dying unnaturally young. In the 1930s major medical journals began to publish articles that linked asbestos to cancer. This served as a warning to the asbestos companies, and afterwards they tried to cover-up the health effects of asbestos. Asbestos companies continued to use asbestos in manufacturing and construction.[25]
>
> Despite that many materials [sic], such as fibreglass insulation, were created to replace asbestos, companies that used asbestos

25. The "studies" are not further identified by Sheffield University, but they almost certainly include Pancoast,"Roentgenologic Study," and Hoffman, "Mortality from Respiratory Diseases." Although Pancoast was at least a physician, Hoffman had no scientific credentials of any kind. Hoffman's highest level of academic achievement was a high school diploma, although he called himself "Doctor" after 1911, when he received an honorary LLD degree from Tulane. A notorious "scientific" racist hired by Prudential in 1894 to help them justify denying insurance coverage to African Americans, Hoffman had published an article in 1892 predicting the entire extinction of this ethnic group by 1930 (Hoffman, "Vital Statistics of the Negro," Hoffman, "Race Traits"; DuBois, [Untitled review]; B. Hoffman, "Scientific Racism"; and Wolff, "Myth of the Actuary"). Like Brodeur's, Hoffman's "data" are nonetheless regarded as reliable in the context of asbestos litigation; the biases, inaccuracies and distortions of his other works, as well as the omissions and contradictions in the 1918 essay, are simply ignored (Brodeur, *Outrageous Misconduct,* 14; Kotelchuck, "Asbestos," 195; Weinstein, *In Re: Joint Eastern and Southern District Asbestos Litigation,* 5; Castleman and Berger, *Asbestos,* 4-5). Ironically, in view of his role as a "warning" source in asbestos litigation, Hoffman wrote a letter to Johns Manville in 1924 declaring himself a fan of the mineral ("Dean").

> ignored the safer alternatives. They ignored the danger for the sake of profits, much like the tobacco industry. The conduct of the asbestos companies is especially egregious, however, because the victims were largely exploited workers who were unaware of the serious health risks they were exposed to on a daily basis.

Like most, if not all, master narratives, this story tells us more about the biases of the narrators than about anything that may have occurred in the historical past. It is demonstrably inaccurate in almost every particular: no ancient author warned of the dangers of asbestos, information about asbestos' inhalation hazards was readily available throughout the twentieth century, and alternative materials were not developed for asbestos' principal uses until the last quarter of the century.[26] The Pliny canard in the University of Sheffield version of the narrative is an error propagated from the assertion in the first four editions of Castleman's *Asbestos: Medical and Legal Aspects* that "The earliest recorded historical recognition of the hazards of asbestos goes back to the time of Christ," modified in the 5th (2005) edition, after two decades of fruitless efforts to locate the patently nonexistent passage in Pliny, to the disingenuous "Some have said that the dangers of asbestos have been known since the time of Christ."[27]

The arguments in asbestos complaints, clearly based on the asbestos litigation master narrative, have been persuasive to juries in cases involving millions and sometimes tens or even hundreds of millions of dollars despite their failure to account for the ubiquity of asbestos in building codes that required and/or specified the mineral in a broad range of assemblies in residential, industrial, and commercial construction.[28] Perhaps more importantly, given that less than

26. Arnold, "Selecting Alternatives"; ASME and EPA, *Analysis of the Feasibility*; Hodgson et al., *Alternatives to Asbestos*; Maines, *Asbestos and Fire*, 24-28.

27. Castleman, *Asbestos* (1985), 27 and (2005), 1; Bartrip, *Way from Dusty Death,* 1; and Browne and Murray, "Asbestos and the Romans." English translations of Pliny's *Natural History* have been available since 1601; the Pauly-Wissowa *Realencyclopädie der Classischen Altertumswissenschaft* (Stuttgart: J. B. Metzler 1: 1830) has provided indexing to all ancient references to asbestos (*amiantos*) since 1894; and the elder Pliny's work has been full-text searchable at Tufts University's Perseus website for at least ten years. The elder Pliny mentions the wonders, but not the dangers, of asbestos at 19.4 and 37.54. Castleman's assertion is apparently based on his misreading of Anderson, "Historical Sketch," 25.

28. For critiques of asbestos litigation from legal and economic standpoints, see Brickman, "Asbestos Litigation," "Ethical Issues," "On the Applicability of the Silica MDL Proceeding," and *Lawyer Barons,* and Carroll, *Asbestos Litigation Costs and Compensation,* and *Asbestos Litigation* (2005).

29. White, "Asbestos Litigation."

one percent of asbestos cases reach trial, these arguments have been used as a bludgeon to extract billions of dollars in settlements from defendants.[29]

According to the narrative, asbestos defendants incorporated the mineral into their products because it was profitable to do so, ignoring safer alternatives. The engineering and testing histories of asbestos-containing materials show, however, that asbestos was used in thousands of products because it was the material that passed standard engineering performance tests developed by the National Bureau of Standards, the National Fire Protection Association (NFPA), the American Society for Testing Materials, the National Board of Fire Underwriters (NBFU), the American Society of Mechanical Engineers (ASME), the USPHS, and dozens of other organizations concerned with safety and health. I shall return to the subject of consensus standards in a later section.

The "Asbestos Industry" Conspiracy Theory

It is an article of faith in the asbestos litigation master narrative that "the asbestos industry conspired together to alter and/or suppress information from the general public about the harmful effects of asbestos."[30] This "conspiracy" hypothesis typically forms one or more of the counts in an asbestos tort complaint.[31] "The asbestos industry" in this context apparently encompasses universities, family-owned hardware and auto parts stores, shipyards, owners of apartment and office buildings, and manufacturers of everything from joint compound to oil tankers.[32] No solvent entity is too small, too large, or too far removed from raw asbestos mining and milling to be named as a defendant in asbestos litigation.[33]

30. Hinshaw and Culbertson, "Courts Reshape Conspiracy Litigation."

31. Most scholars regard conspiracy theories with skepticism, as these almost invariably violate the principle of parsimony, which is fundamental to the scientific method. Conspiracism is, however, a well-known subject of historical inquiry; see, for example, Knight, *Conspiracy Theories*.

32. Setter et al., "Why We Have to Defend," 5; and Wylie, *Trial Lawyers, Inc.*, 23.

33. Asbestos.net, "Two Hundred Defendants"; and Asbury, "13 Companies," "159 Companies," and "Scott Depot Men."

34. U.S. Bureau of the Census 1976: 32E. Total U.S. manufacturing employment reported in the 1972 *Census of Manufactures* was about 22.5 million and value of shipments about $757 billion, of which SIC code 392 accounted for employment of 48,700 and shipments valued at about $1.5 billion. For the number of firms, see Yandle, Bruce, Andrew Dorchak, Andrew P. Morriss, D. Paul Jr. Jones, and Charlene Angelich Jones. "Regulation by Litigation," *Regulation & Governance*, no. 2 (2011), 245.

In fact, the asbestos industry was and is officially defined by the US Bureau of the Census as a small group of manufacturing concerns subsumed under Standard Industrial Classification (SIC) code 392. At the period of its greatest expansion and prosperity in the early 1970s, these enterprises, which numbered fewer than two dozen firms, accounted for two-tenths of a percent of the value of manufacturing shipments in the United States, and a corresponding two-tenths of a percent of manufacturing employment.[34] All of these firms are now bankrupt, necessitating the expansion of the term "asbestos industry" to mean any solvent entity the plaintiff bar can target in a lawsuit.

The so-called Sumner Simpson letters to *Asbestos* magazine are widely cited as the "smoking gun" or "Pentagon Papers" of asbestos litigation, the "proof" of a conspiracy alleged to be so vast as to rival the fantasies of Senator Joseph McCarthy.[35] *Asbestos* magazine, described by owner Clarence Jasper Stover (c1879–c1944) as a "trade paper" that began publication in June 1919, published an article about asbestosis in March 1930.[36] A series of five letters to and from the editor of *Asbestos* between 1935 and 1941 indicate that a handful of executives in firms manufacturing products from asbestos did not want the magazine to publish any more articles on asbestosis until after completion of industry-sponsored occupational health studies that were then under way.[37] Castleman asserts that "Nothing more about the health hazards of asbestos appeared in the trade magazine until 1969."[38]

In a 2010 complaint, plaintiff law firm Kazan, McClain, Lyons, Greenwood & Harley says that this "suppression" of "medical and scientific data" by "a widely disseminated trade journal . . . caused plaintiff[s] to be and remain ignorant" of "the dangers of inhaling asbestos."[39] The implication is that had *Asbestos* published

35. Kotelchuck, "Asbestos," 192 and 202; Brodeur, *Outrageous Misconduct,* 111; and Castleman, *Asbestos* (2005), 492.

36. "Pulmonary asbestosis"; Stover, "Sixteen Years," 3; U.S. Bureau of the Census, *Thirteenth Census* and *Fourteenth Census*; and National Archives, *Records of the U.S. Customs Service*.

37. Kotelchuck, "Asbestos," 199.

38. Castleman, *Asbestos* (2005), 153, which does not provide a citation to the 1969 article.

39. Haskell "Bud" Stillman, et al. v. Allied Packing & Supply, Inc., et al., Superior Court, County of Alameda (CA), Case #RG0528222, filed 29 July 2010: 14. All quotations in this sentence are from this document.

40. "Your Obligation" February 1920: 4; "News of the Industry" July 1934: 33; "This and That" April 1936: 40.

41. U.S. Bureau of the Census, *Fourteenth Census*; "Statement of the ownership," May 1928: 51.

information regarding the inhalation hazards of asbestos between 1931 and 1969, the plaintiff would have read about them there and thus have been duly warned. This is implausible, as we shall see.

At the time that the Sumner Simpson letters were written, *Asbestos* magazine was a small, black-and-white saddle-stapled monthly serial with 1500–1600 subscribers, of whom nearly all were executives and managers in SIC code 392 establishments, that is, the asbestos industry, properly so called.[40] The publisher was listed as "Secretarial Services," consistently with the magazine owner's description of his occupation as a self-employed secretary.[41] According to the masthead, the magazine's office was located on the 16th floor of the Philadelphia Inquirer building at North Broad and Callowhill.[42] The *Union List of Serials (ULS)* notes five public-access libraries on the North American continent as subscribers to *Asbestos* during this period: the Library of Congress in Washington DC, the Crerar Public Library in Chicago, the Detroit Public Library, the Grosvenor Public Library in Buffalo, and the Cleveland Public Library. No academic library reported any holdings of the title to the 1927, 1931, 1943, or 1965 editions of the *ULS*.[43]

No indexing service included *Asbestos* until 1948, and then only selected articles were indexed, which had the effect of making the journal's contents bibliographically inaccessible to all but the most patient and dedicated nonsubscribers.[44] The editorial columns of *Asbestos* reported news of persons clearly known to each other, such as which executives were traveling abroad, who had been hired or promoted, who had retired or died, and what companies had moved into new quarters.[45] The "News of the Industry" column began each month with a list of birthday greetings by name to individual executives and managers. In April 1936, Editor Anna S. Rossiter (b.1892) announced that "Our birthday list is being greatly enlarged. Birth dates of officers of various Asbestos Companies will be welcomed."

42. *Asbestos,* November 1937 v.19 no.5:1.

43. Gerould et al., *Union List of Serials*; Malikoff and Lydenberg, *Union List of Serials*, 72; Gregory, *Union List of Serials,* 340; Titus, *Union List of Serials*, v.1: 503. The Engineering Societies of New York Library also held the title but its collections were open to members only.

44. *Ulrich's Periodicals Directory*; and ASME, *Engineering Index* (1948), xii. The magazine was self-indexed, but this would have been of assistance only to subscribers, and users of the handful of subscribing libraries. See, for example "Topical Index" (December 1931): 27.

45. For examples, see *Asbestos* March 1935 (v.16 no.9): 35; April 1935 (v.16 no.10): 30; May 1935 (v.16 no.11): 36; June 1935 (v.16 no.2): 34; September 1935 (v.17 no.3): 13; May 1936 (v.17 no.11): 32; September 1937 (v.19 no.3): 22; January 1938 (v.19 no.17): 38.

46. Gamble, "Asbestos," 666. The library reported these holdings to ULS in 1946.

The campaign must have been a success, because by September 1939 (v.21 no.3) birthday greetings filled an entire page of the magazine. Librarian William B. Gamble, Chief of the New York Public Library's Science and Technology Division, described *Asbestos* in 1929 as "An excellent publication, giving up-to-date and interesting news concerning the asbestos industry."[46] Gamble ventures no opinion on the magazine as a source of medical information.

Asbestos magazine would surely not have been the first choice of either a worker or a medical professional seeking information on the mineral as an inhalation hazard, on which, according to the master narrators, hundreds of references in other publications had appeared by 1965.[47] It is, in fact, difficult to understand why anyone, including the so-called conspirators, would think it mattered what was or was not published in what its owner called "this little paper," which was read almost exclusively by the "conspirators" themselves. Given its limited distribution, few outside the industry could even have known of the magazine's existence. Even if *Asbestos* had published lurid warnings in every issue between 1931 and 1969, the publication's obscurity would have eventually raised the legal issue of whether "The seller's warning . . . [was] reasonably calculated to reach" the user or consumer.[48] Unless Clarence Borel, for example, had been a subscriber to *Asbestos*, he would have had to travel more than thousand miles from his home in Groves, Texas, to read the nearest publicly available copy in the Chicago Public Library.

Examined in this bibliometric context, the Sumner Simpson letters devolve to a smoking cap pistol rather than a convincing weapon of "retroactive inculpation." Nevertheless, it has since 1977 proved to be a highly effective component of the asbestos litigation master narrative.[49]

Standards Development by the Consensus Process

When the OSHA published its first rules and regulations in May 1971, nearly two hundred consensus standards were incorporated into text or by reference. In the OSH Act of 1970, the US Congress had directed the newly created OSHA to adopt and promulgate national consensus standards where they existed, and to make use of the existing process

47. Ozonoff, "Failed Warnings."

48. LexisNexis headnotes to *FibreBoard Paper Products v. Borel,* 419 U.S. 869 S. Ct. 127.

49. Brodeur, *Outrageous Misconduct*, 111; Castleman, *Asbestos* (2005), 492.

of codemaking by nationally accredited Standards Development Organizations (SDOs). Among the definitions in Section 3 of the Act is:

> (9) The term "national consensus standard" means any occupational safety and health standard or modification thereof which (1), has been adopted and promulgated by a nationally recognized standards-producing organization under procedures whereby it can be determined by the Secretary that persons interested and affected by the scope or provisions of the standard have reached substantial agreement on its adoption, (2) was formulated in a manner which afforded an opportunity for diverse views to be considered and (3) has been designated as such a standard by the Secretary, after consultation with other appropriate Federal agencies.

About five hundred standards were incorporated into OSHA's Rules in July 1987. The incorporation of existing standards and the continued adherence to the established system of codemaking by SDOs were important in the legislative history of OSHA because these two conditions helped to gain the support of the building trades unions, which were and are significant players on SDO technical committees.[50] The United Association of Journeymen and Apprentices of the Plumbing and Pipefitting Industry, for example, has had representation on the National Plumbing Code technical committee since the mid-twentieth century, and the International Brotherhood of Electrical Workers has had a seat on each of the National Electrical Code's (NEC's) twenty-odd Code Panels for many decades.[51] By American National Standards Institute (ANSI) rule, manufacturing industry is limited to a one-third minority on technical committees.[52]

The leadership of the AFL-CIO expressed concerns in the mid-1960s that the then-proposed OSH Act might be implemented as a top-down Federally imposed national code, superseding the established rules of organized labor input to code development.[53] The five (or nine) member National Board of OSH proposed by the 1968 and 1969 versions of the OSH Act was particularly objectionable to organized labor, which succeeded in persuading Congress to make

50. Fair, Clinton M. "Statement," 487.

51. USPHS, *Report of Public Health Service Technical Committee on Plumbing Standards*, v.; and NFPA, *Yearbook and Committee List*, 154-173.

52. Dixon, *Standards Development in the Private Sector*, 46; and ANSI *Essential Requirements*, 5.

53. Schoemann, "National Building Code."

the Secretary of Labor the responsible authority in OSHA's implementation. Section 6 of the OSH Act (Public Law 91-596, 29 USC 655) directed the incorporation into OSHA administrative law of existing national consensus standards and methods of codemaking. It asserts that

> a) Without regard to chapter 5 of title 5, United States Code, or to the other subsections of this section, the Secretary shall, as soon as practicable during the period beginning with the effective date of this Act and ending two years after such date, by rule promulgate as an occupational safety or health standard any national consensus standard, and any established Federal standard, unless he determines that the promulgation of such a standard would not result in improved safety or health for specifically designated employees. In the event of conflict among any such standards, the Secretary shall promulgate the standard which assures the greatest protection of the safety or health of the affected employees.

The NFPA and the ASME were among the first SDOs to be accredited by OSHA, as both organizations had been producing consensus codes and standards by recognized democratic procedures since the late nineteenth century.[54] A number of national standards were incorporated into OSHA by ANSI designation, which certified that they were developed by due process. Originally a coalition of five engineering organizations with the US Departments of War, Navy and Commerce established in 1919, ANSI defines "Due Process" as follows:

- consensus on a proposed standard by a group or "consensus body" that includes representatives from materially affected and interested parties;
- broad-based public review and comment on draft standards;
- consideration of and response to comments submitted by voting members of the relevant consensus body and by public review commenters;
- incorporation of approved changes into a draft standard; and
- right to appeal by any participant that believes that due process principles were not sufficiently respected during the standards

54. For detailed discussions of the codemaking process, see Dixon, *Standards Development in the Private Sector*; ANSI, *ANSI Essential Requirements*; NFPA, "Regulations Governing Technical Committees"; and BOCA, "Democratic National Code Revision."

55. American National Standards Institute, "Domestic Programs (American National Standards) Overview" [webpage], accessed 4 March 2012. See also

development in accordance with the ANSI-accredited procedures of the standards developer.[55]

Although the inclusion of national consensus standards in the OSH Act had been debated at great length in Congressional hearings in 1968 through 1970 and would be again debated by committees and subcommittees every year from 1972 through 1979, there was ample precedent for adopting these standards as administrative law. The Federal government, including the Federal Housing Administration, USPHS, War Department, Interstate Commerce Commission, Bureau of Marine Inspection, and even the Internal Revenue Service, had done so since the 1930s, and states and localities since the turn of the century. Several standards specifying asbestos had been incorporated by reference into the Walsh-Healey Act in 1969.[56]

The *NEC*, for example, sponsored by the NFPA, began its long and still-ongoing process of triennial revision in 1890 and was backed by nearly a century of experience as the adopted building law of thousands of US jurisdictions when the 1968 edition was incorporated into the OSHA rules in 1971. This edition of the *NEC* specified asbestos fifty times; the 1971 edition incorporated by reference into the 1987 OSHA rules included fifty-three specifications for asbestos.

Another example of the development of a standard incorporated into OSHA's rules and regulations, as well as nearly every other building code jurisdiction in the twentieth century United States, was NFPA 54, which governed the installation and maintenance of gas-fired heating equipment. The NFPA first developed a standard for connections to city gas in 1920; in 1928, the American Gas Association (AGA) promulgated a standard for gas pipe in residences. In 1950, the NFPA and AGA collaborated on the first edition of NFPA 54, which was nationally accredited as ASA (later ANSI) Z21.30, *American Standard Installation of Gas Appliances and Piping in Buildings.* This standard included a list of approved heating equipment insulation assemblies developed during World War II, the

56. U.S. Department of Labor, "Title 41--Public Contracts and Property Management; the standards included CGA. *Safe Handling of Compressed Gases*; and U.S. Army Materiel Command. *Safety: AMC Safety Manual*, among others.

57. Cammack and Woodman, *Efficiency of Steam Pipe Coverings*; McMillan, "Heat Insulating Properties"; Heilman, "Heat Losses"; and "Determination of the Thermal Conductivities."

58. Cox, "Heat Insulation," 476; "Rock Wool"; "New J-M Rock Wool Plant"; Winer, "Mineral Wool Insulation"; and "Manufacture of Rock-Wool Insulation."

59. A detailed history of the Table of Clearances is available in Maines, Rachel. "Engineering Standards as Collaborative Projects."

"Table of Clearances from Combustible Construction with Specified Forms of Protection."[57] Of nine approved insulation assemblies in the Table, eight contained asbestos, including "rock wool bats," which included asbestos as a binder.[58] Already in force in thousands of local and state jurisdictions, NFPA 54-1969's incorporation into the OSHA rules made the Table a national, federally enforceable standard in workplaces. The Table was revised and updated at regular intervals through 1990.[59]

The nineteen-member NFPA Committee on Fuel Gases responsible for the 1969 revision of NFPA 54 that was incorporated into OSHA rules in 1971 had representatives from the AGA, Gas Appliance Manufacturers Association, American Iron and Steel Institute, Fire Marshals Association, American Petroleum Institute, Factory Mutual Engineering, the National Park Service, National LP-Gas Association, Ontario Department of Energy, Fire Prevention and Engineering Bureau of Texas, American Insurance Association, Underwriters Laboratories of the US and Canada, New York State Building Codes Commission, and the Kentucky Inspection Bureau. It is difficult to see how this body might have been unduly influenced by any single industry, except, perhaps, insurance, especially since its membership changed every three years.[60]

As far as I have been able to determine, the inclusion of specifications for asbestos in the OSHA rules is generally unknown to the asbestos bar, and forms no part of the legal discourse associated with asbestos litigation. Even when, in the 1980s, asbestos defendants made strenuous, but ultimately unsuccessful, efforts to establish Federal liability for asbestos exposures in shipyards in the 1940s and 1950s, the only evidence from codes and standards adduced by the defense was that of Federal specifications, and Federal standards for air quality in contractor workplaces.[61] The US Congress, which has so far made sixteen legislative attempts to untangle the great snarl of asbestos litigation, did not consider codes and standards in any of its deliberations on the issue.[62]

Of the two asbestos cases I have been able to identify in which building codes played a significant role, one is a personal injury case,

60. NFPA, *Standard for the Installation of Gas Appliances and Gas Piping*, 3.

61. In this series of cases, Barry Castleman testified for the defendant, the Federal government. Anderson, Peggy. "Debate Continues"; "Business Digest: The Economy," D-1; Winter, "Fight: Feds, Manufacturers Gear Up, 33; Sheridan, "Verdict Could Shift Asbestos Liability," 6; and "Supreme Court Rejects Asbestos Bid," *Associated Press* (29 Nov 1988).

62. For a more detailed discussion of these efforts, see Maines, "Is the Proposed Asbestos Settlement Fair?"

Horne v. Owens-Corning Fiberglas, decided by the US Fourth Circuit on August 25, 1993. In affirming the lower court's decision for the defendant, the court asserted that "as a complement to state-of-the-art evidence, industry standards may be introduced . . . They are often set forth in some type of code, such as a building code or electrical code." The court went on to opine that OSHA regulations are "close cousins to building codes."

The other case in which building codes were a factor, *Clarksville-Montgomery County School Systems v. United States Gypsum*, decided by the Sixth Circuit on January 10, 1991, concerned property, not personal injury. The school district, in a suit for the costs of asbestos removal, claimed that US Gypsum's product "was defective and unreasonably dangerous because, from the time it was installed, it created an imminent health hazard to building occupants." Clarksville's architects, however, testified that "use of asbestos and asbestos-containing products was required by state and local codes." In affirming the verdict for defendant, the court cited Tennessee law to the effect that

> Compliance by a manufacturer or seller with any federal or state statute or administrative regulation existing at the time a product was manufactured and prescribing standards for design, inspection, testing, manufacture, labeling, warning or instructions for use of a product, shall raise a rebuttable presumption that the product is not in an unreasonably dangerous condition in regard to matters covered by those standards.[63]

I have found no other asbestos cases that rely on *Clarksville* as a positive precedent for the building code defense or significant efforts by defendants and their counsel to employ this strategy in cases that have actually gone to trial. In the last few years, however, it was not unusual for the building code defense to be employed by counsel representing heating equipment manufacturers in reducing settlement values for their clients.[64]

63. All quotations in this paragraph are from *Clarksville-Montgomery County School System*.

64. There is one case in which the court cites *Clarksville*, but renders a decision for the plaintiffs because "The jury was . . . properly instructed as to the rebuttable presumption against finding a product to be unreasonably dangerous or defective if the manufacturer or seller complied with govermental laws and regulations concerning its manufacture and use," *Boyd v. Celotex*.

Conclusions

The asbestos litigation master narrative is a paradigmatic case of Jasanoff's dictum that these constructs limit "our possibilities for collective action." One of the most successful mechanisms for transferring wealth devised in modern times, the asbestos litigation master narrative seems to have trapped and paralyzed the imaginations of all concerned, so that only issues related to tort law, medicine, industrial hygiene, and epidemiology have been considered relevant to the litigation. What Brickman calls "retroactive inculpation" does not account for, or even mention, the existence and enforcement of building laws and engineering standards other than those for air quality. The built-environment regulatory infrastructure seems to have been invisible even to the judiciary. Juries have held owners of premises and former manufacturers of asbestos-containing products liable as if these actors had perfect freedom to determine how and with what materials they would manufacture, build, and maintain structures and assemblies, and judges have, as we have seen, upheld these decisions.

The plaintiff-bar narrators' assertions that "safer substitutes were available," although readily refutable by the voluminous contemporaneous engineering and standards literature, still go largely unchallenged. Automotive brake manufacturers, for example, are held

65. U.S. Dept. of Transportation, *Federal Motor Vehicle Safety Standards*; American Society of Mechanical Engineers (ASME) *Analysis of the Feasibility*; and Augustyniak, *Regulatory Impact Analysis*. The nonasbestos brake linings passed the tests in 1982 on only one type of experimental vehicle, a safety-articulated light passenger car; nonasbestos brake linings for trucks and other heavier vehicles did not pass these tests until much later.

66. For a few of hundreds of possible examples, the Table of Clearances appears in Chicago, *Building Code* (1957), 371; Southern Building Code Congress (SBCC), *Amendments to Southern Standard Building Code*, 8-34; New York (City), *Building Code* (1970), A116-117 and 383; International Conference of Building Officials (ICBO) *Uniform Mechanical Code*, 44-45; International Association of Plumbing and Mechanical Officials (IAPMO) *Uniform Plumbing Code*, 34 (Table No. 5-B); BOCA, *One and Two Family Dwelling Code*, 90 (Table 11-B); Indiana, *One and Two Family Dwelling Code*, 90 (Table 11-B); New York (State), *Code Manual* (1977), 5-37; NFPA, *Standard for the Installation of Oil Burning Equipment*, 31-74 (Table B-1); New York (City), *Building Code* (1981), RS 14-6; ICBO (1982), 47 (Table 5-B); Chicago, *Building Code* (1990), 554 (Table 13-384-100); Oregon, *Plumbing Specialty Code*, 133-4 (Table No. M 1102b).

67. For the Federal standards, see *49 (CFR) 192* (1971); U.S. Office of Pipeline Safety Regulations; "Minimum Federal Safety Standards." See also Kuhn, "Cathodic Protection"; Romanoff, "Results," and Wright, *Practical Corrosion Control*, 52. For state and local regulation, see California Public Utilities Commission *Rules Governing Design*; and SBCC, *Amendments to Southern Standard Building Code*, 107 (Section M-409.5).

liable for the use of asbestos in brake linings in the 1960s and earlier, although no alternative materials passed Federal stopping-distance tests until 1982.[65] Boiler manufacturers are held liable for having provided the materials to produce code-compliant asbestos-containing insulation assemblies, although asbestos was specified by national standards for thermal insulation until 1990.[66] Pipe manufacturers are sued for having used asbestos in gas pipeline cathodic wrap, although only assemblies using such wrap were approved by Federal regulations.[67] Makers of vinyl asbestos floor coverings are sued for having manufactured these products, which were specified for decades for kitchens, bathrooms, and floors below grade in military structure codes and all Federally assisted structures, including Hill Burton Act hospitals (USPHS), and those with Federal Housing Administration and Veterans Administration mortgage guarantees.[68] In April 2010, a Los Angeles jury imposed $208 million in damages on Certainteed Corporation in a case involving asbestos–cement pipe, although this type of pipe was tested for thirteen years by the US Bureau of Standards (1937–1950), approved as a Federal standard in 1940, specified by USPHS for most of the second half of the twentieth century, and still specified in California's *Uniform Plumbing Code* in 1992.[69]

The consequences of asbestos litigation have been devastating for American business, costing tens of thousands of jobs over the last forty years.[70] Capital tied up in asbestos insurance reserves has increased steadily as the cost of the average settlement has risen from about $40,000 in 1985 to between $1 and 5 million in 2012. Through 2010, the US insurance industry had paid out about $48 billion for asbestos litigation and was holding $23 billion in reserves; in 2011,

68. Polis, "Problem"; National Research Council, *Installation and Maintenance*; U.S. Federal Housing Administration, *Minimum Property Standards for Urban Renewal*, R808.2.; U.S. National Bureau of Standards (NBS), *Guide to Airborne, Impact, and Structureborne Noise Control*, F-38, F-54, and F-60; U.S. General Services Administration (GSA), *Federal Test Method Standard: Floor Coverings*; and U.S. Dept. of Housing and Urban Development (HUD) *Minimum Property Standards for Multifamily Housing*, 205, 250, and 375.

69. Moser "Jury Awards $200 Million"; Romanoff, "Results," D32; U.S. Department of Commerce, *Uniform Plumbing Code*, 14; U.S. FHA (1952), Section 601A; U.S Navy, *Water Supply Systems*, 26 and 52-53; King, Walker and Crocker, *Piping Handbook*, 7-316 through 319; U.S. Bureau of Reclamation, *Concrete Manual*: 347-8; U.S. FHA (1953), Section 601A; IAPMO, *Uniform Plumbing Code* (1973), 21, 41, 58 and 76; IAPMO, *Uniform Plumbing Code* (1991), 24, 72, and 87; Oregon, *Plumbing Specialty Code*, 22 and 126; and California Building Standards Commission, *Uniform Plumbing Code*, 25.

70. Stiglitz, Orszag, and Orszag, *Impact of Asbestos Liabilities on Workers in Bankrupt Firms*.

71. Lin et al., "Summary of U.S. Property & Casualty Insurers' Asbestos Reserves at Year-End 2010," 122-123.

72. Berkowitz, "Analysis: New Asbestos Charges Point to Reserve Woes."

these reserves were increased.[71] American International Group, for example, infuriated its stockholders by announcing an asbestos reserve increase of $4.1 billion in February 2011.[72]

More than eighty firms have entered bankruptcy since Johns-Manville did so in 1982. Of these, only about a quarter, including Johns-Manville, are SIC 392 classified; the remainder are makers of heating equipment, gaskets and seals, building products, refractory materials, ships, floor coverings, valves, and hundreds of other products in which asbestos-containing materials complied with the engineering standards of the time.

As for the warning issue, it is difficult to imagine how it would have occurred to anyone to place warnings on products based on assemblies approved by all three—and in some county code jurisdictions, four—levels of government. Even OSHA's 1972 warning requirements extended only to the marking of asbestos inhalation hazards in workplaces, not to labeling of products or containers entering the stream of commerce.[73] No jurisdiction that specified asbestos in approved assemblies required such warnings until OSHA promulgated its *Hazard Warning Communication* standard in November 1983, effective November 25, 1985.[74]

In part, the four-decade misdirection of jurisprudence represented by asbestos litigation has been possible because lawyers are, to a remarkable degree, oblivious to the complexity of the built environment, and to the network of more than ninety thousand contemporary American standards by some seven hundred SDOs that regulate it. Where these have been incorporated into law, as in the case of OSHA, lawyers and their researchers rarely notice or read the incorporated documents. Standards are the "Invisible Gorilla" of administrative law.[75]

The author, involved regularly in expert witness work for the defense since 2004, frequently encounters situations in which defense attorneys are surprised by questions regarding the technology in which asbestos was used, and even more surprised that this technology was regulated and specified by codes and standards. Attorneys representing a power company, for example, were startled to learn that plants using different fuels have different specifications and requirements for insulation. On more than one occasion, lawyers representing premises defendants whose pipe insulations were

73. Castleman, *Asbestos* (2005), 270, 273, 318, 351, 360, 452, 456, and 500-509, argues that OSHA required warning labels on asbestos-containing products in 1972, but, except for workplace warnings and labeling, this would seem to be inconsistent with the agency's own assertion in *Federal Register* 37: 11318-11322 (7 June 1972) that the newly promulgated "standard stopped short of requiring labeling."

74. 48 *Federal Register*, 25 November 1983: 53280.

75. Chabris, *Invisible Gorilla*.

at issue, have looked blank and shaken their heads when asked what was in the pipes.[76] "We never thought of asking that" is a common response. Technological mismatches between descriptions in plaintiff depositions and engineering accounts of the same procedure are frequently overlooked, although when noticed these usually result in dismissals, summary judgments, or settlements favorable to defendants, for "misidentified product."[77]

This failure to account for the regulation of the built environment may have its origin in law schools, where building codes and engineering standards are not generally regarded as glamorous subjects. Sociologist Lawrence Busch considerably understated the case when he observed in 2011 that "Lawyers tend to dismiss standards as outside the scope of law."[78] Even outside of the tort field, there is little guidance for the student lawyer; the American Bar Association's Forum Committee on Construction Law's 2009 textbook, *Construction Law*, for example, devotes exactly 3 of its 782 pages to building codes (136–37, and 146).

Without the contexts of technology, history, regulatory infrastructure, and the built environment, lawyers seem to enter the world of litigation prepared to accept at face value master narratives that are fully enclosed in the tort conceptual box, and unprepared to seek defenses and arguments outside it. The historian Edward Berkowitz once explained to a group of graduate students what it was like working among policymakers in Washington DC. Unlike the politicians, Berkowitz told us, "Historians see problems whole." Seeing the problem of asbestos litigation, whole is what defendants, attorneys, and the judges and members of Congress many of them have become have so far been unable to do.

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76. Premises defendants did not manufacture or sell asbestos-containing materials, but had these materials on their premises, in compliance with Federal, state and local codes. Universities and colleges fall into this category of defendants.

77. It is worth noting that none of these anecdotes concern jury trials. None of the asbestos cases in which the author has served as an expert have gone to trial; all testimony has been by deposition. Cases have either settled or been dismissed. Since it is almost universally a condition of settlements that all records be sealed and settlement amounts be undisclosed, none of the testimony, nor details of the settlements, are publicly available.

78. Busch, *Standards,* 27.

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