Regulating Safety Culture in the Railroad Industry: The Time Has Come for Broader Horizons

James A. Squires*

I. INTRODUCTION

Railroads have registered some impressive safety gains in the last several decades. By almost all measures, the industry's safety performance has improved markedly. Collision, derailment and employee casualty rates are much lower than they were just twenty years ago.[1] Railroads now rate favorably on safety with other transportation and comparable non-transportation industries.[2]

Progress on safety in the 1980s was made possible in large part by railroads' return to profitability following deregulation. The railroads consequent ability to invest in infrastructure had a direct impact on safety. For example, improvements in track structures tended to reduce derailments and collisions. As infrastructure-related accidents have declined, however, the percentage of on-the-job injuries caused by human factors has increased.[3] According to the Federal Railroad Administra-

* General Attorney, Norfolk Southern Corporation. The views expressed in this article are the author's and are not intended to represent the views of Norfolk Southern Corporation.

1. U.S. GENERAL ACCOUNTING OFFICE, RAIL TRANSPORTATION: FEDERAL RAILROAD ADMINISTRATION'S NEW APPROACH TO RAILROAD SAFETY 27 (1997) (citing a 74 percent decline in railroad accidents between 1976 and 1995).

2. *See* Daniel Saphire, *FELA and Rail Safety: A Response to* Babcock *and* Oldfather, *The Role of the Federal Employers' Liability Act in Railroad Safety*, 19 TRANSP. L.J. 401, 406-09 (1991).

3. *Hearing Before the Subcomm. on Surface Transp. and Merchant Marine of the Senate*

tion ("FRA"), the nation's rail safety watchdog, human factors were behind about one-third of rail accidents and incidents between 1991 and 1998.[4]

The rise in the percentage of human factors causing accidents and incidents has prompted FRA and all industry participants to focus on workplace attitudes and behaviors affecting safety. Regulators have taken to calling the collection of these attitudes and behaviors "safety culture," and the importance of "good" culture has become a theme in efforts to spur further safety improvements. As FRA's top executive said not long ago:

> The work of safety is never done. However, I am pleased to report that we are making real progress that manifests itself in many ways, perhaps most fundamentally in a growing recognition by railroad managers that the culture of the railroad must change. If we are to accomplish rapid change and respond to service needs [sic] of the Nation while achieving a high level of safety, we must have a culture that affirms integrity, holds open lines of communication, encourages identification of safety hazards, and insists that what we say is what we will do every day, even when we are tempted to take the easy way out.[5]

The National Transportation Safety Board ("NTSB") also has begun looking at safety culture in the railroad and other transportation industries. NTSB is an independent federal agency charged by Congress with investigating every civil aviation accident in the United States and significant accidents in the other modes of transportation such as railroad, highway, marine and pipeline. NTSB also issues safety recommendations aimed at preventing future accidents. In several recent reports on railroad accidents, NTSB has examined safety culture factors.[6]

The purpose of this article is to examine FRA's and NTSB's initiatives in light of the growing body of thought on safety culture outside the rail industry. Much has been written on safety culture in recent years by regulators, consultants, academics, and others. This article argues that, in view of the burgeoning literature, rail regulators' model of safety culture is unnecessarily narrow. Rail regulators have devoted considerable attention to pinpointing "bad" safety attitudes and behaviors on the parts of individuals (principally managers), but they have made relatively little effort to probe social phenomena in the background of safety culture. Understanding these phenomena is essential to a complete account of safety culture.

Comm. on Commerce, Science and Transp. 105th Cong. (1998) (statement of Jolene M. Molitoris, Federal Railroad Administrator).

4. *Id.*
5. *Id.*
6. *See* discussion *infra* pp. 7-9.

An examination of the laws governing safety in the railroad workplace may be a salutary starting point. These laws are among the more important determinants of safety culture. To the extent they control (or even just strongly influence) managers' and employees' behaviors, merely targeting the behaviors will not yield cultural change; the laws must change as well. After assessing the strengths and limitations of this approach, the article takes a close look at one railroad workplace law with a pronounced impact on safety culture: the Federal Employers Liability Act,[7] the industry's negligence-based injury compensation statute.

II. Regulatory, Business, and Academic Roots of Safety Culture

After a rash of industrial catastrophes in the 1980s—including Chernobyl, Three Mile Island, Bhopal and the Space Shuttle *Challenger*—government policymakers began to ask whether traditional methods of evaluating accidents properly reflected the organizational context in which the accidents occurred. In the transportation area, John Lauber's dissent in a NTSB report on the 1991 crash of a Continental Express flight in Eagle Lake, Texas is frequently cited as a turning point.[8] Departing from the usual mode of analyzing causation in aviation accidents, Lauber argued that the crash was brought on by a defective culture, one that failed to encourage and enforce adherence to maintenance and quality assurance procedures:

> The multitude of lapses and failures committed by many employees of Continental Express discovered in this investigation is not consistent with the notion that the accident resulted from isolated, as opposed to systemic, factors. It is clear based on this record alone, that the series of failures which led directly to the accident were not the result of an aberration, but rather resulted from the normal, accepted way of doing business at Continental Express.[9]

On the heels of Lauber's dissent, safety culture has become a theme in NTSB accident reports and has also been broadly endorsed by other transportation and non-transportation government agencies with jurisdiction over safety.

Just as safety regulators were casting about for a broader perspective on accident causation, one that would encompass organizational along with individual factors, business theorists introduced the idea that successful corporations were more than just their constituent parts; they were imbued with distinct cultures, to which they owed much of their

7. 45 U.S.C. §§ 51-60 (1994).
8. National Transp. Safety Bd., AAR-92-04, 51-54 (1992).
9. *Id.* at 53.

success. Two popular books, In Search of Excellence[10] and Corporate Cultures,[11] made the term "corporate culture" a permanent entry in America's business lexicon. As Thomas Peters and Robert Waterman, authors of In Search of Excellence, observed: "[W]ithout exception, the dominance and coherence of culture proved to be an essential quality of the excellent companies."[12] In time, the concept of corporate culture migrated to the safety arena and, at the intersection of new approaches to accident causation and business management, "safety culture" was born.

In the background of safety regulators' and management gurus' efforts to improve safety performance through cultural change, the academic community has contributed a growing body of knowledge on organizations. The classical safety paradigm is not organizational in nature. On the contrary, it is based on the premise that most accidents are caused by individuals' errors.[13] This paradigm contains five essential elements. First, it is positivist and objectivist; techniques drawn from the natural sciences are used to model and predict safety.[14] Second, safety is fundamentally behavioral and cognitive; accident prevention consists mainly of rooting out dysfunctional acts.[15] Third, safety's foundation is formal policies and instructions.[16] As a corollary, "proceduralization," which allows collection and reporting of incidents in a standardized format, dominates.[17] Fourth, safety is a professional discipline, with an established niche in management hierarchies.[18] Fifth, all of the above aspects of safety utilize corporate programs aimed at controlling and organizing safety.[19]

In contrast to the classical paradigm, the cultural or organizational perspective on safety seeks to avoid "an exclusive focus on the design of the technical system or on individual factors."[20] Thus, recent qualitative evaluations of major industrial accidents have paid greater attention to

10. THOMAS J. PETERS & ROBERT H. WATERMAN, IN SEARCH OF EXCELLENCE: LESSONS FROM AMERICA'S BEST-RUN COMPANIES (1982).

11. TERRENCE E. DEAL & ALLAN A. KENNEDY, CORPORATE CULTURES: THE RITES AND RITUALS OF CORPORATE LIFE (1982).

12. PETERS & WATERMAN, *supra* note 11, at 75.

13. Michel Llory, *Human- and Work-Centered Safety: Keys to a New Conception of Management*, 40 ERGONOMICS 1148, 1150-51 (1997).

14. *Id.* at 1150.

15. *Id.*

16. *Id.* at 1151.

17. *Id.*

18. *Id.*

19. *Id.*

20. Rosa Isla Diaz & Dolores Diaz Cabrera, *Safety Climate and Attitude as Evaluation Measures of Organizational Safety*, 29 ACCID. ANAL. & PREV. 643 (1997).

organizational factors as antecedents in the accident sequence.[21] According to proponents of the organizational safety approach:

> Whether accidents are triggered off by specific factors such as operator errors or sudden failure of technical systems, they only evolve and break through the sociotechnical defence systems as a whole if there is favourable grounds for 'pathogenetic' or 'accidentogenetic' factors, such as latent causes of technical failure, organizational failures, or mistaken decisions by the management.[22]

All safety culture proponents seem to agree that the maintenance of open pathways of communication are critical to avoiding organizational failures. James Reason, a psychologist and leading safety culture advocate from the University of Manchester, England, has described the ideal accident-averse organization as capable of "creating a safety information system that collects, analyses and disseminates information from incidents and near misses, as well as from regular proactive checks on the system's vital signs."[23] Organizations with this ability are said to possess an "informed culture," that is, a culture "in which those who manage and operate the system have current knowledge about the human, technical, organizational and environmental factors that determine the safety of the system as a whole."[24] According to Reason, an informed culture, one in which safety-related information flows freely, is a safety culture.[25]

A. Refining Rail Safety Regulators' Approach: Culture or Climate?

In tracing the origins of the safety culture concept, it is helpful to lay out in greater detail the concept's roots in organizational theory. This reveals what regulators call safety "culture," but students of organizational theory are more apt to refer to it as "climate." The distinction is not merely semantic; the culture and climate approaches bring different perspectives, assumptions, and goals.

Climate "portrays organizational environments as being rooted in the organization's value system, but tends to present these social environments in relatively static terms . . . ."[26] Climate is bi-polar (labor on one side and management on the other), unidirectional (focused on manage-

21. David A. Hofmann & Adam Stetzer, *A Cross-Level Investigation of Factors Influencing Unsafe Behaviors and Accidents*, 49 Pers. Psychol. 307 (1996).

22. Llory, *supra* note 13, at 1152.

23. James Reason, Managing The Risks of Organizational Accidents 195 (1997).

24. *Id.*

25. *Id.*

26. Daniel R. Denison, *What is the Difference Between Organizational Culture and Organizational Climate? A Native's Point of View on a Decade of Paradigm Wars*, 21 Acad. Mgmt. Rev. 619, (1996).

ment's initiatives), and confined to superficial aspects of the organization that participants can consciously perceive.[27] The agents of the organizational system (the managers) create and sustain the environment within which the subjects of the system (the employees) work.[28] Climate researchers use survey tools and statistical means to measure employees' perceptions of management and the impact of management's actions on employees.[29] Changes wrought by social interaction and extrinsic forces are generally outside the scope of investigation.[30]

Culture, on the other hand, resides deep within an organization, in the unconscious values, beliefs and assumptions of its members. Culture is neither fixed nor static, but "a process—essentially a political process—in which existing meanings are constantly being contested in a rough-and-tumble fashion, renegotiated, and redefined by the parties."[31] From a cultural perspective, organizational control is contested, with various stakeholders vying for influence.[32] Accidents (particularly those with catastrophic consequences) are seen as errors emanating from within an organization's structure. As Vaughan has explained in regard to the Space Shuttle *Challenger* disaster, a cultural approach to accident analysis seeks to explicate the "sociology of mistake."[33] While climate research typically aims to enhance organizational performance, culture research focuses on unearthing the varied influences and interests, both internal and external, which collectively determine an organization's social constitution and proclivity to accidents.

What rail safety regulators call "culture" actually bears a closer resemblance to what organizational theorists call "climate." The following two examples illustrate this resemblance (1) FRA's proposed rules on merger-related safety integration plans and (2) NTSB's 1996 report on the collision of a Metrorail train with another commuter train in

27. *Id.*
28. *Id.*
29. *Id.*
30. *Id.*
31. *Id.*
32. *See* S. P. Bate, *Whatever Happened to Organizational Anthropology? A Review of the Field of Organizational Ethnography and Anthropological Studies*, 50 HUM. REL. 1147 (1997). *See also* Denison, *supra* note 21. Denison's characterization of the cultural perspective on organizations emphasizes elements of struggle and ideology:

> Because the social construction framework that serves as a foundation for most culture research presumes that social environments are created through emergent social processes, politics and ideology become a much more salient issue. Thus, it is far less clear who is in "control" of the organizational context . . . . In short, with social construction as an organizing framework, competing cultural influences are engaged in a power struggle to define the organizational culture.

Id.

33. DIANE VAUGHAN, THE CHALLENGER LAUNCH DECISION, RISKY TECHNOLOGY, CULTURE AND DEVIANCE AT NASA xiv (1996).

Maryland.[34]

The first example involves the draft regulations promulgated in December 1998,[35] when FRA proposed to require railroads seeking authority to carry out mergers and similar transactions to prepare plans detailing how they will safely integrate train operations after the merger.[36] The regulations call for a description of merger applicants' "corporate culture," which FRA defines as "the attitudes, commitments, directives, and practices of railroad management with respect to safe railroad operations."[37] As FRA explained:

> These elements ultimately provide the vision and direction for all levels of railroad employees and influence their training, health, morale, and safety practices and habits. The safety culture of U.S. railroad companies, especially the major Class I railroads, is established by the railroad's chief executive officer and permeates throughout the entire rank-and-file of employees. Management's attitudes, directives, planning, and resource allocations all reflect the mission and vision of a company, and influence the training, morale, and safety practices of carrier employees.[38]

"Corporate culture" according to FRA, thus consisted of management's vision, something to be promulgated downward through a carrier's organization by means of directives, plans and resource allocations. In the draft rules, FRA did not acknowledge the role of employees in forging their own safety culture. In addition, there is not an express possibility that culture may be affected by the give and take of competing interests, or that circumstances extant in the rail industry or society at large may condition management's power to create good safety culture.

The second example of rail safety regulators' climate-based approach is NTSB's report on the 1996 collision of a Metrorail train with a standing

34. Regulations on Safety Integration Plans Governing Railroad Consolidations, Mergers, and Start Up Operations; and Procedures for Surface Transportation Board Consideration of Safety Integration Plans in Cases Involving Railroad Consolidations, Mergers and Acquisitions of Control, 63 C.F.R. 72,225, 72,239 (1998) (proposed Dec. 31, 1998); NATIONAL TRANSP. SAFETY BD., RAR-96/04 (1996).

35. 63 C.F.R. (proposed), *supra* note 34, at 72,239.

36. FRA's basis for instituting a rulemaking in connection with mergers and other transactions is the claim that recent "mega-mergers" have adversely affected combining carriers' safety performance. *See id.* at 72,227 (describing safety failures allegedly caused by the Union Pacific-Southern Pacific and Burlington Northern-Santa Fe combinations). While FRA's claim that mergers degrade safety performance may or may not be valid in a foreshortened transactional framework, the evidence suggests that, in the long run, rail mergers have been a boon to safety. *See* IAN SAVAGE, THE ECONOMICS OF RAILROAD SAFETY 160 (1998). This is due to the reduction of switching operations between combining rail carriers, in the course of which a disproportionate percentage of railroad occupational injuries occur. *Id.*

37. 63 C.F.R. (proposed), *supra* note 34, at 72,239.

38. *Id.* at 72,231.

commuter train in Gaithersburg, Maryland.[39] NTSB determined that the probable causes of the accident were threefold. First, Metrorail's management and board of directors failed fully to understand and address the design features and incompatibilities of the automatic train control system in use on the commuter system.[40] Second, management and the board failed to permit operating department employees to use judgment to make decisions involving operations safety.[41] Third, they effectively promulgated and enforced a prohibition against placing standby trains at terminal stations on the same track as incoming trains.[42]

Reflecting later on the Metrorail accident's causes, NTSB's chairman noted:

> It would be tempting to blame the conditions and circumstances of this accident on one person, the Deputy General Manager. But this would not have recognized corporate culture as a safety problem. Certainly he was part of the problem at Metrorail, but what about the seeming indifference and disregard by some employees' for safety precautions, and the absence of informed opposition when flawed solutions to problems were being considered?[43]

Among factors common to the Metrorail crash and similar accidents were "[t]he arrogance of management that believed in its inherent superiority to government regulations and sound operating practices" and "[t]he establishment of an organizations [sic] culture that discouraged communication, divergent opinion, and an appreciation for the importance of safety."[44] Resisting the temptation to attribute the accident's causes to faulty technology (the automatic train control system) or to an individual's missteps (the Deputy General Manager), NTSB tried to pinpoint systemic shortcomings.[45] However, from an analytic standpoint, these supposedly system-wide defects, managerial indifference, disregard and arrogance are merely human errors up the chain of command within the Metrorail organization.

FRA's and NTSB's adherence to a human-factors paradigm of accident causation and closed-system view of organizational life are hallmarks of the safety climatological approach. Also, characteristic of the climate approach is the agencies' near-exclusive emphasis on managerial factors; in FRA's case, management's attitudes, directives and re-

39. 63 C.F.R. (proposed), *supra* note 34, at 48-49.

40. *Id.* at v.

41. *Id.*

42. *Id.*

43. Jim Hall, Chmn., NTSB, remarks at the Symposium on Corporate Culture and Transportation Safety 9 (April 24, 1997).

44. *Id.* at 10.

45. 63 C.F.R. (proposed), *supra* note 34, at 48-49.

source decisions, and in NTSB's case, management's culpability. To suggest that rail regulatory authorities have adopted a managerial perspective is not to suggest, however, that the agencies' interests are aligned with management's. On the contrary, as Daniel Denison has pointed out, those investigating safety culture/climate from a perspective like the agencies' are often "in the tacit position of playing both sides of the managerial issue. They seldom contest the managerial creation of organizational contexts, but they often represent the interests and perspectives of the nonmanagerial employees who operate within that context."[46]

B. Strengths and Limitations of the Safety Climate Approach

While rail regulators may be perpetuating a misnomer when they call "safety climate" by the phrase "safety culture," their reliance on the work of safety climatologists is not without a foundation. In fact, studies (including some in the rail industry) have validated the nexus between safety climate and safety performance. These studies (three of which are profiled below) are provocative not only for regulators, but also for managers and others whose goal is to enhance organizational safety performance. However, rail safety regulators would be well advised to weigh the climate perspective's limitations before promulgating regulations in tacit reliance thereon.

In a study of locomotive engineers in England, Sharon Clarke found that organizational factors, particularly workers' perceptions of managers' safety attitudes, influenced the likelihood of hazardous incident reporting.[47] Clarke surveyed engineers in three areas of the country, where earlier research had identified varying perceptions of management's concern for safety. The results indicated that reasons relating to managers' attitudes were most significant in predicting engineers' intentions not to report hazardous conditions, including fairly serious locomotive and equipment failures.[48]

In a study of ground workers at several Spanish airports, Rosa Isla Diaz and Dolores Diaz Cabrera found a nexus between organizational policies and practices and workers' perceptions.[49] They also found that organizational policies and practices, operating through safety climate, probably had an impact on workers' safety behavior. One of the key dimensions of safety climate was company policy toward safety. This included an emphasis on compliance with safety standards, feedback on

46. Denison, *supra* note 26, at 50.

47. Sharon Clarke, *Organizational Factors Affecting the Incident Reporting of Train Drivers*, 12 Work & Stress 6, 8 (1998).

48. *See id.* at 14.

49. Diaz & Cabrera, *supra* note 20, at 647-48.

performance, assignment of funds and resources to safety areas, emphasis on safety training and management commitment to safety. A second important dimension of safety climate was employees' perception of the relative emphasis management placed on production versus safety. The researchers noted, however, that in some companies, a dichotomy did not exist and productivity and safety were considered compatible.[50]

Surveying utility line workers, David Hofmann and Adam Stetzer set out to probe whether safety climate would influence causal attributions about accidents. The research was designed to test the effects of safety climate on an acknowledged psychological phenomenon relating to causal attribution. This phenomenon, known as the "defensive attribution bias," reflects the tendency of individuals who perceive themselves as personally similar to the victim of an accident to over-attribute causation to external factors.[51] Hofmann and Stetzer hypothesized that workers' tendency to use self-defensive, external attributions would be accentuated in negative safety climates and attenuated in positive safety climates. In particular, the quality of safety communication in the workplace would affect the extent to which workers were willing to place responsibility on other workers who were involved in an accident. Hofmann and Stetzer confirmed that safety-related communication "significantly moderated the relationship between informational cues and causal attributions" and concluded that "a context that encourages open, positive, and free-flowing communication about negative events" is an essential ingredient of effective accident investigations.[52]

Thus, rail safety regulators' focus on management's role in fostering an environment conducive to safety has a basis in organizational research. This research is thought provoking, not only for regulators, but also for managers and others striving to promote good organizational safety performance. Nevertheless, the climatological approach leaves many essential questions unanswered. What explains, for example, in Clarke's investigation of locomotive engineers in England, managers' varying attitudes, on which the engineers' willingness to report unsafe conditions so critically depended? Can it be ascertained, from Diaz' and Cabrera's survey of airport workers, why some companies underemphasized compliance with safety standards, feedback on performance, assignment of funds and safety training, with resulting negative impacts on safety per-

50. *Id.* at 648.

51. David A. Hofmann & Adam Stetzer, *The Role of Safety Climate and Communication in Accident Interpretation: Implications for Learning from Negative Events*, 41 ACAD. MGMT. J. 644 (1998). A countervailing bias which may lead those investigating accidents (typically supervisors) to over attribute responsibility to the workers involved in the accident is known as the "fundamental attribution error." *Id.*

52. *Id.* at 654-55.

formance? In Hofmann and Stetzer's study of safety-related communication, what were the reasons behind some work-teams' more open environment for communication?

More fundamentally, can we be confident that climate studies capture all the salient variables? What if, contrary to the core assumption of the climate approach, key determinants of safety were not within the closed loop of management's directives, planning and resource allocations, and employees' perceptions? Would a climate approach even suspect their existence? As Michel Llory has suggested, in regard to remodeling the classic accident paradigm, a more open-ended form of investigation may be necessary to avoid overlooking key elements:

> [A]ccounting for work-related social and cultural processes means seeking out new data, and attaching importance or a relative meaningfulness to information that we had ignored or considered to be of secondary importance until then. It thus leads to modes of interpretation that are quite different from the incidents and accidents themselves, and hence to corrective or curative measures that are to a certain extent also different.
>
> In other words, there is a radical change of perspective once we give primacy to social and cultural phenomena over individual behaviour.[53]

If regulators hope to understand what it is they are attempting to manipulate, and their goal is cultural transformation, then they should be willing to entertain a broad variety of factors contributing to safety culture. A full account of safety culture should extend beyond the confines of climatological studies and may even have to suspend (at least temporarily) an interventionist agenda.[54] Again, as Llory has stated, "[t]o go beyond this initial phase of discussion we have to ask other questions about the normative quality of safety culture: Can we impose it? Can we decree it? Can we measure it with safety indicators? Above all what is safety culture made of?"[55]

---

53. Llory, *supra* note 13, at 1152.

54. FRA's 1998 request for authority to investigate railroads' safety culture exemplifies the regulatory agencies' deeply normative, agenda-driven perspective. As FRA reported in the Federal Register, the probe was necessary "to expose cultural shortcomings in the railroad industry, including harassment and intimidation of subordinates, and frame a program to develop a corporate culture that advances and awards safety in the work environment." Agency Request for Emergency Processing of Collections of Information by the Office of Management and Budget, 63Fed. Reg. 17,478 (1998). Of course, regulators are not the only ones interested in promoting "good" safety culture. An interventionist orientation toward safety culture is, not surprisingly, also characteristic of the consultancies that have proliferated since the concept was invented in the early 1980's. Some academics as well have endorsed the view that safety culture is, fundamentally, something to be shaped and molded. *See, e.g.*, REASON, *supra* note 23, at 192 (arguing that safety culture can be socially engineered by identifying and fabricating its essential components and then assembling them into a working whole).

55. Llory, *supra* note 13, at 1152.

C. Expanding the Horizons of Safety Culture

In broadening their perspective on safety culture in the rail industry, regulators might begin by looking at social and cultural phenomena prevalent in society at large. Safety attitudes and behaviors are not the by-product solely of work-related experiences; people import into the workplace ways of thinking and acting formed both before and outside of work. Similarly, safety norms are not limited to, or exclusively created at work. Many unwritten rules regarding safety preexist and, without intervention, may override workplace rules. Any safety initiative or description of safety culture that does not take into account background societal factors is likely to be less effective, on the one hand, and less illuminating, on the other.

Even without leaving work environs, however, regulators may discover social determinants of safety culture that are not strictly a function of management's initiatives, employees' perceptions, or the behaviors of individuals belonging to either group. In fact, regulators need look no further than the manifold laws regulating safety in the rail industry. These laws are among the more important background societal factors informing railroads' culture. They help explain industry participants' safety values, beliefs and assumptions; they are "what safety culture is made of." Moreover, from a practical standpoint, if the laws dictate (or even just strongly influence) safety behavior, and if modifying behavior is the objective, changing the law may be an essential first step.

FRA's own rail safety regulations are among the laws with a thoroughgoing impact on railroads' safety culture. These regulations specify design standards for many types of railroad equipment and infrastructure, including track, freight cars, rear-end marking devices, locomotives, power brakes and drawbars.[56] Savage has described how these standards have unexpected effects relating to the development of safety-related knowledge, a critical component of safety culture:

> While the government may have a legitimate interest in the engineering of certain critical components of railroad equipment and infrastructure, it is surely only interested in how the equipment or infrastructure performs and not how it is designed. There are two consequent problems. The first is that a government committee has to decide on what the design specifications are. The clear indication is that cost-benefit analysis is not one of the tools used by the FRA in making such a determination. The second problem is that there is clear evidence that once written into law, specification standards become so inflexible and so politicized that changes in technology and engineering knowledge are held back. This is particularly the case when engineering advances have repercussions on labor and work rules.[57]

56. *See* 49 C.F.R. pts. 213-36 (1999).

57. Savage, *supra* note 36, at 163.

Thus, the rail safety laws' rigid specification of equipment and infrastructure design, while intended to promote safety, may actually retard the development of technological and engineering knowledge.[58] Once in place, these laws are subject to politicization because of their rigidity and issues unrelated to safety, such as employment levels, soon become intertwined. An unavoidable implication of safety's politicization is that the government itself is not a mere observer of, or actor upon, safety culture. Regulators are participants in safety culture and, as Savage's explication of the externalities associated with design specifications shows, their actions are presumptively neither neutral nor benign.[59]

Other workplace laws worth considering for their impact on safety culture include the railroad occupational disability laws.[60] Arguably, however, no law is as fraught with consequences for safety culture in the railroad industry as the Federal Employers' Liability Act ("FELA").[61] Applicable to about two hundred and seventy thousand railroad workers, including employees of freight railroads, the National Rail Passenger Corporation (Amtrak) and many commuter railroads, FELA stands in contradistinction to the no-fault workers compensation systems covering some ninety million American workers.[62] FELA's negligence-based regime erects barriers uncharacteristic of workers compensation programs to the free flow of safety-related information; something all observers emphasize is critical to good safety culture.[63]

---

58. The command-and-control characteristics of FRA's design specification standards run counter to the trend in safety regulation. As Reason has described:

> The past two or three decades have seen a marked change in the way safety legislation is framed in many industrialized countries. Putting it very simply, there has been a shift away from laws that specify the means by which safe working should be achieved to laws that focus on the attainment of certain safety goals. Instead of rules that prescribe the precise steps to be taken by individuals or organizations, leaving little or no discretion for deviation, the current trend is towards rules that emphasize the required outcomes of safety management, allowing considerable freedom on the part of the operators of hazardous technologies to identify the means by which these ends will be achieved.

REASON, *supra* note 23, at 175.

59. *Id.*

60. Higher disability benefits available to railroad workers may give rise to a moral hazard: "[A] number of studies have indicated that there may be strong incentives to make fraudulent claims and strong disincentives to return to work if the benefits provided approach or exceed full replacement of the worker's wages." TRANSP. RES. BD., NAT'L RES. COUNCIL, SPECIAL REPORT 241, COMPENSATING INJURED RAILROAD WORKERS UNDER THE FEDERAL EMPLOYERS' LIABILITY ACT. (1994).. In an effort to obtain higher benefits, workers may also be less than candid in describing the safety-related causes of their injuries. *Id.*

61. 45 U.S.C. §§ 51-60 (1994).

62. 45 U.S.C. § 51.

63. 45 U.S.C. § 51.

III. The Federal Employers' Liability Act

Enacted by Congress in 1908, when railroads were the nation's largest employer and railroad work was unusually hazardous, FELA was a progressive measure aimed at compensating injured railroad workers when they likely would not have garnered compensation at common law.[64] Through statutory repeal of the fellow-servant doctrine, restriction and later abolishment of assumption-of-risk, and substitution of comparative negligence for contributory negligence, Congress eliminated powerful common law defenses in personal injury suits brought by railroad workers. Building on FELA's remedial principles, the Supreme Court in a series of decisions eroded obstacles to recovery by lessening the standards for proving employer fault.[65] As a consequence, under current law, to recover some quantum of damages a railroad worker need only establish a failure, however minimal, on the part of the employer to exercise due care.[66] If an injury results from a violation of safety statutes or regulations, the railroad is subject to strict liability.[67] Other worker-friendly provisions include the right to file suit in state or federal court and a prohibition on removal.[68]

Not long after Congress enacted FELA, the states also began experimenting with alternatives to the common law approach.[69] No-fault workers compensation programs are based on a fundamentally different premise than FELA or the common law, that both employers and employees should bear some of the costs of compensation for workplace injuries without regard to who caused the injury. Workers compensation incorporates a trade-off: employers give up the right to contest responsibility for injuries for which they are not at fault, but they are spared exposure to common law damages for injuries they do cause. At the same time, employees lose the right to seek full damages, but need not establish their employer's negligence (or counter allegations of their own) in order to recover. The logic in the trade-off is that, in the aggregate, workplace injuries are caused by both employer and employee negligence.

64. 45 U.S.C. §§ 51-60.

65. Ulfik v. Metro-North Commuter R.R., 77 F.3d 54, 58 n.2 (2d Cir. 1996).

66. *See, e.g., id.* at 58 (relaxed standard of proof applies in FELA cases; test is whether employer negligence played any part, even the slightest, in producing injury).

67. *See* 45 U.S.C. § 51 (1994). *See, e.g.*, Illinois Cent. Gulf R.R. Co. v. International Paper Co., 889 F.2d 536, 537 n.1 (5th Cir. 1989) (railroad is strictly liable for injury caused by violation of Safety Appliance Act); Baker v. CSX Transp., Inc., 581 N.E.2d 770, 777 (Ill. App. Ct. 1991) (Locomotive Boiler Inspection Act imposes absolute liability upon defendant where plaintiff presents proof of unsafe locomotive component and injury which is proximately caused by unsafe condition).

68. *See* 45 U.S.C. § 56 (1994).

69. Transp. Res. Bd., Nat'l Res. Council, Compensating Injured Railroad Workers Under the Federal Employers' Liability Act. (1994)., *supra* note 60, at 2-3.

Rather than requiring that fault be proven in each case, workers compensation programs presuppose joint responsibility and assign liability at a macroscopic level.[70]

Proposals to scrap FELA in favor of a federal no-fault system were floated in Congress within a few years of FELA's passage.[71] However, these proposals were defeated by railroad unions, which viewed, and continue to view, FELA as affording more generous benefits.[72] FELA indeed is more generous. According to a 1994 study, the FELA "injury premium" averages two to four times workers compensation indemnity payments.[73] From this premium, an injured worker typically pays twenty-five percent to an attorney, if he has retained one. The remaining differential over workers compensation comes from railroad workers' higher salaries, indemnity for full wage losses without the caps found in most workers compensation programs, and payments for pain and suffering.[74]

Understandably anxious to retain FELA's higher benefits, rail labor also argued that FELA establishes superior incentives for railroads to operate safely.[75] FELA in fact may offer the best incentives for railroads to exercise their current level of care:

> On the face of it, FELA is likely to provide employers with strong incentives for investing in safety. Because workers may recover the full cost of their injuries, employers are likely to invest in precautions whose costs equal the costs of potential liabilities avoided. Because these costs include those that are normally shared by the employee in no-fault workers' compensation systems, there may be an incentive to adopt more investments in safety than would be the case under workers' compensation.[76]

Furthermore, it is conceivable that replacing FELA with a workers compensation system would cause railroads to reduce their standard of care.[77]

---

70. TRANSP. RES. BD., NAT'L RES. COUNCIL, COMPENSATING INJURED RAILROAD WORKERS UNDER THE FEDERAL EMPLOYERS' LIABILITY ACT. (1994). *supra* note 60, at 52-53.

71. FELA when enacted was an attempt to sidestep constitutional questions surrounding workers' compensation programs. *See* Reed v. Philadelphia, Bethlehem & New Eng. R.R. Co., 939 F.2d 128, 132 (3d Cir. 1991) (noting Congress' understandable reluctance to provide a remedy for injured railroad workers that might not withstand constitutional scrutiny). As soon as that circumstance ceased to exist, there was an effort to replace FELA with a no-fault system. *Id.* According to some, if Congress were writing on a blank slate today, it undoubtedly would adopt a workers' compensation program in lieu of FELA's statutory vagaries. *Id.*

72. SAVAGE, *supra* note 36, at 84.

73. TRANSP. RES. BD., NAT'L RES. COUNCIL, COMPENSATING INJURED RAILROAD WORKERS UNDER THE FEDERAL EMPLOYERS' LIABILITY ACT. (1994). *supra* note 60, at 146.

74. *Id.* at 146-47

75. GAO/RCED-96-199, FELA 18 (1996).

76. TRANSP. RES. BD., NAT'L RES. COUNCIL, COMPENSATING INJURED RAILROAD WORKERS UNDER THE FEDERAL EMPLOYERS' LIABILITY ACT. (1994). *supra* note 60, at 71.

77. SAVAGE, *supra* note 36, at 90. On the other hand, the human and economic costs of accidents under any injury-compensation regime may provide ample motivation for an enterprise's investment in and commitment to safety. *Id.*

However, FELA's positive features, more generous benefits and the exacting standard of care the statute fosters, carry a price. As noted, unlike workers compensation, FELA requires a case-by-case determination of negligence through a lawsuit or, more commonly, through internal resolution of a claim. Transaction costs associated with FELA's approach are high. Railroads must maintain a full-time staff to deal with injury-related investigations, settlement negotiations and rehabilitation. In addition, they must typically retain outside counsel to defend litigation. Injured employees are more likely to utilize an attorney and often must forego recovery while a settlement is negotiated.[78]

Compounding FELA's high transaction costs, the statute creates an adversarial environment in which to resolve the facts surrounding workplace injuries. FELA's dictate that workers and management prove each other's negligence undercuts what researchers deem a key part of good safety culture: an organizational context for accident investigations that encourages open, positive, and free-flowing communication.

A. FELA's Impact on Railroads' Safety Culture

Investigations of railroad on-the-job injuries typically begin with the preparation of a personal injury report. Most rail carriers' operating rules and industry union contracts require that workers file such a report as soon as practicable after sustaining an injury. The employee or the railroad then initiates a claim, which at the outset the railroad's claims agents handle internally. From this point, the majority of personal injury claims are resolved without the involvement of attorneys or the filing of a lawsuit.

Even with claims destined for informal resolution, each side skews the focus of the investigation. This is due to the potential need to prove the other side's negligence, not just on the facts of an accident, but on how its circumstances are reported and how injuries are described. Anticipating the need for proof on such matters, one FELA plaintiff's law firm offers the following advice for completing personal injury reports:

> It may be helpful to look at the personal injury report as an "unsafe place to work report" because that is what the railroad should be interested in identifying and is really what you need to establish when you complete the form. The key is to remember that you are not simply reporting the INJURY, but also THE UNSAFE CONDITIONS THAT CAUSED THE ACCIDENT.[79]

Another law firm advises that injured employees always ask themselves

78. *See* Transp. Res. Bd., Nat'l Res. Council, Compensating Injured Railroad Workers Under the Federal Employers' Liability Act, *supra* note 60, at 139, 145.

79. Ron Barczak & Mike McReynolds, *Personal Injury Reports-Critical to Successful Claims* (visited Oct. 1, 1999) <http://www.yjbr.com/pireport.htm>.

before completing a personal injury report "what could the railroad have done to have prevented me from being injured? Could the work place have been safer? Were the tools furnished me sufficient to do the job? Did I have adequate help? Was I provided adequate training and supervision for the job I was required to do?"[80] Because of the personal injury report's evidentiary significance, one railroad union advises its members not to make any statements or fill out any forms until fully advised by an attorney.[81]

In fairness, injured employees' search for external attributions (to borrow Hoffman and Stetzer's phrase), care to avoid inculpatory admissions and comparatively frequent resort to legal representation may stem from the perception that railroads, also prompted by FELA, are themselves intent on deflecting liability in accident investigations. In fact, empirical research appears to confirm that employees view FELA as a key motivator in the investigative process. In a 1998 study, a consultant for FRA surveyed union employees and managers and conducted focus sessions and interviews on safety culture at four of the largest railroads in the United States.[82] Among findings reported to FRA from the focus sessions:

> Employees are particularly sensitive to the implications of the Federal Employee Liability Act and their perception of how it drives the nature and burden of railroad operating rules. As far as they are concerned, the whole basis of the investigative/disciplinary process is designed to place liability on the employee for all incidents and/or injuries. This is a dominant theme for all the railroads in this review.[83]

Thus, railroad employees and managers alike may feel driven toward external, blame-shifting attributions for accidents. With FELA's negligence standard determining compensation and liability, finger pointing is entirely rational. The problem with such a system from a safety culture standpoint is the disincentives to openness it creates. Conversely, a system that promotes candor in describing how and why an accident occurred is the key to identifying unsafe practices and improving safety performance. FELA establishes just the opposite incentives:

> Because the employee's right to be compensated for injuries is conditioned on showing the railroad was at fault, and because, conversely, the railroad can eliminate or reduce its liability by showing that the employee's negli-

80. Williard J. Moody, Sr. & Williard J. Moody, Jr., *Federal Employers' Liability Act, Know Your Rights* (visited Oct. 1, 1999) <http://www.moodyrrlaw.com/fela.htm>.

81. Brotherhood of Railway Carmen, *Do Not Sign a Statement Until You Know Your Rights* (visited Oct. 1, 1999) <http://members.aol.com/tcucarmen/feladnss.htm>.

82. EVANS PLANNING GROUP, SAFETY CULTURE REVIEW FINAL REPORT, SUBMITTED TO FED. R.R. ADMIN., U.S. DEP'T OF TRANSP. at 5-6 (1998).

83. *Id.* at 27.

> gence contributed to the injury, both parties have an economic incentive to place the blame for accidents on the other. This provides motivation to obscure the true causes of workplace accidents, and thus hinder their objective investigation. As a result, effective modifications of workplace procedures and equipment may be delayed or prevented.[84]

FELA makes it more difficult to achieve the desideratum of good safety culture: a work environment that encourages open communication about accidents and incidents. In answer to the question implicitly left open by Hofmann and Stetzer's research on communication and safety climate, it may be a reason why some railroad safety climates are negative. If so, Hofmann and Stetzer's research makes clear, the result will be self-defensive, inaccurate causal attributions that do not provide the feedback from accidents essential to improving organizational safety performance.

In addition, because it is a fault-based regime, FELA frustrates attainment of Reason's ideal accident-averse culture, which must be capable of "creating a safety information system that collects, analyses and disseminates information from incidents and near misses, as well as from regular proactive checks on the system's vital signs."[85] Insofar as railroad employees and employers must prove each other's negligence in connection with workplace injuries, an "informed culture", meaning a safety culture "in which those who manage and operate the system have current knowledge about the human, technical, organizational and environmental factors that determine the safety of the system as a whole", will be more elusive.[86]

IV. Conclusion

As long as railroads remain financially able to make robust, safety-

---

84. Saphire, *supra* note 2, at 411. *See also* Transp. Res. Bd., Nat'l Res. Council, Compensating Injured Railroad Workers Under the Federal Employers' Liability Act. (1994).*supra* note 60, at 66:

> The facts of an accident that might point to a needed change in procedure may be obfuscated by all the parties involved, both management and labor, in an effort to absolve themselves of responsibility. [T]his disincentive may lead to a reluctance to change practices immediately after an accident because of the negligence implication that the prior practice was unsafe.

Id. *See also* Savage, *supra* note 36, at 90:

> The unfortunate side effect [of FELA] is that there is no incentive for managers and employees to work together to objectively investigate the causes of workplace injuries and put in place changes that might mitigate injury occurrence and severity. This is in contrast to industries covered by workers' compensation where employees can freely admit errors they have made in the hope the fellow workers can learn from the mistake and act to mitigate future injuries.

Id.

85. Reason, *supra* note 23, at 195.

86. *Id.*

enhancing capital investments, occupational accidents attributable to defective rail infrastructure are likely to continue declining as a percentage of total work-related accidents. Human factors, conversely, may account for a growing percentage of on-the-job injuries. To the extent such factors are not readily identifiable with individuals' errors, but can be said to derive from loosely defined organizational deficiencies, the concept of safety culture will retain a prominent place in rail regulators' safety kitbag.[87]

To date, rail safety regulators have embraced an unnecessarily narrow model of safety culture, one that bears a closer likeness to what students of organizational life refer to as "safety climate." Climate studies, including some in the rail industry, have borne out that managerial emphasis on safety can make a difference, not only with regard to workers' attitudes, but for organizational safety performance as well. There are important limitations to these studies. The growing academic literature suggests that a true cultural analysis of safety should extend beyond the parameters of labor-management relations and consider a broad array of societal factors.

As a starting point, safety regulators need look no further for social determinants of safety culture than the laws affecting safety in the railroad workplace. Many of these have repercussions for safety culture. Perhaps none has a greater or more harmful impact than FELA, the railroads' fault-based system for assessing responsibility for workplace injuries. The need to establish negligence in every FELA case, whether an injury ultimately is resolved by litigation or informally, as is the norm, creates a substantial impediment to safety communications between railroad workers and managers and frustrates the effective administration of safety programs. In regulators' drive to promote cultural change in the rail industry, FELA's effects, and the effects of other laws regulating safety in the railroad workplace, deserve every bit as much attention as employees' perceptions and management's attitudes. In the future, rail safety regulators should examine all determinants of railroads' safety culture and not stop short of a true safety cultural perspective.

---

87. The safety culture concept's very imprecision and malleability may help explain its popularity. As one rail industry observer has noted:

> Since its first usage, safety culture has been used as a catchall term for the human element within organizational systems, and to a certain extent used as an excuse for accidents. It has tended to be used to explain how organisations with well-developed safety management systems still have accidents. Hence the term has developed to cover the role of individuals in a system, and their effect upon the implementation of safety management systems, and the overall safety of the system.

Caroline R. J. Horbury, *Organisational Change and Safety Culture: The Impact of Communication* 277 (1996) (unpublished Ph.D. dissertation, Aston University, U.K.) (on file with the author).