Organizing Railroad Interests: The Creation of National Railroad Associations in the United States and Prussia

Colleen A. Dunlavy[1]
University of Wisconsin-Madison

Introduction

American business history emerged from the 1980s thoroughly permeated by the "new institutional economics," most would agree. But what has not been sufficiently appreciated is the extent to which business historians who focus on institutions must become political historians as well [17]. For institutions are inherently political entities. According to conventional wisdom, they consist of rules, compliance procedures, and norms that order relationships among individuals [10, 25, 39, 49]. In doing so, institutions necessarily spell out a distribution of power, and in that sense they must be considered political.

The problem, however, is that the point of departure has proven unduly constraining. Transaction cost economics, for all of the rich insight that it yields into the *economic* impact of institutions [49], is not necessarily well-equipped to deal with their *political* dimensions [36]. It is fortunate, therefore, that a "new institutionalism" also emerged in political science in the 1980s, aspects of which speak directly to the concerns of business historians. This literature views institutions and individuals as intimately intertwined: individuals, to be sure, create or alter institutions in the familiar, instrumental sense, but, as they do so, their own strategic choices are shaped by the institutional context in which they operate [19, 39]. Where interest-group activity in particular is concerned, research suggests that a given set of political institutions creates a distinctive array of concrete behavioral incentives and that these exert a powerful impact on the

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[1]This paper is a revised version of Chapter 5 of my dissertation [5]. I am indebted to Suzanne Berger, Alfred Chandler, Joshua Cohen, Rainer Fremdling, Victoria Hattam, Diane Lindstrom, and Merritt Roe Smith for their advice over the years. For research support I am grateful to the Council for European Studies, the German Academic Exchange Service, the Lincoln Educational Foundation, the Fulbright Commission, the Social Science Research Council, the International Research and Exchanges Board, the Smithsonian Institution, the American Council of Learned Societies (with funding from the National Endowment for the Humanities), and the University of Wisconsin-Madison Graduate School. All translations are my own.

BUSINESS AND ECONOMIC HISTORY, Second Series, Volume Nineteen, 1990.
 ISSN 0849-6825.

organizational form that interest-group activity assumes [1, 11, 37]. Together, the new economic and political institutionalisms provide a theoretical breadth commensurate with the complexities of organizing economic interests. Or so the history of efforts to create national railroad associations in the United States and Prussia would suggest.

The rationale for this comparison, it should be noted, is quite simple: the United States and Prussia, which later formed the core of the German empire, industrialized along broadly similar lines in the 19th century [15, pp. 16-23]; yet they had radically different political structures--the one, a federal-legislative system, and the other, a unitary-bureaucratic state. The railroads make a good case for comparison simply because inter-firm relations mattered a great deal if the railroads were to reap economies of scale and throughput [3]. But economic associations do not form spontaneously--not even when the benefits to be gained are apparent to all, as they were to early railroad men. In some form or another, there are always collective-action problems to be overcome [27, 28]. Economic pressures, in other words, may be a necessary condition of action, but they are not sufficient. Hence, comparing this industry in these two countries should provide some clues to the political factors that precipitate and sustain collective action by economic actors [38].

The evidence suggests that in this case political structure proved paramount, though not without limits. Prussian railroads succeeded in creating a permanent national association much earlier--1846 vs. 1886--because from the outset they had to deal with a unitary-bureaucratic state. American railroads, in contrast, tried repeatedly to form regional and then national associations, but their efforts uniformly foundered--and they foundered, I would argue, on the fragmented American political structure. Only when they, too, confronted the real threat of *national* regulation in the 1880s did they, too, succeed in building a national association. Since it was through such associations that the railroads moved to standardize technology and operation, the American lines lagged far behind their Prussian counterparts in this respect. In neither case, however, did the associations prove able to deal with competition. In that respect, the centripetal force of policy-making at the national level did not prove sufficiently strong in either country to overcome the centrifugal pressures of competition.

The Prussian Story

In Prussia, where the earliest railroads were built in the 1820s, as they were in the United States [12, 14], state officials, for rather complicated political reasons, initially left railroad construction entirely in private hands, a situation that railroad men used with considerable success to fend off regulation, lest it scare away private capital [5]. But still the railroads had to obtain charters from the ministries, and one Prussian railroad promoter recognized early on the organizational incentives of the unitary state. In 1836, the Berlin banker Joseph Mendelssohn, himself a promoter of the Berlin-Stettin Railroad, reported to a colleague that another railroad committee was in town to negotiate charter terms with the Finance Ministry. This is how he saw the situation:

> All of these negotiations . . . are still highly chaotic, and neither side has brought a hard and fast principle to the matter . . . Without a doubt it would be highly beneficial for all railroads in the country if every committee sent a delegate here and these delegates then got together for *joint* negotiations with the authorities. [22]

What Mendelssohn perceived was the political reality of dealing with a unitary, bureaucratic state: All of the railroads had to negotiate charter terms with the same small group of officials in the ministries. It was this aspect of policy-making in a unitary-bureaucratic state that generated incentives for a corresponding, unitary organization of railroad interests.

Nothing came of Mendelssohn's proposal, however, until 1842 when the state finally began to provide aid for certain railroads and also took the first steps to regulate the industry. Then between 1842 and 1848, there ensued a battle of wills between the Prussian railroads and the Finance Minister that ultimately produced a *German* railroad association and left the railroads the victor by a small margin.

Throughout these years, the dispute centered on the national railroad law that had been adopted in 1838 despite strenuous objections from the railroads [9, 14]. After some preliminary skirmishes in 1842 and 1843, matters came to a head in the summer of 1846 when the minister ordered the railroads to submit annual reports as the law required [44, p. 393]. In doing so, he gave a clear signal that he would also enforce the law's provisions regarding rates [9, §34]. Mendelssohn's Berlin-Stettin Railroad responded by inviting all Prussian railroads to Berlin that fall to draft a new railroad law. At the close of that meeting the delegates adopted the Berlin-Stettin's proposal to establish a permanent organization. Initially called the "Union of Prussian Railroad Administrations" (*Verband preußischer Eisenbahn-Direktionen* [VpED]), it was intended to give "unanimity" (*Einmüthigkeit*) to their efforts [44, pp. xii-xiii, 393].

Over the next year and a half, the struggle between the railroads and the Finance Minister continued. A few weeks before the VpED's next meeting in the summer of 1847, the Finance Minister duly announced plans for the conference that the railroads wanted, but he restricted the agenda to technical and operational issues concerning through traffic. Moreover, in an apparent attempt to diffuse agitation for changes in the Prussian law, he also invited railroads from other German states [26]. Even though the minister had not yet set a date for the conference, the railroad men promptly responded in kind when they met that summer, voting unanimously to open their association to all German railroads [34, 46]. By transforming their organization into the Association of *German* Railroad Administrations *(Verein deutscher Eisenbahn-Verwaltungen* [VdEV]), the Prussian lines apparently hoped to create a counterweight to the power of Prussian officials at the Finance Minister's conference. Finally, as political tensions heightened throughout Central Europe, the Finance Minister announced that the conference would begin on March 14, 1848--the discussion confined, of course, to technical and operational matters [7]. Twenty-eight railroad men actually travelled to Berlin for the conference,

but only to find the barricades going up on the eve of the revolutionary "March Days." In the circumstances, they prudently agreed to take up the matter again some other time [21, 33].

This represented a partial victory for the railroads, however inadvertent, for it consolidated their control over technical matters. When state officials again contemplated intervening to improve through traffic some two years later, inquiries revealed a consensus among local officials that the railroads could handle such problems themselves [4]. The state's efforts to orchestrate relations among the railroads never recovered the momentum lost during the revolution. Although state officials soon launched a largely successful offensive to control rates and schedules [5], the railroads retained a significant degree of control over other aspects of their industry.

The Prussian lines, however, lost out in other respects, for the Finance Minister's tactical move--inviting other German railroads to the conference--eventually succeeded in heading off demands for reform of the *Prussian* railroad law. Once the association had followed suit and opened membership to all German railroads, its Prussian members apparently recognized that the tactic would dilute their force and they made several attempts to regroup. But it was a losing battle. A proposal to create a separate Prussian section met with defeat; the meeting in late 1847 adjourned without addressing the strictly Prussian items on the agenda, which included revision of the railroad law; and so on. When the question of railroad law came up for the last time in 1849, the minutes dryly noted that a "general discussion was not desired (i.e., first period)" [41, 45, 47].

Instead the delegates turned their attention firmly to technical matters. By 1850 an ancillary organization, the Association of German Railroad Engineers (*Verein deutscher Eisenbahn-Techniker*), had been set up, and the two associations together proceeded to formulate and adopt uniform regulations governing construction norms and operating procedures [2, 44, 48]. The only issue on which the railroads failed to achieve consensus was the ever-thorny problem of rates. Not even the organizational incentives of the unitary state could offset the pressure of competition. Instead, groups of connecting lines began to form regional rate associations (*Tarifverbände*) that drew up freight classification schemes and set rates for through traffic [40].

Meanwhile, the VdEV itself flourished, confining its attention primarily to the technical and organizational problems of creating a unified railroad system [44]. By the 1880s, German railroads, unlike American railroads, had enjoyed the benefits of a national association for four decades--precisely because the early Prussian railroad men had responded quite rationally to the incentives created by the Prussian political structure.

The America Saga

In the United States, too, railroad men sought repeatedly to form permanent associations, but with little success. All told, more than a half dozen railroad associations appeared, flourished briefly, and then disappeared before a permanent organization was finally established in the

1880s [5]. Although the details remain hazy, the general pattern is clear: in most cases associational activity followed a "Prussian" dynamic, which is to say that American railroad men, too, usually convened either to air grievances over state policies or because regulation seemed imminent. But state policies in this case came mainly from the state legislatures, a situation that did not encourage the formation of a *national* association; indeed, federalism compounded the centrifugal pressure of competition, until the locus of policy-making shifted to the national level in the 1880s.

Of course, from the late 1840s on, the industry's economic troubles seemed to demand cooperation and, indeed, the first efforts toward collective action came just as the railroads reached a new level of maturity--and encountered unprecedented problems--in the late 1840s and early 1850s. The railroad network first achieved an appreciable density in New England, and this is where the first associations appeared in the late 1840s. Then by the early 1850s, when the first trunk line railroads had been completed and as the pace of construction in the Midwest accelerated, operating problems and unprecedented competition began to plague railroads throughout the country [23, 42]. It is not surprising, therefore, that all of the early railroad associations sought to promote "harmony," as they called it, which meant either controlling competition or standardizing railroad technology and operation. Yet, in nearly every case, what actually *precipitated* a meeting of railroad men was either some objectionable action by government officials or the threat of it--the "gun behind the door," as Thomas McCraw so aptly puts it [20, p. 35].

Since the details are too complicated to review at length, a summary of trends must suffice. Associational activity came in two waves, the first in the early 1850s and the second one during and after the Civil War. In a half dozen cases, the convention delegates adopted a formal name for their association and intended it to be permanent, but in every case the association seems to have disintegrated shortly thereafter. In addition, most of the conventions sought to handle both aspects of railroad harmony--competition and through traffic--but, like the Prussian association, proved unable to reach agreement on common rates. The most ambitious of the failed attempts illustrates the process.

The National Railway Convention (NRC) appeared just after the Civil War, and there is no question but what government action--this time, at the national level--prompted the railroads to form this organization, the industry's largest and first truly national association [30, 31, 32]. It drew delegates not only from the Northeastern, Mid-Atlantic, and Midwestern states but also from throughout the South [32], a remarkable achievement for the time. The extent to which the federal government's wartime policies had finally mobilized the industry became clear when the delegates got down to business. With J. Edgar Thomson in the chair, the first meeting began in Philadelphia on the Fourth of July, 1866, and dealt almost exclusively with a memorial to Congress against any further increases in the iron tariff. At the same meeting, a draft report on other issues requiring action indicated the range of national-government policies that troubled the railroad men. "Mail-pay"--that is, the rates that the railroads received for carrying the mail--remained a central concern, as it had been since the

1830s [13], but now their complaints also included federal taxes on gross freight receipts and on rolling-stock repairs, a stamp tax on bills of lading, Sunday trains required by the Postmaster General, and apparently also the threat of legislation regarding free passes [30].

Once it had assembled to address government policies, however, the NRC, like the VdEV, quickly turned its attention to technical matters as well. At its second meeting, committees were set up to deal with a range of issues such as railroad construction, bridges, engine houses, signals, safety regulations, patents, and so on [31]. On the sticky question of competition, however, this association, like earlier ones, made little headway. The Committee on Classification, Rates, and Fares merely suggested "that competing lines ought not to attempt to work under each other." [32, p. 32] In this respect, it broke little new ground.

But the NRC did depart from the typical pattern by taking much more concrete steps to create a permanent organization [32]. At the instigation largely of Albert Fink, the NRC resolved to create a permanent railroad bureau whose functions bore a marked similarity to those of the VdEV. Since Albert Fink, a German immigrant, had left home when the German association was already well underway [24], it may well have served as his model. In any event, the committee clearly took the federal government as its point of reference, recommending that the bureau be located in Washington, where it would enjoy "the facilities and encouragement which the Government would naturally be disposed to extend to [such] an institution" [32, p. 29] Its roster of duties included publishing railroad statistics, devising a uniform system of accounting and a standard form for annual reports, and investigating the merits of new inventions. It differed substantively from the VdEV only in that it would have a permanent, salaried staff. Here the committee drew an explicit parallel with the American political structure:

> The Bureau would in its functions be analogous, in a degree, to our Federal Government, as upon it would devolve the care of those matters in which all the railways of the country have a common property[,] independent of the individual rivalries of competing lines, and in these matters the business of the institution would be, in the language of our Federal Constitution, 'to provide for the common defense and promote the general welfare.' [32, p. 27]

Like all previous associations, the bureau would have no powers of compulsion, but the committee thought that the bureau's work, if handled by a permanent staff, would achieve sufficient caliber to make its recommendations "virtually *authoritative*." [32, p. 27] Despite their optimism, however, plans for the Railroad Bureau apparently never materialized, for the NRC itself appears to have met the same fate as previous organizations.

Yet, even though it did not survive, the NRC both symbolized and contributed to a dramatic transformation underway in the years surrounding the Civil War, for its meetings came in the midst of a virtual flowering of associations in the American railroad industry. The years from 1863 to

1873 saw the formation of the brotherhoods of locomotive engineers, conductors, and firemen [18, 35] as well as master car-builders and master mechanics associations [3]. The NRC contributed its quota as well, setting up two regional associations to deal with patent claims [6, 32, 43]. Meanwhile, railroad officials themselves continued their efforts to promote "harmony" in the industry by "system-building," by creating regional pools, and through periodic meetings at which railroad officials set through-traffic schedules. The latter efforts proceeded on a regional basis, too, through the General Time Convention, which encompassed Northeastern and Midwestern lines, and the Southern Railway Time Convention. Out of these institutions eventually emerged the industry's first permanent national association [29].

Since that is a more familiar story, I would only emphasize the way that political pressure proved instrumental in forcing the railroads to deal collectively with standardization issues, despite competition so severe that the General Time Convention (or GTC) had virtually collapsed [29]. In rapid succession in the early 1880s, the two time conventions adopted a series of measures--standard time was just one--which enhanced the uniformity of their operations. In all cases, they did so in order to preempt legislative action either at the state level or in Congress [5, 29]. The words of a GTC delegate in 1884 capture sentiments that were expressed repeatedly in the early 1880s:

> if [uniformity] is not provided for by some authorized body of this character, it will be found to come through State and National enactments, which, however desirable, may not be directed by the more practical experience that it would receive from a body such as yours. [29, p. 717]

In 1885 the GTC recognized the obvious, broadening its scope and then consolidating with the southern convention the following spring to form a single national organization [29]. Political pressure had finally forced the railroads to overcome the obstacles to collective action.

Conclusion

In short, the two political structures encouraged contrasting patterns of associational activity. To be sure, the incentives of the unitary Prussian structure not prove strong enough to offset competitive pressures within the industry. But the Prussian, nonetheless, effectively accelerated efforts to standardize the Prussian system, while the American structure retarded a similar movement in the United States. Consequently, American railroads took a good deal longer to reach the state of economic maturity that Prussian lines had begun to achieve in the 1850s.

The political consequences also deserve notice. In Prussia, the unitary-bureaucratic structure of the state, in and of itself, encouraged the kind of inter-firm cooperation that became the hallmark of late 19th-century Germany. In the United States, on the other hand, the federal-legislative structure inhibited coordination of inter-firm relations in this industry, if not

across the economy as a whole, until the late 19th century. Institutional business history, infused with a healthy appreciation for the politics inherent in institution-building, is well-placed to make sense of national patterns of associational activity.

References

1. Suzanne Berger, "Regime and Interest Representation: The French Traditional Middle Classes," in *idem, ed., Organizing Interests in Western Europe: Pluralism, Corporatism, and the Transformation of Politics* (Cambridge, 1981), 83-101.
2. "Bericht und protokollarische Verhandlung der Commission zur Bearbeitung des Entwurfs eines allgemeinen deutschen Eisenbahn-Gesetzes," Vienna, October 13, 1849, Anlage XIII, in [VdEV], *Protokoll.*
3. Alfred D. Chandler, Jr., *The Visible Hand: The Managerial Revolution in American Business* (Cambridge, MA, 1977)
4. Correspondence in Zentrales Staatsarchiv Merseburg, Historische Abteilung II, Rep. 93E, No. 1127, Vol. I [hereafter StA Merseburg], 103r-105v, 112-13v, 115r-19r.
5. Colleen A. Dunlavy, "Politics and Industrialization: Early Railroads in the United States and Prussia," Ph.D. diss., M.I.T., 1988.
6. Eastern Railroad Association, *Annual Reports* (1868-1893).
7. Finance Minister, Letters to Railroad Commissioners, to the Minister of Foreign Affairs, and to Officials in Saxony, Hesse, and Brunswick, January 8, 1848, in ZStA Merseburg, 54r-56r.
8. Finance Minister to Minister of Foreign Affairs, October 26, 1847, in ZStA Merseburg, 49r-v.
9. "Gesetz über die Eisenbahn-Unternehmungen, vom 3. November 1838, *Gesetz-Sammlung für die Königlichen Preußischen Staaten*, No. 35, reprinted in Klee, Appendix.
10. Peter A. Hall, *Governing the Economy: The Politics of State Intervention in Britain and France* (New York, 1986).
11. Victoria C. Hattam, "Unions and Politics: The Courts and American Labor, 1806-1896," Ph.D. diss., M.I.T., 1987.
12. Balthasar H. Meyer *et al., History of Transportation in the United States before 1860* (Washington, DC, 1917).
13. *History of the Railway Mail Service* (Washington, D.C, 1885).
14. Wolfgang Klee, *Preußische Eisenbahngeschichte* (Stuttgart, 1982).
15. Jürgen Kocka, *White Collar Workers in America, 1890-1940: A Social-Political History in International Perspective*, trans. Maura Kealey (London, 1980).
16. Kühlwetter, Quadflieg, and Mevissen, "Zusammenstellung von Grundsätzen für ein neues Eisenbahn-Gesetz, unter Beürcksichtigung der bisherigen Erfahrungen," October 1, 1847, in Staatsarchiv Hamburg, Senat, Cl. VII, Lit. K^d, No. 11, Vol. 7, Fasc. 8b [hereafter StA Hamburg], Inv. 1 (Anlagen zum Brief vom 27.7.1848), No. 2.
17. William E. Leuchtenburg, "The Pertinence of Political History: Reflections on the Significance of the State in America," *Journal of American History*, 73 (December 1986), 585-600.
18. Walter Licht, *Working for the Railroad: The Organization of Work in the Nineteenth Century* (Princeton, 1983).

19. James G. March and Johan P. Olsen, "The New Institutionalism: Organizational Factors in Political Life," *American Political Science Review* 78, (September 1984), 734-49.
20. Thomas K. McCraw, *Prophets of Regulation: Charles Francis Adams, Louis D. Brandeis, James M. Landis, Alfred E. Kahn* (Cambridge, MA, 1984), 35.
21. Mellin and [?], Finance Ministry, Berlin, March 3, 1848, in ZStA Merseburg, 100r.
22. Joseph Mendelssohn to *Oberbürgermeister* Masche, April 4, 1836, in Staatsbibliothek Preuischer Kulturbesitz (West Berlin), Musikabteilung, Mendelssohn-Archiv, Bankhaus Mendelssohn & Co., Vol. 8, Section 9. (*I am indebted to Dr. Hans-Gnter Klein for allowing me early access to these papers.*)
23. Frederick Merk, "Eastern Antecedents of the Grangers," *Agricultural History*, 23 (January 1949), 1-8.
24. Ellen Fink Milton, *A Biography of Albert Fink* (n.p., 1951).
25. Douglass C. North, *Structure and Change in Economic History* (New York, 1981).
26. Oesterreich (for the Finance Minister) to the Ministry of Foreign Affairs, June 6, 1847, in ZStA Merseburg, 40r-42r.
27. Claus Offe and Helmut Wiesenthal, "Two Logics of Collective Action: Theoretical Notes on Social Class and Organization Form," *Political Power and Social Theory*, 1 (1980), 67-115.
28. Mancur Olson, *The Logic of Collective Action: Public Goods and the Theory of Groups* (Cambridge, MA, 1965; reprint ed., 1971).
29. "Proceedings of the General Time Convention and its Successor the American Railway Association . . . ," Americal Railway Assocation *Proceedings*, 1 (April 14, 1886 to October 11, 1893), Appendix.
30. *Proceedings of the National Railway Convention, at the Musical Fund Hall, Philadelphia, Pa. July 4th & 5th, 1866* (Philadelphia, 1866).
31. *Proceedings of the National Railway Convention, at the St. Nicholas Hotel, New York, October 24 and 25, 1866* (New York, 1866).
32. *Proceedings of the National Railway Convention, at the St. Nicholas Hotel, New York, May 8th and 9th, 1867* (New York, 1867).
33. [Railroad Conference Minutes], Berlin, March 14, 1848, in ZStA Merseburg, 101r-102v.
34. Friedrich Wilhelm von Reden, *Eisenbahn-Jahrbuch für Bahn-Beamte und Staats-Behrden* 2 (1847): 316.
35. Reed C. Richardson, *The Locomotive Engineer, 1863-1963: A Century of Railway Labor Relations and Work Rules* (Ann Arbor, 1963).
36. Marc Schneiberg and J. Rogers Hollingswo:th, "Can Transaction Cost Economics Explain Trade Associations?" in *The Firm as a Nexus of Treaties*, eds. Masahiko Aoki, Bo Gustafsson, and Oliver E. Williamson (London, 1990), 320-346.
37. Theda Skocpol, "Bringing the State Back In: Strategies of Analysis in Current Research," in *Bringing the State Back In*, eds. Peter B. Evans, Dietrich Rueschemeyer, and Theda Skocpol (Cambridge, ENG, 1985).
38. Theda Skocpol and Margaret Somers, "The Uses of Comparative History in Macrosocial Inquiry," *Comparative Studies in Society and History*, 22 (April 1980), 174-197.
39. Rogers M. Smith, "Political Jurisprudence, The New Institutionalism, and the Future of Public-Law," *American Political Science Review*, 82 (1988), 89-108.
40. *Die Tätigkeit des Deutschen Eisenbahn-Verkehrs-Verbandes in den ersten 25 Jahren seines Bestehens 1886-1911* (Hannover, 1911).

41. "Tagesordnung für die am 29th November 1847 zusammentretende General-Versammlung der Abgeordneten des Verbandes der Deutscher Eisenbahn-Directionen," in StA Hamburg, Inv. 1 (Anlagen zum Brief vom 13.11.1847, No. 205a), No. 1.
42. John K. Towles, "Early Railroad Monopoly and Discrimination in Rhode Island, 1835-55," *Yale Review*, 18 (November 1909), 299-319.
43. Steven W. Usselman, "Running the Machine: The Management of Technological Change on American Railroads, 1850-1910," Ph.D. diss., University of Delaware, 1985.
44. [Verein deutscher Eisenbahn-Verwaltungen], *Festschrift über die Thätigkeit des Vereins deutscher Eisenbahn-Verwaltungen in den ersten 50 Jahren seines Bestehens, 1846-1896* (Berlin, 1896).
45. _____, *Protokoll der zu Wien vom 15. bis 19. October 1849 abgehaltenen Generalversammlung des Vereins Deutscher Eisenbahnverwaltungen* in StA Hamburg, Inv. 2 (Anlage zum Brief vom 2.11.1849, No. 276).
46. _____, [Proceedings], Cologne, June 28-29, 1847, in StA Hamburg, Inv. 1 (Anlagen zum Brief vom 18.9.1847, No. 205), No. 1.
47. _____, [Proceedings], Hamburg, November 29-December 2, 1847, in StA Hamburg, Inv. 1 (Anlagen zum Brief vom 20.12.1847, No. 321).
48. _____, *Rückblick auf die Thätigkeit des Vereins deutscher Eisenbahn-Verwaltungen in technischer Beziehung, 1850-1900* (Berlin, 1900).
49. Oliver E. Williamson, *The Economic Institutions of Capitalism* (New York, 1985).