

Present Rail Transport Organization

John P. Carter, Department of Business Administration, University of California at Berkeley

This paper suggests the possibility of converting the federally directed Consolidated Rail Corporation and other financially weak railroads to public toll roads open to a broader group of users. Highways and airways have common tracks over which diversely owned vehicles operate and have a multiplicity of users that the monopoloid rail organizations lack. The institutional factors involved in such a change are seen as posing greater problems than the technological. Established status positions might be changed, and trade-offs are likely to be required. Broader use could range from extending trackage rights to the remaining successful companies to opening the railways to any competent operator willing to pay the tolls. The railway might remain in the private sector or be maintained and controlled by government agencies. Analogies would be to state highway and motor vehicle departments and to the Federal Aviation Administration. Projected federal rail funding requirements in the next decade appear substantial. Adoption of the public highway concept might leave the transportation function in the private sector, while shifting the maintenance function to the public sector. Political support of that latter function could be expected from transportation operators in the private sector.

This paper suggests the possibility of a return to the idea of railways as public highways that would be open to those who would like to pay the tolls and run trains. Railway transport technology has been showing marked indications of enjoying the status of a declining industry, partly because of rigidities and limited maneuverability of the technology and partly because of the obsolete form of business organization and obsolete patterns of government control. Much is irremediable, although the step to trailers (or containers) on flatcars is a good one toward greater flexibility. The business organization of railways and its implications for government regulatory and management structures form the subject of this paper.

Modern transport technologies often provide a common right-of-way over which the vehicles of many users operate. The right-of-way is usually provided by a government agency: the Corps of Engineers, the Federal Aviation Administration (FAA), or state or local highway and street departments. Distance between vehicles is dictated by a recognized set of rules governing behavior and priorities. Where vehicle operators cannot normally be expected to judge their own separation distances, this is managed by traffic controllers—the FAA or the Coast Guard, who also enforce the recognized code of behavior, as do the highway patrol and the police. In most cases there is a fee structure for vehicles using the common track, and, in addition, a charge for the ownership of the vehicle.

The cost of the government track is fixed for the community as a whole, but the general practice of user fees varies this cost to the user.

When the railways were established in the early 19th century, the organization was appropriate to the state of technology at the time. Then the thought was that the railway would be just another version of the highway: open to all users. But it became immediately apparent that the flanged wheel on rail lacked flexibility and that meets between trains would have to be organized differently from those between wagons, which led to the adoption of a single organization that both owned the tracks and operated the trains. The military was the best known large owner. The chronometer was familiar; the telegraph had yet to be invented. Thus, discipline and timetable became at least the ideal organizational factors of early railroads. Undoubtedly much was

learned by trial and error, especially the latter. That single large organization, responsible for both tracks and vehicle movements, continues in railway organizations today (1).

In some countries, railways were government owned and operated from the start; in others, they were initially private businesses. Only in this country and in Canada do railways still exist as private enterprises. The French and British railways, among the last holdouts of private enterprise elsewhere, became government owned about the time of World War II. The general pattern was that a railway became a government responsibility when it was no longer economically viable as a private enterprise. That stage was reached in this country only in this decade, where as elsewhere it occurred before the development of sophisticated communications technologies.

In most countries railways were accepted as a government responsibility in the last century, but here the Consolidated Rail Corporation (Conrail), with a majority of its directors federally appointed, did not assume responsibility for the railways until 1976. The irretrievable bankruptcies of the eastern railways and the assumption of their operations by a federal agency lead us to ask whether a more advanced form of organization might not feasibly be applied to Conrail.

A version of that, called ConFac, was mentioned by the United States Railway Association (2, p. 49; 3, p. 38, 4) but not explored further. Fishwick, in his 1975 ex parte testimony before the Rail Services Planning Office (RSPO) of the Interstate Commerce Commission (ICC), supported the ConFac concept. The RSPO rejected the idea as being generally opposed by the industry (5, p. 79). In its simplest version, ConFac is only an extension of the trackage rights concept, well known for a century or more. That is, the tracks would belong to one railway, but trains of other railways could also operate over them, ordinarily under the rules of and subject to the control of the owning company. Examples abound. The Santa Fe System uses Southern Pacific Transportation Company tracks between Bakersfield and Mojave. The Union Pacific Railroad uses Santa Fe tracks between San Bernardino and Daggett. The Southern Pacific and the Western Pacific Railroad Company use each other's tracks between Wells and Winnemucca. There, each company's tracks are used one way: one company eastbound and the other westbound. The Terminal Railroad Association of St. Louis would be an example of a railway over whose tracks many other railways operate.

The concept of railways as public highways could be adopted for negative cash flow bankruptcies, that is, for those railways that in bankruptcy show no promise of being reorganizable on an income basis. Conrail would be a prime example. The congressionally mandated goal of profitability followed by a return to the private sector may well be more the result of pious hope than of rigorous analysis (6, p. 1; 7, p. 36; 8, p. 118). The Rock Island Lines may also fall into that negative cash flow category, and possibly still others do as well (9, p. 184).

While it is by no means clear that such a concept is operationally feasible, if it were, there could be a substantial reduction in federal expenditures. Luther Miller has said that in the first half of this decade federal as-

sistance to the rails ran to at least nine figures, largely on an ad hoc basis to maintain the operation of mid-western and northeastern railways. Much of that operation has now been assumed by Conrail, but billions are still required for track rehabilitation (10, pp. 16, 21, 27). The operations of Conrail alone will require an estimated \$2.2 billion in federal funding by the end of the 1970s, and a total of \$2.9 billion during Conrail's first decade (11, p. 55). For 1976, Conrail's total operating expenses were estimated at \$2.6 billion, which will almost double a decade later. But 40 to 45 percent of those operating expenses are for transportation; maintenance of way accounts for only 12 to 15 percent of operating expenses. If transportation and maintenance costs were shifted from Conrail to its toll customers, Conrail's operations and budget would become much more manageable and would reduce federal funding requirements.

In its present 19th century form, Conrail is the country's largest railway. Some have expressed the view that with such heavy requirements for federal funding, Conrail will be politically unable to drive hard bargains with the unions. Isabel Benham has been quoted as saying that this can then set a pattern of inflationary wage and work rules for the entire rail industry. The withdrawal of the Chessie System and the Southern Railway Company from the Final System Plan lends credence to that fear. As Arthur Lewis and James Hagen pointed out, the employees of those parts of the estates of the Erie Lackawanna Railway Company and the Penn Central Transportation Company chose to stay in Conrail and to renegotiate their labor contracts rather than to accept the established wage and working conditions of Chessie and Southern.

That large organizations come to exist in order to maintain themselves as their primary goal is a well-recognized phenomenon. But the development of rail management and the cost of rail labor in other industrial countries does validate some of the concerns expressed above. In 1973 the labor costs alone of the state railways in both West Germany and Italy exceeded the gross operating revenues of those organizations. And even after substantial subsidies, both operated at a deficit (12, p. iv). Both the German and the Italian state railways, however, were organized before present communications techniques were available. Conrail is still young and flexible. It might be capable of pointing the way to a more innovative form of organization. State railways elsewhere show what can happen when a 19th century bilateral monopoly continues into the late 20th century.

If Conrail were to become a landlord highway, rather than a transportation company, one could expect that the first users of the new road would be the solvent companies; for example, successful western roads might be delighted to be able to operate their own trains, under their own control and for their own account, directly into the far eastern markets. Fishwick, in his testimony before the RSPO, proposed trackage rights for his road, Chessie, and Erie Lackawanna into the northeast terminals over government-owned rights-of-way.

Then it might be expected that, if entry controls permitted, innovators would appear on the scene. Freight forwarders, truckers, and unit train contractors might be the initial backbone of that development. Many bright young people now excluded from the industry by entry controls would be happy to enter if they could.

Some aspects of operating railways as public highways are easy to comprehend. The over-the-road operation would hardly change, and train movement could continue to be controlled by radio or signal in-

dications. The train controllers might be employees of the landlord railway as at present, of the Federal Railway Administration (FRA), parallel to the FAA, or of a state, as a component of state departments of transportation.

Train personnel could be certified by the FRA in a fashion analogous to the certification of pilots by the FAA or by the state departments of motor vehicles in a fashion analogous to the licensing of commercial chauffeurs and truck drivers.

Specialists could then be expected to develop from train personnel, as they have in the cases of flight crews or truck drivers. Crews might possibly be supplied through a union hiring hall as is the practice for long-shoremen on the waterfront.

Large-scale train operators could lift some of the certification burden from the certifying agency, as major airlines now do in assisting the FAA in the administration of pilot certification.

The end result might be a better trained and more professional group of train operators. It is worth noting that one outstanding impression that comes through from reading the accident reports of the National Transportation Safety Board (Reports T4-4; 75-3, 4, 6, 8, 9; and 76-2, 3, 7) is the inadequate training of railway train staff, a somewhat haphazard use of radio communication, and sometimes a certain lack of discipline. Perhaps accidents do not occur with sufficient frequency on any one railway for its management to feel that the full development of a code of operating behavior and radio use is worthwhile. Standardized procedures developed by the FRA or by the associations of state agencies could be expected to improve railway safety.

As indicated, one would suppose that the principal users of the northeastern public railways would be solvent rail companies. These large-scale and experienced operators would presumably have their own regular employees who would work under established contracts and according to standardized practices governing the movement of trains and their safety and the use of radio communication. The small train operator could lease locomotives and cars, hire such crews as needed from professional suppliers, pay the tolls for that run, and avoid almost all fixed costs, just as truck users do. The present freight forwarders, for example, might emerge as the professional entrepreneurs, occasionally leasing locomotives, hiring professional crews, and assembling and transporting the cars of their shipper clients.

It could be supposed that shorter and more frequent trains might require smaller and lighter locomotives. It has been charged that current track problems arise not only from giant new cars but also from the heavy locomotives required to meet rail management's present operational philosophy of long heavy trains (13).

While a rail analogy to airlines and highways can easily be visualized, this does not seem true for the terminals. Modern rubber-tired transporters can easily be wheeled around and drawn up in the desired cluster patterns in terminal areas. The linear nature of rail movement, restricted by the inflexibility of the flanged wheel on rail, poses problems for terminal operations. The organization of essentially linear terminals requires analysis, and it may be the point on which the concept of the public railway founders.

But most technical problems can likely be solved. The concept will more probably founder on institutional matters, especially the problems associated with any large transition, such as avoiding shock to established positions, entrenched property rights, and professional skills.

Beginning with the certificate requirement for rail-

ways in 1920 and extending to highway, air, and water carriers during the pre-World War II depression, entry into the transportation business gradually closed and finally reached freight forwarders at the end of World War II. With entry controlled, the right to operate transportation services became scarce; scarce items became expensive. Over time, operating rights have been bought and sold, and the intangible assets have become incorporated into the financial structure of the transportation industry.

If entry were opened to all, those intangible assets would become valueless, although established operators would clearly have a head start on potential competitors. However, a threat to asset values would obviously produce a strong political reaction from those threatened. There are equity problems in any case, and there may be constitutional problems.

Moreover, Congress has permitted the industry to cartelize its pricing procedures. The prices so made may be reviewed by the controlling economic agency: the Interstate Commerce Commission, Civil Aeronautics Board, state public utilities commissions, or others. A whole group of specialists in transportation pricing and the techniques for its variance have emerged. Their knowledge would become obsolete and their livelihood seriously affected if the market should take on the characteristics of open competition.

Most existing transportation operators and the professional corps of traffic managers can be expected to be opposed to opening entry into the transport industry. Moreover, our usual government decision-making process involves holding hearings and presenting evidence and argument. The industry will obviously be consulted and can be expected to provide the preponderance of witnesses. The innovators and other would be entrepreneurs have been excluded from the industry by the certificate requirements. They are outsiders and do not have the same standing before the committees as do those already established in the industry, and most of them, of course, having been systematically excluded from the industry over many years, have looked in other directions for their activities and may have lost interest in transportation. It is hard to see how a legislative body could favor something opposed by established industry. It will be much easier for that body to provide substantial subsidies to the establishment than to follow the unknown route of innovative competition.

If entry control were to be abolished generally, many years of hard thinking and hard bargaining would be required. On the other hand, open entry could be limited only to government-owned railway facilities—Conrail and such other lines as may later fall into that category. That would circumvent the problems of entrenched economic interests. Conrail might even successfully play the role of a demonstration project. It could be that there would be other railways, still in private hands, that might consider it advantageous to assume the role of a landlord toll road and permit others to provide transportation along their roads. That might be concurrent with the maintenance of their own transportation service, improving utilization of their tracks. To make that possible, some relaxation of entry controls would be needed.

One familiar route for coping with vested interests that impair productivity is to calculate some value for those vested interests and then to buy them out. That route was followed by the waterfront employers, as a sequel to the San Francisco Port Study (14), as a method of persuading the waterfront labor union to abandon unproductive working rules. That change made possible the conversion of shipping operations from manual breakbulk stowage to today's container ships. An enormous increase in the productivity of the waterfront

labor force followed, as did a significant increase in the productivity of capital. Ship port time was reduced in proportion to the increase in labor productivity, and the ship was left free to make more voyages per year. The cargo-handling equipment was transferred from on board, where it could be used only when the ship was in port, to the quay, where it could be used whenever a ship required it. The longshoremen's union used the payments from the waterfront employers to compensate its members for their increased productivity by offering them well-funded early retirement. In that fashion the union was able to maintain full employment for its active members.

The Regional Rail Reorganization (3R) Act of 1973 followed a similar route when it provided for lifetime payments to any employees of the bankrupt northeastern rails who might be displaced by the formation of Conrail.

If railways became public highways and users operated more frequent and shorter trains, some similar reward might be needed in order to increase railway workers' productivity. One possibility, of course, might be the analogy to the highway, where not all transport labor is provided by a monopoly union. Another possibility might be to argue that the total demand for railway labor would expand if trains were operated by two men instead of four. One southeastern railway has already done that, but only after a long and difficult period of labor unrest. That railway also operates its trains with no caboose; two men in the locomotive use a radio beacon on the coupler of the last car to provide distance measurement (15, p. 22; 16, p. 645). The caboose, which can require extra switching movements, has been criticized by the National Commission on Productivity's Task Force on Railroad Productivity as being made necessary only by the excessively large crews used on American trains.

There is obviously room for the ingenuity of labor relations experts here. Increased employment on the rails that the public highway concept should bring should offer a quid pro quo, along with other rewards, for increasing the productivity of train crews. And many rail employees are old enough to welcome retirement.

A similar labor work rules block appears to inhibit the use of rail containers and trailers on flatcars (COFC/TOFC) by large trucking organizations. Apparently the usual working rules provide that if an over-the-road driver is available, he must be paid for the run even if the trailer is shipped by rail. What prevents employers from reducing their force of drivers by attrition, and so finding no one available, is not clear. There would seem to be possibilities for economies if labor negotiators were to find a way to reward truck drivers for permitting their loads to be moved by rail. In that way large trucking organizations, instead of worrying about double or triple trailers on the highway, could move as many as desired on one train.

One reward possibility might be that the truck drivers learn to drive the train. A prerequisite to such a change, of course, from the customer's point of view, is that rail service be upgraded to the speed, reliability, and freedom from claims of the present trucking service. Moreover, the present owner-operated trucking of exempt commodities can hardly be integrated into a COFC/TOFC operation, which requires someone at the destination with a tractor to receive the arriving trailer. The individual hauler of exempt commodities is not in that position, and it is hardly feasible to put tractor and trailer on the train and ride along. The established smaller entrepreneur would, at best, be unaffected by the application of this concept.

As the physical organization of terminals poses a

problem requiring analysis, so does the business pattern of terminals. While present intercity rights-of-way can easily be conceived as becoming toll roads, with charges based on gross ton kilometers, possibly adjusted for axle weights or speed, or both, terminal organization is less clear. Modern transport technologies have their own terminals under their control. But the physical structure of rail yards implies the continuation of a common controlling agency. It seems improbable that the toll-road users, those who provide the transportation service, would want to acquire their own yards and terminals. Present yard facilities are probably quite adequate, but they would need to be adapted to common use.

A possible analogy is with airport and seaport organization. Airports and seaports are typically owned by a local government agency and are open to all users. Airports and seaports are rarely operated by the local government agency, although some aspects of the operation are provided by federal agencies such as the FAA, the Coast Guard, and the Corps of Engineers. The most common function of a local airport or seaport is to play the role of landlord; the tenants then undertake the actual operation. The airlines are among the tenants of an airport and pay rent for their counters, ramps, freight sheds, maintenance, and so forth. For seaports, shipping companies are sometimes direct tenants of the port, but the regularity of shipping services is less than that of air services and gives intermediary terminal companies a larger role in seaports than they have in airports.

One might suppose that freight-train movement over a public railway might more nearly approximate the nature of shipping movements than air movements. Some successful western railways might operate their own trains regularly, even daily, but hardly more than that, into the dense northeastern markets. Some industrial customers could be expected to be doing the same: power companies with their unit trains of coal, automobile manufacturers with raw materials for their plants and new cars off the assembly lines. But there would be a large group of less regular users such as freight forwarders and other developing specialists.

Some large users might break up trains for traffic at many intermediate points, and the important yards will then be those near the points of origin and destination of the cargo. Large intermediate classification yards would diminish in importance. Trains, like planes and trucks, could move directly from origin to destination with little or no intermediate switching. Service would be faster; loaded cars would no longer spend 45 percent of their time in the yards but would move faster and in shorter trains. Labor requirements may well increase, providing an incentive for the improvement of rail labor productivity.

In this framework, Conrail might possibly be able to offer to local government agencies those yards near freight-generating economic activities. Those agencies could adopt the management patterns of airports and seaports. They could maintain the properties, contract with tenants to operate them, in whole or in part, collect rents, and use fees analogous to landing fees and wharfage and dockage.

Large intermediate classification yards might offer promise for industrial parks and be offered to local agencies for that purpose. Some local governments are likely to be eager to improve their economic bases.

Local government agencies need not, of course, operate the yards. They may contract with local entrepreneurs for their maintenance and with others to provide the transportation service, including sorting cars, fueling, maintenance of locomotives, and pickup and

delivery of cars to the district's industrial sidings. This last need not be monopolized; more than one local entrepreneur might undertake it.

The revenues from local taxes would not necessarily be tapped and would surely be more secure than in if a private enterprise railway went bankrupt. The landlord's toll railway would presumably continue to pay taxes based on the assessed valuation of the property (which is more than can be said for turnpikes). Locally owned airports and seaports are presumably off the tax rolls in most jurisdictions, but some tenants are taxed on the value of their leaseholds and improvements.

A system like this, if technically and economically feasible, would do a number of things, not the least of which would be the elimination of 19th century railway monopoly characteristics, which are the foundation on which the elaborate and stifling systems of public control over the transport industry were erected. The technological development of unitary transport vehicles running on publicly provided tracks was not accompanied by an institutional reorganization to exploit the flexibility of the developments in this century. Instead, the newer technologies were forced into the 19th century organizational mold established by the railways. Administrative and regulatory machinery was concurrently expanded to control and limit the newer technologies and to establish them in monopoly roles analogous to those of the railways. As long as some shippers continue to be dependent on traditional and expensive railway transport, the argument in favor of the maintenance of the status quo continues to flourish.

But if there is free entry and innovation throughout our transportation systems, then the arguments for treating transport as a special case to be politically sheltered from market forces evaporate. There remains only the question of compensation for the loss of intangible values resulting from the restoration of competition.

CONCLUSION

If railways were to assume the form of public highways, railway organization would parallel that of highways, airways, and waterways. Many operators could provide transportation over a common track. Among the benefits from such a transformation of the railway industry would be

1. Retention in the private sector of the transportation function (as distinct from the maintenance of way) of railways;
2. Substantial reduction in federal funding, since the transportation function would not be a government responsibility;
3. Encouragement of innovation and entrepreneurship in (railway) transportation;
4. Encouragement of innovation and entrepreneurship in state and local government terminal development;
5. Encouragement of more competition in transportation;
6. Reduction or even elimination of the need to regulate transportation on a basis distinct from other industries; and
7. Development of a user constituency, analogous to those constituencies of the other transportation modes, to support funding of the railways.

The forecast is that Conrail will be operating profitably by the end of this decade. If so, this concept may be explored leisurely; if not, there is a risk that the last century's railway organization pattern will be-

come uncritically entrenched. We should explore the alternatives before we subsidize nostalgia.

REFERENCES

1. J. P. Carter. Historical Accident. California Management Review, Fall, 1975.
2. Preliminary System Plan. United States Railway Association, Washington, DC, Vol. 1, 1975.
3. D. D. Wyckoff. Public Tracks, Private Users. Transportation and Distribution Management, Apr. 1973.
4. J. P. Carter. A Railway Proposal. Paper presented at the Western Economics Association Annual Meeting, 1969.
5. Evaluation of the U.S. Railway Association's Preliminary System Plan. Rail Services Planning Office, Interstate Commerce Commission, 1975.
6. A. R. Karr. On the Track? Wall Street Journal, June 29, 1976.
7. B. F. Biaggini. The Right to Earn a Profit. Railway Age, July 4, 1976.
8. R. Loving, Jr. A Costly Rescue for the Northeast Railroads. Fortune, Feb. 1974.
9. E. L. Altman. Predicting Railroad Bankruptcies in America. Bell Journal of Economics and Management Science, Spring, 1973.
10. Comptroller General of the United States. Information Available on Estimated Costs to Rehabilitate the Nation's Railroad Track and a Summary of Federal Assistance to the Industry. General Accounting Office, Washington, DC, 1975.
11. Final System Plan, United States Railway Association, Washington, DC, Vol. 1, 1975.
12. Railroads of Selected Industrial Countries. Union Pacific Railroad, New York, 1975.
13. G. Kovatch, J. B. Barker, R. F. Casey, and G. Zames. Transportation Systems Technology: A 20 Year Outlook. U.S. Department of Transportation, Cambridge, MA, 1971.
14. San Francisco Port Study. National Academy of Sciences and National Research Council, Washington, DC, 1964.
15. D. P. Morgan. Florida East Coast. Trains, Feb. 1975.
16. Value Line, July 30, 1976.

Publication of this paper sponsored by Committee on State Role in Rail Transport.