Railways and the Coming of Road Transport in the Netherlands, 1919-1940

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The year 1917 witnessed the founding of a working union between the four railway companies then operating in the Netherlands. Scarcity of coal, steel, and other strategic materials in the neutral country not self-sufficient in this respect necessitated such a cooperation between railways, which until then had practiced a kind of cut throat competition. At the same time, government influence grew stronger, leading to a complete state-owned railway system by 1938 [10]. But for most of the period under discussion, it may be said that the railways were state-owned and privately operated, but without much free market influence.

The situation in the Netherlands was different in several ways from other countries. First, competition presented by water transportation, at least in respect of freight traffic, was traditionally severe. The rivers Rhine and Waal had always been the major arteries of traffic from the ports of Rotterdam and Amsterdam towards the German hinterland, especially the heavily industrialized Ruhr area [1, 7]. Ores, oil, grain, and other bulk goods traveled upriver, and coal and industrial products the other way. And not only was international traffic heavy, internal water transport was also important. A government policy of canal building in the 1920s and 30s to supplement the natural waterways and older canals only aggravated this situation by providing large, free waterways for coal traffic from the Limburg coalfields to the west and the Twente industrial area, further cutting into the already declining coal traffic by rail. Annual income from coal traffic declined from a high of some 21 million guilders in 1931 to only 13 million in 1936, largely as a result of the opening of the Juliana Canal in Limburg, which provided a free, all-weather waterway for coal barges [5, p. 309].

In the Netherlands, largely because of this water competition, income from passenger traffic had always balanced, or even bettered, the income from freight for the railways. In 1928 income from passengers was almost 84 million guilders, while freight brought in just over 82 million [9, July 1929, p. 24]. By 1938 the balance had shifted even more towards the passenger side of the business: 60 percent from passengers, with only 35 percent from freight, and 5 percent from miscellaneous sources [8, p. 176]. The Holland Railway, operating in the densely populated part of Holland, had an especially extensive system of suburban and long-distance passenger trains, and although the State

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Railways handled more freight than their competitors, they too were very strong in passenger traffic.

A second difference with many other countries (except Belgium) was the dense network of steam and electric tramways which had sprung up, sometimes intended as feeders of the railways, but here and there, especially in the provinces of North and South Holland, in the form of fast electric interurbans in direct competition with them. The railway companies, the Holland Railway first of all had countered this competition by buying up many of these tramway companies. The Electric Railway Company (ESM), which had operated the double-track line Amsterdam-Haarlem parallel to the railway since 1904, was one of the last to be taken over by the Holland Railway in 1919 [2, pp. 19, 59]. ESM was built by the American firm of White & Co. and financed partly from the U.S., a rarity at the time, as the capital flow across the Atlantic generally was the other way around [11].

This process of grouping the smaller regional tramway systems into fewer large companies, owned by the Netherlands Railways (NS), continued until after World War II, until almost all systems, apart from the municipally owned city streetcar systems, were grouped together under the wings of the NS.

Curiously enough, but typically Dutch, the first onslaught of road competition came from the bicycle. The relatively short distances made suburban traffic especially vulnerable to this cheap alternative. The number of registered bicycles grew from 861,541 in 1919 to some 3,300,000 twenty-five years later [5, p. 293]. Local streetcar and interurban traffic declined even more sharply as a result of this ubiquitous two-wheeled vehicle.

Table 1: *Rail Network in the Netherlands*

	Rail Network (kilometers)		
Year	Total	Electrified	Passengers (millions)
1910	3,215	33	
1920	3,406	33	55
1930	3,667	134	102
1940	3,314	526	95
1993	2,757	1,991	333

Source: [12, table 4e].

Competition of trucks and motorbuses came slowly after the end of World War I in 1919. In 1920, a year for which dependable statistics exist, the railway network measured 3,406 kilometers for a total population of 6.7 million (Table l) [12, Tables 1, 4e]. Furthermore, in 1920 only 11,000 private automobiles were registered, together with an unknown number of trucks and buses, probably somewhere around the same number. By 1933 the number of automobiles had increased tenfold, with the commercial trucks and buses around half their number (Table 2).

Table 2: Road Transport

Year	Motorcars	Motorcycles	Buses & Trucks	Passengers*
1910	2,000			
1920	11,000			20,000
1930	68,000	30,000	44,000	34,000
1940	100,000	66,000	55,000	
1993	5,575,000	275,000	679,000	

*Estimated.

Source: [17, pp. 93-34; 12, table 4e].

Trucks, and especially motorbuses, were eating away at the most valuable part of railway traffic. Truck operators concentrated on the less than carload business with frequent, cheap and flexible services. Where the railways had to maintain an extensive network to guarantee transportation for everyone everywhere, a duty imposed by law, truckers were, of course, only operating where profits were to be made. The carriage of bulk goods at low rates was gladly left to the railways. Truckers were only subjected to some form of regulation toward the end of the interbellum period, and even then it was not very effective.

Motorbuses were even more dangerous, because they followed the shifts in population more easily than railways or tramways, with their expensive and inflexible infrastructure. Railways were further hampered by extensive and sometimes oppressive government regulation and supervision. Services were subjected to intense scrutiny and rates had to be approved by the government. A quick response to changing needs was hardly possible with this heavy-handed supervision. Private bus operators used existing roads, for which they were not responsible and paid little, and were free to parallel the most lucrative railway lines. And when there was not enough traffic, they simply shifted their activities elsewhere. Complaints from the public were ignored.

On the psychological side, motor transport was popularly seen as modern, fast and comfortable while the steam railways were considered old-fashioned, dirty, and slow – not quite without reason. Third class rail travelers still sat on hard wooden seats, six in a row, while bus passengers were carried on padded seats in a well-sprung vehicle and deposited close to work or home.

The first reaction of the railways to the new competition was disbelief. A mode of land transportation which had enjoyed a practical monopoly for so long simply could not be superseded by something else so quickly. But soon enough it dawned on railway leaders that this was getting serious. Something had to be done.

Closing the ranks of all railway and tramway companies in the country and in the colonies, formerly antagonists, was an important step forward, which enabled the industry to present a unified front to the outside world. This was partly achieved by the founding, in 1928, of the biweekly trade journal *Spoor- en Tramwegen* (Railways and Tramways) by S.A. Reitsma, a journalist-railwayman with a lot of experience in the Dutch East Indies. The new journal quickly became the mouthpiece of the industry, defending the established positions, but with an open eye for faults and deficiencies in the system and for new developments around the world.

Apart from this closing of the ranks, something more substantial had to be done. Several options were open, and the first, and maybe the easiest, was to lobby government for enacting legislation to curb the unbridled competition of the road. The first attack was directed against the motorbus, not the truck, reflecting the overwhelming importance of passenger traffic. Government was not averse to such action since it had to supply the deficits of the railways after the 1917 agreements. These deficits had been mounting alarmingly since the merger and only came to a halt in 1927. Then for two years the NS were in the black again, before the world crisis struck.

Apart from financial reasons, government was inclined to act as these free buses exposed the public to some danger as a result of the inadequate technical state of the vehicles, inexperienced operators, and such. In 1926 a new addition to the existing railway law was published, which made an official license mandatory for every passenger-carrying motorbus operated in regular service. The provincial authorities were appointed to issue these licenses and were expected to keep in view both the interest of the traveling public and of the railways and tramways in their region [5, p. 302].

This law, while not perfect, did something to eliminate the most glaring examples of cut throat competition. A call in Parliament for a truly national company of buses, as in Belgium, working together with the railways and tramways instead of against them, was ignored by the government [9, October 1928, pp. 268-69]. The new law proved to be full of loopholes: it was fairly easy to circumvent by operating a bus as an extra or special service only, without published schedules, for which a license was not required. Only in 1939 were these "wild" buses finally forbidden [6, p. 213]. But, of course, even with this competition checked, the fundamental problem of inflexibility of railway transport compared to road transport remained. An international publication stated the problem thus: "The motor vehicle, through its ability to effect door-to-door service, deprives the district railways of goods for direct delivery to private persons as well as of high-grade traffic" [17, p. 93].

Another way of countering the road competition was found in using the same weapons as the enemy. In 1927 the Netherlands Railways founded the Algemene Transport Onderneming (ATO, General Transportation Cy) to operate bus and truck services all over the country [5, p. 311; 9, October 1928, pp. 189-193]. The trucking part of the new company was reasonably successful, but the bus services much less so. They came too late to the business, when most of the more profitable routes were already licensed to other operators, leaving only the unremunerative lines to the ATO. In 1928, an old-established drayage firm, Van Gend & Loos & Company, with some 300 trucks and drays in service nationwide, was taken over and incorporated into the ATO [9, October 1929, p. 226]. Since then drayage and house to house service for the railways was executed by the new new acquisition.

One more way of reducing the annual deficits, which grew alarmingly again after the peak year 1929, was giving up rail service on regional lines with a very light traffic density. Even after 1919 the government, apparently blind to

the new modes of transportation, had ordered the building of new regional lines, which were certain never to pay their way, but which the NS had to work somehow. Most of them were closed again before 1940, some with barely ten years of operation [9, July 1929, p. 15]. The last of these lines was opened only in 1934, and critical questions were asked if this outlay was really necessary [5, p. 308]. Curiously enough, this particular line, Gouda-Alphen, is still in use and has even been electrified.

A greater problem was presented by existing regional lines. In the years before 1914, a lot of these regionals had been built by independent companies, often supported by local government. They had only built the lines, and had left the actual working in the hands of the established companies. These contracts were now seen as onerous, often with a guaranteed income for the bond and shareholders even if not earned; but getting rid of them proved to be almost impossible. The only way out was by compulsory purchase of the owning companies, a procedure which started in 1930. A new expropriation law was passed in 1934, which gave the government greater powers to acquire these railways, and between 1930 and 1936 some 350 kilometers of the worst lines were closed altogether or kept open for occasional freight traffic only [5, pp. 314-16].

Another means of survival was reduction of expenses. Some less-used grade crossings were no longer guarded; stations were closed or downgraded to simple unstaffed halts; labor saving machinery was introduced where possible, and double work avoided, something which proved to be harder than expected because of the ingrained conservatism of railway staff in general. As a result of these measures, total personnel was reduced from 51,075 in 1921 to 31,931 in 1936, a process which continued after that year. And, as elsewhere in the country in this period, wages were cut by as much as 30 percent, especially after 1930 [5, p. 312].

One more – and almost unavoidable – way of fighting road competition was by extensive modernization of the outdated railways. Rail traffic could be made more attractive for shipper and traveler, and by utilizing modern technology costs could be cut even more. The steam locomotive was a labor-intensive and thermally inefficient machine, needing an extensive infrastructure in the shape of coaling stations, water treatment plants, running sheds and depots and other paraphernalia. Switching over to other forms of traction seemed attractive.

Of the available technologies in the 1920s, electric traction was by far the most proven form. Indeed, since 1908 a modern electric suburban line was running successfully between Rotterdam and The Hague. In 1924 the decision was made to electrify the "old" line, the mainline Amsterdam-Haarlem-The Hague-Rotterdam, by far the most heavily used line of the whole network. A different system was chosen, 1500 volts DC in contrast with the 10,000 volts AC of the 1908 line. In 1928 the whole line was operated with electric traction, except for the long-distance and international trains, which were still steam-hauled [14]. The success was clear. Traffic rose, expenses were cut dramatically, not least by using only one motorman per train and doing away with the fireman. The problem of the presence of a fireman on a diesel or electric engine, as still required

by American and British trade unions and still plaguing railroads, never existed in Holland.

Internal combustion motor traction was still somewhat experimental in the 1920s. Yet the NS ordered its first motor cars in 1922. The first three were fairly large bogie cars, powered by two gasoline engines through a pneumatical gearbox. An improved version came soon after, and they proved their worth on the lightly traveled regional lines all over the country. A lighter four-wheel version, now with diesel engines and equipped for one-man operation without a conductor, came some years later. Altogether some 34 of these doodlebugs of several classes were in use before 1940, and they helped materially to reduce expenses on the regional lines [3, 15].

The level of comfort provided with this new form of traction, both motor and electric, was still somewhat limited, with three by two seating on wooden seats in third class. A spectacular change in this came in 1934, when the first of the high-speed, streamlined, articulated three-car diesel-electric units took the rails. They were designed by W. Hupkes, then CME of the NS, and built in Holland but equipped with German diesel engines. All welded construction was used for the first time, necessitating new techniques and shop practice. Influence of the earlier "Fliegende Hamburger" in Germany was clearly visible, but the Dutch trains were not meant for limited extra-fare service, but for regular travel in second and third class only, all on padded seats. Despite some severe initial technical problems, the new trains were an impressive success [3, pp. 23-45]. As never before they caught the public fancy, and the diesel became a household word, used even for advertising vacuum cleaners and detergents [16, p. 49]. Even the noted American designer Raymond Loewy approved of them: "Three cheers for this. In the writer's opinion it is the best looking Diesel-electric unit train built so far. Its aerodynamics are nearly perfect; the front end treatment and the flush side windows are most attractive and efficient" [4, illustr. 101]. With these sleek trains running, railways were seen as modern again, an important psychological victory after being considered a dirty, inefficient, and uncomfortable thing of the past for so many years.

Commercially they were a success too, restoring a lot of the long-distance traffic to the rail. In 1940 even larger and faster five-car units were introduced, but because of war and fuel rationing by the Germans, they saw little service. At the same time, electrification on a large scale was decided upon. All main lines were to be electrified, using modern streamlined multiple-unit trains. The war meant a serious setback, of course, to these ambitious plans, but after 1945 the program was taken in hand again and finished in 1957.

Modernizing the freight side of the business proved to be harder. Full-size diesel locomotives were still unknown, so the steam engine could not yet be discarded for this kind of service. But in the switching business a breakthrough was achieved. Steam switchers, although working perhaps only a few hours per day, needed fuel and supervision even when not actually working. Here great savings could be obtained by introducing light motor switchers, suitable for one-man operation. In the main yards, where work was going on day

and night, steam continued to reign supreme, but the smaller stations and local industrial spurs could be served by these new locomotives [13, pp. 14-22]. After some abortive trials, a first series of small (12.5 ton) four-wheel locomotives was introduced in 1930, equipped with 50 h.p. gasoline engines and mechanical transmission. These proved to be a success, and a large series of a much heavier (21 ton) diesel electric locomotive, with an 72 hp engine, was built from 1934. Most of them are still in service, proof of their durability and general usefulness. They brought down the cost of serving small stations and sidings, offered quick and versatile service to customers, and so helped retain at least part of the business, otherwise lost to the road, for NS.

Conclusion

At the end of the period under consideration, the Netherlands Railways had retained and even strengthened their position as prime passenger carrier in the country, especially on the medium to long distances. By concentrating on the more heavily used lines, discarding useless branch lines, lowering of tariffs, and finding more efficient means of moving people the NS had managed to make a success of passenger traffic again. To illustrate the higher efficiency, 202,000 train seats were needed to move some 100 million passengers in 1930; in 1940 it was down to 151,000 seats for 95 million, while in 1993 180,000 seats were needed to carry no less than 333 million passengers [12, Table 4e]. And apart from trains, the NS had also managed to obtain an important share of the motorbus network, especially in Holland and Utrecht, through its subsidiaries.

On the freight side, the share of the rail continued to decline in comparison to waterborne traffic. In 1920, 16.7 million (metric) tons were carried by rail, while about twice that amount was transported by water. In 1938 freight volume by rail had declined somewhat to 14.6 million tons, while waterborne freight had skyrocketed to 91.5 million tons (Table 3). International freight transport by road was still negligible in that year. For domestic trucks no dependable statistics are available, although here NS managed to keep at least a small share through its subsidiaries.

Table 3: *Volume of Freight Carried (millions of metric tons)*

	Water Domestic	Water Int'l	Rail (Total)	Rail Domestic	Rail Int'l	Road Domestic	Road Int'l
1920	17.0	16. 7	16.7				0.3
1925	24.0	48. 2	16.6				0.8
1930	32.5	61.4	22.7				1.0
1935	35.0	48.5		9.4	4.7		0.9
1938	26.6	64.9		9.6	5.0		0.9
1993	67.5	119.9		4.8	11.9	276	132. 8

Source: [12, table 4e].

Responsibility for the small share of rail in the freight business must rest primarily with the government. The building of modern canals, which continued

all through the period, made shipping cheap when compared to other forms of transport. Moreover, domestic freight traffic on the road was hardly regulated until the very end of our period, denying the railway a larger share of this business after the effects of the crisis gradually wore off in the thirties. Yet the railways managed, by introducing a more flexible tariff structure and labor-saving measures, to retain about the same volume of freight, although proportionally their share declined from one third in 1920 to one sixth in 1938 of the total volume of freight carried. The already existing preponderance of passenger traffic grew larger during the period, a trend which was to continue after 1945.

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