

3. Conclusions

The cost, constraints and lack of planning meant that tram in the British Isles was poorly equipped to respond to changes in society. These weaknesses caused tramcar in Britain to disappear much earlier than in the rest of Europe, some weaknesses progressing over the ensuing years to undermine all local transport provisions in the country and more besides.

‘Those who ignore the lessons of history are condemned to re-live them!’

2. The Barometer

Some influences on the attrition of British tramways are offered for discussion:

- The changes in passenger demand post 1949 say more about society than the competence of transport operators.
- Legislation can have unintended consequences too. Britain was near unique in global terms in requiring the authority of the national parliament to construct a street tramway – a slow and costly process. Contemporary light rail schemes are similarly afflicted.
- Since the 1890s public debate in Britain on matters of public transport provision have been dominated by issues of ownership of the utility, not what it was expected to provide for society.
- ‘Healthy industries have healthy suppliers’. The British electric tramcar was crippled from an early stage by turmoil within the supply industry, and whilst local employment was retained by the later continual rebuilding of older vehicles, there was no development of industry wide standard designs offering a lower unit cost and ease of transfer of material between operators.
- Both tram and trolleybus were ultimately powered by home produced coal and were closely linked to the British coal based economy with its labour intensive production units and heavy peak transport demands at shift change times. The replacement modes were oil fired but national government has been ostensibly indifferent as to the source of the fuel, although heavily reliant on oil taxes.
- Whilst the above factors all played their part in undermining tram, the greatest threat to tram, and to public transport, has been/still is the spread of urban population. This influence appears to be little understood by transport historians and transport professionals alike. Whilst population spread is a global trend, the rate of development in Britain post 1919 was exceptional, and was/is highly reliant on the availability of fuel oil. Not only has housing moved out but so has everything else a population does – employment, shopping, leisure/entertainment, education, health, etc. The scattered sites for these activities draws citizens to use their own, personal, transport rather than a public transport network which penalises the user (in respect of cost and time) to negotiate traditional ‘hub and spoke’ route networks. Suburban housing almost defies serving by any fixed route public transport mode.
- This same population spread has also influenced other core aspects of society: consider the frequency of local government reorganisations in the UK since the 1970s.

- Experience in the USA was initially similar to UK but changed from the 1970s after the US government endorsed the underwriting of local public transport, principally to arrest urban decay.
- Passenger numbers in both Spain and Germany have increased since 1950.

CLOSURE OF EUROPEAN ELECTRIC TRAMWAYS IN MAJOR CITIES

COUNTRY	SAMPLE SIZE	PERCENTAGE of SAMPLE OPEN BY 1st JAN.									
		1925	1930	1935	1940	1945	1950	1955	1960	1965	1970
BRITISH ISLES	28	100	96	96	85	78	50	25	7	0	0
FRANCE (post 1919)	11	100	100	100	90	90	90	72	36	27	27
WEST GERMANY	22	100	100	100	100	100	100	100	95	95	91
ITALY (post 1945)	13	100	100	100	100	84	84	69	61	46	38
SOVIET UNION (EUROPEAN-post 1945)	16	87	100	100	100	100	100	100	100	100	100
(Western Europe)	105	100	98	98	94	91	82	70	59	51	46
(All Europe)	143	100	98	98	95	93	87	78	69	65	62

TABLE 3 SOURCE: Operator Opening and Closing Data

(Sample size = number of urban locations with electric tramways and a population >150,000.)

1.3 The Contagion Spreads

Of much greater significance than the run down of tramways has been the run down in British local public transport usage from its 1949 peak - by 1997, 73% of the 1949 peak passengers had been lost. Whilst the trend away from public transport has been viewed as an inevitable sign of ‘social progress’, the consequences have been far reaching and are now matters of national and international concern. Note that British and US experience is not shared universally: see Table 4. The hypothesis is offered that the factors behind the early run down of British tramways have also been behind the run down in public transport as a whole.

**INTERNATIONAL TRENDS OF PASSENGER NUMBERS
(All Local Road Transport Modes Combined)**

Year	Britain	Germany	Spain	USA
1950	1.00	1.00	1.00	1.00
1955	0.85	1.22	1.11	0.64
1960	0.74	1.30	1.25	0.51
1965	0.66	1.22	1.75	0.42
1970	0.52	1.11	1.76	0.36
1975	0.46	1.19	1.69	0.36
1980	0.38	1.19	1.47	0.41
1985	0.34	1.07	1.42	0.40
1990	0.30	1.29	1.38	0.41
1995	0.27	1.49		0.36
2000	0.27	1.51		0.42

TABLE 4 SOURCE: National Transport Statistics

Passenger numbers reported for 1950 are the base level for the comparison for each country reported. Different approaches to recording “passengers” will account for some of the differences in relative levels shown. Observe then:

OPENING OF ELECTRIC TRAMWAYS IN EUROPEAN MAJOR CITIES

COUNTRY	SAMPLE SIZE	PERCENTAGE of SAMPLE OPEN BY 1st JAN. of:						
		1885	1890	1895	1900	1905	1910	1915
BRITISH ISLES	28	0	0	0	46	92	100	100
FRANCE (1900)	10	0	0	50	70	80	90	100
GERMANY (1900)	34	5	5	38	91	100	100	100
ITALY (1900)	11	0	0	27	63	72	100	100
RUSSIA (1900)	19	0	0	5	31	57	84	84
(All Europe)	137	1	2	22	58	86	95	97

TABLE 2: SOURCE: Operator Opening and Closing Data

(Sample size = number of urban locations with electric tramways and a population >150,000.)

The demand for new electric tramcars saw wholesale imports of American equipment plus the establishment of new car building plants in Britain alongside established horse car and railway vehicle builders. Unfortunately, the rapid reduction in demand from c1904 when the initial electrification schemes were completed saw two of the new car manufacturing plants liquidated - shades of .com bubbles c100 years later.

1.2 Heading for Trouble

Despite the undermining of the support industries, the electric tram in Britain prospered for some 25 years, responding to society's insatiable demand for improved mobility – see Table 1 (1899-1919). The all time peak for tramway passengers was in 1919; thereafter, trolleybus and motorbus passenger numbers rose significantly until they too peaked (c1948 and 1955 respectively).

Post 1919, tramways had few champions outside certain local authorities. In the face of evidence to the contrary, the 1930 Royal Commission on Transport declared “.. that tramways, if not an obsolete form of transport, are at all events in a state of obsolescence..” and recommended no more be built. By 1935, half of the tramway operations in the British Isles had closed, a rate of attrition by far the worst in Europe: see table 3. Of the 28 tramways in the country's major cities, 18 had confirmed their closure decision by 1940.

THE BRITISH TRAM: BASKET-CASE OR BAROMETER?

1. The Basket Case?

1.1 In the Beginning

The urban tramcar concept appeared in Britain from the USA in 1860. Following the passage of the Tramways Act in 1870, tramways became the country's favoured mode of urban travel for the next 50+ years, but with exceptions: see Table 1 (1879-1899).

PROFILE OF UK TRAMWAYS 1879 - 1969						
Year	Route Miles	Passengers (millions)	Vehicles	Passengers /Route Mile (millions)	Passengers /Vehicle (millions)	Vehicles /Route Mile
1879	284	141	1376	0.50	0.10	4.85
1889	842	441	3647	0.52	0.12	4.33
1899	984	893	5988	0.91	0.15	6.09
1909	2398	2636	11648	1.10	0.23	4.86
1919	2569	4802	13451	1.87	0.36	5.24
1919	2569	4802	13451	1.87	0.36	5.24
1929	2323	4613	13922	1.99	0.33	5.99
1937	1234	3261	9215	2.64	0.35	7.47
1949	582	1991	4705	3.42	0.42	8.08
1959	137	247	672	1.80	0.37	4.91
1969	11	12	115	1.09	0.10	10.45

Table 1

**Sources: Munby's Inland Transport Statistics
Individual Operator Histories**

Note: The 1969 data refers only to Blackpool/Fleetwood where the tramway caters for a significant seasonal peak in passengers.

In brief, the Tramways Act required tramways to -

- i. Secure parliamentary authority to build a street tramway
- ii. Pave and maintain the road surface between the rails + 18" each side.
- iii. Cede the operation of each tramway to local authority direction after a nominated period (usually 21 years).

Electric traction had evolved in the 1880s and gradually, starting in the USA from c1889, became the preferred traction mode. There had been pioneering applications of electric traction in the British Isles from 1883 but American technology prevailed. In the meantime, British tramways were in turmoil over issues of ownership as the 21 year clauses in the Tramways Act matured. A critical resultant was the deferring of improvements until c1900 when there was an expansion of electrification without equal in global terms – see Table 2.