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The Auto in America's Landscape and Way of Life

D. E. CHRISTENSEN

WHEN A BRITISHER CONSIDERS the United States he frequently thinks in terms of large, powerful automobiles, a tangled network of motorways, urban congestion and sprawl related to mass use of autos and to an auto-oriented way of life. It is the purpose of this article first to examine the place and impact of the automobile in the American landscape and way of life, and, secondly, to consider briefly how this relates to the steady press toward mass auto use in the United Kingdom during the 1960's.

Before World War I auto use in both America and in Britain was limited largely to the wealthy. Autos were few and expensive, and, indeed, there were few places where one could operate them satisfactorily the year round.

Most travelling in America during the 1920's was limited to the northeast quarter of the country where there were surfaced streets in larger towns and cities and a few surfaced country roads between them. However, most roads were dirt and gravel surfaced and were not usable to motor vehicles in all seasons or weather conditions. Cross-country travelling was attempted during these early decades of auto use by those with a pioneer spirit and some mechanical ability. Auto repair shops were few and replacement parts even fewer.

AUTOS AND ROAD USE IN AMERICA

Auto use was adopted on a large scale in America rapidly during the generally prosperous 1920's. During this one decade the number of passenger-car registrations increased from about 8 to 23 millions (Table I). Auto use has increased steadily in the years since World War II. Twenty-eight million passenger cars were registered in 1946 in comparison with 72 million in 1964. In addition to an increase in the number of vehicles on American roads, there has been a simultaneous increase in the average amount of use of each vehicle. In 1921 the average auto-owning American travelled 5200 miles in his auto. Average auto use in recent years has been about 10,000 miles per auto per year.¹

While the number of vehicles and their use have increased enormously, so also has the network of surfaced roads on which they are operated. The total mileage of all kinds of rural roads increased by only 46 per cent between 1904 and 1962 (from 2,151,000 to 3,144,000).

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Table I
MOTOR VEHICLE REGISTRATIONS IN AMERICA

Year	Passenger autos	Buses	Trucks	Total (auto, truck, bus)
1900	8,000	—	—	8,000
1905	77,400	—	1,400	78,800
1910	458,377	—	10,123	468,500
1915	2,332,426	—	158,506	2,490,932
1920	8,131,522	—	1,107,639	9,239,161
1925	17,439,701	17,808	2,483,215	19,940,724
1930	22,972,745	40,507	3,518,747	26,531,999
1935	22,494,884	58,994	3,675,865	26,229,743
1940	27,372,397	72,641	4,590,386	32,035,424
1945	25,691,434	112,253	4,834,742	30,638,429
1950	40,185,146	143,206	8,238,638	48,566,984
	40,333,591*	223,652*	8,604,448*	49,161,691*
1955	51,951,376	142,335	9,860,056	61,953,767
	52,135,583*	255,249*	10,302,987*	62,693,819*
1960	61,404,715	137,572	11,352,618	72,894,905
	61,656,157*	272,129*	11,937,589*	73,865,875*
1964	71,635,686	151,179	13,319,402	85,106,267
	71,950,198*	305,490*	14,041,445*	86,297,135*
1965	75,024,000	—	15,038,000†	90,062,000

* Privately and publicly owned vehicles. All other figures are for privately owned vehicles only.

† Includes buses.

Sources: *Published Data, U.S. Bureau of Roads*. Preliminary 1965 figs: Standard and Poor, *Auto Industry Survey*, 9th June 1966.

However, the proportion of all rural roads that is surfaced has increased from 7 per cent of the total in 1904 to 71 per cent of the total in 1962.²

Rural roads in the U.S. range from common two-lane, two-way-traffic reinforced concrete and "black-top" bituminous roads to the sixteen-lane sections of motorway in Dallas and Chicago. Almost all rural and urban roads are toll-free, but a few motorways, like the Pennsylvania, New York and New Jersey "turn-pikes" or motorways, are usable only on payment of a toll fee. To cross some interstate bridges across major rivers also requires the payment of a toll. Most surfaced roads in rural America have no curbed edges and have a continuous one-lane wide grassy "shoulder" on both sides of the paved roadway onto which motorists can drive if they wish. Auto-high or waist-high hedges and walls, so characteristic of British roads, are not characteristic of American roads in rural areas.

Urban roads, almost all surfaced in America as in Britain, differ from their British counterparts in several ways. In general, the roads and cement walkways on either side of the road are wider than in Britain. And with few exceptions buildings are set back some distance from roads of all types.

Since 1916 the U.S. Federal Government has shared with the states and local communities the cost of constructing the primary network of highways. Through the years federal and state taxes on petrol and vehicles have provided most of the revenue for road building and maintenance. In the past the Federal Government contributed about

half of the cost of building and maintaining the primary road network. For the past several years, however, the Federal Government has contributed about two-thirds of these costs (about \$3,500,000,000 per year).

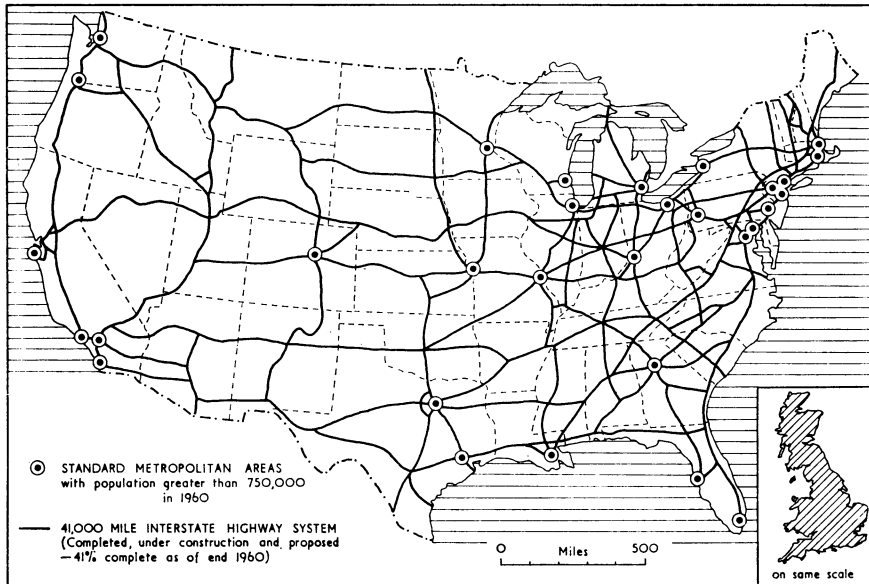


Fig. 1

The new interstate highway system being built across the United States, however, is being financed largely (90 per cent) by the Federal Government. When completed in 1972 the entire network will consist of 41,000 miles of toll-free limited access motorways traversing all parts of the country (Fig. 1) and linking all major cities. Although it will comprise only 1 per cent of America's street and road mileage it is designed to carry 20 per cent of all traffic.³ It is being built to handle the increasing volume of long-distance travel, to reduce the accident rate, and it is justified, also, as a defence expenditure. The actual route through each state is largely a decision of state highway engineers, who have inclined through the years *not* to have a comprehensive traffic-handling plan. Without a plan they have tended to build roads to try to alleviate major congestion points as they come into focus.

TRENDS IN MOTOR-VEHICLE USE IN AMERICA

Trends in the use of various transport media in handling passengers and goods reveal a strong and steady increase in the use of motor vehicles. In Table II it can be seen that between 1940 and 1960 the total amount of goods or freight hauled annually in America nearly doubled.

During this period the volume of freight carried on American railways increased from 412 to 595 million tons per year, but at the same time the proportion of freight moved by rail declined from 63 to 44 per cent. During the same period the volume of freight handled by trucks increased almost fivefold and the proportion of freight moved by truck increased from 10 to 22 per cent of the total.

Table II
FREIGHT HAULAGE IN UNITED STATES
[In Millions of Ton Miles (MTM) and per cent]

	Rail		Motor		Inland Water		Pipe		Air		Total	
	MTM	%	MTM	%	MTM	%	MTM	%	MTM	%	MTM	%
1940	412	63	62	10	118	18	59	9	—	—	651	100
1960	595	44	298	22	220	17	229	17	1	0.1	1342	100

SOURCE: U.S. Bureau of the Census, *Statistical Abstract of the United States*, 1963.

Table III
PASSENGER TRAVEL IN UNITED STATES
[In Millions of Passenger Miles (MPM) and per cent]

	Railroads		Commercial motor carriers		Private automobiles		Inland waterways		Airways		Total	
	MPM	%	MPM	%	MPM	%	MPM	%	MPM	%	MPM	%
1950	32	7	26	6	403	85	1	0.3	10	2	472	100
1960	22	3	20	3	683	90	3	0.4	34	4	762	100

SOURCE: U.S. Bureau of the Census, *Statistical Abstract of the United States*, 1963.

Passenger travel in America increased from 472 million passenger miles in 1950 to 762 million passenger miles in 1960 (Table III). In 1950 the auto already was by far the most used means of passenger transport, accounting for 85 per cent of total passenger miles. But between 1950 and 1960 the proportion of passengers carried by auto increased to 90 per cent, at the expense largely of both railways and bus lines, whose share of passenger miles declined by a half or more in this one decade alone.

AUTO-RELATED BUSINESS AND EMPLOYMENT IN AMERICA

About 7 million new autos and 12 million used autos have been sold each year in the United States in the 1960's. Most of the manufacture of parts and assembly of new autos, buses and trucks takes place in Michigan and adjoining states. However, an increasing number of regional assembly plants are being established in major cities across the country. Advantages in local employment accrue to the regional plant,

while the home factory gains in reduced shipping costs for the crates and freight cars full of parts rather than the more space-consuming shipment of finished vehicles.

It has been estimated that in America there are 64,000 retail dealers in new and used vehicles, 207,000 petrol-station operators, 11,000 auto and truck rental establishments, 104,000 garages, 110,000 vehicle wholesale dealers, parking-lot and parking-garage and motel operators and 250,000 trucking, motor-bus, taxicab and auto-wrecking firms.⁴ A recent article in *Fortune* magazine reports that about 13 per cent of America's production of copper, aluminium and nickel, about 22 per cent of the iron, steel and air conditioners, 35 to 50 per cent of the zinc, lead and radios, 61 per cent of the rubber and 75 per cent of the plate glass produced in America are used directly in the manufacture of autos, trucks and buses and for replacement parts.⁵ Considering all of these, it is clear that motor-vehicle manufacture and use involves a significant portion of the total employment in America in mines, oil fields, factories, transportation media and wholesale and retail business. In fact, it has been estimated by the Automobile Manufacturers Association that one business in six and "one worker of every seven employed persons in the United States gains livelihood through manufacture, distribution, sale, servicing, or commercial use of an automotive vehicle".⁶ Furthermore, these figures do not include the many large and small shopping centres, the drive-in bank facilities, drive-in theatres, and even a few drive-in churches which have been built or modified to accommodate auto users and which, therefore, depend heavily on auto use. To this list one might also add the manufacture, distribution and sale of small boats, boat trailers, camping and picnic equipment, and, in fact, the entire tourist business, whose recent expansion also parallels the boom in auto use. Nor does this one business in six or one worker in seven take into consideration the involvement of the auto in the construction industry. Road building alone is one of the largest businesses in the country and is second only to education in the expenditure of state governments. A more specific example of employment in road building is the interstate highway network on which 400,000 workers are being employed for the 15 years needed to complete the entire project.⁷ And yet even this employment figure does *not* include the many thousands employed in factories making heavy earth-moving and paving machinery, or in the factories making the cement, the concrete forms, the steel and other components of the roadways themselves.

The central place which the auto industry holds in the functioning of the American economy is indicated further by the fact that eight of the ten wealthiest corporations in America are auto-manufacturing and petroleum-refining companies. These are: General Motors, Ford, Standard Oil companies of New Jersey, California and Indiana, Gulf Oil, Texaco and Sacony (Mobil) oil companies.⁸

AUTO-RELATED PROBLEMS IN AMERICA

There are a number of questions that might be raised and problems pointed out that are associated with the auto and the highway in America.

The first questions might be concerned with supplies of steel, petroleum and other resources to maintain a heavy use of automotive vehicles. Economic exploitation of lower grades of domestic iron ore has placed a vast new supply at the steel maker's disposal and no shortage of this basic automotive component is likely for several decades, even assuming some increase in production of automobiles and trucks. Liquid petroleum mining in America probably will become uneconomic within a few decades, but, even without imports, vast deposits of oil-bearing shale in the interior of western United States would be able to provide necessary motor fuels for several more decades, even though at a slightly higher cost per gallon.

The auto has not caused a general air-pollution problem in America, but there are local air-pollution problems attributed largely to, or aggravated by, large concentrations of motor vehicles in large cities. More serious than air pollution, for the present at least, is the spoilation of urban and rural landscapes by signs, billboards and junkyards. Garish, many times flashing, reflecting and moving signs render the main shopping streets of many American cities and towns very distracting and ugly. Billboard walls mask the countryside and distract the driver with cigarette, petroleum, auto, whisky and other advertisements and election campaign posters. It is encouraging that in October 1965 the Congress passed legislation, proposed by the President, to eliminate billboard and junkyard blight by 1970.

Land-use competition is serious in many communities, but, taking the nation as a whole, America is not crowded. Roadway "rights of way" 100 to 200 yards wide and space-eating motorway intersections do take up large strips and areas of land. Even so, in 1959 rural highways and roads and their rights of way occupied only 20,407,000 acres, or 1.1 per cent of the total area of the United States.⁹ Although some of the land converted to road use had not previously been productive most rural road building has reduced the total area of our best farmland.

In view of America's continuing and costly problem of surplus farm produce the elimination of high-quality farmland does not now pose a serious problem and is not likely to do so for at least several decades. This is admittedly a short-term view which also may be selfishly inconsiderate of the desperate food needs of a large portion of the human family. It is a fact, nevertheless, that a reduction in America's usable farmland by road building and suburban expansion appears to be less of a problem at this time than the costly agricultural surplus handling programme, on the one hand, and urban congestion and growth and traffic-handling needs, on the other.

In towns and cities the land-use competition and the demands of automobiles and other motor vehicles pose a very different and more critical problem. The motor vehicle has been the basis for the recent "urban sprawl" in the United States. Suburbs are springing up, peopled in part by former residents of the inner city who move out in search of more space and improved living conditions, less congestion and crime and lower taxes. Many of the inner city's tax-paying upper and middle income citizens are leaving for the suburbs, and their places are being taken by population groups who place high demands on the city in terms of police, fire, welfare and other services.

In an effort to lure suburbanites back for shopping and work, if not for residence, the city makes many accommodations for the automobiles which many suburbanites seem to insist on driving into the very heart of town as they come to work or shop. About a fourth of the area of most American towns and cities is used for streets and alleys, but this figure can run as high as half of the area of the central business district when streets, alleys, expressways, parking lots and parking garages are considered. And it is a vicious circle type of situation. When small or large changes are made to try to eliminate congestion and to accommodate auto users, then more autos are attracted and congestion continues, with the demand for even more expressways, parking garages and one-way streets. How this competition for use of land in the inner city can be resolved is still the key question with which urban planners must contend as they try to establish a central business district which will be accessible, and convenient to auto users, pedestrians and commuters, and at the same time will be multi-functional and economically viable.

The second group of questions one might ask in regard to the intensive use of automotive vehicles in America is concerned with what the auto is doing to America as a country and to Americans as individuals.

Most Americans have grown up in an auto-oriented culture. The auto, as a personal transportation facility, appeals to one's feelings about freedom and independence. The auto encourages an interest in machines which, in turn, has helped to advance automotive technology even further. Auto ownership fallaciously gives younger drivers a feeling of power and maturity, and it is used by many as a status or prestige symbol. But the freedom of movement and speeds which the auto permits have contributed to several problems. The auto has encouraged mobility of residence from inner city to suburb and from one part of America to another. The motor vehicle—and electricity—have virtually eliminated the former sharp difference between urban and rural living conditions. The increase in paved roadways has opened the whole of the continent to vacationing Americans and others. And the number of auto-caused deaths and injuries continues to creep upwards with the increase in the number of vehicles and miles driven.

Because the auto makes possible easy travel about a large and diverse nation, and because of the availability of free city, state and regional road maps, it might be assumed that Americans would become landscape and geography enthusiasts and skilled map readers. But this is not so. With power and speed to spare, many Americans drive quickly across the country, stopping briefly for light lunches at hamburger and malted milk drive-ins along the highway and overnighting in motels. Furthermore, in driving across the country or even across a city, most Americans travel the main routes which have tended to become excessively auto-oriented. Americans therefore tend to have a distorted, limited, "windshield view" of their own country. But despite the many facets of American life which are related to and depend on the motor vehicle, few Americans are aware of the central place which the many and diverse motor-vehicle-related businesses hold in the political power structure and economy of their country.

Because of these several auto-use problems and attitudes, and also because of the great and growing importance of automotive transportation in America's employment and transportation, and because of the many and mounting urban and suburban problems as these areas try to accommodate more and more autos, a final question can be raised. Is America trapped on a cultural one-way street? Is America in a non-reversible spiral that will lead to more and more enslavement to this demanding machine?

There are many indications that this is not so. Some of our largest cities are encouraging and subsidizing the re-establishment of public transport systems which had been permitted to wither and die of deficits because of insufficient use. Public transport is twenty to forty times more efficient (in terms of space required) in handling passengers into and out of the inner city, and, furthermore, it eliminates the parking problems at the more critical inner end of the journey. A few towns and cities are eliminating autos from central business districts altogether. Streets in these town centres are being made over for pedestrians with benches, grass, walkways and flowers. Efforts to control air pollution arising from auto exhaust are under way in California with the requirement that all new autos sold in the state after 1966 must be equipped with an exhaust-cleaning device.

In the spring of 1966, a great national debate began across the country and in Congress, focussing on the safety of automobiles, auto tyres, equipment and highways. By August 1966 a tyre safety bill had passed the Senate and other measures were pending in various Congressional committees. Also early in 1966, President Johnson recommended the organization of a new Federal Department of Transportation. As a result of the focussing of attention on America's mounting transportation problems, and perhaps most significant of all in its long term implications, the question about how far cities and rural areas should go to accommodate more and more autos is being

raised and seriously discussed by an increasing number of citizen groups and planners across the land.

THE AUTO IN BRITAIN

Although the people in Britain have been involved with autos, trucks and buses for as long as Americans, it was not until the 1960's that a revolution in auto ownership began to take place. Only then did a rising level of income bring a motor-cycle or an auto into the range of hopeful ownership of a large portion of the population. In the *thirty-year* period from 1930 to 1960 the number of autos in the United States increased 269 per cent; while in the *ten-year* period from 1951 to 1961 the number of autos in the United Kingdom increased 242 per cent.

Table IV
SELECTED MOTOR-VEHICLE STATISTICS FOR AMERICA AND UNITED KINGDOM

	(1962-3 data) United Kingdom	(1961-2 data) United States
A Area (1000's sq. miles)	94.2	3,615.2
B Population (1000's)	53,812	185,822
C Motor vehicles* (1000's)	10,764	79,023
D Miles main highway† (1000's)	28.3	266.3
F Vehicles/capita (C/B)	0.20	0.43
G Miles main highway/1000 sq. miles area (D/A)	301	74
H Vehicles/miles main highway (C/D)	381	297
J No. vehicles operated per fatal accident	1,410	2,000

* Autos, trucks and buses (includes motor-cycles in United Kingdom).

† Defined as "Primary roads in the United States; as "Type A" roads in the United Kingdom.

SOURCES: U.S. Bureau of the Census. *Statistical Abstract of the United States*, 1963. British Ministry of Transport Reports.

The ratio of vehicles to people in the United Kingdom is still lower than in America (item F, Table IV). But Table IV also shows that in terms of "Miles of main highway per 1000 square miles of area" (item G) the United Kingdom ranks much higher than the United States average. In fact, Britain's main road density is very similar to that found in the most densely populated states of America's industrial northeast. In terms of the "Number of vehicles per mile of main highway" (item H) the United Kingdom already ranks higher than the United States. The significance of this is underscored by the fact that the United Kingdom is just embarking on a motoring boom. The crowding of vehicles on Britain's roads and streets and the higher auto-fatality rate (item J, Table IV) are in part the result of an inheritance from a non-motorized past. So many of Britain's rural roads are narrow, and in towns and cities the narrow streets are lined with terrace houses set against the pavements and providing no space for off-street parking.

The Buchanan Report states that congestion costs doubled between 1958 and 1963, that bus use in Britain has declined by 16 per cent during the past decade and that over 10 per cent of the labour force in the United Kingdom is employed in support of the road-transport industry. The 30-mile-long traffic jam between Torquay and Exeter on 18th July, 1964, is reputed to have been the longest in the world, and the Ministry of Transport predicts an annual 7 per cent increase in the number of autos in Britain for the rest of this decade.

When America embarked on its "motoring for the people" revolution four decades ago there were no models elsewhere in the world that could be studied to point out the most effective way to avoid problems. Such is not the case now. All of Britain can learn, as the Buchanan Committee and others have, from America's experiences and problems in coping with the auto, just as America and the rest of the world learned much from Britain's earlier start in the Industrial Revolution. Today the auto is moulding a new way of life in many countries just as the railroad and then the street-car in the nineteenth century set the pattern for much of the urban and rural landscape of present-day Britain. Although Britain's present wave of prosperity may be sparked in large measure by the auto industry's success and auto exports, many more Britons must begin to consider seriously how much they are willing to have the automobile remould their landscape and change their entire way of life.

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- ⁹ Calculated from statistics in U.S. Dept. of Agriculture Economics Report No. 13, *Major Uses of Land and Water in the United States*.