INTERMODAL FREIGHT TRANSPORT

DAVID LOWE

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David Lowe FCILT

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Elsevier Butterworth-Heinemann
Linacre House, Jordan Hill, Oxford OX2 8DP
30 Corporate Drive, Burlington, MA 01803

First published 2005

British Library Cataloguing in Publication Data
A catalogue record for this book is available from the British Library

Library of Congress Cataloguing in Publication Data
A catalogue record for this book is available from the Library of Congress

ISBN 0 7506 5935 1

For information on all Elsevier Butterworth-Heinemann publications visit our website at http://books.elsevier.com

Typeset by Charon Tec Pvt. Ltd, Chennai, India
www.charontec.com
Printed and bound in Great Britain

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To my wife
Patricia

Disclaimer

The legal explanations in this text are provided for general information purposes only and are not definitive interpretations of the law, which only the courts may make. Readers are advised to seek appropriate legal advice before making any decisions based on the legal information contained herein.

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The Author

David Lowe is a freelance writer with a lifetime of road haulage and freight industry experience. He is the author of the best-selling *Transport Manager's and Operator's Handbook*, published annually since 1970, and of numerous other transport-related titles and was a regular contributor to the UK transport press for many years. Besides having a detailed knowledge of UK and European Union (EU) road transport law and extensive 'hands-on' experience of freight transport operations, he has taken a particular interest in the development and growth of intermodal transport. He is a Fellow of the Chartered Institute of Logistics and Transport, a Liveryman of the Worshipful Company of Carmen and is a former winner of the Carmen Company's prestigious Herbert Crow Memorial Award for, 'over 30 years of written contributions towards the furtherance of transport industry knowledge'.

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Foreword

One of the few joys of being a Transport Minister in the UK government is that it is a mercifully politics-free zone. I have never yet come across a convincing Marxist-Leninist view of traffic management and the Adam Smith version, which would presumably turn all traffic lights off and rely on market forces, seems equally unappealing. It would, however, be wrong to conclude that there is no science behind modern transport policy. Since the doctrine of 'predict and provide' rightly came under attack, ministers in both Conservative and Labour governments have emphasised the need to concentrate on sustainable integrated transport that offers practical alternatives to the way we have historically managed the movement of people and freight with the objective of protecting the environment, reducing air pollution and noise, and improving social mobility.

Much of the effort to create a new, more intelligent transport policy has understandably concentrated on ways of offering alternatives to the use of the private car. The inherent inefficiency of a single occupant in a large metal container consuming large quantities of fossil fuel compared to the same person using a train or bus is easy to appreciate. But until recently much less thought has been given as to how the movement of goods rather than people can change the way we procure the lifestyle consumers demand while impacting significantly less on the world around us. My suspicion is that this is because freight policy has been in the 'too difficult' file on transport planners' desks. Yet the challenges facing an advanced economy such as ours in which currently 420 000 trucks of varying degrees of environmental efficiency deliver virtually all our goods and services are actually very real.

In this excellent and extremely comprehensive book David Lowe builds on his established reputation as one of this country's leading transport writers to explain and illustrate the key concept of intermodal transport in detail. In the next decade much more attention will be paid to the use of rail, canals and short sea freighters as alternatives to trucks over part if not all of the freight journey. This will be a priority for politicians but also for consignors and consignees. It will be integral to the corporate social responsibility of any serious enterprise. More to the point, it will also be a driver toward more efficient and less costly transportation. This is a timely and readable volume which will appeal to policy-makers and practitioners at every level. I thoroughly commend it.

Steven Norris FCILT, FIHT
Minister for Transport 1992–1996
Director General,
The Road Haulage Association 1997–1999

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Acknowledgements

Many organizations, both governmental and private, numerous commercial firms in the UK and throughout Europe and many individuals from the industry very kindly provided, by various means, much of the information used in compiling the text for this book both in its original form in 1996 and in its current expanded and updated form. The names of some of them are to be found where appropriate in the text. To all of these I would like to record my sincere appreciation for their valued help.

However, it would be remiss of me not to record my particular appreciation for the assistance provided for the original text by Mr. J. R. Fells, formerly of the Freight and Road Haulage Division, Department of Transport, London and Mr. J. Hugh Rees, formerly of the Directorate-General for Transport (DG VII), Commission of the EU, Brussels. Also, various staff members from the freight division of Eurotunnel both in Calais and Folkestone; Andrew Trasler, Through Transport Mutual Services (UK) Limited – the TT Club, London; and Ms Helen Berry, Peter Huggins and Ms Lynn Mentiply, Library staff at the former Chartered Institute of Transport library, London, and the Chartered Institute of Logistics and Transport library, Corby. I am also indebted to Gerhard Muller, noted United States transportation specialist from whose book *Intermodal Freight Transport* (1995) I have gleaned much and to which I have made reference.

Various relevant intermodal and freight organizations have been the source of much useful information, especially; the International Union of Combined Road–Rail Transport Companies (UIRR), and the European Intermodal Association (EIA); both of these are Brussels-based organizations. I am also grateful for the considerable knowledge that I gained about intermodalism from attending the series of intermodal exhibitions and conferences organized by Informa Maritime and Transport.

Acknowledgement is made to The Stationery Office (TSO) in respect of the reproduction of extracts from legislative material in accordance with HMSO guidelines; to the European Commission (EC) in respect of the reproduction of extracts from its reports as identified in the text (also legally permitted); and to the UK International Road Freight Office for the reproduction of notes from its explanatory literature for transport operators, and to its helpful staff who patiently answered many questions.

Additional help and support has been forthcoming from Lord (Tony) Berkeley, head of the Rail Freight Group; Paul Kneller of Eurotunnel's freight team; Duncan Buchanan of the Strategic Rail Authority (SRA); Roy Parker, Freight Marketing Manager, British Waterways; and Edmund Athayde of Herfurth Shipping (UK) Ltd, Hull. I also acknowledge the valuable information gained from material published on the Internet by British Waterways Board and the Association of Inland Navigation Authorities; by the UK Department for Transport; by the UK-based 'Freight on Rail' pressure group; and by the various sectoral branches of the EC within its Directorate-General for Energy and Transport on the Commission's extensive Europa web site, for which reproduction is permitted. Various industry journals have provided a constant source of reference as to what is happening in intermodal freighting, most notably; *International Freighting Weekly* (IFW), *Rail* and *Commercial Motor.* Finally, I would like to express my gratitude to my publishers Elsevier for their considerable forbearance while awaiting the manuscript for this book.

Despite all the kind assistance received, I accept that responsibility for the interpretation and presentation of all the information herein and its accuracy rests solely on my shoulders.

David Lowe
March 2005

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Preface

The movement of freight is a vital ingredient in achieving economic sustainability and for enhancing our lives in many different ways. However, for all the benefits that it brings, such as stocking the shelves of our corner shops, local supermarkets, DIY stores and garden centres for instance, it does have its downside. Road haulage, in particular, which is the aspect of transport with which we, the general public, are likely to be most familiar because of the large lorries that we see on our streets, adds to the congestion in our town and city centres and on our motorways; these lorries pollute the air we breath with unhealthy exhaust fumes, but so too do buses and the thousands of cars on our roads; they cause visual intrusion, noise and vibration and they contribute, albeit only marginally compared to all the other vehicles and pedestrians, to the awful accident toll on our roads. But, no matter what the environmental penalties of lorry use amount to, we cannot do without road transport: the heavy lorry will never go away and can never be replaced by some magical form of conveyance that is noiseless, fumeless and takes up no road space – no such contrivance exists now and is never likely to.

However, all is not doom and gloom. There is a partial solution which is operationally feasible, economically viable and, most importantly, environmentally sustainable. It is the concept of intermodal freighting. This is a system in which two or more different modes of transport, such as road and rail, road and waterway or rail and shipping are combined, or integrated, to enable goods contained within a single loading unit, to be moved from their place of origin to their final destination. The loading unit, depending on the system used, may be a container, a swap body, a complete road vehicle or an unattached articulated semi-trailer. Importantly, at the interchange of the modes the goods remain undisturbed, only the loading unit is transferred from one mode to another, and in the case where a load is packed within a road vehicle or road semi-trailer, which thus constitutes the loading unit, this is either driven, or lifted, on to a rail wagon or a roll-on/roll-off ferry ship.

The intermodal alternative – or in contemporary terminology, intermodalism – currently holds sway over other, individual, transport modes, especially direct door-to-door delivery by road haulage, mainly for reasons of its so-called ‘green credentials’ because, in other words, it is less of a blight on the environment. It is a transport system where road vehicles are employed to do what they can do best; namely, the essential, short-haul, collections and deliveries in locations where trains and canal barges cannot go, but where the long-haul leg of the journey to the final delivery is carried out by the much more environmentally friendly freight train or waterway transport system which, for their part they are best suited. In fact, such is the current support for the intermodal transport concept that it comprises a major building block of the EC’s Transport Policy White Paper for 2010: *Time to Decide*, for the reason that it contributes to the desirable objective of shifting the balance between modes.

The stated aim of the Commission’s policy on intermodal freight transport is to support the efficient door-to-door movement of goods, using two or more modes of transport, in an integrated transport chain. As the Commission says:

> Each mode of transport has its own advantages; for example, potential capacity, high levels of safety, flexibility, low energy consumption, low environmental impact. Intermodal transport allows each mode to play its role in building transport chains, which overall, are more efficient, cost effective and sustainable.

Road haulage invariably features significantly in the intermodal equation, usually in combination with rail freighting and using the two modes together – commonly referred to as combined road–rail freighting – is the predominant intermodal solution. But inland waterway and/or short-sea and coastal shipping too, where appropriate, may also be combined with road transport to form an intermodal operation. Multimodal transport, on the other hand, involves the use of more than just two modes; for instance, a typical multimodal freight journey may involve a combination of road haulage, a rail freight journey leg and then either a short sea, coastal or even a trans-ocean crossing.

The inter- or multi-modal concept is simple to comprehend. But the whys and wherefores of effecting delivery of a particular freight consignment by either a single mode, direct, door-to-door road haulage operation or by utilizing a combination of different modes, is a much more complex issue. Broadly, the aim of intermodalism is to utilize the most operationally efficient and cost effective combination of transport modes to convey a load of goods to its final destination – using each individual mode to its best effect. However, of equal importance, is the need to switch freight traffic from our inadequate and overcrowded road network on to rail or on to the relatively under-utilized waterway systems of the UK and Europe, principally with the environmentally beneficial objectives of reducing air pollution, noise, vibration and the risk of road traffic accidents. While the commercial considerations are obviously important to shippers consigning the goods, achieving environmental harmony is a key objective of the sustainable transport policies of both the UK Government and the EC.

The general public depends heavily on the heavy lorry for carrying most of its goods traffic – without it our supermarket shelves would be virtually empty. However, while being extremely convenient and flexible with its direct door-to-door delivery capability, the lorry is nevertheless notorious for polluting the atmosphere with noxious exhaust fumes which damage human health, for using-up scarce fossil-based fuel resources, for creating undue noise and vibration – which is especially noticeable in urban areas – and for adding to the traffic congestion and accident risks on our largely inadequate road network. But, it is possible, through intermodalism, to harness the particular advantages of road transport to the freight carrying capabilities of other quieter, less polluting, and generally more environmentally friendly transport modes. And by so doing cost effective freight deliveries can be achieved while avoiding, or at least reducing, the environmental blight which massive and ever-growing volumes of heavy lorry traffic inflicts upon us. From the lorry operator's point of view, intermodalism offers the possibility of avoiding the proliferation of lorry bans in urban areas; congestion charging zones; motorway tolls; and the prospect of Lorry Road User Charges (currently existing in parts of Europe and to be with us in the UK in 2007/2008); the ever increasing costs of delay and disruption to operating schedules and in the UK, the extortionate price of diesel fuel inflated by excessive levels of excise duty imposed by government.

This book examines, in a practical manner, the whole concept of intermodalism as it relates specifically to freight transport: passenger inter-modalism being a wholly different genre is not covered. Some of the text herein follows on from a study on combined road–rail freighting written by the author in 1996. However, while that particular work focused mainly on a single aspect of freight intermodalism, namely combined road–rail transport, this new text, besides being significantly updated to take account of new Government and EU policy initiatives, legislative changes and operational developments in the interim period, has also been broadened to include the wider concept of intermodalism involving inland waterway freighting and short-sea and coastal shipping. Such has been the expansion of interest in this form of transportation in recent times that there has been almost an explosion of information about it published on the Internet, and the author has taken the opportunity to draw together and incorporate some of this accumulated wisdom to provide readers with a much greater insight into the structure of intermodalism, the policy-making activities of Brussels and national governments and to relevant legislative developments.

The text examines intermodalism from a number of perspectives; first of all from the political angle in regard to governmental policies and strategies and then from a geographical viewpoint where intermodal developments in the UK, in Europe and, collectively in North America, the Middle East, Asia and

Australia, are considered. Then, importantly, individual chapters are devoted to the key constituent elements of intermodalism, namely road haulage; rail freighting; inland waterway, short-sea and coastal shipping; networks and terminals; and hardware in the form of intermodal vehicles, loading, lifting and transfer equipment.

The book also covers many other essential factors involved in making intermodalism work in an efficient and cost-effective manner; for example, the legal aspects of carrier liability; vital safety regulations; governmental grant aid designed to encourage a switch of freight from road to other more sustainable modes of transport; environmental considerations in favour of intermodal transport; and documentation and authorization requirements. To help the reader, an extensive glossary of related terms is included and so to is a bibliography of useful further reading.

Overall, it has been the author's intention to provide, so far as is possible with such a fast-moving scenario, a study of intermodal freight transport that will be a valid and useful source of reference for freight shippers, intermodal road hauliers – and especially those road hauliers contemplating a switch of their long-haul traffic to other modes, rail service suppliers, terminal operators, equipment manufacturers and ancillary suppliers to the industry. The book will also be of value to students of transport and others who may wish to keep abreast of developing trends in transportation. Additionally, it is hoped that the text will be of general interest to industry at large as it endeavours to placate public concern about environmental issues and achieve such worthwhile objectives as reduced pollution, reduced road traffic congestion and fewer road traffic accidents, but without any diminution in the levels of service, speed and security with which goods – many of them being the vital ingredients of everyday life – are transported to their destination.

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What Is Intermodal Freight Transport?

Intermodal freight transport, as previously outlined in the Preface, is the concept of utilizing two or more 'suitable' modes, in combination, to form an integrated transport chain aimed at achieving operationally efficient and cost-effective delivery of goods in an environmentally sustainable manner from their point of origin to their final destination.

While some freight movements may use, and justify the use of, a number of different transport modes, such as road, rail or inland waterway or either short- or deep-sea shipping, thus making them multimodal operations, in the majority of instances efficient movements are invariably achieved by the use of just two modes: most commonly road haulage collection and final delivery journeys combined with a rail-freight trunk-haul journey, what is known as a 'combined road–rail' operation. However, where operational circumstances dictate or a feasible alternative option is available, road haulage or rail freighting may be combined instead with an inland waterway journey via river or canal, or with a short-sea shipping (SSS) operation, typically a coastal or a cross-Channel sailing. Combined transport operations involving either road haulage or rail freight in conjunction with deep-sea container services or with an airfreight operation also feature in intermodal and multimodal scenarios, albeit the latter occurring in only a relatively small number of instances and small scale in terms of the freight volumes shipped.

The word 'suitable' in the context used above may have a number of alternative connotations. It is possible in a given set of circumstances that cost alone will determine the choice of mode or modes, but frequently other considerations are decisive. For instance, operational practicalities like frequency of service, speed of delivery, the availability of special handling facilities, the ability to meet particular packaging requirements, security considerations or the sheer volumes of freight to be moved may be the determining factors, or indeed it may be that a number of these various service 'pluses', in combination, produce the ideal solution. But other less tangible issues may also enter the equation such as the need to follow corporate environmental policies or to assuage a shipper's social conscience.

Freighting by one of the intermodal or multimodal combinations mentioned above is the alternative, of course, to consigning loads for the whole of their journey by a single mode, as is the case with some 62 per cent of domestic freight moved in Great Britain (according to the Department for Transports' (DfTs'), *Transport Statistics for Great Britain – 2004*, publication) for example, which is transported by road. It is a fact that the haulage of goods by road from their source direct to their final destination remains the preferred method in the majority of cases, and it is this preference which those individuals, corporate bodies, and government departments alike who champion the cause of intermodal transport are trying to break down.

Since by far the largest proportion of freight traffic commences and ends its journey on the back of a lorry, intermodalism is principally understood to mean the use of an alternative mode to undertake the

middle, long-haul, or trunk, leg of the journey. Typically this involves trans-shipping the unitized load from a lorry at a railhead, inland waterway terminal, or at a seaport, for onward shipment by rail, inland waterway barge, sea-going ship, and then trans-shipping it back again onto a lorry for the final delivery of the leg to the customer; that is, the consignee. In some instances, as we shall see later, it is not just the unitized load that is trans-shipped, but the whole road vehicle, or at least its semi-trailer, which is loaded aboard a rail freight wagon, an inland waterway barge, a short-sea vessel, invariably a roll-on/roll-off (RO-RO) ferry ship, or an ocean-going ship for onward transportation.

No matter what the particular freighting arrangement is, the essence of the whole operation is to utilize the key characteristics of each individual transport mode to its best advantage. The lorry has the benefits of immediacy and flexibility in its favour plus the ability to affect collections and deliveries of goods from locations that have no rail sidings or waterway quays for loading. Rail freighting offers a lower-cost alternative for multiple loads carried over longer transits and a much less-polluting effect on the environment, as does barge traffic shipped on the navigable rivers, and canals of inland waterway networks. Thus road haulage in any combination with either rail freighting, inland waterway, short-sea, or coastal shipping may prove to be the most viable option, both economically and operationally. But in certain cases, particularly where no RO-RO vehicle ferry service, road or rail tunnel facility exists, shipping by container vessel may be necessary, and especially for trans-global freight movements.

As this book will show, there are politically motivated policy moves within the European Union (EU) to find ways of switching as much freight as possible from road onto the rail, and to a lesser extent onto the waterway, networks. This is seen as a beneficial antidote to the adverse impact of heavy lorries on traffic flows both on motorways and in urban areas, although the latter is something of a misconception since heavy lorries will still be required to serve many road–rail terminals, and the substantial numbers of freight originators and recipients located in urban areas who are not rail connected (e.g. most small businesses and High Street retail outlets). The European Commission (EC) talks of the 'complementary' qualities of road and rail transport, and it is this aspect of complementarity that it believes to be the key to transport policy for the future. However, we should not overlook the keen interest now being shown in Brussels (i.e. in the EC's Directorate-General for Energy and Transport – DG VII) in revitalizing the role of inland waterway and short-sea and coastal shipping, as we shall see in greater detail in Chapter 8.

Also to be gained from a modal switch are perceived social benefits, such as reduced air pollution, resulting from fewer heavy lorries, the theoretical saving in road accidents – according to the European Commission's *Community Road Accident Database* (CARE), there were some 40 000 road accident deaths in the 15 Member State-EU in 2002 costing 160 billion euros (£115 billion at the November 2004 currency exchange rate) – and the separation of freight movements from a 'people' environment, which roads substantially are and rail, largely, is not.

The economic concept of road–rail combined transport is that it keeps the expensive element of the road haulage operation, namely the operation of the road vehicle tractive unit and the driver, fully utilized on short-haul, road-borne collections and deliveries, for which it is ideally suited and sufficiently flexible to go anywhere at any time to suit individual requirements, while the less expensive part of the operation, namely the loaded semi-trailer, swap body, or container, is sent unaccompanied on the long-haul leg of the journey by rail. Given that the rail-haul leg is long enough to justify the switch from road (generally it needs to be at least 500 kilometres, although new thinking suggests that short-distance intermodalism becomes viable for distances in excess of only around 200 kilometres), this produces benefits by way of savings in journey time, reduced consumption of carbon fuel, less pollution from exhaust emissions, reduced heavy traffic flows on motorways, and, theoretically, fewer road accidents. The road haulier benefits from not having his truck and driver missing for hours, if not days, on end, pounding up and down the roads of the UK or across Europe to meet customer deadlines, and incurring wear and tear, damage, driver subsistence costs, plus the well-known risks of penalty for speeding, traffic, and other law infringements. Given the right combination of circumstances, the goods transported on the long haul by rail rather

than by road will be at their destination sooner since trains, unlike truck drivers, are not obliged by law to park up en-route for a statutory night or weekend rest period.

The essence of efficient intermodal transport lies in the use of a unit-load system capable of transfer between road, rail, and other transport modes, and which allows for the collection of consignments by, for example, a road vehicle followed by a trunk-haul journey by rail or waterway and a final road-borne delivery without trans-shipment or repacking of the load itself. Standard loading units take the form of either road-going semi-trailers conforming to standard dimensions and designed to be piggybacked aboard rail wagons, or more commonly, swap bodies and shipping containers built to international (ISO) standards which are fully interchangeable between a variety of road vehicle combinations, rail wagons, river and canal barges, and sea-going ships. In all circumstances the load remains intact and secure within the loading unit which is lifted or transferred by purpose-built equipment onto a rail wagon, a canal barge, or into the hold of a ship and then back to a road vehicle at the end of the trunk-haul leg of the journey.

Such systems provide greater flexibility for the customer, who may be either the consignor or the consignee, by allowing goods to be loaded or unloaded at his premises in the conventional manner without changing the current practices applied to his domestic or local traffic. It also assures his piece of mind if, having seen his freight securely stowed and sealed in an intermodal-loading unit, he knows that it will not be disturbed again until it reaches its final destination, unless it is to comprise part of a groupage load. The principal benefits of unit-load intermodalism is that it can provide:

- lower transit costs over long journeys;
- potentially faster delivery times in certain circumstances (these obviously need to be individually assessed for particular cases);
- a reduction in road congestion (a major beneficial factor in these modern times);
- a more environmentally acceptable solution to congestion and related problems (such as the emission of noise and fumes, the damage caused to the built environment by vibration and so on);
- reduced consumption of fossil fuels since the long-haul section of the route is more fuel efficient;
- safer transit for some dangerous products.

1.1 The background to intermodalism

The practice of transferring road trailers and road-borne containers onto rail wagon for trunk haulage has existed since the earliest days of rail. The hardware has obviously changed over the years and today's domestic and international journeys are much longer than the domestic operations of yesteryear, but the basic principles remain the same. Simple wooden box containers, used even in the days of horse-drawn transport, have given way to the latest form of steel shipping container and swap body built to international (ISO) strength and dimensional standards, while road-hauled semi-trailers have developed from simple two-wheeled affairs with 'cart-like' springing – as drawn by the well-known railway 'turn-on-a-sixpence' three-wheeled Scammell mechanical horse – into high-capacity multiaxle, sophisticatedly-suspended units. In fact, present-day articulated semi-trailers are highly sophisticated pieces of equipment, cushioned with air suspension and equipped with airbrakes, and capable of safely carrying a 30-odd tonne laden ISO container or swap body within the current legal maximum vehicle gross weight limit of 44 tonnes and at the maximum permitted speed; namely 56 miles per hour (mph) for speed-limited heavy trucks. The parallel development of technically sophisticated lifting and transfer equipment enables these loading units and semi-trailers to be transferred rapidly and efficiently from road to rail or barge for long-haul transport, and back again for final delivery.

Intermodal road–rail transport as we know, today it has been widely and successfully employed in mainland Europe for many years; especially notable, for example, being the French Novatrans 'Kangaroo' system for the piggyback carriage on rail of unaccompanied road-going semi-trailers and the similar German Kombiverkehr system in which swap bodies, piggyback semi-trailers, and complete road vehicles are also carried by rail on what is known as a rolling motorway system.

1.2 The impact of the Channel Tunnel

It is useful to consider here the impact of the Channel Tunnel between the UK and France, which opened in May 1994, on the longer-haul potential of UK–Europe intermodal freighting. Eurotunnel, the Tunnel operator, originally estimated that it would carry around 400 000 heavy goods vehicles annually on its drive-on/off freight shuttle service, a target which, in 2003, it significantly exceeded with 1 284 875 trucks being carried – in fact, capturing some 40 per cent of the total cross-Channel driver-accompanied freight traffic market. By September 2003 Eurotunnel was operating up to seven freight shuttles each way every hour during peak periods. However, these carryings have somewhat diminished since these figures were published with a 4 per cent reduction in truck shuttles reported for the third-quarter of 2004 and a 2 per cent loss of market share.

Besides this lorry traffic, substantial volumes of rail-borne inter-Continental swap body and container traffic passes through the Tunnel from inland freight terminals in the UK to international destinations via Europe's 241 000-kilometre rail networks. In 2003 this amounted to 1 743 686 tonnes; albeit this tonnage was some 40 per cent less than its carryings in 1999 and lower than for both 1998 and 1997, largely due to its slow recovery from the widely publicized problems of 2002 caused by the influx of illegal immigrants into the UK who were stowing away on the freight trains from the French side of the Tunnel, resulting in many service cancellations. Encouragingly, however, by November 2004, Eurotunnel had reported a 7-percent increase in its rail-freight carryings through the Tunnel.

These statistics show the Tunnel to have been an important catalyst for increased interest in the development of intermodal services between the UK and Europe. Furthermore, additional encouragement was provided by legislative measures permitting heavier lorries for use in intermodal transport operations. From March 1994, 44-tonne lorries (compared with the previous domestic maximum weight limit of 38 tonnes) were allowed on UK roads, initially for use only in road–rail transport operations to and from rail terminals, subject to specific technical and administrative conditions, but since 1 February 2001 44-tonne vehicles have also been permitted, unconditionally, for general-freight carrying in the UK. This development proved to be a boon for Eurotunnel's heavy-vehicle carryings since it encouraged greater interest among UK road hauliers in undertaking trans-European operations via the Tunnel. Another boost for Eurotunnel's market potential share, although not yet, at the end of 2004, reflected in its carryings, was the addition of the 10 new Member States to the EU from May 2004; road hauliers from these countries being permitted to carry freight to and from the UK subject to meeting the necessary EU legal requirements relating to goods vehicle operation.

1.3 Freight transport growth

Continued development of intermodal transport between the UK and Continental Europe is, of course, dependent upon a growing freight transport market throughout the EU, the rest of Western Europe, and the former Eastern Bloc countries – now, largely, part of the EU. The EU expanded from its former 15 Member States in May 2004 with the admission of the 10 so-called 'accession' states; namely, the Czech Republic, Estonia, Cyprus, Latvia, Lithuania, Hungary, Malta, Poland, Slovenia, and Slovakia – increasing the potential market to some 480 million people – and is due to expand again in 2007 when Bulgaria and Romania expect to be admitted, with Turkey following at some point in the future. There is no doubt that

Year	1970	1980	1990	1995	2000
Pipeline	6.8	7.1	5.0	5.3	4.7
Inland water	10.9	8.9	7.6	7.4	6.9
Rail	30.2	24.2	18.2	14.2	13.8
Road	52.0	59.9	69.2	73.2	74.6

Fig. 1.1 EU Freight transport by mode statistics 1970–2000 (in tonne-kilometres %). (*Source*: EU Energy and Transport in Figure 2003, via Internet.)

with all these new Member States, the expanded EU will provide colossal opportunities for the development of intermodal freight transport – in October 2003, European Commissioner in charge of transport, Sna Loyola de Palacio, said that goods transport would increase by 36–40 per cent in the next decade and that besides the new infrastructures needed, alternative modes of transport would also have to be developed. Certainly, if she is right, which undoubtedly she is, it would be a frightening prospect if the resultant increase in intra-European trade and consequently its transportation needs were to be funnelled onto the EU's existing heavily congested road network.

We have, of course, already seen significant transport growth within the EU over past years, but it has not been shared equally between modes. While road transport has grown to account for roughly 75 per cent of all intra-Community goods transport activity, in the same period (i.e. 1970–2000) rail transport decreased in relative terms from 30.2 to 13.8 per cent. The inland waterways of Europe, as Figure 1.1 shows, also declined from carryings of 10.9 per cent of traffic to just 6.9 per cent, albeit since 2000 we have begun to see a reversing trend in the fortunes of this mode, while SSS now carries some 40 per cent of all trade within the EU.

The trend towards the growth of road freighting in favour of other modes as shown in the table above continues. In its 2001 White Paper, *European Transport Policy for 2010: Time to Decide*, the EC predicted that by 2010 heavy goods vehicle traffic will have increased by nearly 50 per cent over its 1998 level. And with the strong economic growth expected in the acceding countries (i.e. the 10 countries which joined in May 2004) and better links with outlying countries it suggests that there will be further increases in traffic flows, and in particular road haulage traffic. This inexorable level of road-traffic growth is unsustainable, and everybody knows that. The EC for its part is of the opinion that road transport alone will not cope with the projected expansion in traffic; it suggests that it will need the combined strengths of both road and rail services to meet the challenge. In fact, the EC's White Paper proposed some 60 specific measures to improve transport across the Community, including an action programme extending until 2010. In the context of intermodalism, the most interesting proposals are three-fold:

- revitalizing the railways;
- improving quality in the road transport sector;
- promoting transport by inland waterway (generally referred to in Europe as inland navigation) and by sea.

To relieve congestion on Europe's roads and to protect the environment, the Commission is desperately striving to direct pressure towards a switch of more freight from road to rail and to inland waterway – it talks of achieving 'modal shift'. Thus, through both government direction and commercial pressure, we shall see this developing trend towards intermodal transport continuing. And it has to be in everyone's interest for this to happen. Undoubtedly, the continuing development of combined road–rail transport, associating the economic and environmental advantages of rail and inland waterway freighting for long-distance inter-city or international trunk hauls with the practical advantages of road haulage for local collection and delivery is a strategy which holds much promise for the future.

However, to be a competitive alternative to direct 'door-to-door' lorry transport over long distances, intermodal transport must offer frequent schedules, fast transit times, a high degree of reliability, and all at a cost that fully meets the expectations of markets with the keenest service requirements. In practice, its development is most likely to take place mainly between large industrial conurbations where the problems of road infrastructure congestion are currently most acute and operating costs are thus higher, and where air pollution from road vehicles is at its worst, as in the UK and the Northern European industrial triangle.

Before venturing further into this exploration of what intermodal freight transport is about, it is useful in this opening chapter to consider a few definitions for the variety of terms used in connection with road–rail transport, and in intermodal transport in general, and the equipment needed for its operation. Often these terms are used quite indiscriminately, resulting in people saying one thing, but yet really meaning something quite different. For example, not all containers are built to the international (ISO) standards, or are of the type with which we are principally concerned in the context of this book, and demountable bodies used in domestic transport operations are not to be confused with ISO standard intermodal swap bodies, which often they are. To fully set the scene, we should also examine in this chapter the pressures that have brought about renewed interest in intermodal freight transport, and finally, in summary, what the future holds.

1.4 Definitions

Although this book contains a glossary of terms some of the key components and systems that are encountered in intermodal operations are described here.

1.4.1 Unit loads and loading units

A unit load is a consignment of freight – invariably, but not always, comprising a combination of small consignments, as in a groupage load, which is unitized to save trans-shipment and repacking time and cost at each individual stage of the journey, and also for ease of handling. Such loads are usually consolidated into an ISO container or a swap body built to internationally recognized and accepted standards or into an articulated lorry semi-trailer. Unitization of freight into standard loading units in this manner is a vital element of the intermodal transport concept providing speed and efficiency in handling, security for the load in transit and reduced risk of damage.

1.4.2 Intermodal transport

The term 'intermodal' and the practice of 'intermodalism' are relatively new, being absent, for example, from the *Concise Oxford English Dictionary* of 1980, although, as we have already seen, intermodalism was far from a new concept even at that time. However, by 1993 the terminology was included, being defined as:

> a vehicle/container system, etc. employing, suitable for, or able to adapt or be conveyed by two or more modes of transport.

By the 10th (1999) edition of the same Dictionary it was obviously felt unnecessary to credit the word 'intermodal' with a more detailed definition than:

> involving two or more different modes of transport.

The term 'intermodalism' may thus be taken to mean the practice or activity of conveying freight in unit loads by two or more transport modes such as, for example, by road and rail, by road and inland waterway, or by road and air. Invariably a road element is necessary to make the initial collection of the goods from the consignor's premises and to make final delivery to the consignee since in the majority of