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## 200 years of Channel Tunnel: History-Development-Today

### Lord Tony Berkeley

Lord Berkeley is chairman of the Rail Freight Group, the representative body of the UK rail freight industry. He was Public Affairs Manager of Eurotunnel from 1981 until the end of construction of the Channel Tunnel in 1994 and, before that, worked for George Wimpey on a number of multi-discipline projects around the world. He sits in the House of Lords and was an opposition Transport Spokesperson 1996/7. He is Secretary of the All Party Parliamentary Rail Group and of the All Party Parliamentary Cycling Group. He is a Board Member of the European Rail Freight Association. Member of the Institution of Civil Engineers, Fellow of the Chartered Institute of Transport. He is President of the UK Marine Pilots Association and a Harbour Commissioner for the port of Fowey in Cornwall.

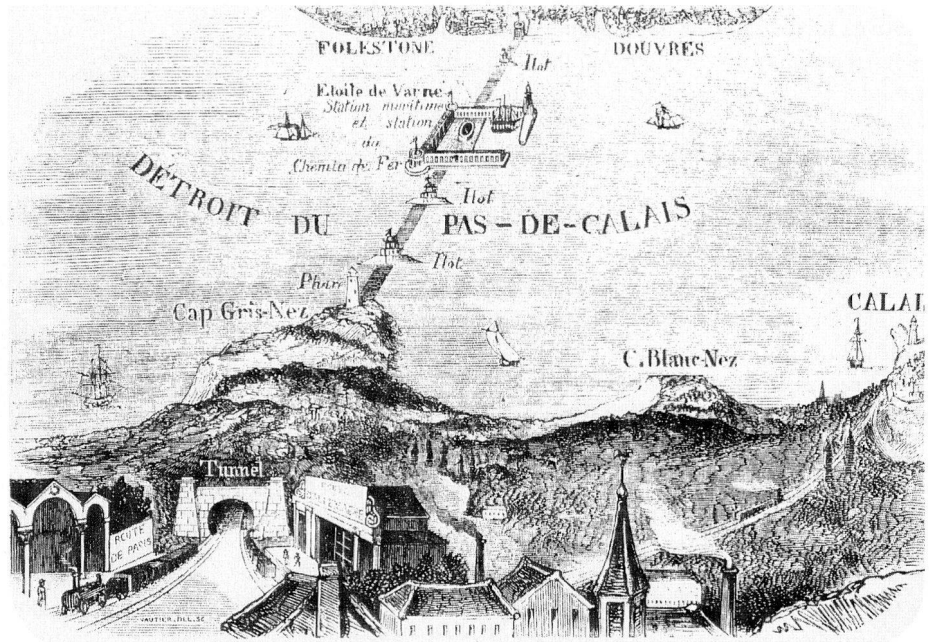


Plate 1: Plan of Thomé de Gamond 1857. (Foto: Hunt, Donald: The Tunnel, 1994)

**The Channel Tunnel had to overcome many difficulties – political and financial ones among others – from the beginning of building in the early 1970s up to its official opening in 1994. Even though the tunnel still hasn't achieved the wished-for importance as a fixed link between the UK and the Continent, the outlook for the future finally seems to be bright.**

**Vom Baubeginn in den frühen 1970er Jahren an bis zur offiziellen Eröffnung 1994 musste der Channel Tunnel viele Schwierigkeiten – u.a. politische und finanzielle – überwinden. Auch wenn der Tunnel noch nicht ganz die gewünschte Bedeutung einer festen Verbindung zwischen Grossbritannien und dem Kontinent erreicht hat, sind die Zukunftsaussichten gut.**

### Background

Britain is an island, and behaves like one, with a certain disdain and arrogance when it comes to dealing with its continental neighbours.

The latter have to cope with invasions and occupations but gain from cultural exchanges. Crossing 50 km of sea between Dover and Calais in small boats exacerbated these difficulties; even with modern ferries today, they are sometimes prevented from docking due to bad weather, although this is no longer due to small boats in rough seas but to the high windage of modern ferries making it difficult to enter their berths without tugs, and they don't want to pay for tugs.

So Britain relied on a navy to protect it and, later, to gain wealth from trade and pillage overseas, as did Dutch, French, Spanish and Portuguese navies; the difference was that Britain's home base was an island and therefore less likely to be invaded or overrun.

So being an island was clearly a strength, but there were many in Britain who felt that it was also a disadvantage and that there would be many benefits in having a fixed link between the UK and the continent. With the technology developments of the industrial revolution this became more credible.

Many ideas were proposed, by Matthieu, Thomé de Gamond, Beaumont, Whittaker and many others.

### Motives for building or not building a fixed link

Most of the reasons given for wanting to build a fixed link were for travel, business, cultural or similar reasons, but some were to facilitate war or invasion.

This was usually the main reason why they did not get very far, either financially or practically, because of the fear of invasion by the British Government.

Given the wars and traumas suffered on the continent in the last 200 years, this is not perhaps surprising, but it also enabled the British to expand their empire with little fear of invasion at home. Ships can blockade islands, as they tried to in the two wars of the 20th century, but this proved to cause less horror than what happened on the continent.

This fear of invasion continued until the present generation, and it is reported that the 1973 attempt that actually started construction was to include a barrier that could block the tunnel in an emergency; others have suggested that there could have been a plug which could have been removed to let the sea in. It reflects an innate conservatism of the UK military, even when modern equipment would have enabled a sea or air invasion (or both) to be achieved on a wider front than relying on just one link that could easily be put out of action.

Other reasons for not building any fixed link included the fear of the dog loving British of rabies. Eurotunnel was required to install anti fox barriers in the Tunnel.

Varroosis, a disease of bees which is carried in imported timber, was also used as a reason for not building a link.

### Financing a fixed link

Most railways in the UK were built using private capital; the companies often went into liquidation, sometimes several times, but it was only in 1947 that the railways were taken over by the state, largely as a result of the damage and lack of investment in the two wars. The 1973 scheme was to be the exception, financed by British Rail, but it only got a few 100 metres before Government financial pressures stopped it.

But, when Mrs Thatcher and President Mitterrand finally agreed to allow the construction of the present Tunnel, she insisted that it must be financed in the private sector – ‘not a penny of public money’. Mitterrand had to agree to this.

The Channel Tunnel financing, although in theory totally private, did rely on guarantees of minimum levels of traffic and revenue from the then state run railways – for passenger and freight.

### Different means of crossing the Channel

The Straits of Dover are 30 km wide at their narrowest point, and the cliffs at each side are chalk. Since chalk is a good



Plate 2: Tunnel Spoil. (Foto: Rail Freight Group)

material for tunnelling, this might be seen as the obvious solution. However, until recent times, engineers had no way of knowing what the ground was like under the Channel – they could take samples from the sea bed but not bore down to see what was under the sea bed, and how good it was for tunnelling. Even for the present scheme, one could never be sure that a line of boreholes would pick up underground fissures which could cause a flood, so the first bores included a probe ahead, and the boring machines from the French side, where fissures were more likely, also provisions for closing off the face in the event of a flood.

But tunnels were not the only type of fixed link proposed others included bridges, submerged tubes. The problem here is that there are several hundred ships using the straits of Dover every day and some are very tall so a bridge must be high, and the piers of bridges would need massive protection from being hit by a ship.

The sea can also be very rough, with strong tides, so building a submerged tube involving digging a trench to ensure that it was not affected by a ships anchor, depth of water etc. – had never been done before.

### Recent history

Bored rail tunnel started in 1972/3 led by BR and SNCF. Preliminary works at Dover and Sangatte started – at Dover, an inclined shaft was built to the level of the tunnel and a few hundred metres of service tunnel built.

Then a financial crisis occurred in the UK, with Government needing to commit to the Thames Barrier, a third London airport and Channel Tunnel and something had to give – it was the Tunnel. The French Government was very angry.

Groups of interested people kept the idea alive, perhaps spurred on by the entry of the UK into the European Union.



Plate 3: French portal. (Foto: Rail Freight Group)

From the early 1980s companies started to put forward proposals, not only for the completion of the rail tunnel already started, but also for road tunnels, bridges and submerged tubes and combinations of these.

The French government always said that, after the cancellation by the UK Government of the last project, it was up to the UK Government to demonstrate its good faith first this time. The UK Prime Minister Thatcher made it quite clear that it would only permit a fixed link to be built if it could be done without any Government money.

The rail tunnel was partly designed, and was always felt to be less risky than other solutions. Those contractors and financiers promoting it thought that they nearly had Government approval; the subject came to the UK Cabinet on the day that the Belgrano was sunk in the Falkland war, so the Tunnel was not discussed properly, and Government decided instead to ask a committee of banks to look at the feasibility of a fixed link.

This put it in the 'long grass' for a year or two. The banks reported on different options, and that some were more likely to be financed by a government guarantee than others. The tunnel people eventually convinced the banks to write to the Government saying that the Tunnel could be so financed under certain circumstances.

The two Governments then agreed to hold a competition for the design, construction, operation and financing of a fixed link without any government guarantee. There were feverish attempts at creating cross-channel partnerships for



Plate 4: First freight train 1994. (Foto: Rail Freight Group)

different schemes and, when the bids went in, they were supported by impressive lists of advisers, financiers, designers and contractors. None of course could guarantee the financeability, in spite of many letters of support from banks worldwide.

### The Tunnel wins

In the end a bored tunnel scheme was chosen, to take classic trains and 'shuttles/navettes' for road vehicles as being the least risky and the one most likely to be built.

There then followed two years of frantic design, costing, and land purchase in parallel with seeking planning approval and finance for the project – and agreeing a method of management and operation of such a project between two such different cultures. All this work had to be financed by the 'promoters'.

Finally, the plans were approved by Governments and Parliaments, the Treaty of Canterbury signed and finance for the construction was raised – so that actual work on site could begin.

Interestingly, it took six weeks to obtain planning approval in France, and two years in the UK – 'if you want to drain the swamp, you do not consult the frogs.'

The construction companies who had led and won the bid awarded themselves 'design and construct' contracts; then the banks demanded the creation of a client or customer – Eurotunnel.

### Building the Tunnel

*What went right?* The civil engineering – tunnelling was through good chalk; the sea did not come in and good tunnelling rates were achieved. This part kept well to budget and programme – because it was designed and priced properly.

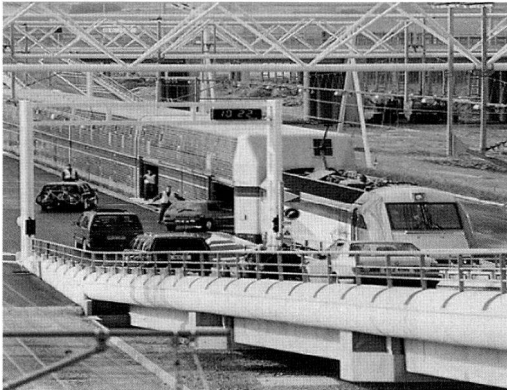


Plate 5: Car shuttle 1994. (Foto: Rail Freight Group)

*What was not so good* – The fixed equipment in the Tunnel was designed later, not scoped or procured properly, approvals by new authorities, customs, immigration, three police forces in the UK, security, safety, anti-rabies all with new powers to show their own importance added to the cost and delay, so the fixed equipment was late being installed and the costs overran significantly over budget.

*What was seriously wrong* was the design and construction of the shuttle trains for cars, lorries and coaches. Here the newly empowered safety 'regulators' achieved their ultimate challenge with a mixture of long tunnels, petrol and people. The design got more and more complicated – 150 km of cable in each coach – and the costs escalated – instrumented to death. Costs were three or four times over budget.

*So the money ran out*, and more had to be found; the share price, initially £3.50, went up to around £15 but, as delays and cost overruns mounted, it plummeted to around £1 where it stayed for many years. The bank loans got more and more complicated as debt was traded and extended.

In the end, it was finished, and approved for running trains, although some time after the Queen and President Mitterrand opened it officially and travelled through it.

### Road connections

Both Governments managed to build motorway connections to the tunnel entrances for the road traffic, and, in order to allow fair competition with the ferries, to the ports of Dover and Calais too.

### Rail connections

The TGV line linking the Tunnel with Lille, Paris and Brussels was opened at around the time the Tunnel opened. Rail freight in France sued the classic lines through Calais or Boulogne.

In the UK, there was no plan for a high speed line, so the Eurostar and freight trains had to share capacity on the classic network.

The high speed rail line to London was finally completed in autumn, 13 years after the Tunnel opened.

### How has the Tunnel operated since opening?

Firstly, the traffic forecasts used to support the original financing proved to be wildly optimistic; even the Eurostar, which is relatively successful now, is only taking less than half the number of passengers expected at this time.

As for freight, a combination of high charges, poor service quality and the problems of clandestine immigrants getting onto or into the wagons has caused a massive reduction in volumes. Whereas 40 trains per day were forecast at opening, quickly rising to 50 or 60, there is sometimes only one or two a day now. Alongside the track in Kent are enough trucks to fill 200 trains a day.

A year or two after opening, there was a disastrous fire on a lorry shuttle, luckily with no loss of life. The Tunnel was closed for many months, losing valuable revenue but loss of business confidence as well.

Competition from much improved services on ferries limited the growth in road traffic but it is still relatively healthy.

Now in 2007 Eurotunnel has been restructured as a French company and the debt partly written off or refinanced. The shareholders, mainly French, are less unhappy than they were before. Perhaps a period of relative stability, sensible management and firm regulation will enable the Tunnel to become the important fixed link between the UK and the continent that has so far eluded it.

### Literature

- Hunt, Donald: The Tunnel. The Story of the Channel Tunnel 1802–1994. Upton-Upon Severn, Worcestershire, 1994.