

Responses to Alan's presentation about Brunel

Response from Peter

Thank you Alan for the comprehensive presentation on the life, successes and failures of Brunel's many projects.

I like most, I am aware of his many achievements. Not so aware of his failures. Pioneering engineers in the 19th century were very much "hands on". Not only designing the project, closely supervising the progress, raising the necessary finances and also lobbying the government for parliamentary approval.

The thing that struck me most with Alan's presentation was "Brunel's Time line". It shows how much work Brunel did between 1822, when he started work in his father's office and his death in 1859.

Repy to Peter's response from Alan

Happily, you confirm the point I made in my response to Stephen about nineteenth century engineers being hands-on and involved in all stages of a project. I suppose Brunel went even further than this in that he often had several major works in progress simultaneously.

As you say, the timeline highlights the volume and range of Brunel's work.

Response from Tessa

It's lucky that I married a civil engineer who was a enthusiastic train spotter. So I know a little bit about the broad gage issue !!

I hope to introduce a bit about the human issues which I understand more than I do about engineering!

Looking forward to seeing you all on Monday.

Response from Stephen

Thanks, Alan, for the most informative write-up of Brunel's career.

I knew what I guess most people would have known about the subject - that he was a giant of Victorian engineering, the creator of GWR, broad-gauge, structures like bridges and the ships. What I hadn't realised till reading your piece was the downs as well as the ups of his career - the stalled or abandoned projects, the cost and time over-runs, the pioneering technology that failed to generate anticipated profits. (Incidentally his persistence with broad gauge reminded me of the competition between VHS and Betamax in the 80s - in so far as I understood it, the superior technology lost out because it failed to command sufficient market share to make it viable economically in the long term.)

I have the feeling that if he were working today, he would be pilloried and subject of public opprobrium for those 'downs' instead of feted as an engineering genius. Reading your piece, my mind returned time and again to the debates and controversies over modern projects like HS2 and the Elizabeth Line in London. It left me wondering how those projects (if ever completed) might be viewed in 100 years' time! Also, who will in future get the credit for these projects, as I had always believed (and I am sure I am not the only person to do so) the Clifton Suspension Bridge was a triumph of Brunel's - turns out the history of the project and responsibility for its completion is just a bit more complicated than that! A good example of why we need to study history.

Reply from Alan to Stephen's Response

Yes, my understanding of Brunel was very much like yours before I started to examine his story in more detail. He certainly did not enjoy uninterrupted success and one of the projects with which we most associate Brunel, the Clifton Suspension Bridge, was not completed by him.

A very interesting analogy with Betamax/VHS. Narrow gauge won in the end mainly because they were first in the field, already had many more miles of track and were strongly supported by the North and Midlands lobby.

It does seem that many major projects in the nineteenth century were and are associated with one individual. Brunel often helped argue the case, raise the finance, do the design work, and manage the build. He had a natural urge in any case to be in control throughout a project, but I suspect that other engineers also liked to be involved at every stage.

Response from Phil

Bristol is an outdoor living museum for the work of Brunel, main attractions being:

- Clifton Suspension Bridge
- Temple Meads Railway Station
- SS Great Britain
- Bristol Docks

His work can be found elsewhere in the South West, a legacy from his involvement building the Great Western Railway (GWR), in particular the Tamar Bridge, another suspension bridge marking the boundary between Devon and Cornwall.

In my time at Bristol the Faculty of Engineering was made up of four Departments: Civil, Mechanical, Electrical and Aviation. They still exist more or less as such today. I wonder which Department would have attracted Brunel! I've no doubt that he would have excelled at any one of these disciplines!

Civil: Structures, Bridges, Roads, The Permanent Way

Mechanical: Locomotives, Rolling Stock

Electrical: Before his time?

Aviation: Hot Air Balloons!?

A closing thought. Brunel eventually dismantled his originally favoured Broad Gauge railway in favour of Standard Gauge.

The final Broad Gauge express train, known as The Cornishman, left Paddington Station at 10.15am on a Friday for Penzance. Once it had sent off on it's return journey the line was closed and the conversion work began. On Monday the first Standard Gauge Cornishman travelled to Penzance. Over the weekend 171 miles of track, main line, branch lines and sidings had been converted by some 3500 men! Network Rail please take note!

(From The Quirky Past, Slightly Odd History, May 25th 2015)

Reply from Alan to Phil's Response

Many thanks for your comments on Brunel's many links with Bristol and the South West.

A few more points on the broad gauge issue. Daniel Gooch, who was originally locomotive superintendent and eventually Chairman of GWR, seems to have been even more passionate than was Brunel about the advantages of broad gauge. It wasn't until after Gooch died that it was finally abandoned. The frantic weekend conversion to standard gauge that you describe happened in May 1892

The last broad gauge locomotive was scrapped in 1905. There is a replica (The North Star) in Swindon GWR museum.

Response from Geoff

Thank you for the comments so far and for the photos and drawings that Tessa forwarded to us. Brunel's work was carried out without the benefit of the camera to record it, which is a great pity. My overall impressions are of a man of boundless energy and determination as well as skill and imagination and also of wonder at what was achieved in those times with the technology available, admittedly less constrained by health and safety laws. That he was able to exercise such personal control over huge engineering and construction projects and achieve what he did is

impressive. I had been unaware that he had designed in detail and had had made a prefabricated hospital for the Crimea which was successfully put together in situ and operated well. He coped with setbacks, survived several close shaves and moved on from his failures. Phil raised the broad gauge issue and it is surprising, as a very practical person, that he remained so wedded to it for so long, not because of technical reasons, but because he had lost the battle- everywhere else in the country was on narrow gauge and the defeat was inevitable. It seems that he just did not want to recognise it.

He was also keen that his constructions would add to the location, not something that always happens and his time coincided with major change in Britain, on its way to an industrially based rather than rural society; like the discussion on the later Lord Armstrong, it has helped me to appreciate how Britain became so dominant. I was also interested to see that much of the plant Brunel used came from Boulton and Watt, which takes us back to the earlier period of the Lunar Society, which we had a very enjoyable time discussing several years ago, thanks to Jan. It confirms the saying that History is just one ruddy thing after another.

Reply from Alan to Geoff's response

You raise the question of the technology available at the time. By virtue of his ambition, search for innovation and determination to pursue the seemingly impossible, Brunel was constantly pushing the boundaries of technology. He was limited by the tools, equipment and materials available and many of his projects were, of necessity, labour-intensive. The ill-fated atmospheric railway depended on a strip of leather (presumably the best material available) to effect a seal and maintain a vacuum. The Great Eastern was built without cranes. The Thames Tunnel depended on 36 men chipping away at an unstable rock face. Lighting was by candle power. And, I wonder, did he have a slide rule?

Fortunately, there are many paintings, sketches and lithographs of Brunel's work and many of his own drawings, notes and diaries are held in extensive archives. Photography was in its very early stages. I have not seen any photographs recording the progress of particular projects in any detail, though someone else may know different. There are the well-known photographs of Brunel himself and I have also seen contemporary photographs showing construction of the Clifton Suspension Bridge, the Saltash Bridge and the Great Eastern.

One of the books I consulted is rather grandly titled Brunel - The Man Who Built the World. It's probably not unrealistic - as you say the Brunel story helps to explain how Britain became so dominant.