

Review of 'Heroic Failures' via 'Zoom' by Ian McLauchlin Thursday 26th Jan 2023

27 members (with a number of couples) logged on to watch Ian's fascinating presentation, covering a complex subject which Ian handled so well as represented in the comments we received. *"Brilliance in action! Thank you very much for such an illuminating talk this morning. I thoroughly enjoyed it."*; *"I did enjoy this morning Ian, Thanks."* *"Your talk was a new subject to me and I learned some basics with the help of your clever diagrams. Thank you."*; *"A thank you for a most interesting and thought provoking presentation yesterday. I really enjoyed it."*

Before Thursday I had not seen the presentation and in my introduction I explained that Ian is able to think outside the box, is curious about why things happen and how things work or don't work. Also that he loves collecting data and producing graphs. Ian certainly lived up to my expectations and those of our regular 'Zoomers' and his talk had attracted a couple of members with an interest in engineering and it ticked the box for them too.

Ian started with the Tacoma Narrows Bridge disaster of 1940 and although it was designed to be the most flexible bridge ever, it didn't stand up to high winds, swaying considerably and collapsing into the estuary below. The good thing about inspirational talks such as Ian's is that it often leads you to find out more and I discovered that 'the remains of the bridge are still at the bottom of Puget Sound, where they form one of the largest man-made reefs in the world.'

Ian also covered another bridge disaster that of the Dee Bridge; a rail accident with five fatalities in 1847 leading to an examination of cast iron and its use in the mid nineteenth century and highlighted by Ian. Shown by a useful diagram showing a crystal lattice and leading on to another diagram with metals under stress, dislocations and how they appear under a microscope.

Throughout his presentation Ian took us through each disaster with helpful diagrams and charts examining the strength of materials and how they respond to stress.

Ian gave us a useful example, that of the de Havilland Comet in 1954 with stress concentration of sharp corners around the windows clearly seen in a photo of the aircraft windows after the accident and a diagram supplied by Ian. Pointing out that the cabin pressurisation and depressurisation certainly had its effect on the windows due to their poor design.

Ian mentioned that the weather always wins, however hard you try to stop it. As seen in a photo he took at Nottingham University showing reinforcing bars in reinforced concrete. "Rainwater gets in and the steel bars rust. The expansion causes the concrete to break away and SPALL. That causes the steel bars to be further exposed to the weather."



It is difficult in a short review to do justice to such an excellent presentation covering a variety of disasters and their causes. Not only did Ian give us a superb talk but he also covered a variety of questions answering so well, covering complicated subject material. Thank you Ian.

I thoroughly recommend watching Ian's presentation on our YouTube site <https://www.youtube.com/watch?v=cjwTvMiCgvk>

Review by Christine Chittock, Chair