

Three Gorgeous Dam by Laura Brown, Rohan Hegarty

The Three Gorges Dam is a testament to the effectiveness of past engineering techniques blended with civil engineering's latest innovations. It is estimated to generate 85TWh per year, which is 1/10 of the current energy needs in China (Power Technology, 2019). Its name is derived from the three huge gorges (Xiling, Wu and Qutang) upstream of the dam wall, and during winter this landscape can become shrouded in mist, as witnessed by our study tour.



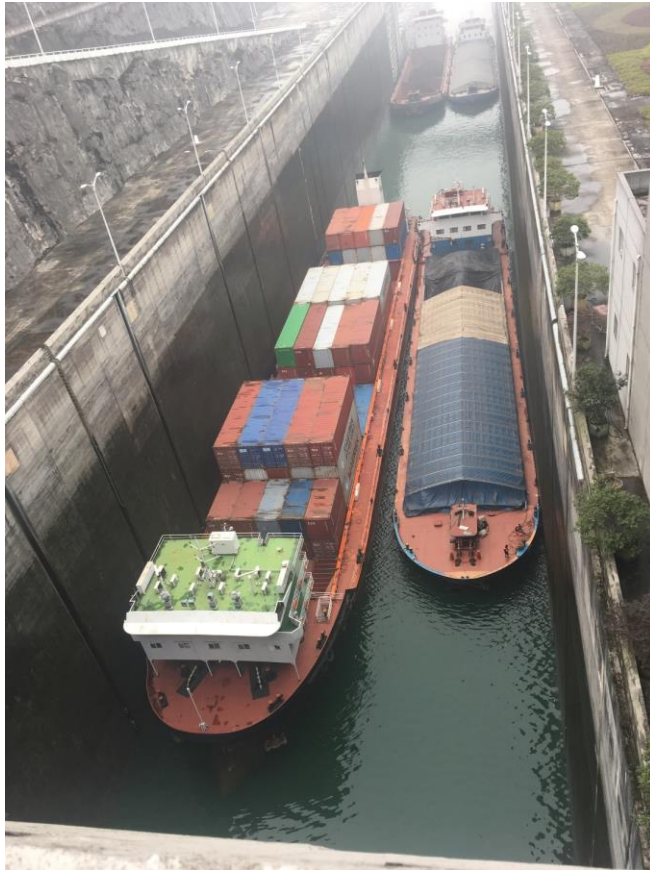
The 3 Gorges Covered in Mist

The dam is built along the third longest river on Earth, the Yangtze. The Yangtze River with its origins on Plateau of Tibet to its end at the East China Sea, has played a pivotal role to economic, social and cultural growth of China. However, the river is also susceptible to catastrophic flooding, which historically, and continually has cost the lives of millions of people. The three gorges dam has aimed to prevent these floods, by using its spillway of about the same height as the river bed to retain, and release water when necessary. Through the same function, it also prevents bore wave that propagates from downstream from hitting urban areas. In contrast to the reservoir dam, the perforated dam has advantages such as ease of sediment removal as such the environmental impact of it is reduced (Climate Technology Centre and Network, n.d.).

Our journey to the dam, by train (from Nanjing to Yichang), demonstrated the necessity for flood control of the river, as factories, farms and towns populate the flat expanses downstream of the dam. This relates to the fundamental mindset of civil engineering - furthering social wellbeing.

The construction of the dam has deepened the upstream river and controlled the often-volatile river flow. However, the biggest task the engineers faced was having to transport ships upstream and downstream with a difference in elevation of up to 113m(China Discovery, 2019). To solve this problem, two transportation methods were constructed: a two-way, five-stage ship lock and a ship lift. The ship lift was the most recent addition to dam after opening officially in 2016.

We got to see both methods on the study tour and personally I found the ship lift the more interesting of the two. It is an insane display of engineering due to the scale of the elevator. Seeing this ship elevator in person was like seeing something out of a marvel superhero movie. The ship lift can lift vessels of up to 3,000 tonnes, at a fraction of the time to transit the ship locks.



Two Way Five Stage Ship Lock

How does travelling and visiting structures relate to civil engineering

Civil, as with all engineering disciplines, has intricate technical concepts which can be understood from conventional teaching methods. However, some concepts are hard to comprehend in a classroom, one such being the importance of the degree and magnitude of problems that it can solve. Overall, the journey we took to the Three Gorges Dam was an interactive and enjoyable experience of how a structure has changed a region environmentally, economically and socially. In the long run it is something that many of us will refer back to throughout the rest of our degrees and future careers.

Reference:

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