

THE APPLICATION OF THE ELASTICITY THEORY

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During centuries, a great role has been devoted to such branch of science as “elasticity theory”. Even in those far times, when people faced at first with building, they understood the necessity of knowing the elasticity of materials. The fundamental knowledge of it help them to appointed the correct size of details in the structures in conformity to their admissible loads. There is no doubt that Egyptians knew some empirical rules of this science, in other case they couldn't built such grandiose monuments, pyramids, temples, obelisks, which are standing even nowadays. The origin of elasticity theory concerns the 17th century. Galileo is considered to be the founder of it. With the help of this science, people built great buildings.

One of the most wonderful ancient town is Petra. The complexity of the buildings are so improbable, that nowadays the most outstanding scientists can only make hypothesis, they don't know the answers how the ancient people made such miracles. Petra is situated on the territory of Jordan. In this ancient town was filmed “Indiana Johns and the last crusade”. Petra is one of the new 7 miracles of the world. The Petra inhabitants were great masters in work with stone. The meaning of the word “Petra” is “Rock”. People cut homes, crypts from the boulders. Petra is settled down in the red sandstone in the heart of the desert.

The most famous building in Petra is Al-Hazne – the greatest example of the skill of ancient architects and stone-cutters. How did they cut façade? How did they make the preliminary project? Scientist can only make assumptions. The big surface of the rock was cut off. It was necessary to built scaffolds but there were any tree in this place. Without scaffolds they could use the roughness as astep. In such case the mason and the carver began to work from the very top. But how could they define the necessary scale of the construction? It is real to mark the future construction and then to cut it, but it is very hard to do the same thing if you are hanging over the precipice.

The existence of Petra is the acknowledgement of beautiful merging of science and imagination.

One of the most famous buildings of the present is Petronas Towers. They are situated in Kuala Lumpur, Malaysia. This buildings were the world's tallest buildings from 1998 to 2004. They are the 88 – floor towers. Twin Towers were built in Islamic style, that is why we see in them the eight-final star. They were built on the site of Kuala Lumpur's race track.

Because of the depth of the bedrock, the buildings were built on the world's deepest foundations. The Twin Towers occupy the territory of 40 hectares

Due to a lack of steel and the huge cost of importing steel, the towers were constructed on a cheaper radical design of super high-strength reinforced concrete. High-strength concrete is a material familiar to Asian contractors and twice as effective as steel in sway reduction; however, it makes the building twice as heavy on its foundation than a comparable steel building.

Petronas Towers have a very interesting lift system. All main lifts are double-deckers with the lower deck of the lift taking passengers to odd-numbered floors and upper deck to even-numbered floors. To reach an even-numbered floor from the ground level, passengers must take an escalator to the upper deck of the lift. The lifts contain number of safety features. It is possible to evacuate people from a lift stuck between floors by manually driving one of the adjacent lifts next to it and opening a panel in the wall. That's why it is possible for people to walk between lift cars.

The towers feature is a sky bridge between the two towers on the 41st and 42nd floors, which is the highest build in the bridge in the world. It was designed to slide in and out of the towers to prevent it from breaking during high winds. The sky bridge is open to all visitors, but their amount is limited. The sky bridge also acts a safety device, so that in the event of a fire or other emergency in one tower, tenants can evacuate by crossing the sky bridge to the other tower. So, the beauty and the complexity intertwine in Petronas Towers.

This two examples show, that people can build really magnificent structures, with help of the science and fantasy.

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