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SHUKHOV'S TOWER: RUSSIA'S EIFFEL TOWER

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Background

Shukhov Tower, located in the heart of Moscow, is adored by the locals in the same way that Parisians adore the Eiffel Tower. Engineer Shukhov created this structure, which is recognized as a landmark in the history of constructivist architecture. It mixes cutting-edge engineering techniques with the socio-political ethos of communism[1]. and was completed in 1922. Six stacked hyperboloid surfaces made completely of straight steel segments make up the tower. The tapering steel segments were first built on the ground, then they were hoisted and placed one by one. The overall tower structure is significantly more stable thanks to its design, which lessens the likelihood that it may warp or bend[2].

Shukhov Tower, once a radio transmission tower, had lost its significance and was deteriorating from neglect. This, along with the fact that it is in a prime site in a growing Moscow, makes the demolition a perpetual threat to it. International architects, engineers, professors, and cultural leaders were gathering to call on Putin to overturn the commission's decision and keep the skyscraper as government officials move toward its demolition[3]. The Shukhov Tower is unique due to its unique structure and symbolism.

Figure1. Tatlin's Tower, The Monument to the Third International
https://en.wikipedia.org/wiki/Constructivist_architecture

Structure

The Shukhov Tower's curved hyperboloid is made up entirely of straight lines, and since many people believe that curves are only made up of curves, it is astonishing that straight lines can make curves. In addition to aesthetic concerns, the two primary justifications for using hyperbolic structures are strength and efficiency. In order to avoid forces in the direction of imbalance, hyperbolic surfaces bend in both directions. They are particularly cost-effective because less material is required to carry the weight as a result. The surface bends in both directions, although it is made completely of straight steel bars for strength. They are more resistant to buckling since every component that makes up the surface is straight, which also prevents the steel beams from being bent and lowers the cost of the formwork[4].

A diamond-shaped lattice structure is created by weaving together each steel beam and the steel beam that intersects it diagonally. Because the rhombus can be thought of as consisting of two triangles, and since triangles are known to be extremely stable, so is the rhombus structure. This towering structure is stable, which increases safety and dependability. Second, when there is a high wind, the numerous diamond-shaped lattices allow air to move fast. Overall, the lattice construction adds to the building's safety and financial efficiency.

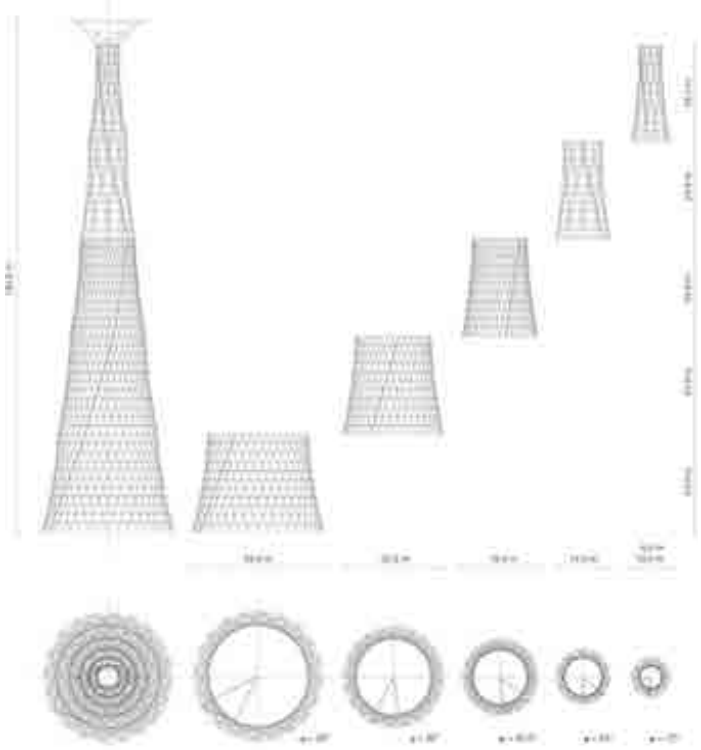

Figure2. Hyperboloid lattice structure
https://i.pinimg.com/originals/ee/31/8e/ee318e30a21eaa83c05bb2569aa2848e.gif

Symbol

Functionally speaking, Shukhov was the first radio tower in the Soviet Union, which was used to transmit information and entertainment to the people of Moscow in an era when only radios were available[5]. This explains why it needed to be built so high, as the obstruction of the building would have prevented the radio signals from spreading freely.

Emotionally, an iconic building symbolizes a city, a country, or even an era, and whenever people see it, they are reminded of their loved ones, friends, and stories of what happened in that era. Now, the Shukhov Tower is decorated with lights and no matter in which street or alley in Moscow, people can always see it when they look up at night.

The emotional and functional imprints are not independent, but rather influence each other, and it is the formal use of the Shukhov Tower by the older generation of Muscovites in all aspects of their lives that has led to their fondness for it even after it has been abandoned. It can be said that the tower has influenced the older generation of Russians, but its influence has also spread among the new generation, and it has become an icon in the hearts of Muscovites, a building that carries people's feelings and history.

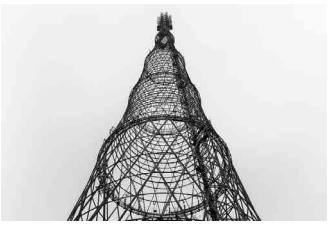

Figure3. Framework of Shukhov Tower
https://www.e-architect.com/moscow/shukhov-tower-moscow
https://www.buzzfeednews.com/article/kevinoflynn/a-cool-soviet-era-landmark-faces-possible-destruction-in-mos

Discussion

We refer to the Shukhov Tower as the Eiffel Tower of Russia for its structure and symbolism. Although it may not be as well-known or prominent as the Eiffel Tower, the people of Moscow adore it, and many notable architects are inspired by his design.

In the end, the battle to conserve the tower was successful, the government protected it and routinely maintained it. People can finally rest assured that the tower in the hearts of the Moscow people will not falland and the model was placed in a museum forever[6]. It was a huge triumph.

Figure4. Save Shukhov Tower
https://www.behance.net/gallery/15621277/Shukhov-Tower-Posters

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