

Space Elevators!

Today we'll be watching the video **Space Elevator – Science Fiction or the Future of Mankind?** from the **Kurzgesagt** channel on Youtube. (<https://www.youtube.com/watch?v=qPQQwgGWktE>) This video discusses the idea of a space elevator.

Part 1: Vocabulary

- orbit
- gravity
- rotation
- payload
- counterweight
- tether
- raw materials
- hurdles
- “spacefaring civilization”

Part 2: Questions for Discussion

1. Do you think space science and technology are important? Why or why not? Should human beings be spending money, time, and energy on developing space technology, or not?
2. Given the risks involved in building a space elevator, do you think it is a good idea for us to try it? Why or why not? Do you think we're ready to try it now, or should we wait?
3. Building a space elevator is risky. How should humanity decide whether to build a space elevator? Do you think there should be a vote, or should authorities decide? Why do you think so? If we do try it, who do you think should administrate the project?
4. It seems likely that if humans built a space elevator, there would only be one on the Earth. In that case, who should control it and decide how it is used?
5. If you were going to travel to space permanently on a space elevator, the *payload* you would be allowed to bring would be limited. What are the top five items you would bring with you?

Note: You can include more questions here. Sometimes discussions run out of questions, so having extras is a good idea. However, 5 sets of questions like above is the minimum for your Midterm Assessment Task.

Part 3: Answering One Question At Length

Question: *Building a space elevator is risky. How should humanity decide whether to build a space elevator? Do you think there should be a vote, or should authorities decide? Why do you think so? If we do try it, who do you think should administrate the project?*

Answer: Personally, I think that the risks involved in building a space elevator are very high, but I think we should still consider doing it. Of course, because of the risks, it's important that the decision be made fairly, since a failed or broken space elevator—or even a working one—could affect the lives of everyone on Earth.

The obvious question is how we can decide fairly whether to build a space elevator. It's a very difficult question. First of all, it's a difficult question to answer. Most normal people will not really understand the possible benefits of a space elevator, nor will they understand the risks of that come with a failed space elevator. It is important to recognize that most people would not even understand the question, because the most obvious solution—holding a worldwide vote—is unlikely to get a reasonable result, let alone how difficult it would be to organize a worldwide vote.

At the same time, the decision should not be made by experts alone. The history of expert decision-making with terrible results for people excluded from the decision-making process is obvious from history. Besides, it is likely that even experts will disagree about whether to build a space elevator.

Meanwhile, even in “democratic” countries today, the process of representing the will of citizens is problematic. Governments tend not to represent the will of their citizens as a whole, but rather to represent the will of some proportion of the population, while ignoring the will of the rest. In many cases, the will of the majority of the population is in fact ignored by the government. (For example, the vast majority of Americans feel that the American government's treatment of illegal immigrants right now is “going too far,” but the U.S. government continues this behavior regardless.) If we cannot rely on supposedly “democratic” governments to represent their citizens will, then we really have no existing way to gauge the feelings of humanity, even if humanity were properly equipped to make this decision.

At the same time, it is also clear that building a space elevator cannot be a decision made independently by a single government or a single company. It needs to be a *collective* endeavour. This is true for two reasons: first, because it is dangerous for any one company or government to hold a monopoly on a space elevator, and second, because the greatest chance of success for such a project is in a larger number of experts sharing their knowledge and skill together. (A single corporation or government is likelier to fail acting on its own.)

In the end, two things will be necessary for this decision to be made:

1. A wide-ranging, worldwide education program that will help everyone to understand the possible risks and the likely short- and long-term benefits of building a space elevator.
2. A form of governance that is better at representing the will of the population in an equitable and meaningful way.

In other words, I believe that humanity does not yet have a political system adequate for making these kinds of decisions, nor is humanity educated enough overall to make intelligent decisions. Worse, most people who don't know enough to decide sensibly are also unaware that they don't know enough to make the decision. At the same time, most people in advanced societies are also incapable of envisioning any further development of political systems beyond the current state. (Too many people cannot even imagine a fairer and more equitable system than the one currently in place in their society: especially in so-called democracies, many

people erroneously believe that political systems development is over, and we have reached the final political system that humans will use forever.)

In other words, I don't think we're ready to even consider such a decision, much less to make the decision—and because of this, we're definitely not ready to start building space elevators. Advanced technology of this kind requires a more advanced politics and a more advanced population than we currently have, and those who want human space exploration to be a possibility will need to work on both political evolution and public education if they want that to become possible.