

11.8. Anatoly Yunitskiy



Anatoly Eduardovich Yunitsky
(b. 1949) – inventor of
String Transport Systems for
the Earth and space
(M.O. left, at *Rail Sky Way*
Minsk's headquarters, Belarus,
May 2015)

From conversations with A. E. Yunitsky and his personal archives:

1. Anatoly was six... Once his little sister Tamara saw other kids gorging themselves on ice-cream, their cheeks daubed all white, and asked him: Tolya, please pretty please buy me some ice-cream... The big brother's heart melted, and he did as he was asked. And he also topped the ice-cream with lemonade and brioche. Spending the three rubles that he had lifted off his mother. Then they lingered at the side of a busy road, afraid to cross it. After some wrangling they made a dash for it... stumbled, fell down... The brakes of a truck squealed, and a huge wheel stopped inches away from Tamara's head, with Anatoly looking on in dismay... That was a lesson for life: do not steal, or you will be punished. Or someone close to you will...

2. Tamara was five, Anatoly had just turned eight. At three in the morning he touched his sister on the shoulder to wake her up... The basket was full before they even noticed. To make all mushrooms fit in, Anatoly tucked in a row of twigs around the rim, and the basket suddenly became two times more capacious.

Then he put those mushrooms that did not fit in into a gray shopping bag – light enough to be carried by Tamara.

3. Anatoly learnt to milk cows when he was a small boy. Grownup women wondered how he managed to do it so quickly, and without a single drip missing the bucket. He also did it with two hands, like a dyed-in-the-wool dairy farmer. The funny thing is, nobody taught him to do that.

4. He liked to gather bilberries. He also learnt to do it with both hands. As a result, he was faster than grownup women and those who used "combs", ladle-like devices fitted with thin iron rods. Anatoly never resorted to the "comb". He saw how it ruined bilberry plants, tearing off leaves and stripping the twigs bare. The bilberries in his basket were clean, without a single leaf.

5. Then came fodder time. Cut grass was falling into the truck's body, and his task was to "dance" tramping the grass down and stuffing it into the corners. After a long summer day of such "dancing", his feet often cramped at night... And when it was time for corn harvesting, Anatoly went to work as an assistant combine harvester operator.

6. The first rockets designed and built by Anatoly were ... steam rockets, and they worked on water. Finding an empty shell somewhere in the forest, in a dugout or in a trench, he poured in water until the shell was two-thirds full. Then the mouth of the shell had to be sealed with a piece of wood. At first he could not manage it without losing his liquid "fuel", as to stop the shell he had to turn it over, emptying it of the water in the process. Later he found a better way to do it by skewering the water-filled shell onto a tree branch in an upright position, and then using a stone to ram the branch in. Then he cut the branch off with a knife and went on to build a "cosmodrome": the branch was stuck into the ground with the shell side up, and a "launching pad" of dry wood was made around it. A small fire was started, the water in the shell gradually warmed up, then boiled, and the pressure inside the shell quickly increased to a critical point. The shell then slipped off the branch and flew several hundred meters away, leaving behind a long steamy contrail.

7. The friends rummaged through ravines, found cartridges, broke off bullets and shook gunpowder out of the shells. From time to time they also came across old mines and artillery shells. Gunpowder was put into a special jar. That was for Anatoly. He had made a rocket, and it had to be launched. And it would not fly without gunpowder...



Our stands at the World industrial exhibition "Industriemesse'95" (20 years ago!) stood side by side. Hannover, Germany, 1995

8. To make a little more money, his mother, Yulia Stepanovna, part-timed as a charwoman at school. She had to scrub the floors in several classrooms. She alone could not make it, and her son helped her out.

The mother did not want him to do that dirty job, but he would not listen to her objections, and tagged along almost every night. When the head mistress came in one morning, she could not bring herself to step over the threshold – the floor was shining as if lit from within. She asked the teachers who had done it, and they answered: *It is the charwoman's kids, they toiled through the night together with her scrubbing the dirt off unpainted floorboards with knives...* With people having moved into new houses from dugouts only a short while ago, nobody even dreamed of painted floors...

9. The mother was not paid for the work she had done at the collective farm. She had to raise two children, but how could she pull it off if, at the end of the working year, they told her it was she who owned the farm, and not the other way round...

The family simply had no money to live on, and life in Kryuki became intolerable. In 1962 they went back to Kazakhstan, to stay with her other sister who lived not far from

Dzhezkazgan... One summer night the kids were sitting in a street cinema watching some film. It has already gotten dark. Suddenly they saw a burning candle rushing up into the sky to the left of the huge screen. It climbed higher and higher, and then disappeared in the dark sky. Everybody knew it was another rocket launch at Baikonur. And the entire world would learn about it the next day...

I want to say that Mother worked hard all her life. She dedicated herself to us, her children. She became a "shock worker of Communist labor", and her portrait was put up on the Board of Honor in the City of Nikolsky (now Satpayev) and also in the City of Dzhezkazgan...

10. Instead of fuel they used flammable combs, but they did not burn hot enough. They began to use motion picture film... Aircraft pilots "helped" them to design rockets by dropping silvery tape. Later he learnt that aircraft used that tape during military maneuvers to hide from radars. The tape provided excellent material for rocket bodies. All they had to do was to roll several layers of it around a "form" – a metal pipe – then glue it together so that the finished body could be pulled off the pipe, and finally make the rocket's combustible stuffing that would boost the rocket into "space."

11. When I was a student of Tyumen Engineering and Construction Institute, I liked sci-fi stories and fairy tales, especially *Adventures of Baron Münchhausen*. The thought that rocket fuel and rocket launches were environmentally hazardous had already visited me several times. And quite unexpectedly the baron gave me two ideas closely related to space exploration. The first was when he climbed off the Moon by a vine. That was Tsiolkovsky's idea! And the second was when he pulled himself out of the bog by his own hair braided into a pigtail! Can the cargo go into space "by itself"?! Anti-gravitation?! No, not yet. And the rest went against the laws of physics...

12. Friends asked me many times to manufacture fish-stunning explosive devices, and I told them that I would never do it, and they would have to go on using their fishing rods. They also invited me to their hunting trips, and I always turned those invitations down – I simply cannot bring myself to kill a living being...

13. I had been thinking of visiting my home village of Kryuki for ten years, and finally I made it there together with a TV crew... When the entire area had been covered with poisonous ashes from Chernobyl... Our old house had been robbed and burned down by a band of marauding looters.

14. Over the next fifteen years, the state, gangsters or "strategic partners" (who in reality proved to be no different from gangsters) did the same thing seven more times: they swindled me out of almost everything I had – money, land, property, companies... And they raked in a lot, too. Just intellectual property rights were valued by independent international appraisers at US\$ 14 billion. Luckily, they could not take away the most important things – my freedom and my life.

15. Smoking? I quit. I said "no" one time – and that was it.

16. Anatoly mastered the Theory of Inventive Problem Solving (TRIZ) and made a rich treasure trove of practical patenting experience, just like Einstein who spent several years working in a Swiss patent office and later described that period with these words: *I learnt to separate the wheat from the chaff*. In all probability, without that background the great physicist would not have developed his relativity theory, nor would Yunitsky have designed his string transport system.

17. **Ideal Functional Model:** *solution of the problem lies within the Operating Zone – if we cannot move the center of mass, let it stay where it is.* And that center of mass must coincide with the Earth's center of mass, or there will be no equilibrium – either static or dynamic. There is only one technical solution here – the means of transportation must be in the form of a ring circling the planet. To go up into space, this ring must increase its diameter relying on internal forces. And the center of mass of the ring must always remain in the center of the planet.

18. String transport possesses colossal system-building capacity. For example, new settlements in Russia can be built in the most beautiful and environmentally sound localities. Because it will be possible to rapidly and reliably reach any metropolitan or recreational area all year round. *And nobody – from Chukotka and Vladivostok to Saint-Petersburg and Sochi – will be filling isolated, separated from Russia's common physical and psychological space.*

19. ...The first customer was the Ministry of Economy of Russia – it commissioned a working model of Yunitsky String Transport (YST, scale 1:10) for the Russian exposition at the World Fair EXPO 2005 in Nagoya, Japan. The working model was manufactured, tested and paid for by the customer. However, at the last meeting of the Russian steering committee one "government" scientific advisor made this peremptory statement: *String roads? Nobody in the world has them, and we want to go to Japan and make fools of ourselves!? Not on my life!*



Sergey Sibiryakov (left), economist, systems analyst and entrepreneur, discussing the prospects of promoting Yunitsky string technologies with Maksim Kalashnikov, futurist writer. Compilation of pictures from video interview (recommended to all my readers! – M.O.) under the heading: "Technopark: Innovations and Innovators", Issue No. 14, July 14, 2011, at new-core.ru/video/neyromir/strunnyitransportyunickogo-2

20. S.A.Sibiryakov (summary):

They would not let Eiffel build his tower. One problem cropped up after another! He said, I will build it with my own money, and let it stand for 30 years. If it is not used the way it should, I will go bust, but if it becomes profitable, it will mean that my technology is right. Just give me a 30-year concession to use it. The answer was: well, it is your money, go ahead and waste it.

Today the Eiffel Tower is, first, the most popular tourist attraction in Paris, second, the symbol of Paris, and third, Eiffel became one of the richest men in France.

This is what we now want to do in Moscow. We have investors! All we need is for the city administration to say – have a go at it!

21. In 1982 the *Technical Knowledge for Youth* magazine (Issue No. 6, pp. 34-36) published translation of the novel *The Fountains of Paradise* by the futurist writer Arthur

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Clarke ¹⁵⁸, and Anatoly Yunitsky, an engineer from Gomel, came out with the idea of going *Into Space ... on a Wheel*. Then Anatoly wrote a letter to the famous master...

Arthur Clarke's response to Anatoly Yunitsky:

Dear Mr. Yunitsky! It was with great joy and satisfaction that I read your letter. It touched and excited me. It is wonderful that there are people living on our planet who are troubled by the technocratic development of mankind. They feel concerned and alarmed for the future of the planet – and it does not matter where they live, whether in the Soviet Union or Japan, America or France... I am very busy now, working on a new book, so my letter will be brief.

In the nearest future, when I finish my work, I will write you a detailed letter. I have put your contact details and information about your idea into my computer. I believe that idea to be interesting and promising.

Act! Victory favors those who are insistent and single-minded. I believe you are one of such people. I hug you.

Respectfully yours, Arthur Clarke.

P.S. Dear Anatoly! The answers to your other questions you will find in my recent interview. I think you will learn a little more about me. Write to me about yourself and about your new ideas – I will be happy to write back...

22. In his book *Profiles of the Future* (1962), Arthur Clarke formulated the so-called *Clarke Laws* informing the evolution of modern science.

Law One: *When a distinguished but elderly scientist states that something is possible, he is almost certainly right. When he states that something is impossible, he is very probably wrong.*

Law Two: *The only way of discovering the limits of the possible is to venture a little way past them into the impossible.*

Law Three: *Any sufficiently advanced technology is indistinguishable from magic.*

***And here I am saying "farewell" to my readers. And I am also saying to you:
May there be more meetings! Including your meetings with Modern TRIZ!***

And, naturally, I wish you good luck!

¹⁵⁸ Sir Arthur Charles Clarke (December 16, 1917, Minehead, Somerset, UK – March 19, 2008, Colombo, Sri Lanka) – English writer, scientist, futurologist and inventor, best known for his cooperation with Stanley Kubrick on the iconic science fiction movie *2001: A Space Odyssey* (1968); author of the idea for the creation of a group of geostationary satellites to provide global communication coverage (1945) and organize global weather forecasting (1954), enthusiastic supporter of the space elevator idea; in 1984 the *Technical Knowledge for Youth* magazine (M.O.: журнал "Техника – молодежи") commenced publication of Clarke's novel *2010: Odyssey Two*. The author dedicated the novel to Cosmonaut Aleksey Leonov and Academician A. D. Sakharov. The dedication to Sakharov was removed, but neither the translators, nor the editors noticed that all Russian characters in the novel bore the names of Soviet dissidents who were well-known in the West. After the second installment was released, publication of the novel was discontinued by the censors, members of the magazine's editorial board were severely reprimanded, and Vasily Zakharchenko, Editor-in-Chief, was fired. Nevertheless, the novel was reprinted in Soviet times, complete with dedications to Leonov and Sakharov, in the same magazine by the same Editor-in-Chief that replaced Zakharchenko (S. V. Chumakov) in Issues Nos. 11-12 for 1989 and Nos. 1-5 for 1990. Incidentally, in Issue No. 5 for 1990 it was announced that the novel had been published in full; http://en.wikipedia.org/wiki/Arthur_C._Clarke.