

Transport of the future

Now, when not only Russia but the whole world rolls down in some world crisis hopelessness, one is tempted to ask a question: will a clear bluish color of the new era peep again through the fog of hopelessness? I'm not going to be very cautious and will tell you right away: I know the man who has already invented that future...

ALEXANDER NIKONOV

Mankind has gone through crises and came in all sorts of dead ends more than once. Humanity could have been killed many times! And each time the recovery from the next deadly crisis gave us new technologies. When ten thousand years ago, when the world population has multiplied so much that killed off all the mammoths and other megafauna, there arose a mighty famine and 90% of the human population has simply went extinct. The transition to a new track saved, and it was called the Neolithic revolution, when mankind switched from hunting and gathering to a fundamentally different technology – agriculture. And the entire image of the civilization has changed drastically.

In the Middle Ages the story repeated – leather making, as well as cattle breeding polluted rivers where all the sewage and the waste of manufactories were discharged, so greatly that the stench along the banks was unbearable, the fish died, and it was impossible to drink that water.

The London Parliament closed the windows with shutters so as the smell from the rotting Thames did not prevent parliamentarians to adopt wise laws.

All the forests of Europe were nullified – heating and metallurgy have eaten all woods, even up to this day there are no plain forests in Europe. What have saved the civilization then? The transition to new technologies! Coal and then oil replaced wood. It has even more intensified

agriculture and drastically increased the carrying capacity of the planet, allowing the population of the globe to grow by seven times. And now fish in European rivers is available again. Yes, paradoxically as it may seem, today, in the era of advanced industrial technologies, the rivers are cleaner than they were during the "ecologically clean" medieval pastoral, which has actually never been as such. But as we move forward, we want to live more comfortably in a cleaner environment. And we want to overcome a new stalemate of the world crisis, in which we once again wandered in. All the previous paths of growth has been exhausted, technologies are mastered and pushed to the limit. We need new drivers of development that can be either different energies or different transport.

Do you remember, how railways or cars changed the world?... Can we see on the horizon new technologies that would give another boost to the world?

Certainly. This is the string transport.

It is in the sounds of these strings that I hear the song of the new hope. This miracle was invented by a Russian scientist, doctor of technical Sciences, academician and a member of the USSR Federation of cosmonautics Anatoly Yunitskiy. In a cafe at the Belorussky railway terminal, where we met before the departure of the designer to the test site, typically for a genius, he sketched for me the blueprints and formulas on a napkin. And now I will

clarify what the string transport is without drawings and formulas.

Imagine a series of high supports similar to poles of power transmission lines or bridge piers. Two thick strings are stretched between them. In fact, slack, loose strings do not exist: it is the pre-tension that makes a wire like a string. Only between our supports, there are stretched not just steel wires and not even ropes, but beams, rectangular in cross-section and with a very clever internal filling. It is on these parallel beams, like on rails, a wagon rushes from one support to another, rapidly running away over the horizon.

You may say that it's too simple for a revolutionary breakthrough technology that can change the entire image of the civilization.

And I'll answer: Yes, everything of genius is simple! What is complicated in the Internet? From the point of view of technology, these are just computing machines connected with wires to transmit information. That's all! And this extremely primitive object has turned the world upside down!.. And the most genius invention in the world is the Hunter's sewing needle with an eye for a thread transferred from the backside on a sharp nose. It is also not a Newtonian binomial. But it allowed to automate sewing, and marked the beginning of the global garment industry.

The essence of Yunitskiy's idea somehow reminds a smile of a Cheshire cat, when there is no cat, but there is a smile. Let me explain... Let's take a common road or better – a bridge. The wheels of a vehicle, be it a car or a train, are going on two narrow tracks, aren't they? And all the rest of the space of the road or a bridge is wasted! With 90% of load on bridge piers coming from the massive concrete road base. The bridge holds himself, and transport accounts for only 10% of its payload. The same happens to the usual roadbed, only worse – it rests entirely on the ground, creating a low-pressure dam on the location by its mounds; it disrupts the hydrology of the environment. Therefore, we often see waterlogging on one side of the road, and draining – on the other. And do you know how much place roads occupy on the planet? If we managed to get rid of all roads – railways and asphalt, – we would have cleared the area equal to five territories of Great Britain.

And it is just such a miracle that Yunitskiy suggested: let's mount the roads on light supports and leave from them only tracks for wheels! Air roads!

And we shall not need endless roads-dams spanning the planet in a rigid corset.

We don't need massive bridge piers that carry themselves. We have the lightest design, a linear kilometer of which costs tenfold less than any other road. One kilometer of an ordinary highway costs now approximately 10 million euros, in elevated design – 100 million.

A kilometer of string track (called now SkyWay) – about two million.

In addition, the roads are always eating money, they have to be maintained and cleaned. Every year humanity spends several billions of dollars on cleaning railways and motor-roads from snow. And SkyWay routes do not need it, as there is nothing to clean on them: they have no roadbed, only rails, on which snow does not remain for long! The service life of such routes is at least a hundred years.

And still that's not all! Most of the fuel for any speedy vehicle is spent on overcoming the resistance of the atmosphere. Removing roadbed from under the vehicle and mounting it in the air on two rails, we will drastically improve the streamlining of the rail vehicle. Blowdown in the wind tunnel showed that a unibus – the inventor called his rail-running vehicle this way – has a better streamlining compared with any of the race cars and even airplanes with their wings and tail decreasing good streamlining. But the wings of an aircraft can not be torn off, it rests by them on the air, and the SkyWay transport does not need unnecessary parts, it touches the support only in those points where the solid steel wheel kisses with the solid steel rail. Rolling resistance in this case is minimal.

Speed? Like that of a turboprop airplane – 500 km/h. In addition, there is no need to travel an hour and a half to the airport to arrive two hours before the flight and then an hour of flight and another hour and a half to get to the center of the city. Right in the center of the capital You take a sit in a SkyWay wagon – a unibus – and in an hour you are in Voronezh. In an hour and a half – in St. Petersburg. After 13 hours – in Vladivostok. Appreciated? By the way, a flight to Vladivostok by an airplane lasts almost as much (9 hours) as a ride by a unibus (13 hours). Well, then why should you pay more for the plane if you can travel to the other end of the country almost for free: at today's money a ticket to Vladivostok on the SkyWay unibus would cost 1,000 rubles at maximum. And the SkyWay track has no joints, therefore the unibus flies absolutely smoothly, without shaking and without



a driver, because the logistics of SkyWay tracks and junctions allows to control this transport by automation, which makes considerably less mistakes than a man.

Another advantage of string transport: you draw on the map the shortest line and install supports on any terrain: in the mountains or even in marshlands – they are lightweight, prefabricated and rapidly erected. Moreover, the usual "grazing" routes are killing people – every year half a million people are killed on the roads of the world and 10 million become crippled.

SkyWay transport virtually excludes accidents. In this sense, it is safer than railway. Thus, switching over on SkyWay transport, we will save over a hundred million human lives for the whole XXI century. And we will not get a billion of disabled. Is it bad?

– But that's not all! – Yunitskiy passionately spoils one napkin after another. – Now the world has one billion cars. Just a few million unibuses can replace them for freight and passenger traffic – simply due to the speed and fast turnaround. And only for a quarter of a century (this is the standard service life of a SkyWay vehicle) every million of unibuses will save for the planet 22 billion tons of fuel worth of 20 trillion dollars. This fuel will not burn, will not spoil the air... In this case, the complete transition of the civilization to economical SkyWay transport will not cancel private transport. Instead, personal unibuses will move on the same tracks. "How will it change the image of the civilization?" – an incredulous reader may ask. The answer is simple... Now our cities and the whole infrastructure of the civilization are designed for the "grazing" transport. The change of its nature and movement speed will completely change everything.

Firstly, the notion of hard-to-reach places will disappear. Russia is rich in mineral deposits that are either not developed or abandoned: due to transportation inaccessibility their development is unprofitable. For example, the Chukotka deposit of tin and tungsten Iultin was beneficial when Stalin's prisoners worked hard there for free. And when Economics came, the minefield has been abandoned, because free people should be paid. In Russia there are places where it is unprofitable to extract even gold.

It is costly to build a railroad there, it is even more expensive to transport by aircraft. Besides, in our Northern regions non-flying weather may last for weeks. The freight SkyWay transport removes these problems – it is possible to install supports and align string rails in any point!

Secondly, the high-speed breakthrough will completely change the concept of a city. Cities will become linear. The valuable land will be that, which is located near transcontinental and other high-speed SkyWay routes.

Getting a glimpse of the future, we will see the towers of the SkyWay transport stations with one-storey buildings at the bottom. And all public transport also runs on the SkyWay. Only footpaths remain on the surface of the earth, and cabins of local traffic SkyWay "buses" pass over them.

As a result of the SkyWay revolution the very psychology of man will change. Today a metropolitan citizen is trying to find a job closer to home, because it takes him an hour to drive a measly 20 kilometers from home to his place of work. By the mid-century, it will be possible to live 400 kilometers from the place of work and get to it for an hour, too.

– Anatoly, – I interrupted the flight of Yunitskiy's engineering thought, – you said that humanity's need for fuel will drop sharply. But it is bad for Russia. We live thanks to oil.

And here real star heights opened for me!.. It turns out that SkyWay transport gives a second chance to our long-suffering homeland. After all, the main pain, which has forced Russia to be permanently lagging behind and always playing catch-up since the times of Peter the Great and to this day, is the climate. Russia is the coldest country in the world. Moreover, it is leading by a wide margin. The average annual temperature in Russia is minus 5.5 degrees Celsius. For comparison: in Finland – plus 1.5 degrees, in Iceland – plus 1 degree. Though in Canada – minus 4.5 degrees.

It would seem that the difference is not great in comparison with Russia. But in Canada people actually don't live North of Edmonton, which is located at the latitude of our city of Oryol (that is as much as 300 km to the South of Moscow), and in Russia, beyond the Arctic circle, there are cities with above one million population. Therefore, we have giant "overhead expenses on climate". Any match produced in Russia will be uncompetitive, because it will always cost more than a Chinese one due to the heating and thermal insulation of our homes and factories. It has always been a Russian misfortune. But now it can become an advantage! How?

Follow the train of thought... We are now in an era of low oil prices. But – what a surprise! Russia has the largest reserves of fresh water in the world. And fresh water is the main tight resource of the XXI century. Political scientists and economists are already predicting water wars in the rapidly desiccating Middle East. Water shortages are currently experienced by Africa, India and China. In our country this

water is uselessly drained into the Arctic ocean by huge Siberian rivers. And the quality of our water, for example, in Baikal or Taimyr is unique. You can straightly drink it without any purification. This is the first point.

The second point. Southern countries (like India) need the cold almost more than Russia needs the warmth. But! If the heating process is energetically favorable, because its efficiency factor is 100%, the cooling process is not so wonderful: its efficiency factor is only 10%. That is, to get 10 "calories of cold", it takes 100 calories of energy.

However, here in Siberia the cold is gratuitous! The only question is how to sell it to India! And here is how.

The Baikal water can freeze for free – in winter. It can be sent to India in the thermal containers. In a conventional train ice will not reach the destination, it will melt.

But it will fly in by SkyWay. And here we are already selling in a hot country not only scarce water but also the cold to use for cooling of premises instead of the energy-consuming air conditioning. Two birds with one stone, you know?!

After the conversation with Anatoly Yunitskiy, having carefully collected all the napkins scribbled all over by him, I walked to the subway, the aquariums of skewed trolleybuses floated past, trucks accelerated with smoke after them. I couldn't help thinking that I see a leaving nature of the old world. His last cursed days. My inner eyes already saw the blue sky charted with white arrows of wagons, rushing from tower to tower on the strings invisible from afar, and from this it seemed as if they fly through the air...