Alexander Bolonkin

USSR

NASA, USA

LIFE. SCIENCE. FUTURE

Concentration camp, USSR.

New York

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LIFE. SCIENCE. FUTURE

**(Biography notes, researches and innovations.
Translation from Russian by Yulia Plotnikov)**

New York

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Preface

A human life is special. It may turn this or that way and put you on trial. Unfortunately, young people very often make the same mistakes their parents did. That is why if we have a look at biographies of senior people – especially those ones who lived unusual lives and had very special destinies – it may help us to avoid many mistakes, delusions, wrong decisions and deceit. Of course, political powers, authorities, regimes and social situation constantly change, but there are some vital general basics always remaining in a human society and they are quite necessary to be realized and understood for an individual to survive and not to repeat stupid mistakes of older generations. This is the prime and important goal of this book.

The author of this book is a researcher. A main goal of any true researcher is impartial and comprehensive investigation of the reality, discovering its laws and building models of nature, environment, human and society behavior. These laws help to predict human and environment reaction to our activity, and consequently, achieve required results and make all human progress move forward.

The most important feature of a true researcher is the ability to change (or revise) his opinions, conclusions and regulations in case the reality response does not coincide with his theories and forecasts.

The author worked a lot for Soviet aviation, rocket and space industries and in research labs of the NASA and USAir Force. He was not much interested in minor routine technical problems which were again and again to be solved by engineers and scientists in the course of projecting, designing and final operational development of some spacecraft or rocket, and which he was supposed to deal with by virtue of office. His spare time was devoted, first of all to breakthrough technologies of the future which would make mankind leap to a new stage of technological progress. Some of these technologies suggested by the author are understandably expounded in a special Appendix to this book (Breakthrough to the Future)

Besides current and future problems of aviation, astronautics, energy, breakthrough technologies of the future he devoted a lot of time to the purpose of existence and to the future of mankind, or more exactly to the future of *Intellect* and *Universe*. The Self-copying System Complexity Increase law discovered by Alexander Bolonkin explains not only beginnings of Homo Sapience on Earth, but also its inevitable transition into E-creatures and to Superior Intellect (to God, as true believers would say), to a total control by its Universe laws and creation of new Universes with new life.

All these ideas are compactly and plainly expounded in a special chapter of this book (Pondering on Life, Progress, Mankind and Science) so that a reader uninterested in these problems may just skip this section.

Part 1. Life in the USSR.

My Ancestry
(My Sister Anna's Reminiscences)

Grigoriy (our great grandfather, a grandfather of our mother Olga) lived in the village of Kosteneevo, Elabuga region in Tataria (current Tatarstan). He was educated – he finished 2 grades of parochial school – and for a time even was elected to be a *starosta* (a village elder in Russian village communities) in his village of 400 homesteads. The village belonged to the state (to a Tzar), so there was not base estate and people there were not serfs; they were not dependent on a landlord, instead they paid a land tenure rent once a year. Acreage for sowing was given to peasants according to a number of males in a family. Those who wanted more than that could buy a land from peasants who were not going to cultivate their piece of land.

Grigoriy had two children: son Dmitriy and daughter Maria (see my *family tree*). Our grandfather Dmitriy had four sons and four daughters. Our mother Olga was the last but one child. The family of Dmitriy had been very hard working. Grigoriy was the head of the big family and he was the one to command. In summertime members of the family worked in their household, but in winter Grigoriy used to send Dmitriy out to make some money on the side by working as a carrier by trade. He drove a troika sledge (carriage-and-three) for region authorities (local authorities). The fourth one was a carthorse and was used for ploughing and other household needs. They had a two-storey country house - the first storey was actually a basement (ground floor) with ground-low windows. The second storey was used for living in a frost-free season, and the basement was used when the cold season came. The sons of Dmitriy got married and started to live separately. But Dmitriy still stayed with his father as Grigoriy disagreed to let Dmitriy start his separate family. The old man was afraid of living all alone and running the house alone. Being on the rebound Dmitriy started to booze up and finally became an alcohol addict. When Dmitriy again asked his farther to parcel him out a piece of land Grigoriy set their house on fire in revenge. 12 more houses of their neighbors also got burnt. So, Grigoriy's son, 2 grandsons, 2 granddaughters and Arina, Dmitriy's wife became homeless. As old Grigoriy was guilty of setting fire to property, he was committed to be jailed into a deep pit.

Dmitriy built a new house for himself, his wife Arina, his daughters Olga (our mother), Uljana and sons Semyon and Andrey.

Dmitriy was a kind man. Once when he caught a poor landless widow stealing straw he just shamed her and never told anyone. The woman had nothing to heat her stove with. There were no woods in the neighborhood, so villagers stoked their stoves with straw and thatch for warmth and cooking. Samovars were set to boil with pinecones from the woods of Landlord Sherbakov. This landlord was quite an advanced man. He was the first to give his serfs freedom so that his steward could invite peasants to work for salary.

Due to the fire apples got baked right on apple-trees. While trying to climb the tree to bring us some apples in a day or two after the great fire was put out our mother got her feet burnt and became unable to walk. She rode a homemade wheelchair and treated her feet with horse muck. Finally she got healed by folk remedies.

Dmitriy was placable, he forgave Grigoriy, he bailed his farther out and gave the old man a place to live in his new house. Their uncle Osip and his family lived next door.

Of all the sisters and cousins our mother was the most skilful. She could spin yarn, weave, knit and crochet socks, stockings and mittens, she was a good tailor and sewer, too and could cut out a pattern by eye. She was very upset with her mother Arina, as Arina did not allow her to go to school, but allowed her sister Uljana.

Uljana learned how to read and write and decided to leave school. She just relied on her brothers and sisters all her life.

Our grandfather Dmitriy died of alcohol abuse when he was 54. His wife Arina (Olga's mother) got a big fishbone stuck in her throat when eating a fish pie. The bone was removed but her throat was badly injured. She got a larynx cancer and died when she was 50. Our great grandfather Grigoriy arrived at the age of 98 and died at his grandson Osip's.

After harvesting in the village was over our mother had to go to town to work as a maid. 17-year-old Olga went to Moscow to make some money on the side. She was an orphan as both of her parents died. Osip was not able to support her, as he had old Grigoriy and Uljana dependent on him. He also had children. His sons Semyon and Andrey left the village after finishing school. The house stayed empty for several years.

In Autumn 1917 when the October Communist Coup d'etat took place our mother came back from Moscow to her brother. Osip forced her to marry to Vasiliy Bolonkin. They did not want to start a family, neither her, nor Vasiliy. But his parents made him get a wife as they needed a strong young woman to keep their house. She had my sister Anna (born on November 7, 1919) by her first husband Vasiliy Bolonkin. The child was unwanted. When Anna was 19 days old Olga took the baby and left for her sister Masha Boozova.

Michail, Masha's husband was a Red commissar in the Civil War. When White troops came and dislodged the Red Army troops, Masha had to hide herself away from White Guards, as they would put to death a Red commissar's wife. Olga secretly brought foodstuff and water to the Masha's shelter, that's why Masha allowed Olga to stay at her house and Olga looked after Masha's son and her own daughter Anna who were of the same age.

After she got an official divorce, the Bolonkins gave her 2 or 3 sheep. Having sold them and some belongings which she happened to bring from Moscow Olga had a little hut built on the piece of land bought from Grandpa Sokolov. She had an orchard of apple-trees and raspberry canes and a cow which was stolen some time later. That was a year of bad harvest as it was very dry (perhaps it was in 1921 – *author's note*). Famine struck Russia. Whole families died, villages became desolate. Our mother had one pood (16.5 kg *or* 36 lbs) for a year, so to survive she picked up acorns and victualed acorn powder and orach. Her daughter Anna was fed once a day with boorda (a spoonful of rye flour per cup of warm water) all year long. Olga herself ate acorns, nettle, orach. Both Olga and her daughter survived.

Next year was better for crops. Our mother managed to grow some vegetables, but her former husband Vasiliy came to the village, stole all her harvest and sold it. Olga and her daughter had nothing to eat. There was unemployment and people were starving. She decided to go to Tashkent, the City of Bread (a capital of Uzbekistan), but her health and a local climate made it impossible to stay there.

My sister got dysentery. When she was 3 or 5 an epidemic broke out. She was about to die and was not able even to speak. Anna was put in a hospital room and her mother – near the entrance. A young doctor made her respire hot steam through a glass pipe. That made her

recover, at first very slowly, then rapidly. When she was 7 she insisted that her mother would send her to school; she went to the first grade and learned how to write and read.

Generally speaking they could not make a living and had nothing to eat, thus they had a lot of complications after illness – sinusitis, pharyngitis, chronic angina, gastric diseases, gradual hearing loss, etc.

Later our mother left Tashkent and came back to her hut in the village. As the hut was desolate for quite a long time some birds made a nest in a chimney, and when Olga tried to fire a stove her thatch-roofed house burned down. They happen to spend a winter in a somebody else's hut and when summer came our mother went to Perm. Anna was 8, but she did not look like it, she was a shortish, thin and feeble, physically retarded child. Unemployment in Perm made Olga bring Anna to an orphanage. The girl was so small and weak that a teacher made her sit at the first desk in a row. Time passed and the orphanage was to move to another place. By that time our mother got a job of cleaner at some school. She shared a room (where they had 2 beds, 2 chairs and a table) with another school cleaner. All her belongings she kept in a basket under her bed. As the orphanage was about to move to some other city Olga had to take her daughter back to live with her. It was a NEP period (New Economic Policy in 1920s). Her wage was 7 rubles a month. The work was not easy but sort of that one she used to do about the house. She brought water on her shoulders and washed floors at school during a break between morning and evening shifts. A stove heating at school was on only in winter. Washing a floor with cold water after annual summer redecorations at school Olga caught a bad cold. It provoked a toothache. She had two teeth out at a local dentist's but at night she started to run a high temperature and was taken to a hospital. Another school cleaner agreed to give shelter to little Anna and Olga left her a pood sack of flour to feed the girl. But when lunchtime came that woman usually sent Anna out to the yard so that she and her mother could have their meal alone, after that they invited Anna back to give her a cup of hot water and a piece of bread. While our mother was in the hospital Anna was starving. In the hospital Olga lost all the rest teeth (she was 36) and had to wear dentures. She was lucky to have very good dentures made so she used them till she celebrated her 70th birthday. After that she ordered new dentures and used them 5 more years till her death in 1971.

When living in Perm our mother worked as cleaner in different schools. Once one woman offered her a vacancy of a cook and a watchwoman in a kindergarten, and Olga got a room provided by that kindergarten to live. In the daytime she brought water and cooked soups and porridge for kids, also she baked rye bread. Generally speaking, she had pretty much work to do. It was a period of so-called Golodomor (a lack of food in Russia and Ukraine; derived from words 'golod' – 'famine' and 'mor' – 'pestilence, death') when Stalin was a Secretary General of the USSR Government. Hundreds of people died of starvation. In 1932 our mother met my future farther Alexander Vasiljev. I was born in 1933. Being a soldier my farther was sent to China together with his military unit and he was killed in action at the Eastern China Rail Road (ECRR). As my parents did not get married officially, I was given my mother's last name (Bolonkin) from her first marriage. I was baptized. A priest immersed me into a baptismal bowl and then passed to my 14-year-old sister, which became my godmother.

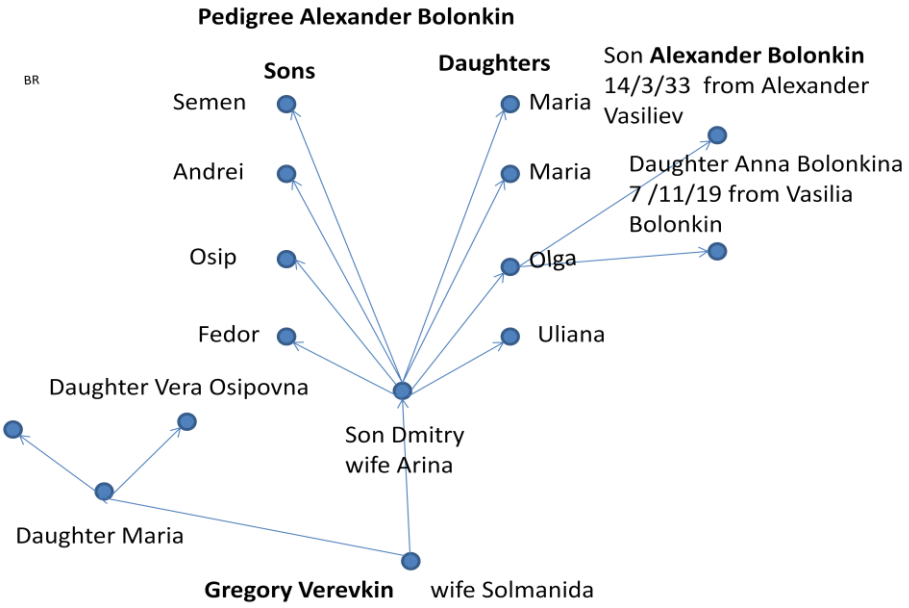
My memory still keeps one scene of those past times. Dispensing food at the kindergarten my mother put more porridge into my plate than into my neighbors' and a boy sitting next to me started to yell that she was fattening her son.

Galina Grigorjevna Serebrennikova, the kindergarten principal who offered my mother a job had got married by that time and had been on maternity leave. Her place was given to a Tatar woman who was a kindergarten teacher there. She fired my mother. According to my

sister, our mother was unsociable and unaccommodating, and not very tolerant. Galina Serebrennikova was a well-educated woman of culture, being the principal she always got on well with my mother, and my mother respected her.

Since then our mother again started to work as janitor or cleaner at schools where she usually was provided with a room to live. The work was not easy. My sister complained that our mother didn't like her and wasn't kind to her and often beat her (perhaps, because of her father).

After finishing a teachers' training vocational school Anna was sent to countryside to work at some village school.



Alexander Bolonkin's family tree

Childhood

I was born on March 14, 1933 in the city of Perm, Capital of West Ural, in the former Soviet Union. My mother Olga Dmitrievna Bolonkina (maiden name Verevkina) was born in 1894 in the village of Kosteneevo, Elabuga region, Tartar Republic. She had a daughter (by her first husband), Anna Vasiljevna Bolonkina (born in 1919). She also had an older son who died when he was a baby. She was not officially married to my father. He was in the Army and died in a battle with Japanese troops at the Eastern China Rail Road (ECRR) in 1933, that's why I practically don't know him. It was time of widespread famine, we received foodstuff only per special ration cards - bread ration cards were in use till 1936 in the USSR.

I remember that before the Great Patriotic War (World War II) we lived in a wooden multifamily house in the schoolyard by the crossing of Lenin Street and Komsomolsky Prospekt (the 2-storey brick building of that school still remains there, but the wooden house was demolished long time ago). A Perm Teachers' Training College (currently Perm State Teachers' Training Academy) dormitory was next door to us. It was a walk-in apartment with a heating stove. For heating we used woods, a restroom and everything was out in the yard. Behind a fence there was a drug-store (it still remains in Lenin Street practically the same) with a big rubbish dump at the back and I together with other kids played picking up rejected spectacles which we used as lenses, magnifying and burning glasses. The yards of our house and dormitory were

always full of firewood used for heating and we liked playing war among the woods stacked up in piles throwing stones to each other. I wonder how it happened that we didn't harm anybody. Also we liked to look for used condoms behind the stacks of wood near the college dormitory. We blew them up to make balloons. Once my kindergarten teacher saw a condom in my pocket and called my mother to give explanations. Another time in the kindergarten we – boys and girls – were to take sunbaths naked all together. I felt ashamed and run away to hide in bushes. It's an interesting fact that when I visited Perm in 2004 that kindergarten was still in its place safe and sound. I still regret that I forgot to write down the address. It's amazing that this wooden building appeared to be such long-standing.

In 1941 I started to go to school, but our school had constantly been moving from one place to another so I can hardly remember the very beginning of my studies. There was a bakery not very far from the place where I lived and I used to sit by the baker's window to smell freshly backed bread. From time to time we were gathered for Young Pioneer Meetings (some people, esp. foreigners wrongly compare those events with boy scout jamborees) where we were again and again told how our Communist Party and Soviet Government dearly loved us and cared about us. Same things were practically all the time jabbered about at our class meetings at school, too. At those meetings we were to chant a popular Soviet slogan: "We thank you, comrade Stalin, for our happy childhood". As to me, I was permanently hungry, so I picked up leftovers forgot by children of wealthier parents. I truly believed that we the children live here only due to the care of the Party and comrade Stalin and was greatly surprised to realize that my parent was supposed to cover all the expenses of my summer vacation in a pioneer c

Left: My mother Olga Dmitrievna Bolonkina. Middle: My sister Anna Vasiljevna Bolonkina. Right: I am 3.5 age.

When the War began, the school and the house where we lived were given to a military hospital. All the lodgers were evicted from their house within 24 hours. My mother and sister had to take the last self-propelled barge going down the Kama river to Elabuga where some acquaintance of my mother lived. We settled down in countryside and lived there for several months. My memory kept only my attempt to ride bareback and a very sharp and bony chine of a horse. Then we moved to the city of Elabuga and rented a room there till my sister happened to

solicit the City Soviet (local authorities, city council) for an empty hut (its owner died and her only daughter living in countryside never cared about the house). We planted potatoes in a kitchen garden at the back of this hut. Besides that we had only a small bread ration of 300 gram per person, and despite I was a little kid I had to wait in bread line for hours together with adults. We were never provided with other foodstuffs (even cereals) though we were given not only *bread* ration cards. We cooked nettle soups, pretty delicious and healthy. I still remember a saying of those times: "The Decree commands us to eat not more than 300 grams (10.6 ounces), but to lay shit not less than one kilo (more 2 pounds), and who lays a pood (35 pounds) of shit will be granted gold" (in the original it is rhymed and sounds funny). Rumors had been circulating in town that the Soviet Union was the first to attack Germany and also that Germans had pills which could turn water into gasoline.

I remember my school in Elabuga where I finished three grades and also remember a cemetery, marked-place, forest and old cloister used for holding German POWs captive. We had dug a trench in the yard of our hut to hide ourselves and our belongings away in case of bombing though we did not have much to hide.

Living in Elabuga I met a boy Tolya (Anatoliy) Malantsev (his farther's last name was Zhdanovich) and we became good friends. His family owned a wooden house (perhaps, his grandpa's), a barn and a small vegetable garden. Tolya and I used to walk to an old tower on the bank of the Kama river; once there Tolya climbed a tree, fell down and had badly hurt his leg. Another time he got some gunpowder somewhere; while trying to burn it he got his face singed. Tanya Morozova, our classmate, was a straight A student in our class. Once she burst into tears because she got a good mark instead of expected excellent, and it was a chance for me and Tolya to realize that both of us like this girl.

My friend and his parents gave me food and, perhaps, I survived due to their help. Many years later I tried to search for him over the Internet but unfortunately, in vain.

Shortly after (perhaps, by the end of 1943) Anna was sent to work to liberated areas of Ukraine. She left us in the hut where we still lived and went there alone. On her way to Ukraine her train was three times attacked by bombers. In one of the attacks a train driver was killed and a railroad was damaged; so the passengers had to wait till the rails are cleared and repaired. Poltava met with night bombing, and one lady working at the Regional Finance Department lost her husband. A Director of the Finance Department did not want my sister to be killed by bombs, too, and sent her not to freshly-liberated areas, but to a calmer village named Dikanka. Anna wrote to us a letter where she told us not to follow her as we had a good place to live in Elabuga. But our mother was illiterate, she could not read, she even could not go and bustle around to arrange things concerning our ration cards. She sold all our belongings and we left for Dikanka. I still remember our long night march across the big city of Kharkov from one railroad station to another loaded heavily with our baggage. My mother bought a pancake from pedlars in the street, but the pancake appeared to be made mostly out of chalk and we couldn't eat it despite we were very hungry. In Dikanka we rented a room. I remember a school destroyed by bombing and a mill where people from Dikanka brought their grain to make flour. Our school was in a log hut. Living in Ukraine, I, as a child, came across with a fact that Ukrainians are very intolerant of Russians. There was a very popular offensive saying: 'A Hohol (*scorn.*: Ukrainian) laid shit on the floor, and a Katzap (*scorn.*: Russian) snatched it with his teeth' (a funny rhymed saying in the original). Only recently, having read about that very Golodomor I realized why Ukrainians express hostility towards Russians (Ukraine suffered most of all during that period of famine, more than 4 million people in Ukraine died from lack of food) though it was completely Stalin's

and his Ukrainian grovellers' fault. The local Communist Party leaders were to blame for this, but definitely not Russian people. It was in Ukraine where I tasted apples and some other fruits (plums and walnuts) for the first time in my life.

But anyway we had nowhere to dwell, so my mother took us and we moved to Turkmenia (a former name of Turkmenistan) to a small township called Bairam-Ali where her sister Maria Boozova lived. Trains moved very slowly. I loved watching around and spend whole days sitting on a footboard to see places passing by and I came back inside a coach covered with soot. As to this trip, I remember only Tashkent train station. People were beset by hordes of lice. At the train station we gave our underwear and clothes to have them heated up to get rid of lice, and I enjoyed those several days when lice did not bite me. We lived at Maria Boozova's in a little outbuilding in a yard of her messuage right in front of the train station. I remember scorpions, snakes, tarantulas and big bumblebees with their stings. At night scorpions liked to get into our bed and if we turned and push them down they could sting mercilessly and very painfully. Together with other kids I went to a faraway irrigation ditch to have a swim. Once older boys threw me down into the ditch, and I had to move my hands and legs instinctively to reach the bank safely.

Also my memory keeps a desolate derelict mosque in the desert; it was like a huge cube topped with a hemispherical dome, and seemed to be built in the Medieval times. Some climbers daubed their names and the date of 1926 on the inside of the dome wanting to immortalize themselves in such a weird way.

At school we were given some food, and adult workpeople were fed with cooked tortoises caught in the desert and irrigation ditches. I remember a completely prostrated starveling naked boy of 6 or 8 (just bones and grey skin) laying dead to the world at a market place and thousands of lice teeming all over his body so that his skin seemed to be moving like waves. People just passed by him unconcernedly.

Theft was a common practice. Even children prowled around habitually with a single eye to "jumping" anything conveniently portable. Hungry kids usually stole into neighboring orchards to get fruit. Once I also went together with other kids to a city orchard to steal mulberry. We had climbed the trees, but suddenly a watchman appeared and discharged his gun into the air. We happened to hear that watchmen used salt in their guns and that such a shot can cause an awful pain. All of us jumped down from the trees falling like autumn apples and rushed to a fence. I still wonder how we didn't break arms and legs. Another time a gardener caught a 6- or 7-year old boy and took his pants off. The boy was ashamed of walking home bottomless and cried bitterly.

In the fourth grade we had military science classes and often went to a shooting ground to practice. We were taught how to operate a small-bore rifle. Each cartridge was very strictly accounted and reported (otherwise an enemy could use it!!), and when one cartridge case was occasionally lost (an elder generation may remember that those things were pretty tiny) our military instructor made us crawl around to look for it in the sand.

The end of the War (1945) we celebrated in Bairam-Ali. I remember an official ceremonial meeting dedicated to the event. And also remember very clearly a welcoming ceremony staged at the train station when the first troop train arrived and brought soldiers returning back home. My neighbor's farther was among those who returned from the War with that train. He brought a big suitcase of different stuff captured in Germany. Particularly an accordion, a bicycle, a watch and smart clothes for his son. All the kids in the neighborhood felt awfully envious. All the soldiers

coming some time later were wounded, sick and poor. There were no more welcoming ceremonies.

I had a natural lurch for learning, and it came easy to me; I decided to become an A student. Starting from the fourth grade (1945) and finishing with my graduation from the Kazan Aviation Institute (1958) trough the years of my studies I got only the highest marks.

Severe living conditions and constant chills debilitated my sister and she started to go deaf. She had to quit her job as she had been teaching in a primary school for a year and a half. The last year she worked in two shifts teaching both morning and evening classes. Waiting in lines for bread in Turkmenia my sister learnt how to knit patterned lacy shawls. My mother spun and Anna knitted for us and for sale. That's how they made some money to pay for our tickets back to Perm (Perm was renamed Molotov in 1936 to celebrate the 50th anniversary of Vyacheslav Molotov, the Soviet Foreign Secretary and Stalin's groveller; in 1957 Perm got its original name back).

In Perm we settled down in a woodshed belonged to Varvara Aphanasjevna Barinova, when autumn came we moved to a school kitchen. My sister got a job of book-keeper of a construction-and-repair artel (a crew or cooperative association of craftsmen working together). The artel was repairing a building in Lenin Street. Konstantin Michailovich Dashkov, the artel chief, installed a stove heating in a front storeroom in that building; my sister went to the District executive committee and managed to wangle that 5-square meter room, as she kept the document stating that our family was evicted by the military hospital. Since then we obtained our own domicile provided by the District executive committee. I remember that room very well as I spent there more than 4 years while studying at the Aviation technical school after a seven-year secondary school. The stove took about 1.5 square meters (16 square feet) of the room space. The rest 3.5 square meters (37.7 square feet) were for the dwellers to reside. In the morning when one person got up to get dressed all the rest had to wait for him or her to finish and leave as there was not enough space for the rest two. There were arm-wide cracks in walls, and in winter nights water froze up in the room.

While studying at school I started to attend a Pioneer Palace (it was arranged in a handsome old two-storey brick mansion, it still remains practically the same in Perm in Komsomolsky avenue). I began to go to a radio amateur study group where I made my first crystal set. But I couldn't tune it to any wave. Perhaps there were no powerful broadcasting stations around. Then I went to an aircraft modeling study group and made there a simple schematic model. I was sent to the Regional aircraft models competition where my model was a great unexpected success. It could fly best of all the rest (more than one minute in the air), thus I set a flight time record. My model would have set a flight range record, too, but I did not know what is to be adjusted in the model to make it fly strait, but not in a circle.

I believe this influenced my future occupation. I started to dream of becoming a cosmonaut (astronaut) and flying to distant planets. But as far as astronautics and space travel science were not so widely spoken about yet, I decided to start designing space crafts on my own.

It was rather difficult for our family to survive: I had never had my fill since 1941 till 1947 when ration cards were cancelled and revoked at last. For my mother I was difficult to support, so after I finished the seventh grade she insisted that I should enter a technical school as students there were given a living allowance.

Perm Aviation Technical Collage and Regional aircraft modeling lab (1948-1952)

This technical school trained technician – specialists for the Perm Aircraft Engine Plant named after J.V.Stalin (so-called Stalin Plant). This big plant produced Shvetsov engines. Technical design was the most prestigious specialization in this school. Only students with excellent marks had a chance to be enrolled. I got in quite a nice group, and made friends with Viktor Sapegin, Gennadiy Billgilldeev, Igor Vyatkin, Viktor Bogdanov and others. Every day I walked to a Technical school library to prepare my homework. I still remember our teacher of draftsmanship teacher Delyagin; most of students liked him, perhaps, because of his benevolence and familiarities ("Hey, buddy, you must have been sleeping on your drawings, eh?"). Also I remember Pavel Kozhevnikov who later became a deputy staff head of the school and some time after was taken to the Regional Committee of the Communist Party and became an executive responsible for science matters. I remember him joking at the classes. He asked us: what's the difference between a plant and a factory? We answered: "A plant outputs heavy industry production, but a factory is a light industry enterprise..." "No, - disagreed he. – The thing is, that a factory's chimney is shorter than plant's, so a factory's smoke is lower, as well". Besides technical studies and ideological brainwashing we (as was the national custom) were taught military science. We had parade drills and square bashing, and, besides, were given a rifle of 1895 to assemble, disassemble and clean; the rifle was kept in a lockable safe in a military classroom, and its cartridge-chamber was perforated so that we could not fire the rifle.

Yuriy Balykov, the Director of the Young Technician Station (YTS) (a bunch of study groups for schoolchildren and young people interested in technology and engineering) arranged that the Director of the Aviation technical school would give us a room for the Regional aircraft modeling lab and I was supposed to be its Head and aircraft modeling instructor. So, for that purpose we were given a large room on the upper storey of a two-storey building in the school yard. The only way leading to this room was an outer iron staircase. I remember how it was to pull upstairs various bulky engineering tools which were left by a prewar Young Technician Station. It was something! There were a lathe, a drill machine, a milling machine, a disk saw, wooden workbenches, cabinets and toolboxes. It felt like before the War began the lab had been attended by very talented aircraft modellists. Among other tools and stuff they also left a brilliantly made gasoline Veshnykov engine, I was told that in pre-war times it was even exhibited in the USA. Unfortunately when we lent our room to guest teams which came for competitions and needed a place for repairing their models, the engine was stolen from a locked cabinet.

We had a wonderful team: Valentin Igtegov, Alik Kataev, German Petrov, Viktor Sosnin, Alik Dulesov, Valentin Samtsov and others. Many of them entered Aviation colleges and institutes, worked in aircraft industry and reached high positions, scientific degrees and academic ranks.

Two events of those times are imprinted in my memory. First, when waste shavings caught fire in the lab (I don't remember the reason why), but we managed to extinguish the fire ourselves. Second, when, in defiance of my strict ban, Samtsov used the disk saw and had two of his fingertips cut. I took him I rushed to a hospital. We were kept in a hospital admission room for a couple of hours while he was having his fingers treated and bandaged. A Samtsov's mother

was incensed by the accident especially when she saw his bandaged hand. But he explained her that it was all his fault and his idea to use the disk saw in spite of my ban. Then she went to the hospital and had her rage out right there.

I should note that we had nobody to teach us aircraft modeling. All our knowledge, all we had comprehended was read from rare books. Anyway, our team always gained a lead and usually won the premier places at regional competitions. I set up several all-USSR (National) records, among them cord helicopter records, and once I had beaten a radiocontrolled model speed World record. A radio control box and other radio stuff for my model were made by Polunin, an instructor of a radio equipment study group. To my regret, we did not manage to register my last record, because the registration regulations had been changed right while my record documentation was in process. We were the first in Perm Region to design and develop models of jets. Pulsating jets made a terrific noise. When we were testing them in our lab people living next door became panic-stricken.

To fly our models we went to the nearest airfield. To get there we were to pass a local jail, a deep gully and high slopes for ski jumping. Sometimes we had to drag plywood sheets for launching jet cord models.

Bulletins and drawings of our lab influenced aircraft modeling schools in the Region to develop rapidly. Guest teams coming for competitions started to bring piston motor models. Alik Dulesov, a guy from our lab, made a wonderful flying copy of a plane PO-2 (ПО-2). Also we made a model with a big fuel tank so that it could beat the distance and flight time record. At the competition we were assigned the real PO-2 and I took a place of a copilot as a sport commissioner. We followed the model for about an hour, and then we had to give it up as our plane ran out of fuel, and the model flew over the Kama river. It was a regional record! Before starting that model we put a letter into it asking those who would find it to inform us about its location, but nobody replied.

Our laboratory was the first in the Region to make indoor aircraft models. Those amazing little things were about 30×30 cm (12×12 in) and weighed about 3 - 4 g (0,1 oz). Modelers invented many different interesting things while making those models. For instance, for indoor models they needed an extremely thin and light covering of about just several microns thick. No doubt, in those times any industries would never produce this sort of stuff (and never would even try for such a purpose). The guys from our lab experimentally found a very simple do-it-yourself method of making this sort of thin film. You just had to take a bowl full of water and drop on its surface a few drops of aviation coating which spread on the surface of water. The lacquer got dry and turned into a very thin sticky film, transparent and elastic. It could be perfectly used for sticking all over a model's frame; a heated coil was used to cut it finely. Models' frames were usually made of straw and thin dry piping stems.

And that amazing construction equipped with a rubber motor was able to fly about a large room for several minutes. We arranged the first Perm competition of indoor aircraft models in the Palace of Culture (centers of social and cultural activities in Soviet Russia) belonged to the Stalin Plant

Another striking solution found in our lab concerned mini conventional engines for aircraft models. First (according to a construction of real-sized engines) those micro-engines had electric ignition. There was a high-voltage induction coil and batteries. That ignition system weighed about one kilo, ten times more than the engine itself. And above all, it was not long-lasting as its

batteries got low pretty soon. Modelers invented a co-called ‘compressive engine’ which did not need any electric ignition system. They added some ether to the fuel, and the air-fuel mixture was ignited by that very ether under compression.

Left: Bolonkin with model of helicopter. Right: Our group in Perm Collage: from left to right: 1-Victor Sapegin, 3-Igor Viatkin, 5 – Victor Sosnin.

Later on modelers found one more solution of the ignition problem. In a cylinder head they inserted a special heater plug with a small coil made of high-resistance wire. When a model was started the coil got heated up by a battery, and when the engine was running the coil had been keeping incandescent due to a high temperature of combustor gases.

Jets had just started to enter a big aviation. Yuriy Balykov, the Regional YTS Director happened to get somewhere a big colorful poster with a scheme of the first Soviet jet VK-1, which actually was a copy of the British Rolls-Royce Nene. I hanged the poster gifted by Balykov on the wall in the lab where it could be seen. Once when I was out, Kozhevnikov, the Head of the curriculum department of our technical school visited the lab and took the poster away. When I realized who did it, I rushed to his room and blurted out (a student – to his boss! just imagine!): “You stole our poster!” He kicked me out, but the accident seemed to be over and he never ostracized or repressed me. Later on I entered into good relations with him. When I, being already a Doctor, came to Perm he invited me as an expert in a *gravitsupa* (an invention of a local innovator), a device which can accelerate in space without any jet in contravention of the Second Newton law). When I was leaving Perm, Kozhevnikov booked tickets for me and sent me a Regional committee personal car instead of a taxi to drive me to the airport.

Generally speaking, an educational process in our technical school was very well arranged. We had excellent engineering workshops equipped with all kinds of machine tools available in those times (there were turning lathes, planers, drilling and milling machines) and a very good foundry. During my work practice I was free to choose what to do so I could devote time to making bits and pieces for my aircraft model motors. The DOSAAF publishing house (DOSAAF - *Voluntary Society for Cooperation with the Army, Aviation, and Fleet* - was a

paramilitary society in the Soviet Union. The stated goal of the society was *"patriotic upbringing of the population and preparation of it to the defense of the Motherland"* and development of paramilitary sports) released a brochure describing a new aircraft model compressive engine and featuring its schemes. The workshop of our school made one engine hoping that in future we would master our skills to churn out that kind of engine nationwide. Unfortunately those who assembled the engine forgot to make by-pass windows in a cylinder, and the engine was impossible to start.

I had my work practice in a design engineering bureau headed by Arkadiy Dmitrievich Shvetsov, and also in a workshop 19 of the Perm Aircraft Engine Plant. At that time, being among the leading manufacturers of the country the plant was mastering the newest technologies. It produced a double-row 14-cylinder engine ASh-82 which was the most powerful air-cooled fuel-injection turbocharged engine at that time. Its maximum power was 1 700 hp. That engine was a named after A.D. Shvetsov though it was a crib of the overseas model Wright R-1820. It was quite a common practice in Stalin and post-Stalin Russia to cover up strictly a prototype model name. Many famous Soviet planes were equipped with ASh-82, among them bombers TU-2, fighters LA-5 and LA-7, passenger aircrafts IL-12 and IL-14. The plant had produced about 70,000 engines in all. To tell the truth, Shvetsov designed a much more powerful four-row air-cooled engine (the twin-engine ASh-82), but his project was closed as by that time engineers in Europe started to develop jets.

My work practice was very instructive and intentional. We, the students, were demonstrated an innovation method of wax template precision casting of a bladed supercharger turbine; machine tool workshops and foundries, test boxes, a small design engineering bureau of Shvetsov. I still remember one innovator struggling to obtain permission for prototyping of his piston engine with pistons circling in toroidal combustion chamber.

Also we visited the neighboring Instrument-making Plant where we were shown hammer shop and stamping production. Actually, this technical school was an adjunct of Permian plants so the majority of its graduates went to work at those enterprises. Only 5% of students which were the best would be able to study further and get higher degrees. I was much surprised by a really weird fact that though we were just teenagers, before we were admitted to the plant, KGB men called us one by one to a closed room and interrogated (with a table lamp dazzling into a poor respondent's face) concerning our biography, parents, friends, and about each other.

Before finishing the technical school I had fallen in love twice. First with Nina Milchakova who, filled with inspiration, passionately recited lyrics about comrade Stalin (though she lived in destitution) from a stage of a school assembly hall, and then with Lyusya Saburova who was such a sex-appeal thing that guys complained of having an erection in her presence.

That was the time when I started to cherish an idea of promising simple rotary-piston engines. But those ideas could cause hectic discussions with floor fights, so my scientific adviser suggested that I shouldn't run risks; that was why my diploma project was devoted to just an ordinary in-line air-cooled engine.

I had only highest marks and finished the technical school in 1952 with honor. I appeared to be among those 5% who would be able to get some higher education degree. So I decided to enter the Kazan Aviation Institute; my friends Alik Kataev and German Petrov entered it a year before. After a seven-year school they finished three more years to complete a ten-year Secondary school (it's like a High school in America). They did it one year before me as my

studies in the technical school took four years. As I finished school cum laude I could be enrolled to the college or institute without passing exams.

Trying to be struck off the register in the local military registration-and-enlistment office (because I had to go to another city to study) I faced some unexpected obstacles: the official responsible for military registration decided to use me as his personal errand boy and made me deliver call-up papers instead of him all day long. By the end of the working day I reminded him about my purpose of visiting the office and showed again a document confirming that I was enrolled in the Kasan Institute, but he grossly replied that I was supposed to go to the Army.

I was greatly upset and decided to complain to the Regional military commissar office. A secretary there appeared to be a nice kind lady. When I told her about my trouble she just called to the local military registration-and-enlistment office where I ran errands and the vexed local commissar had nothing to do but to strike me off the military register.

My friends Viktor Sapegin and Gennadiy Billgilldeev were pressed into the Army, sent to military colleges and willy-nilly became professional military men. As the most promising student, Viktor was offered to study further and get a postgraduate degree in a Military higher school in Kiev; he became a Doctor, rose to the rank of Colonel (a very high military rank in Russia) and committed suicide having left a wife and a son.

Kazan Aviation Institute (1952-1958)

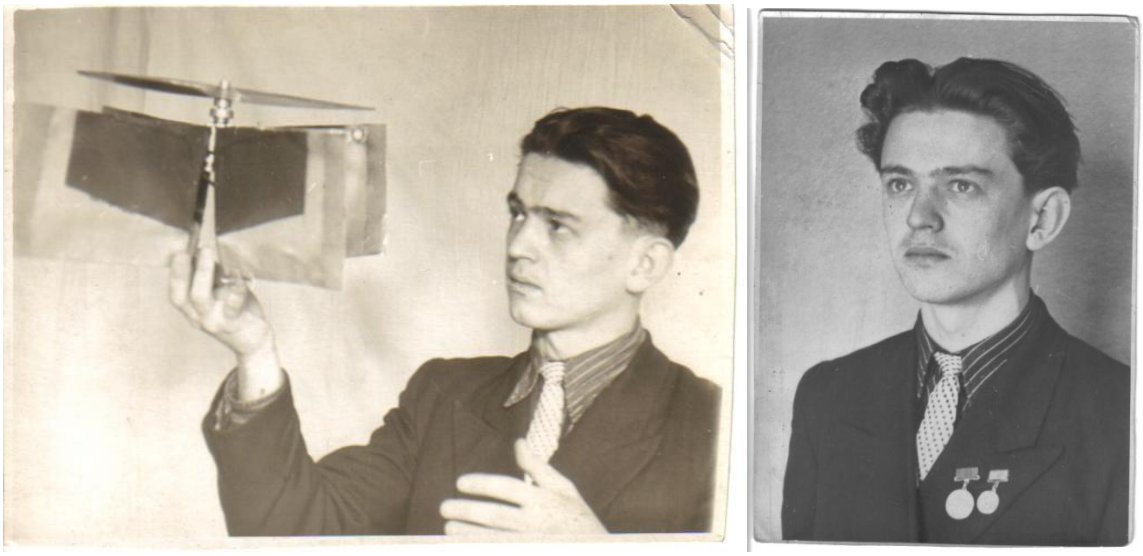
In 1952 I entered the first Aircraft construction department of the Kazan Aviation Institute. A rector of the Institute was S.V. Rumantsev, who some time later became the Under Secretary of Higher Education of the USSR, and the rector position was taken by Yu.K. Zastella. A.K. Matyukhin was a Party Committee Secretary and A. H. Pantukhin was a Komsomol Board Secretary of our Institute (Komsomol *or* YCL – Young Communist League). A Dean of my Aircraft construction department was Ivan Fyodorovich Parkhomenko.

Having considered my personal details, at the first Komsomol meeting of the Institute the Komsomol Board nominated me for a course Komsomol organizer but I refused, moreover I was late for the meeting! The Dean made me a monitor of my group. I was in this position through all six years of my study. I was responsible to keep a register of students' attendance, so I saved many of them when they missed lectures.

We were taught by an excellent faculty. There were many well-known researchers, authors of famous coursebooks, among them prof. P.A. Kuzmin, Yu.G. Odinokov, G,S. Zhiritsky and others.

Among students there were pretty many former aircraft modelers. I got a permission to organize an aircraft modeling lab, it was arranged in the building of our department, next door to the Dean's office. My free-flying helicopter model had set up a flight time World record – it was in the air for 2 minutes 23 sec (after that it flew away out of sight). It was found 6 km 400 m (about 4 miles) away from a starting place – it also was a flight distance World record for helicopter models. The record was approved and registered by the World Federation. For Tataria (Kazan is the capital of Tatarstan) it was quite an event. I was besieged by newsmen and film makers. They were shooting me at my classes and in labs. I felt greatly confused as our Head of department was asked to imitate classes in process with my close-up and other students as a background. The documentary was included into "Povolzhje" newsreel (Povolzhje or Privolzhje means regions along the Volga river, correspondingly, Prikamje - regions along the Kama river) and shown over TV.

Many newspapers wrote about the event and about me. In particular the “Soviet Patriot” Federal state newspaper (issued January 1, 1957) published my picture and interview entitled “My Ideas, My Plans”. Also my brochure devoted to building of simple flying models was translated into the Tatar language and published in Tataria. Our team was taking part in National (all-USSR) competitions, too.



Left: A. Bolonkin – student KAI with the helicopter model. Right: Bolonkin awarded the gold silver medals for model records.

I started to be invited to secondary schools to run aircraft modeling study groups and creativity hobby groups for schoolchildren. That was good because allowed me to make some money, it was a good addition to my small scholarship (though being an A-student I received a raised scholarship). It helped me to avoid a moil of unloading wagons. Other students had to agree to that job to make their living. As opposed to some other students, I never received any financial support from my mother as she worked as a janitor and couldn’t afford sending me money. My scholarship was 30 rubles per month and I also had to pay for dormitory. The very minimal lunch in an institute canteen cost about 30 – 40 kopeks. That would include a soup with cereals and some porridge. A small pork chop or a cutlet was not affordable. Bread was included into the lunch cost and that was helpful. I usually took a glass of tea and had it with bread. Also couple of times I managed to get to an Institution recreation center (each time for a week or two) to restore my health. There Institution students were provided good food for free. Fashionable and stylish clothes were out of the question. I had been wearing one and the same suit for 6 years while studying at the Institute.

We had classes at the building of the Aircraft construction department and at the next-door building of some former Art college. In corridors of that former college there were many naked sculptures. Students liked to stub out cigarettes on sculptures’ penises and it was weird to see black penises stuck up from white marble.

Time passed and another *pyatiletka* (a five-year plan of economical and political development in the USSR) started. We were gathered in an assembly hall to be explained that the current plan was going to be very special and different from the previous ones. New large and beautiful buildings and dormitories are going to be built in the campus of our Institute. By the end of our study we were promised a separate room for each person. New hydroelectric dams

were going to be built, too, and the Volga would flow closer to our dormitory and so on, and so forth. Actually by the end of our study they just squeezed one more (fifth) bed into each room to accommodate more students, a storing place for our drawings were taken away for some other purpose, for the students it became impossible to get to overcrowded proms if they did not manage to arrange an invitation card beforehand. Also reading rooms in Institution libraries became more overcrowded so that it was not easy to find a free seat. And so on. It was easy to explain: each year the institute enrolled 10% more students, but floor space remained the same.

Some of my former aircraft modellists also studied in KAI: Alik Kataev, who later started to work in the Central Committee of the Soviet Union Communist Party (CC CPSU), German Petrov, Valentin Irtegov (got his PhD). I was in a good relationship with some of my fellow-students, too, especially with Khanif Gizatullin, Eugene Kuklev (became a professor in Leningrad), Anatoliy Izergin (became a businessman), Valeriy Glazyrin, Razgildyaev (changed his last name to Kronin) and others.

In my group there were several overseas students. I studied together with guys from China, Poland, Czechoslovakia. Their scholarship was much higher than ours. Chinese students also received some extra money for books and every year they mailed to China a lot of academic literature and coursebooks. They were the most hardworking and diligent among all the rest and nothing could distract them from their studies. Poles were involved into commerce: they brought nice smart clothes from Poland, and bought in the Soviet Union TV sets, cameras, watches, electric appliances to send to Poland. After they graduated and came back to Poland they realized that they did not know Polish names of airplane parts and units (as they'd been taught in Russian, of course). Czechs had left the best impression upon me.

When I was a first-year student, a war veteran joined our group. He had two Red Battle Standard Orders. We asked him to tell us how he appeared to be awarded such a high reward twice. He plainly told us that he was mobilized in the end of the War. Their cannon battery was camouflaged in ambush. All of a sudden they noticed a German self-propelled gun coming out of a forest, and they started to shoot it. He admitted that the German self-propelled gun would be able to blow the Russian battery apart, but it simply had run out of shells. Finally, the German gun was put out of action. This was the occasion for awarding the Order and some extra money bonus (which in recent postwar times became practically nothing – money was reformed like 10:1). As the fact of destruction of the German self-propelled gun could not be ascribed to the whole battery, it was ascribed to that guy. He was supposed to be awarded an Order; he had been waiting for a long time but in vain. Some time later his commander sent one more report concerning the award, and soon he was sent even two Orders. He was quite an opened guy and also told us how they were capturing trophies.

Working in the Aircraft modeling lab in Perm I managed to save some money and bought a bike and a button accordion. The bike was soon stolen, but the accordion travelled with me to Kazan. In order to study playing the button accordion I organized a hobby group of accordion players and went to the Institute labor union committee so that they would arrange with a teacher of music for our group. The only thing was that in that case we were supposed to play at amateurs' performances. I still remember myself pressing the accordion buttons with my trembling fingers at our first concert. Good thing I wasn't alone in the ensemble, and the listeners were far not music critics!

My button accordion had also been stolen soon after. Some hustler cleaned out a few rooms in our dormitory while we were away parading in some demonstration (a very popular kind of mass activity in Soviet times. We had demonstrations every time there was some political

event (anniversary or celebration). Workpeople, schoolchildren and students were supposed to participate. If you did not come you surely could have troubles and a not very nice showdown at a Party/Komsomol Meeting). He stole money and valuables. I was among those who insisted that sufferers should sue the Institute for the damage done, as there was no security in our dormitories. Any person could come in and take a key to any room at a front-door watchman's counter. Right when we left for holidays an Institution attorney scheduled a court session. No one of sufferers managed to attend, so the Court came down in favor of the Institute. After I came back from holidays I took an appeal for cassation, so the next court session was scheduled and we came. This time the Court appeared to come down in favor of the students. I expected to be revenged by the Institute management but nothing special happened. It felt like our case was pretty insignificant for such a huge organization and it was quite easy for it to pay 100 rubles to each sufferer. The guys were very grateful to me for that little victory, and front-door keepers began to watch the keys on their counter.

On high days and holidays we had gala nights and dancing parties in the Institute assembly hall. There were (and still are) a lot of colleges and universities in Kazan (e.g. State University, Pedagogical (Teachers' Training) Institute, Technological Institute and many others) where many girls studied as well. Our Institute was the most prestigious one and many of them were eager to visit our dance nights. A Teachers' Training Institute dormitory was next door to the dormitory where I lived. I also made some friends among girls who studied at the Conservatory. Most of all I liked Eelya Salakhutdinova who attended a gymnastic class at my Institute. By the end of studies she married Drozdov, a student from my Institute.

After I beat an aircraft model World record I became quite a famous guy, and turned heads whenever I walked into a classroom. Once when I was hurrying to a class I was burned by an admiring glance of one homely unpretentious girl; I felt like I jumped through a circle of fire. It was something, I never felt that way before. Couple of days later I came across her and asked her out on a date. When we were walking along the street some boozed guy came upon us, first he turned and rent the girl harshly ("while your boyfriend is in the army you are playing him false with impunity!"), and then he thrust a knife into my back. I was taken to a militia (USSR police) station where I was given medical aid and just in several minutes that boozed guy was also delivered to the station. This was the time when the Virgin Land recruiting campaign was in its full swing and volunteer Komsomol members were welcome to participate (*a well-known Communist Party decision concerning usage of a vast virgin soil area of northern Kazakhstan for planting wheat. Komsomol member volunteers were supposed to be the major manpower. Actually the things turned to be quite different: most people sent to plough those virgin lands appeared to be convicts. To understand the case better you may want to read the book of Leonid I. Brezhnev "Virgin Lands" (in some translations may be "Virgin Soil")).* As I happened to find out later that guy was proposed a choice – either to go to prison or to virgin lands. He had chosen the latter. There were quite a few of real Komsomol volunteers participating in that campaign. Most of them were criminal offenders, thieves, rapists and other felons.

When Joseph V. Stalin died (on March 5, 1953) I was appalled like most Soviet people. Since the early childhood we were imprinted the idea that he was the only one the wisest and greatest and that he is supposed to save our country from evil American imperialists constantly japing Soviet people. I felt like now we became defenseless, unprotected and helpless, and hordes of enemies were about to attack our Motherland and enslave us. Some of our students put everything aside and rushed to Moscow to attend at a funeral. However, Moscow was closed, and

those who wanted to give the last honors to the greatest Soviet Leader were discharged from trains and made go back home.

From time to time we managed to listen to the Voice of America though in the Soviet Union all the Western radio stations were usually jammed. From those broadcastings we happened to hear them speaking about some *repressions*. Living here in the USSR we never heard of such things. How it appeared to be that they (living so far away in America) knew something special and weird about us? Many years later I found out a simple truth. Only a few were able to get back home safe after having time done. But they never told about Stalinist prison camps as they were forbidden (under threat of being sent back to prison for libel and anti-soviet propaganda), those people were afraid of becoming a victim of whistle blowers and would never tell the truth about their being in prison as our Soviet propaganda instilled hatred for those who had been ever imprisoned for their political views.

Later, in February 1956 after the XX Communist Party Convention was over we were gathered for an extraordinary closed Komsomol meeting to be read the famous Khrushyov's Report about the Stalin Personality Cult and its consequences. However no discussions or questions concerning the point were permitted. Most people were shocked at the famous Report, though it revealed just a little minor part of all offences perpetrated by the World Proletariat Leader, Farther of Nations and all work peoples, which were humbly waiting for Soviet People to help them to overthrow capitalism and start a happy life. At the same time it was widely propagandized that those things were just very little unessential deviations from the major Party line; those deviations were corrected and improved and we might stop worrying.

At a Military department of the Institute we were trained to get certificates of military aircraft maintenance engineers. I still remember unusual feelings when testing the jet fighter MIG-15 for the first time in my life I gave it a full throttle and the plane shot forward stringing hawsers.

Our military instructor was Major L.S. Troopp. He asked us not to forget that his name contains a double **p** at least while he's alive ('*troop*' in Russian means corpse, dead body). Our holidays in June 1957 we spent at a military airbase as we were sent to military training. There we helped technicians to maintain and service airplanes, also we had parade drills with chanting soldier songs, and had meals at a soldiers' dining hall. There I found out a lot of interesting things: for instance, there is always a properly kitted jet on the field with a pilot inside ready to start at a moment's notice; also there are duty pilots and military aircrafts keeping alert. So I think now you understand that the stories about a surprise assault on peacefully napping airfields in 1941 were just fairy tales for ignorants.

Pilots told us a funny but true story. Once a Communist Party inspector arrived to check how the things were going. Having noticed that he was approaching from behind, the pilots played it cool and started to discuss a fact that there was a common habit here not to save fuel and not to switch off the landing gear after a plane had taken off so that the wheels continued spinning in the air. What an inexcusable waste! By the end of his visit at the airbase Party meeting the inspecting apparatchik publicly denounced and reviled the wasteful pilots. Of course that caused lots of laugh and jeer, as a plane has no wheel drive, so that it speeds up due to its thrust.

One of our students died right at a parade drill. He just was marching along together with all the rest and unexpectedly fell down. I do not know a true reason, but one student died the same way when I studied at the Technical School in Perm.

When my mother came to visit me she stayed with her cousins Vera Osipovna and Maria Osipovna living in Kazan.

When I studied in Kazan, another anti-fop campaign started (Soviet fops called *stilyagas* (derived from a word 'stylish') wore very tight trousers). Once at the Institution dance party Komsomol 'overseers' caught some fop guy, brought him to a Komsomol Committee room (I was right there), measured his trouser leg width and started to beat him up making him say who he was and where from. The guy appeared to be a son of some very big Regional Committee official. He gave them his father's home phone number so that the Komsomol overseers would make sure who he was. When the father asked what the matter was and whether he should send a car to pick his son up he was replied that everything was OK and there was nothing to worry about. I shared that accident with guys in my dormitory. Of all the students only Vladimir Razgildyaev (Kronin) became indignant and went to the Komsomol Committee to protest.

Being Soviet students, every year by the end of summer we were sent to collective farms – *kolkhozes* (I was in villages of Polyanka, Alaty, Balymery in Tataria) to help with harvesting. I was astonished at a terrible poverty of collective farms. Potatoes were extremely small and the harvest itself was loss-making. Tatars in those villages spoke very poor Russian. When I studied in the Technical school in Perm, we were sent "to fight a harvest" to a foremost immaculate exemplary kolkhoz where we were at least well fed, and once even were presented a large can full of fresh milk. But here in Tataria I saw only squalor and sordid poverty.

I had my practical training at the Kazan Helicopter plant. I remember a high-frequency hardening process (when a huge shaft was made red-hot with high-frequency currents) and a giant press machine used for pressing bulky pieces.

When I became a graduating senior I got interested in scientific researches. My first yearly project was titled "Investigations of Cord Model Flights" but nobody paid attention to it though scientifically that topic was rather complicated and interesting (in other words, in that paper I investigated a flight of highly-maneuverable plane on a leash). Who would care useless little models for amateurs! No big deal. So, I decided to remove a word 'model' and re-titled my project like "Unsteady Motion of a Mass Point with Unilateral Constraints in a Hemisphere". The paper had rammed through all the contests and boards and won a Republican Prize. I realized how important it was to use scientific terms even for describing simple things. Later on I wrote other projects and I became an only student of KAI mentioned in an Order of the Higher Education Secretary.

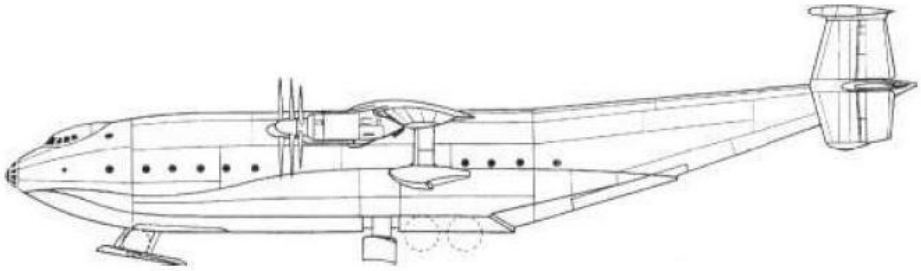
We had our pre-graduation training and diploma projecting at plants in Tashkent, Gorky (Nizhny Novgorod is now) and Novosibirsk. As an A-student I was sent to the experimental design (engineering) bureau (EDB or just DB) of Oleg Konstantinovich Antonov in Kiev. This EDB was designing military transport planes and passenger aircrafts.

It was in that EDB where I was preparing my Diploma project. I was fascinated by totally new unusual constructions and design which made an engineering data breakthrough possible. I always had a lot of fresh ideas. And I got added evidence that innovations usually face a lot of skepticism and oppositionists. Then days the EDB of Antonov was dealing with a new float seaplane design. This had led me to consider a hydrofoil seaplane in my Diploma project. I suggested attaching a small retractable foil allowing a regular plane to land on water and take off from water surface. I developed the design and made all the necessary calculations, studied the questions of aircraft sensitivity and stability. The results demonstrated aerodynamics, weight and takeoff run advantages. My Diploma project got an excellent mark.

Based on that project in the beginning of 60s the EDB of Antonov decided to develop amphibian transport aircrafts on the basis of landplane AN-22 used for combat equipment and cargo transportation, including missiles and fuel. That amphibian was meant for descending different cargos and for supplying submarines on the high sea with different stuff, for rescue operations, mining the water, searching and destructing enemy submarines. Its fuselage was supposed to be equipped with special deadrise steps. The first version of the plane also had supporting floats on its fuselage, and the second version had retractable floats under wings. The plane was also supposed to be equipped with ski-foil hydro undercarriage (water-landing gear) which would include a nose ski and two hydrofoils as main supports. Soon hydrodynamic tests of 1:20 scale models were successfully performed in a TsAGI (Central Aerohydrodynamic Institute) water channel, but that was all. One could hardly get a financial support in the USSR for developing something absolutely new. The only argument which would surely sound convincing to our military leaders and government was the following: Americans had already developed and implemented THIS, so we should overtake them!

Soviet and American Education Systems

I think I can compare education systems of the USA and the former Soviet Union as I have been living and teaching in America for rather a long period. Hope young people who are going to choose a college or university to study in may find my comparison useful.



The project of the amphibian transport hydrofoil craft AN-22 developed by the experimental design bureau of Oleg Antonov.

1. Studies in Soviet Technical schools and Universities were extremely intense and full of content. Almost each day we had about 8 hours of classes. Besides we had plenty of homework, term projects and course assignments and additional 'public work' (it usually had nothing to do with studies and as a rule involved Komsomol/Communist Party activities. That bothering work badly distracted students from their studies, but we could not recede from it.) In summer we usually were sent to collective farms (as was mentioned above we called it "to fight the harvest") and also had military training courses. We were just put into the pressure cooker ruining our health. Many students gave up and quitted their study. Nevertheless most of our people usually recall their young years delightedly and their memory keeps only good things.
2. The detailed curricula came down from on high, i.e. from the National Board of Education. This unified our education making it independent from the college/university location. The

location was important if one cared about the place of his or her future job assignment. Moscow college and university graduates were assigned to work in Moscow and its satellite cities. Universities in Soviet Republics were interested in keeping freshly-graduated young specialists in their regions (republics). Curricula in American colleges are much dependent on teachers, so a graduate of some famous prestige university is rated much highly than a young specialist from some provincial college. However in the USSR there were more prestigious universities such as the Moscow State University or Moscow Military Technical School which were rather difficult to enter and only most skilful A students could be enrolled; no wonder that their knowledge was better and they were rated higher than graduates of provincial universities.

3. In Soviet Universities we were prepared to become versatile specialists. We were given knowledge concerning not just a major subject, but many allied subjects as well (such as mechanics, strength of materials, technology, industrial engineering and many others) and had enhanced multi-disciplinary courses. So our graduates were able (sometimes with some little optional self-education, as some local specific knowledge might be required) to work practically in any branch of science or industry. For instance, Alik Feldman, one of our graduates majoring in aircraft construction got a job in the USA connected with explosion resistance of buildings. Any of our graduates could easily work at any kind of machine building plant or research lab. I even am saying nothing of the fact that all of us (in case of war!) had been thoroughly prepared to be technicians to maintain and service military aircrafts. Physical training classes were also very important. Generally speaking, we became well-trained highly qualified slaves for the regime.

   The range of knowledge provided by the U.S. education is much narrower. American graduates can hardly work in allied industries. Though they are pretty good specialists of their narrow area.

4. A substantial drawback of our education was a very severe indoctrination which took an essential part of educational process time. The CPSU History, Marxism-Leninism, Dialectical and Historical materialism, Marxist philosophy and the rest myths and communist false doctrines were drummed into students' heads. We *WERE* to memorize them. All critical anti-Marxist literature even that one issued before 1917 (the October communist overturn) had been withdrawn from libraries. If a student tried to think critically and asked damaging questions (e.g., "…we study the Marxist Law concerning relative and absolute proletariat impoverishment under capitalism; the consequence of that law is an inevitable rebellion of working people. But as we may see, working people live quite well in capitalist countries, much better than in times of Carl Marx…") teachers could report to the KGB as they were supposed to in such cases. Besides, there was a KGB secret informer in each study group responsible for reporting about critical questions and ideas or grievances against the Soviet Power. He could blow the whistle on other students, teachers, his friends, etc. And of course he could ruin your career and life just because you got off on the wrong foot with him or because he just did not like you.

I still remember one Komsomol meeting where we were demanded to expel one student from the Komsomol (which was equal to his expulsion from the Institute). Our Komsomol leaders could not clearly explain the reason why he was supposed to be expelled. We asked to give him the floor so that he would be accorded the right of reply. But the leaders objected strongly. Students and the Komsomol leaders had been bickering for about an hour. At last the students spat upon the hopeless case and voted for the expulsion.

I am quite frequently asked what colleges are better – Russian or overseas. I always reply as follows: if possible, try to study in a college of the country where you are going to work. First, during the years of your studies you will acquire relations and coat-tails which may assist you with your further job placement. Second, you master the language of the country where you study. If you go to work to another country (even back to your Motherland) you may find yourself in a tight corner (above I told about the Polish students and their troubles with technical terms), as you may not know special technical terms even in your native language.

And one more worldly wisdom. If you are going to get married, may your spouse be of your educational attainment. A person should study when he or she is young, and full-time, i.e. you should devote all your time to studies. Only in this case you will be a success in your study. Anyway youth is the best period of your life and you should maximize its opportunities.

Experimental Design Bureau of Oleg Antonov

I graduated cum laude. To tell the truth I was an only student in our course who had only excellent marks through all the period of studies. After I got my diploma I was sent to the Antonov's EDB (Kiev, Svyatoshino, P.O. box 4). On March 25, 1958 I got a position of engineer in an aerodynamics group of a sketching design department. I was accommodated in a dormitory together with three more young specialists. My salary was 90 rubles per month. My direct boss was Smolensky (now resides in the U.S.). The Head of our department was Alexander Arked'evich Borin, a rehabilitee (former political prisoner). In the beginning of 30s before he was arrested. Borin was building airframes together with Antonov, so after Borin was released Antonov made him a Head of department and arranged him a flat for old times' sake. Bolbot (later was sent to Moscow to the Department of Aircraft Industry) and Belolipetsky were Antonov's deputies.

When I got that job the EDB was busy with developing, bringing up to the mark or designing versions of military transport aircrafts AN-8, AN -12, AN -22 (Antaeus), AN -32, AN -72; multipurpose AN -2, AN -14, AN -28; passenger aircrafts AN -10, AN -24.

I was responsible for calculations of aircraft performance, stability, controllability, and wind tunnel testing. I went on business to TSAGI , to the EDB of Tupolev and Sukhoy, to the Kharkov Aviation Institute (KhAI) and other places. I really loved aviation, was fond of my work and even sometimes tried to put my boss right.

Pretty soon I was given a position of senior engineer and leading aerodynamic of the light multipurpose aircraft AN-14 "Bee". This aircraft – high profile semicantilever monoplane weighing about 3630 kg (8 003 lbs) – had two Ivchenko piston engines AI-14. The idea of that plane was wonderful. The plane had a big loading ramp at the back for bulky cargo, three-wheeled fixed landing gear, its takeoff and landing run was just about 100 m (328 ft), and it could take off and land on unprepared grounds. It could carry up to 9 men or 600 kg (1 326 lbs) of cargo. A range of its use varied from short-haul flights for passengers, mail or cargo carriage to farm operations (insecticide dusting or fertilizer scattering), weather or forest fire observations, communication, etc.

But, with this bunch of advantages, there were several obvious mistakes in calculations and design itself which might become fatal for any aircraft. The plane was not able to fly on one engine (which is inadmissible for a twin-engine airplane – in case one engine is gone a plane

cannot carry on and a crash is inevitable). The plane was not perfectly steerable at all. When landing, a pilot cold not dip a tail and set a landing attack angle and so on. I easily recognized the mistake in calculations. But I was explained that the mistake was made on purpose because the engineers were in a hurry to finish the project as its calculations were to be approved in TSAGI by a certain deadline (you may find it funny that scientists in TSAGI did not notice that they were cheated). As to me, I did not find it too weird that after the project had been passed no one of the EDB engineers lifted a finger to improve the mistakes; they simply started to build the plane as it was. It was a typical example of Soviet carelessness!

I managed to solve the plane steerability problem. It was very important as a pilot of that plane was supposed to be a 'local redneck' who had only a brief flight training course. The problem of engines was a little bit more difficult. We could not just take and replace the engines. Ivchenko was requested to boost his engine. But it was not that easy. That would be a long process requiring long-term researches, thorough assessments, revisions in manufacture and so on, and, besides, that would surely cause a loss of engine life and its cost increase.

On March 14, 1958 the AN-14 made its maiden flight. But serial production of that plane equipped with 300-horsepower boosted AI-14RF engines became possible only since 1966, and through 1972 only 340 planes had been produced. The AN-14 was supposed to replace the AN-2 old model (maiden flight - 1947). But that veteran outlived its descendant. Serial production of AN-2 in the USSR remained till 1992, and it is still produced in China. They have produced 18000 AN-2 planes in total. That plane costs only $75000.

The AN-28 was developed on the base of the AN-14, and it still is successfully produced in Poland; the AN-38 was developed in Ukraine.

Airplane AN-14

I was doing calculations for new planes such as AN-24, AN-22 and for other modified models (such as AN-12) and I was strongly against any cheating and wangling. You can spin a man, a Chief designer of your EDB, scientists in TSAGI , a society, but you NEVER can cheat the Nature. It will unmask any deceitful wiles pretty soon.

Airplane AN-12

When I was a student I fondly hoped that projecting a supersonic aircraft would be the best for EDB's prestige purposes, I even shared that idea with Antonov! I was too naïve to understand that each Aviation EDB was fighting for a certain market niche and would never allow competitors to take it away. The EDB headed by Tupolev was better known and authoritative. It would never pass such a nice tidbit to someone else. Later on I found out that a secretary of Antonov was ordered to press a security call button under his desk in case enemies broke through (I wonder how they physically would, as each visitor was thoroughly checked by KGB men). I was also told that, besides an entrance leading to a boardroom from the room of Antonov there was also a door to a bathroom for having fun with female employees. I never believed that. He came across as quite a nice and civilized person really. I always think about him as a man of great intellect. To tell the truth once he promised us (when we were discussing another *pyatiletka* – five-year plan) that in two or three years we would have a big housing development so that each of us would be able to get an apartment… But living in the Soviet Union I had been hearing that sort of promises throughout all my life, and never managed to see those promises fulfilled. Instead I simply improved my housing conditions by a series of consecutive apartment interchanges (quite a popular way of solving that hardly-solvable problem in the Soviet Union) paying every time in addition a few of my yearly wages.

Antonov himself received a plot of land with a garden, fenced it in and built a nice little two-storey British-style mansion.

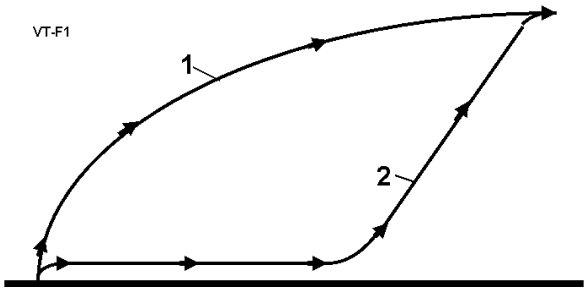
Together with my boss Alexander Borin I was eager to equip our design office with newest devices. In those times first computing machinery (electronic computer) had just been brought to market in the USSR. Many engineers in our EDB were suspicious, and distrusted that equipment. They reasoned as follows: why on earth do we need that? We went on quite fine without that computer, we were doing good with a slide rule and an arithmometer (mechanical computer). And at that your calculation was sent to some other engineer for checking and re-calculations. That engineer rounded all the numbers his way so that any correct calculation was returned with lots of red remarks, to say nothing of the fact that manual calculations took a lot of time and energy. There were hundreds of people in our EDB making calculations.

Our first mainframe computer (in those times it was called ‘electronic calculating machine’ or ECM) was Russian “Ural-1”, as well as electronic evaluators. They were installed in a special huge bulk area. A Head of that computing laboratory became Blekherman (currently resides in the U.S.), as Borin had recommended him. “Ural” was quite a bulky vacuum tube computer with hundreds of electronic tubes and indicators. It was sort of those huge alien things described in space fiction novels, with all those bewitching blinking indicators and muted buzz of coolers. It was not so easy to operate the machine. First you had to punch your program out on a film, debug it, find and improve all the mistakes (quite a difficult task in case of complicated programs). If you compare “Ural” to modern computers, you may surely find it ***extremely*** slow (about 100 operations per second), but for us it was fantastic! Moreover, output results were given as a column of numbers which was not very convenient.

Electronic evaluators were simpler and worked faster, outputs were arranged as diagrams, but their accuracy left much to be desired. Those machines facilitated very important calculations which I made while studying a vertical takeoff and landing aircraft (VTOL) start. Later, in 1965 I published the obtained results in “Flight Dynamics Research” of the Moscow Aviation Institute.

That type of aircraft had only begun to be designed. Everybody thought that having taken off vertically the plane should simultaneously ascend and move to a given point (i.e. it should have vertical and horizontal velocities simultaneously). A trajectory in that case convexed upwards and looked quite logical and natural. In 1959 I numerically proved that having taken off the plane should first gain speed horizontally at a low altitude and can climb only after it gained the required speed. In my case I received a convexed downwards trajectory. Same was about its landing.

That saved more than a half of time and fuel. Considering that the major portion of fuel was used for a taking off and landing the cost savings were quite considerable. Later my results were proved theoretically by American researchers and me.



Vertical Takeoff and Landing aircraft trajectories: 1 – The original trajectory; 2 – The optimized trajectory (result of my research).

In 1962 I published a book “Theory of Flying Models” (Теория полета летающих моделей, ДОСААФ, 1962г), my farewell gift to aircraft modellists. It was pretty difficult to write a book in a dormitory room shared with 3 or 4 more guys, so I found a quiet place in a dormitory basement where I liked to spend my evenings after work and where nobody annoyed me. The book appeared to be quite unique and useful for low-speed aerodynamics and aircraft model calculations, as well as for the aircraft modeling theory and modellist self-education. For a half a century it was (and still is) the only book in the world dealing with such themes.

Its significance and value increased in recent years, as the U.S. Department of Defense started to develop radio-controlled reconnaissance micro-aircrafts.

I always loved mathematics. Profound knowledge of math was necessary at my work as I was not simply doing calculations concerning a given matter, but was trying to perform a thorough research and optimization.

Aircraft AN-22. Weight is 205 tons, payload is 60 tons. Produced 56 pieces.

Aircraft AN-124. Weight is 402 tons, payload is 150 tons.

Aircraft AN-24. Weight is 21 tons, passengers 48, produced 1362 pieces.

Aircraft AN-32. Weight is 17.2 tons, payload 50 soldiers

Studying in KAI, I thought about transferring to the Mechanics-and-Mathematics dept. Soon after I graduated and started to work I decided to enter an extramural course of the Mathematics dept in the Kiev State University. I was much surprised by a rough nationalism demonstrated by some of Ukrainian lecturers. Despite a collective request of students to give lectures in Russian those teachers lectured in the Ukrainian language and what is more they were concocting Ukrainian mathematical terms which were very embarrassing; students got into an awkward situation as all the coursebooks were in Russian.

My Diploma project concerned a theory of system optimization. By simple mathematical transformations I showed that the sensational Principle of Maximum (which was a new much-talked-of method of Pontryagin, a Russian Academician; he was awarded a Lenin Prize for that method) arises from a classical variational calculus. My idea met approval of many Ukrainian scientists researchers.

My boss Alexander Borin was a good sort. He was a wonderful person and an excellent specialist. Years of Stalinist prison camps dished his chances in getting a Higher education degree. He happened to maintain himself because he worked mostly in different *sharagas* (sharaga *or* sharashka, *sometimes* sharazhka – *Soviet prison slang*: a design department (formed of engineers imprisoned during mass repressions in 1930s) in the Soviet NKVD prison system. These were effective slave-labor 'elite' camps (lager') where scientists and engineers worked on projects assigned by the Communist Party leadership.). He appealed to the Supreme Certification Board for a permission to present his Doctoral thesis and get a degree skipping graduate work and studies. His appeal wasn't satisfied, but he had neither time nor energy for preparing and taking those redundant university exams. Finally, he was sent to work in TSAGI so he had to move to Zhukovsky town (Moscow region) where he had some old friends. Although the AN-24 plane had been developed under his direction, his name was crossed out from a list of candidates for Lenin Prize which was supposed to be granted to AN-24 developers.

A son of Antonov (or maybe it was a son of some other head) studied in the Moscow Aviation Institute. He did not seem to be a good student. The EDB and MAI were at daggers drawn, Antonov even forbad giving anything from the design office to MAI.

A Kiev Military Engineering Aviation Higher School (KMEAHS) publishing office issued some of my papers, in particular, those ones dealing with estimation methods of flight characteristic alterations under change of plane's shapes and design.

I suggested that Antonov should arrange for us a little practice with training flights, and that time I happened to drive AN-2 for a half an hour.

The EDB's security was organized quite funny. The front entrance was behind an impressive solid fence, there was a checkpoint with a turnstile and each employee were given passes at the clockhouse. At the back of the EDB was an airfield which was opened and not fenced, so anyone could get inside and go wherever he would want. Once when I flew back from Moscow I got off a plane at the airfield and walked directly to the office. Some guy shouted from the distance: "Hey, who are you?" I replied: "A friend!" Also there was a funny story about one old woman who saw a big line in front of the checkpoint and decided that there might be a sort of shop where she could buy some hard-to-get thing (otherwise why on earth so many people came to wait in line?). She got into line, successfully passed the checkpoint (people were asked just their names and the old woman might have a namesake among the employees) and spend a good deal of time wandering about the territory and looking for a shop.

Anyway, inside the workshops also were local checkpoints and special passes, so a casual visitor could hardly get in.

As a leading designer and calculator I was granted the first (highest) degree of security clearance (Top secret of National importance). Only Antonov, his deputies and my boss had such a degree. Actually, there were three degrees: Secret, Top secret, Top secret of National importance. Also there was a special 'confidential' data category. Some stuff (books and papers) was supposed to be read only in a special room of the First (Secret) department and if you wanted to make notes there was a special notebook for that purpose which was also kept in the First department.

Most of information we drew from foreign journals and Moscow Information Institute bulletins. American journals openly published pictures, design features, drawings and circuitries of their airplanes; they even published their projects which were just planned to be developed in future and not yet implemented. Same was about NASA; despite their researches and projects cost millions of dollars. All that stuff was godlessly copied by us. I know, now it sounds weird,

but in those days we knew more about foreign aircrafts than about projects developed by Soviet design offices (for instance, by Ilushin's or Tupolev's). To tell the truth we knew practically nothing about the latter ones. Any information was possible to obtain only through the Department of Aircraft industry after long and trying efforts. Even those projects which were full copies of foreign ones had been classified as secret and restricted. I wondered how naïve were Americans – if they ever wanted to set back Soviet industry development by many years they should simply close their technical data and restrict an access to their project information, and also stop selling single samples of their machines to Communist countries.

One of the most interesting projects I was involved into was a superhigh plane project. World Human rights groups of those times used to release special carrier balloons stuffed with propaganda literature and leaflets into air currents of the USSR. Communist leaders were rather anxious about that, as they were not interested in informing Soviet people and telling them the truth as that would surely ruin the Soviet mythology.

We were promptly supposed to develop an urgent project of a plane for destroying those balloons. But pretty soon Human rights groups run out of money and stopped releasing balloons, so our project lost its urgency and was not implemented.

They say that it was Nikita Khrushev who facilitated obtaining finance support for AN-10 and AN-12 projects. Once, when he was visiting our EDB he was shown the AN-8, a twin-engined transport airplane. He asked: "What about Americans? Do they have this kind of plane?" "They have four-engined," was a reply. "Then we also should have a four-engined one!" that was a start for sister planes designing (the turboprop passenger aircraft AN-10 (The NATO ASCC reporting name was Cat) and the military transport AN-12). The AN-10 maiden flight was on March, 7 1957, and AN-12 – on December, 16, 1957. The first flight of a new plane was always an event. Despite bosses' discontent, designers always tried to skulk through to the airfield to see their brainchild fly; those who didn't have a chance to get to the airfield climbed to the roof of the EDB building.

In 60s and 70s there were several accidents and wrecks with planes designed and built in our EDB. An anti-ice system appeared to be unreliable. In 1959 and 1960 two planes in Lvov, Ukraine unexpectedly went diving down due to icing and crashed. 72 people died. This shortcoming was easily eliminated. But anyway that plane was recommended to be used only in mild climate.

AN-10's and AN-12's wheels were attached directly to a fuselage, and, consequently had a narrow gauged undercarriage. Low-speed landing control of the plane was carried out by the divided (left and right wheel) braking. Due to the narrow gauge the turning moment was little. Once a pilot was unable to hold a landing plane steady on a runway, the plane rolled aside from the runway and hit a guarding pole. Of course the plane was damaged, not the pole. Together with one aerodynamic engineer I was sent to TsAGI where we together with their researchers spent a month calculating and investigating the case to find a way to solve that problem.

The second accident was even more serious. One of AN-10's wings failed. It happened in Voroshilovgrad, near Lugansk city. 64 men died. A longeron of the failed wing was covered with cracks. It might be a result of constant engine vibrations and a new technology of chemical milling of longerons. Shakhatooni, a former wife of Antonov and a Head of Material's Strength department suggested additional overlays all over a longeron (it seemed to be a standard and obvious solution for such a problem). In aviation, in case one plane reveals some defect, all the rest planes of this type are to be examined and improved, too. Note that a longeron is a main

detail of a wing and it is pretty expensive and not very easy to replace an airplane's wing. Anyway, wings were improved.
Only one thing was not taken into account: before overlays had been attached the cracks could be easily seen so the plane could be withdrawn from service right away. But after those overlays had been riveted the initiated cracks became covered and impossible to detect and, being unseen, they could progress and become dangerous.

Then one more in-flight crash occurred. On May 18, 1972 while en route to Kharkov International Airport, an Aeroflot An-10 suffered a structural failure during a descent, causing a wing to separate from the fuselage. Can you imagine? A wing of a big multi-seater passenger aircraft with an excellent reputation (passenger place in this plane cost much less than in TU-104) break off in the air! Quite an infrequent occurrence for our aviation. No pilot's skills would help in such a situation. The pilots only radioed: "Take care of our families!" That time 122 men died. The cause of the accident was later revealed to be metal fatigue. Following this accident, Aeroflot ceased operating the An-10. In total 108 planes of this model had been produced. 12 of them crashed. The rest were transformed into cargo aircrafts, given away to aviation technical schools and study groups as visual training aids, some of them became monuments or pieces of playgrounds, etc.

That aircrash made an indelible painful impression on me. Later I understood the feelings of Yangel. When his missile R-16 exploded right on a launch pad of Baikonur killing more than two hundred people including many engineers from his EDB, he got a heart attack, then gave up everything and went to his dacha (a wooden hut, country house or cottage in Russia, usually with a kitchen-garden, traditionally used as a vacation home) in Siberia. Though it was not his fault, the accident happened because Nedelin, the missile troops Commander-in-Chief, ordered to perform maintenance works of the fuelled missile in defiance of all the instructions.

AN-12's wings were designed the same way, but military transport planes AN-12 (1248 units produced in the USSR and 661 in China (Chinese AN-12 was called Y-8)) were impossible to withdraw from service. That would be as if the Army would loose its transport aviation. To cap it all, a life of a Soviet soldier was not much valued by the government. So the matter ended up with half measures. Planes of this model are still used by the Air Force of Russia and the CIS (former USSR). There were many modifications of the AN-12, from tanker aircrafts to bombers. This plane was widely used in local wars of the USSR and Russian Federation. In particular, it was the well-known AN-12 'Black Tulip' which transported bodies of Soviet solders killed in Afghanistan to the Motherland. 187 of 1248 Soviet AN-12s perished in civil crashes in peacetime. As a result the UAE, Sudan and Iran became a no-fly zone for the AN-12.

Comparing Soviet and American planes I must admit that in tote our constructions and designs never was inferior to American ones despite general backwardness of our civil industry. We'd been tearin' the guts out of our industry. Unfortunately, American engines' lives shamed ours, and our avionics was so outdated that many passenger models were not able to be certified internationally.

Generally speaking, the separatist policy of our government (we should produce everything ourselves so that not to become dependent on some other state!) was very pernicious and had fatal consequences as it dissipated our strength and wasted our recourses hindering our country from taking a leading position in the International industry and agriculture. All the time we were aimed at nothing but overtaking America, constantly jabbering about enormous plans

and our radiant Communist future. By the way, you never could read or hear in mass media what, in particular, people were going to have under Communism. This topic was excluded from public discussions. In 1920 at one of the early Komsomol meetings V.I. Lenin asserted: "You, young people, are going to live under Communism just in 10 or 20 years." In 1931-33 Communists inflicted Golodomor (they took all the bread away from villagers in favor of militarization of the industry) and more than 6 million of people starved to death. By 1940 workpeople were assigned to plants like slaves. In 1960 at the 22nd Party Meeting N.S. Khrushev adopted the Communism Building Program which was supposed to be completed by 1980, and asserted that his contemporary generation (people of 1960s) was surely going to live under Communism… 1980 came, and meat (half a kilo (1.1 lbs) per month!) was possible to buy again only on special ration cards.

Soviet people were so credulous, readily accepting fairy tales about our 'radiant future' and bigshot plans, that they seemed to be duped ad infinitum.

On business I pretty often travelled to the EDB of A.N. Tupolev in Moscow. As many other leading designers and engineers he was a victim of the Stalinist regime. On October, 21 1937 Tupolev was arrested on an espionage and subversive activity charge. The top people of TSAGI and his EDB, directors of many aviation plants were arrested together with him. Many of those people were executed by shooting. Being imprisoned Tupolev worked at the closed design office of the NKVD (Dept of Interior in the Soviet Union. The public and secret police organization of the Soviet Union that directly executed the rule of power of the Soviets, including political repression, during the era of Stalin) called the Central design bureau №29 (CDB-29, or "Tupolev's sharaga"). The CDB-29, a design department of TSAGI , a penitentiary for intellectuals and the educated, was one of special backroom design departments of the NKVD created in 1930s and 1940s. The department represented a special NKVD prison, which actually was an aviation design office. It was located in Moscow, Radio street, 24. The Chief designer there was a well-known aircraft authority Tupolev, an inmate.

Many different designers and engineers worked in that CDB in different times, such as V.M. Petlyakov, V.M. Myasishev, V.A. Chizhevsky, A.A. Arkhangelsky, I.G. Neman, L.L. Kerber, S.P. Korolev, A.I. Putilov, A.M. Cheryomukhin, Yu.A. Krutkov, B.S. Stechkin, R.L. Bartini, D.S. Makarov, H.I. Bazenkov and many other engineering authorities. Such well-known aircrafts as Pe-2 and Tu-2 had been designed right there.

Communist leaders found such sort of sharagas very beneficial: you don't need to provide convenient housing for engineers (they are accommodated in barracks with double-deck beds), you don't need to pay them salary, meal expenses are minimal (skilly is not expensive), irregular working hours and a huge motive to work hard, as in case of successful design they could hope for curtailment or early release.

Later Andrey Nikolaevich Tupolev (1888-1972) was honored in his own country by being made an Member of the USSR Academy of Sciences (1953), Engineer Colonel-General (1968), and three times a Hero of Socialist Labor (highest civilian award in the USSR) (awarded in 1945, 1957 and 1972).

More than 100 types of aircrafts had been designed under the direction of Tupolev, 70 of them had been series-produced. His aircrafts set up 78 World records, and made about 30 outstanding remarkable flights.

Tupolev brought up a constellation of eminent aircraft designers, engineers and researchers, who headed aviation experimental design offices, among them V.M. Petlyakov, P.O. Sukhoy, V.M. Myasishev, A.I. Putilov, V.A. Chizhevsky, A.A. Arkhangelsky, L.M. Mil', A.P.

Golubkov, I.F. Nezval', A.A. Tupolev (Tupolev's son, who was put at the head of his office shortly before Tupolev-senior's death). 6 future academicians of the USSR AS (Academia of Sciences) and 17 general designers worked in the Tupolev's sharaga.

However Tupolev had been so much intimidated that refused to support Academician Sakharov in his struggle against unlawful repressions.

I'd like to note one curious fact: we got used to hear that new aircrafts had been developed by Antonov, Tupolev, Mikoyan, Sukhoy, Petlyakov… But the fact is that a plane is designed and developed by a huge team of designers and engineers. As to me, I don't think it is fair to name a plane after only one of them, especially when he's gone (as it was with AN-124 of the Antonov's EDB). I cannot say that a contribution of a Chief designer into a product bearing his name is always so decisive. The things are quite the opposite. For instance, preparing my Diploma project, together with other undergrads I spent six months in different departments of the Antonov's EDB. Throughout that period no one of us happened to see Antonov to drop in at any of his EDB departments to see how things were going. Same situation was at the Shvetsov's EDB. I never managed to see the general designer to suggest some fresh original solution. All the solutions were advanced by heads of departments, and before those solutions were prepared by their subordinates. Being a leading calculator and designer I could swear that, according to my calculations, my solution is better than that one of my direct bosses or a general designer. No one of them had sufficient profound knowledge of the theory and they could not check me up. Practically none of them had individual inventions. Looking through the patents for inventions I always paid attention to a least-status co-author. He definitely was a real author and inventor. All the rest were his higher-ups ascribing the invention to themselves. In case the inventor disagreed they just didn't give a resolution to patent an invention. Sometimes it looked pretty funny. An invention had only one distinctive feature, but four authors! And if the Patent registration board required a long list of co-authors to be shortened, then, there was no doubt that the least person would be crossed out.

I believe it's much better to give planes a name of a company (design bureau) which worked on its project and developed the thing. For instance, everybody knows planes made by Boeing, General Dynamics, McDonnell, Douglas, Orbital Science Corporation, but I doubt that anybody knows names of their general designers or engineers.

The main thing in engineering and developing a project is having this project supported financially (which usually means relations with influential circles or a government (or maybe private) order). You may know nothing about engineering but having a sufficient financial support obtained you always may hire qualified professionals. The more qualified specialists you happen to get, the better your project is developed and the less money you spend.

One more absurd thing was a mania of general designers to become academicians. Originally, a rank of Academician was supposed to be granted to a SCIENTIST, a researcher who made a significant contribution to a SCIENCE, a theory, who pointed out new methods and fresh paths of its development. In the USSR a member of the Academy of Sciences received quite a high lifelong salary and, as a rule, became a Director of some research institute. It was a person authorized to decide who was worthy enough to get an access to interesting scientific projects or who was to be promoted. Having become a big boss and powerful administrator, he, as a rule, had no time for making researchers himself and was neither full- and nor even part-time engaged in science. Instead he became a representative of his institute in high places where not engineering but some other skills are required. But, breaking all the logical laws, a number of "his" treatises and papers could become enormous. It was because he became a co-author of all

the important and significant researches of his institute or persons wanting to advance their papers or get their PhD. Of all those directors I remember Strumninsky best of all, he was a Scientific Deputy Director of TsAGI . He was a co-author of countless numbers of his colleagues' papers.

Of course, Chief designers deserve prestigious state money rewards (there were Stalin prize, Lenin prize, etc. in the Soviet Union), grant them honorary titles like Hero of Socialist Labor, award orders and medals for developing new technologies, especially because most of those people had passed an arduous and dramatic path to their high positions of Chief designers (like Tupolev or Glushko), …but where does SIENCE come in? All of them had research and engineering skills not less and not much than common run of engineers. But having received a high position and a "rank of Academician" they, as a rule, began having too high an opinion of themselves. For instance, once presenting his subordinate department head's Doctoral thesis (which was likely to be written by that man's subordinates) to the Academic council Tupolev wrote in his resolution that he SUGGESTS giving that man a Doctor of Engineering degree (NOT "recommend" or "consider appropriate" as is officially accepted in Russian science). And as to Kololev, he was of opinion that the Einstein's theory of relativity is nothing more than a lot of bullshit.

That was how the Soviet Academy of Sciences partly became a stronghold of high-ranking apparatchiks and officials of the Communist Party Central Committee. Russian Science had been strongly discredited by all those "academicians" with degrees in Marxism-Leninism and Marxist philosophy, authors of fake theses about great-enormous-incredible achievements of the Communist regime and by venal historians.

Elections of CC CPSU Academicians became fictitious. Once having returned from regular elections of academicians, Glushko showed us a list of elected people. In a couple of days in a newspaper we read quite different names. Glushko explained that together with others he was called back again and said that they had elected wrong people – not those who were proposed by the Central Committee, so they held "re-elections".

Doctoral Dissertation. Moscow Aviation Institute

I always had an inclination for the research work especially for the theoretical one. You know, when you develop a theory, in many cases there is no need to beg for a financial support, equipment, materials and other stuff. The only thing which was required was my time and, besides, I became independent to some extent.

Having spent two required years in the Antonov's EDB, I applied to the postgraduate courses of Moscow Aviation Institute (MAI) to the Flight Dynamics and Control systems department. On November 15, 1960 I was enlisted. Our Department Head Ivan Ostalovsky well-known for his textbooks on aerodynamics and flight dynamics became my academic adviser. I.V. Strazheva, his coauthor and a wife of Academician Yangel', the Chief designer of Soviet long-range ballistic missiles, worked along with Ostalovsky in the department. The Institute campus was located by the crossing of Volokolamskoe and Leningradskoye highways not far from the subway station 'Sokol' (the Falcon).

I was settled in the dormitory for the institute personnel. I shared a room with there other postgraduate students. There was one restroom and one small kitchen on each store of the dormitory. It was very convenient that our dormitory was near the Institute. Students' dormitories were located nearby the Institute either. Vitaly Sevastyanov used to visit our

dormitory. That time he was attending postgraduate courses of Department #102, and was eager to get enlisted to the Team of Cosmonauts. He got his postgraduate degree in 1965 while in 1967 he became an applicant to the Team of Cosmonauts (Astronauts). I remember us kidding around that we'd hardly live till his flight to space. In 1970 he travelled to space as a flight engineer aboard the Soyuz-9 spaceship along with A. Nikolaev. It was a 17-day flight. In 1975 Vitaly had his 2nd space flight aboard the Soyuz-18 also as the flight engineer along with P. Klimuk. This flight was much longer and lasted for almost 63 days.

Studying in MAI I used to visit closed viewings of non-classified American movies about aerospace engineering. Sometimes we watched movies shot illegally by some spies. One of them showed fighters taking off from a US aircraft carrier. It seemed to be taken "thru a keyhole". In those times powerful aircraft carriers were a dream of the Soviet military. And even today Russia still doesn't have carriers of American type.

The topic for my Doctoral thesis was "Multistage Rocket Trajectory Optimization". It was a very complicated theoretical and mathematical study. By then there were plenty of papers on single stage rockets' optimal trajectories. My study's peculiarity was that each stage of a multistage rocket could be considered an independent rocket. And the sum of separate optimal trajectories wasn't the total optimal trajectory. A detailed theory of jointing sections in order to obtain the total optimal trajectory using the variation calculus hadn't been developed at all. It was unclear when to start or to stop engines of each rocket stage. This problem was solved by matching numbers. Such a method required much effort and computing time and didn't guarantee the optimal result. Most of current papers described only conditions necessary for the optimization and didn't guarantee the total calculated trajectory to be really optimal.

I developed conditions of jointing trajectories optimally for each rocket stage and the sufficient minimum conditions in so-called discontinuity variational problems of the second kind. These conditions were applied to multistage rockets. My paper was published in the "Flight Dynamics Research" digest, Mashinostroenie, 1965. It turned to be perfect and nothing still has been added to it even nowadays. I have successfully defended my doctoral dissertation in early 1964. Higher Attestation Commission approved it on June 26 1964. And I also received an associate professor.

At the end of my postgraduate studies my scientific adviser (the Head of the Flight Dynamics and Control systems department) was asked by Professor Dobronravov from MVTU (Moscow State Technical University now) to accept his postgraduate student Vadim Krotov who had just completed his postgrad courses. Ostoslavsky gave me his papers to read so that to get my opinion. Wishing to help the young specialist I gave the positive conclusion so that he would be accepted, though I found all his work simply a "soap bubble". He managed to muddle Dobronravov's brain (along with many other non-mathematicians') that he (non-mathematician either) made a great discovery in math – a mathematical description of sliding modes. After examining the topic I found that he had simply repeated the result of the Italian mathematician Picone. Sliding modes had been known in the control theory long before Krotov started to write his paper.

Krotov applied his "theory" to combustion engines and stated in his Doctoral thesis that if an engine is started and stopped as frequently as possible it would cause a colossal fuel saving, "the more frequently one starts and stops an engine per second, the bigger this fuel saving will be." Any engine specialist will find this statement a complete nonsense. Ones who don't believe can try it on their own cars. Due to transient processes (when it is being started) an engine

consumes much more fuel than during its regular work mode. There's no need to say that such a car will never budge and an engine will not drive a machine it is attached to.

Another "great achievement" of Krotov was adding the auxiliary and absolutely redundant requirement of minimum in the phase coordinates to the Bellman's equation (which is a sufficient minimum condition giving a complete solution of a problem), well-known in the optimization theory. That made the equation practically unsolvable. In other words it was like one bound a steed to a car to announce the creation of a brand new vehicle.

Krotov insisted that he should be immediately promoted to the rank of PhD, Professor. It sounded funny that mathematicians believed Krotov to open "a new page" in the engineering while engineers believed he made a discovery in math. Mathematicians were shocked with his demands but finally they agreed to grant him a PhD in mathematics. There were plenty of people like Viktor Petrik in times of the USSR either.

Then Krotov started intriguing and created a "scientists' gang" for further promoting himself and his "co-gangsters".

Soon he scribbled a Post-Doctoral thesis where he attempted to prove that a spaceship descends from its orbit in a wrong way. According to Krotov, the more frequently a pilot-astronaut pulls and pushes the control column, the faster a spaceship slows down (brakes) in the atmosphere. Krotov didn't know about brake flaps, a wonderful device used in aviation for a long time for slowing the craft down. While his suggestion gave an ineffective slowing down, caused huge overloads and required an ultra heavy heat-protection. Usage of the Krotov's method was like slowing down a car with turning a steering wheel right and left instead of using regular brakes. A real method of slowing down using 3-5 ricochets on the atmosphere had been being known long before and was easily calculated without any Krotov's theories.

Supported by his "gang" one day Krotov became a Professor (Post Doctor) and started the remorseless suppressing of those who refused to join the "gang" and especially of those who dared to criticize his "theories".

Soon Vladimir Goorman, the nearest Krotov's assistant and myrmidon, got his Doctor's degree. It was known long ago that an impulse (switching the thrust on) placing a satellite to a higher orbit is to be given in the perigee (the lowest point) of the orbit. If a thrust power is limited, an impulse should be given after each satellite's turn. He tried to prove that if an impulse duration tends to zero while the impulses' quantity tends to infinity, the minimum fuel consumption is achieved. In other words the idea of infinite engine's ons and offs –as in the Krotov's Doctoral thesis – was introduced. One thing was forgotten: even in an ideal case without accounting transient processes the quantity of a satellite's turns and the orbit transition time tend to infinity. As a result, all of their theories were absolutely inapplicable to practice.

I refused to join their "gang" and pointed at some of their errors which caused their hatred and life-long persecution.

Having accomplished the postgrad courses and received my PhD degree I started to work as an assistant at the Higher mathematics department of MAI. I faced the accommodation problem – it was impossible to stay in the dormitory forever.

Then an opportunity turned up. Once I was going back to Moscow from a business visit in Leningrad. The same time the USSR leader Leonid Brezhnev was going back to Moscow from some celebration in Leningrad. Besides our train, there were two "Red Arrow" trains (a fast train from Moscow to Leningrad (St. Petersburg)) in the Leningrad Railroad station. An access to those two trains was blocked. But the Brezhnev's railroad car was attached to our train. On my way to Moscow I wrote a letter describing my current situation with an accommodation and

asked for help in obtaining an apartment. Then the train arrived to Moscow. Doors to one side of the platform were locked, and passengers were leaving cars on the opposite side. I stayed in the car and opened the window a little way. When Brezhnev was passing my window I hailed him and handled him my letter. Some days later I got a phone call from the Communist Party Central Committee. They were very much surprised to hear that I had given my letter personally to Brezhnev. It made clear that he hadn't happen to read it and passed it directly to the secretariat. My letter was forwarded to MAI but the Institute was unable to give me an apartment.

Being in Moscow I got married. But my marriage turned to be unhappy. All that my bride told about herself later appeared to be lies. She lied that she had been a 4-year student of the Communications Institute, she lied about her father being the Chief engineer of a big plant (which didn't exist in practice), she lied about many other things as well. She even had a fake in her passport (the year of her birth was 1941, it was corrected to 1944). Her key aim was to settle down in Moscow legally. Unfortunately I was too naive and too busy with my researches to see and correct my mistake in time. This severely punished me later. Soon after my arrest the wife annulled my registration in our apartment. Before my release she arranged the divorce and took all of our property and savings. Later she privatized the apartment which meant that she became an only owner.

Rocket Engine Experimental Design Bureau of V.P. Glushko

In 1965 I was proposed a position of Head of rocket engine reliability department in the Glushko's Rocket Engine EDB located in Khimki near Moscow. Also I was promised to be provided with an apartment. So my employers sent a solicitation letter to the Moscow City Council asking to provide me an apartment through the local housing department. The housing department gave me a room in a shared flat at Butyrskaya street.

Later, though it cost me a fortune I paid to my flatmates and managed to exchange that room to a single-room flat (studio), and then to a two- room one (one-bedroom) in Preobrazhensky borough of Moscow. Every time I made a flat interchange it cost me a couple of my yearly wages.

Glushko's was the leading design office. It was dealing with development of engines for most of Russian strategic and operational missiles and space rockets. The EDB itself was considerably small, but a plant producing engines was huge. My direct boss in that EDB was Solovjev. Speaking of EDBs of that kind, I happened to visit the rocket and missile EDB of Korolev in Central Engine Research Institute and presented at tests of rockets and missiles performed at secret missile bases in the vicinities of Moscow.

The destiny of Valentin Petrovich Glushko (1908-1989) was not better than of S.P. Korolev, the creator of Soviet rockets.

Since 1932 Glushko worked at the Jet Propulsion Research Group (JPRG) which was organized under the jurisdiction of OSOAVIAKhIM (the precursor of DOSAAF) (The precursor of DOSAAF was OSOAVIAKhIM, *Union of Societies of Assistance to Defence and Aviation-Chemical Construction of the USSR*) created on January 27, 1927. The goal of the society was preparation of reserves for armed forces.). The researchers jocularly called their group like a 'Group of Engineers Working for Free' (it's a play of words: if you abbreviate this in Russian you get the same abbreviation as is above). Working there Glushko had developed several experimental rocket engines.

In March 1938 Glushko was arrested and till August 1939 he was under investigation in the NKVD special prison located in Loubyanka street, and then in Boutyrka prison. On August 15, 1939 he was sentenced to a eight-year imprisonment by a special NKVD session. He was convicted of subversive activities and sabotage as all his experimental rocket engines test failures were considered as acts of sabotage. Glushko was left to work in the NKVD technical bureau. Till 1940 he was working in a prison engineering group (sharashka) of the NKVD 4th Special dept at Tushinsky Aircraft engine building plant № 82. There he had developed a project of liquid-propellant rocket engine (LRE) slave stations for the planes S-100 and Stal'-7. In 1940 Glushko was transferred to Kazan where he kept on working (still imprisoned) as a Chief designer of the NKVD 4th Special dept's sharashka at Kazan plant № 16. There he had been developing LRE slave stations RD-1, RD-1X3, RD-2, RD-3. As his designed idea was a success, in August, 27 1944 he was early released with cancellation and removal of a conviction record. Fully exonerated in 1956.

From July through December 1945 and from May through December 1946 Glushko lived in Germany where he had been sent to study captured German missilery (mostly the V-2 rocket) in Northausen.

On July 3, 1946 the speciality of Aircraft plant № 456 in Khimki had been changed by order of the Department of Aircraft Industry; since then the plant was supposed to produce liquid-propellant rocket engines. For that purpose a team of the EDB from Kazan was transferred to Khimki as well. The same order made him the Chief designer of his own bureau, the EDB-456 (currently NPO Energomash (NPO –Research-and-Production Center)) and remained at this position until 1974. That bureau played a prominent role in the development of rocket engines within the Soviet Union.

On 10 October, 1948 the R-1 missile (NATO reporting name SS-1 Scunner) with the RD-100 engine (a copy of the German V-2) was successfully started. The RD-100 engine had several modifications (RD-101, RD-102 and RD -103). On April 19, 1953 the R-5 missile (SS-3 Shyster) with the RD-103 engine was also successfully started.

The successful tests of the R-5M atomic missile on February 2, 1956 brought Glushko a Hero of Socialist Labor title. Later on the Glushko's engineers developed powerful rocket engines using low- and high-boiling liquid-propellants. Those engines were applied in the first and most of the second stages of Soviet launch vehicles and in many operational missiles including the RD-107 and RD-108 engines for the "Vostok" carrier rocket, the RD-119 and RD-253 engines for the "Proton" carrier rocket, the RD-301 and RD-170 (the most powerful engines in the world!) for the heavy-lift "Energia" and many others.

In 1974 Leonid Brezhnev placed Glushko in charge of the OKB-1, Korolev's former design bureau, later named NPO Energia. He became the Chief designer of space systems, the General designer of the famous "Energia-Buran" space shuttle vehicle (the biggest and the most expensive project in the history of Soviet space exploration); in 1953 Glushko became a Corresponding Member of the Academy of Science and in 1958 – a full Member of the Academy of Science; member of the CPSU since 1956. Also Glushko was a full member of International Aeronautics Academy, and a S.U. Supreme Soviet deputy of the 7-11th convocation; a Lenin prize laureate and a Hero of Socialist Labour (awarded twice – in 1956 and 1961).

His closest colleague in the Jet Propulsion Research Group and in prison was Sergey Pavlovich Korolëv (sometimes transliterated Sergei Korolyov). On June 27, 1938, during the Great Purge, Korolev was arrested by the NKVD after being unjustly denounced by Ivan Kleymyenov, Georgiy Langemak, and Valentin Glushko arrested in 1937 and cracked under

torture. Later the first two of them were executed by shooting (as most of heads and engineers of their JPRG. Korolev was put in the list of the Military collegium of the Supreme Court. He was a Category 1 indictable (most serious) in that list viséd personally by Stalin. On September 27, 1938 Korolev was accused of deliberately slowing the work of the research institute (Section 58-7 of the USSR Criminal Code), and following torture in the Lubyanka prison to extract a confession, was tried and sentenced to ten years in a forced labor camp – 'Sevzheldorlag' (an acronym for 'Northern Rail road Camp' in Russian) with a 5-year disfranchisement.

Korolev later learned that he had been denounced by Glushko, and this became the cause of the life long animosity between the two men.

Having spent a year in the Butyrskaya prison and still believing that his arrest was a mistake, Korolev wrote many appeals to the authorities, including Stalin himself, hoping at least to be sent to some sharashka in Moscow. Following the fall of the NKVD head, Nikolai Yezhov, the new chief Lavrentiy Beria chose to retry Korolev in 1939, but by that time Korolev was on his way from prison to a GULag camp in the Far East – in April 1939 he was transported under guard by train and boat to the Kolyma to a golden mine called Maldyak to work as unprivileged. Finally, in several months his appeal was satisfied.

On his way back to Moscow Korolev missed the "Indigirka" ship (because she was full) which was bound for Vladifostok from Magadan. That saved his life: on her way to Vladifostok "Indigirka" had run into a heavy storm and sank near Hokkaido. No one prisoner was let out from a locked up deck.

Towards the end of 1939 he was sent to VladLag (Vladivostok Lager') and in three months came back to Moscow, but he had already sustained injuries and had lost most of his teeth due to the labor camp's brutal conditions. Four months later in Moscow Korolev's sentence was reduced to eight years, which he did not have to serve in a labor camp. This time Korolyov was assigned to the Central Design Bureau 29 (CDB – 29) of the NKVD special prison. Korolyov was brought here to work under the leadership of Tupolev (also an inmate). During World War II, this sharashka designed both the Tupolev Tu-2 bomber and the Petlyakov Pe-2 dive bomber. The group was moved several times during the War, the first time to avoid capture by advancing German forces. Simultaneously Korolev worked on project of controlled airborne torpedo and brand new rocket interceptor off his own bat. That caused Korolev to be moved to another sharashka (DB -16 of Kazan Aviation plant №16) under Valentin Glushko developing rocket-assisted take off boosters for aircrafts (a system for helping overloaded aircraft into the air by providing additional thrust in a form of small rockets.). There with his usual diligence Korolev devoted himself to the idea of using rocked engines for aircraft enhancement, notably for takeoff run shortening and for increasing a combat plane's dynamic performance and speed capability. Korolev was kept in the Glushko's sharashka since 1942 until 1944.

On June 27, 1944, Korolev - along with Tupolev, Glushko and others - was finally discharged by special government decree, although the charges against him were not dropped until 1957. (The design bureau was handed over from NKVD control to the state aviation industry commission. Korolyov continued working with the bureau for another year, serving as deputy chief designer under Glushko). Fully rehabilitated on 18 April 1957.

Among his awards are the title of Hero of Socialist Labor (in 1956 and 1961), Lenin Prize (1971), also he was awarded the Order of Lenin three times. In 1953 he became a member of the CPSU and in 1958 - a Member of the Academy of Science. Korolev was the only person awarded a Hero of Socialist Labor being imprisoned. In 1976 he was inducted into the International Space Hall of Fame.

His colleagues remember Korolev to be a pessimist, seeing his future in deep dark. His favorite saying was: “They gonner shoot yer up -and no obituary”.

As the first Soviet satellite (sputnik) had been successfully launched, Korolev was supposed to be granted a Nobel Prize. But Khrushev kept Korolev’s name top secret, and when foreign reporters asked him about the name of the rocket’s creator Khrushev answered: “All the Soviet people”.

In 1966 Korolev had surgery. Due to an old facial trauma got in prison (an interrogator hit him on the cheek with a carafe and broke his jaw) doctors were not able to insert an airway tube into his trachea and he died. A funeral of Korolev (1907-1966) was the most impressive. On the way back from a farewell ceremony Glushko noted: “If I were going to be buried like that, I would be ready to die right tomorrow.”

Speaking about Stalin’s repressions which affected about 60 million people (about 1/3 of the USSR population, and most of them died) it’s quite difficult to catch up with the reasoning of destroying the leading scientists, researchers, inventors. We more or less clearly can trace some logic in the destruction of well-off peasantry – so-called ‘koolaks’ (*from Russian* koolak *or* kulak which means ‘fist’) – it’s quite well known from any history textbook that they were violently plundered with all their cattle and stuff taken away by the state in favor of collective farms; we may understand the elimination of a basic mass of WWII veterans (wandering the streets on their self-made wheel-bases or sledges and begging with their frayed uniform and jingling medals on). But investigators and designers were working on developing new military technologies and combat equipment – a main tool to make a great Stalin’s dream (global domination) come true. Everybody knows that any test of new missiles or other weapons may fail. Unfortunately, any of those unsuccessful tests would have a chance to be considered as subversive activity and finish up with a firing squad or a prison labor camp. The only explanation which might have sense is, as was said above, that the state didn’t want to provide engineers with apartments (as they were accommodated in barracks with double-deck beds), to pay them salary, meal expenses were minimal, besides, they were working 10-12 hours a day having a huge motive to work hard, as in case of successful design they could hope for curtailment or early discharge.
(The system was based on the fear and ememy- and spymania (Stalin advanced a thesis: *the class struggle will intensify and increase with an increased success of Socialism in the USSR. So be aware! Enemy is wide awake and is always on the alert! Enemies and spies are around you - they can be anywhere, even next door!*). It was a time of whistle-blowing. It’s a grotesque fact but NKVD officials had plans coming down from on high according to which they had to catch a certain number of ‘public enemies’ per some period; in case they did not fulfill the plan they could be punished. The thing is, the system was greatly uninterested not only in independent well-to-do farmers (peasants) which were quickly exterminated during the early 30s but, first of all, in well-educated thinking intelligent individuals of sober mind who might realize stupidity and inconsistence of the Communistic regime and the Soviet system. More than ‘catching-up-with-and-overtaking-America’ the Soviet leaders wanted Russian people not to be stirred up.)

That was the reason why engineers were so much afraid of making a mistake and in most cases just copied overseas patterns which had already passed tests successfully. This fear remained in post-Stalin times also: it was practically impossible to get a go-ahead to develop and implement a brand new solution or technology.

So, as I have already started to tell, in the EDB of Glushko I was proposed a position of Head of engine reliability department. They had a lot of troubles with running engine stability. In 7% of all the test flights one of the engines (together with its fuel supply system) cavitated

initiating strong vibrations and pressure shocks which caused the engine to collapse. Of course, mass media never reported about such failures besides those cases when it was impossible to hide the case away (e.g. a cosmonaut had been placed in orbit, it was ballyhooed all over the world, but… on its way back a spacecraft unexpectedly crushed). The Soviet public was supposed to hear and read about only successful Soviet launches, and only unsuccessful American ones. In the Soviet people's mind a feeling of pride and tremendous success was fostered (and we are far beyond those Yankees!). To celebrate the state achievements young people could arrange spontaneous joyous meetings and parties. A pet subject of the Soviet mass media was a heavy weight of our satellites that actually was nothing more than a consequence of a mistake in a missile specification. The prospective nuclear warhead was overweighed in the project calculations on purpose by academician A.D. Sakharov . As a result, Korolev's rockets appeared to be too much expensive for churning them out and useless as combat ballistic missiles They were perfectly suitable for launching heavy-weight sputniks and space ship. Later they were adapted to be used as combat missiles carrying several individually-guided nuclear warheads. However, the usage of liquid oxygen as an oxidizing agent caused the missiles' combat capabilities to decrease considerably though on the other hand their payload capability sufficiently increased. Fuelling liquid oxygen having temperature -183^{o}C (90^{o}K *or* -297^{o}F) was rather difficult and took too much time which was absolutely unacceptable in battlefield conditions.

In the very beginning our tests and launches used to fail much more often than America's. The situation improved much later. Korolev used up 6 rockets till he had launched his first sputnik. That satellite did not contain any research instruments, sensors or lunar packets, there were only batteries and a beeping transmitter. Due to their success in electronics Americans stuffed much more research instruments into their light-weight satellites than Soviet engineers into their heavy ones. Before a famous space travel of Laika and then Belka and Strelka about 6 dogs rested in peace having been unsuccessfully launched to space. During this space race 4 of our cosmonauts died in space while Americans lost only 3 of their men but not in space but in earth trainings. Our earth training victims (Bondarenko, for instance) had never been publicly reported. Hiding a loss of cosmonauts in space was quite a difficult task as their successful launch had been widely announced all over the world. The launch of Yuriy Gagarin had been officially announced only after his brake engine switched on making everybody hope that he would come back safe.

I am saying nothing of the enormous accident when in 1960 the intercontinental missile exploded on a launch pad of Baikonur (Kazakhstan) killing more than hundred of people including leading engineers and designers. As I told before, the catastrophe was fully a fault of Nedelin, the USSR missile troops Commander-in-Chief, who ordered to perform maintenance works of the missile while it was on standby in defiance of all the safety rules. But newspapers wrote that Nedelin was killed in a plane crash. All the rest deaths were not reported.

Launches of American satellites and shuttles, quite the contrary, were usually reported in advance attracting thousands (up million) of people from all over the USA to Cape Kennedy. As to Baikonur, its coordinates were top secret and, as I said before, spacecraft launches were announced only after the crafts orbited successfully. In 1969 the launch of American astronauts and a video of their visit to the Moon watched live more than 500 million people all over the world except the USSR and China. You might find it very weird and funny but we (I and other engineers having an access to a top secret information) were shown popular American films about their satellite launches in strict confidence in a special closed room under the seal of secrecy.

Having a top security clearance, and either by his backstairs influence or due to his dogged insistence Glushko managed to subscribe for the TASS Information Bulletin publishing Foreign Desk reports not censored and improved by the intelligence service. Officially that secret Bulletin was meant for Party Regional Committee secretaries. After being read it was supposed to be passed to the EDB special library, so most of my colleagues came to the closed reading room to read it. I was among the most active readers trying to fish out at least some general information concerning that damned American imperialism. But it did not last long. Some secret informer squealed on us and the First (Secret) department forbad a librarian to allow us that seditious reading.

The major goal of the Communist Party Central Committee was not a progress, science development, or researches but propaganda of the fact that their "Socialism" was the most advanced and foremost and the only true doctrine, and the state system would allow the USSR to overtake all the capitalistic countries. Before the first sputnik was launched both the USSR and the USA attached no importance to the fact. Americans had more than everything required for launching spacecrafts and satellites and could do it at any time. The U.S. government just didn't consider it right to spend tax money on such unnecessary things as spacecrafts because there were much more urgent earthly needs and things to take care of. The Soviet government didn't make too much fuss about launchings as well. Korolev had a rough time wresting rockets to be launched from the Military Department. You may not believe but the Soviet press announced the famous launch of the first sputnik in a little newspaper article. However this news was a bombshell in the overseas press. All the foreign press started a new topic of advanced Soviet technologies and cutting-edge science. The CC CPSU instantly revealed how it could convince the world public of great advantages of the Communist regime. The rocket industry became generously financed from a far too scraggy Soviet state budget. The USA realized that their image of a world leader and a hi-tech state got a most crushing strike. The States re-considered their system of Secondary, High and Higher educations, created the NASA, Defense Advanced Research Projects Agency (DARPA), developed a colossal program of a flight to the Moon. So, the 'space race' had a start: the first animal in space, then the first cosmonaut (astronaut), first female cosmonaut, first human spacewalk, Moon race, and so on.

In fact the first satellite launched into space by the Soviet Union made America move forward, but not the USSR. People of America had all their needs met, they were taken care of by their government and never had to come through hard times of food and other stuff shortages. Vast masses of Soviet people were subject to conditions of incredible poverty that would barely have been tolerated in the USA and Europe. And the USSR could not afford to improve the country's living standards due to a huge outlay on space race researches.

Soon after I became a Head of rocket engine reliability department I realized that I took upon my shoulder a huge responsibility. Tests showed that Glushko engines (all the SU nuclear-armed operational missiles were equipped with such engines!) began cavitating at - 30^{o}C (- 22^{o}F), and would explode if started. Everybody knows that this temperature is common for Siberian winters, and it can be even much colder in the Northern regions of the European part of Russia. This meant that at - 30^{o}C (- 22^{o}F) an attempted attack or retaliatory strike of Russia would end up with its nuclear self-destruction. The CC CPSU and top military leaders had pushed the panic button. They set the top priority goal: to conceal the fact from the government at any rate. They were terribly afraid of any information leakage, because the government's reasoning would be as follows: if the U.S. leaders found out that the USSR

nuclear shield got collapsed at a certain temperature, they would surely make a nuclear strike at unprotected Russia.

If the defenseless happen in the USA, the Soviet power never loss this possibility.

Our EDB was demanded in a form of an ultimatum to troubleshoot the engines and get them rid of that awful drawback as soon as possible. The existence of our EDB and its employees turned to go out on a limb.

Having taken the firing test results of those engines at low temperatures we realized that the engines had been tested at 0^oC, -10^oC, -20^oC and -40^oC ($+32^oF$, $+14^oF$, -4^oF and $-40\ ^oF$) to be on the safe side. All the tests had been successful and showed excellent results. I also found out that no factory testing had been performed. It seemed to be obvious that if the engine worked perfectly at -40^oC then it sure should work at -30^oC (-22^oF).

We made thorough tests at -30^oC and our engine exploded right away due to vibrations and pressure shocks, so that we had to have extinguishers on to fight the fire. That was the one and only case when the cavitation occurred after *each* start of the engine. We rushed to match the engine start options, changed several components, and finally made the engine run steadily and stably at -30^oC. All the combat missiles had been upgraded as quickly as possible according to the obtained results, and military leaders calmed down. Frankly speaking, I think that those upgrades just caused the critical point to shift to the other temperature range. Of course, nobody wanted to delve into the problem, because the main task of Glushko was to show that missiles could be launched at -30^oC so that the CC CPSU and military leaders would stop fussing around.

Developing the Glushko engines our engineers considered all the innovations of foreign rocket production, such as exhaust nozzle shaping, zirconium oxide coating, closed combustion period, two-plane swinging (rotary) motors used to control the missile flight, repeated triggering, etc. Though in many engineering solutions our EDB got much farther and really 'overtook' America. For instance, Glushko was the first to apply extra high pressures in a combustion chamber (up to 250 atm (RD-170) instead of 50-100 atm of the most American rocket jets), and combustion turbo unit pressures up to 583 atm. Combined with the closed fuel cycle this sufficiently improved the jet specific impulse. And this made Glushko jets the best-in-class. The RD-170 was used in the "Zenit" and "Energy" carrier rockets. Developed on the basis of this engine the RD-180 was used in the "Atlas" launch vehicle and RD-191was used in the "Angara" launch vehicle. Only the USA purchased 46 units of RD-180 and technology. The first launch of the "Atlas" took place in 2000. Since then in the past four years the RD-180 has carried into orbit and into space 28 American spacecrafts. One of those crafts was sent to Pluto.

RD-180 is a half of RD-170. One has two cameras. Trust is 423.4 tons in vacuum, specific impulse is 337.8 s in vacuum, pressure in the combustion chamber is 263 atm, the cost is $9 millions (2010).

Glushko did not manage to develop a single-cam jet having thrust of 600-700 t (like the American F-1 of the same tonnage). It would take much time and money to redesign the 200-ton engine so that it would become 700-ton. Glushko solved the problem very simply and quite originally: he just made one single block out of 4 separate 200-ton units. Properties of his new RD-170 appeared to be as follows: thrust in vacuum - 806.4 t, weight – 9 750 kg (21 490 lbs), specific impulse - 337.3 sec (quite high).

Both engines were fueled by liquid oxygen and kerosene. But the F-1's combustion chamber pressure was 70 atm (while the RD-170 performed 250 atm) and specific impulse (very

important parameter) was only 263 sec., mind, that it weighed 8 353 kg (18 415 lbs) and was 5,8 m (19 ft) high. Its nozzle could diverge from 10:1 to 16:1. Of course it was developed many years ago, in 1959. Five F-1 jets were used in the Saturn-V flying to the Moon. As to the RD-170 it was finished by 1980, i.e. 20 years later. This jet embodied all the upgrades done within that period. In particular, the RD-170 can be started up to 10 times. In 2010 its cost was $13.5 million.

The problem of LRE (Liquid Rocket Engine) cavitations and damages was extremely difficult. My team was not the only one to work on its solution; the Central Aviation Motorbuilding Institution was also dealing with it as well as many researchers of our Academy of Science. Actually engineers couldn't realize why two absolutely identical LRE placed in one and the same conditions behaved in different ways: one worked perfectly, another cavitated and the increasing vibration might burst the engine into pieces. We tried to find at least some slight difference between cavitating and successful LREs, but in vain. All the attempts to initiate cavitations on purpose failed. The problem was solved in a pure Soviet way: if a LRE started cavitating it was supposed to be switched off right away and the saved fuel was to be used to increase the rest LREs' run time so that a rocket would be put into orbit as close to the calculated trajectory as possible. Later one more way was found: the problem appeared to be easily solved by inserting a close-meshed sieve (0,1 mm (0,0039 in)) in a fuel supply tube to filter off tiny pieces of metal which – according to some engineers – might damage the engine. I had a different opinion. I thought that this close-meshed sieve made a hydrodynamic resistance increase and therefore damped cavitation waves and pressure shocks. Finally, we managed to reduce a number of cavitating jets to 2% which was more than acceptable speaking about reliability and operational safety.

American developers faced the same problem of liquid-propellant engine damages and fires. It took them two years to upgrade their F-1 so that it became acceptably safe and reliable. It took them a lot of time and efforts to find a right place for fuel and oxidation injectors as well as to solve problems of jet cooling and using ultrahigh pressure in the Glushko LREs. As I said before most of their projects and technical solutions were openly published in journals, while ours had been top secret, though many of them were copied from foreign ones.

There was a hidden bitter hostility between Glushko and Korolev. Some people connected that hostility with the fact that those two engineers had different tastes in fuels: Korolev preferred liquid oxygen with kerosene, but Glushko liked nitric tetroxide with UDMH (unsymmetrical dimethylhydrozene). The first kind of fuel was suitable and very economic for satellite launchers and space craft shuttles. It had a high specific thrust (up to 330 sec). But extremely cold oxygen was too difficult and awkward to use, it took too much time to refuel due to oxygen constant evaporation. It is quite OK for launching sputniks and spacecrafts, but absolutely unacceptable for battle rockets and missiles when a vehicle should be launched in a second after receiving an order.

Nitric tetroxide with UDMH belongs to high temperature fuels. Among its main disadvantages were a low specific thrust (290-310 sec) and aggressive nitric acid (which causticity you might remember from secondary school chemistry classes). The last problem had been solved by choosing acid-resistant materials and so-called capsular storage of the acid in hermetic capsules. This kind of fuel was acceptable for battle rockets and missiles, allowing them always to be on the alert, so that missiles could be launched before enemy missiles destroy our launching facility.

RD-170 launch vehicle jet

One more drawback was connected with aiming equipment. In those times gyroscopic accelerometers were common devices used for that purpose. It took quite a lot of time for a gyroscope to spin up, so it was supposed to be kept permanently spinning.

To my mind the life long animosity between Korolev and Glushko occurred because Korolev learned who had denounced him despite Glushko had done that under torture.

Engineers from the engine EDB of Glushko never missed an opportunity to disparage their colleagues from the rocket EDB, and they used to say that even a wagon would fly if their engine were to attach to it. And, frankly speaking, they were right saying that, because 80% of a rocket is its engine, 15% - its aiming system (usually developed by the EDB of Pilugin) and 5% - a rocket shell. In fact, the rocket itself is nothing else but a huge tin for fuel. However all the laurels are gained by this fuel tin because it is the end product being launched in full view of reporters and other public. Korolev is known world-wide, but one could hardly tell you even in Russia who was Glushko.

Moon Race

The Space Race was a mid-to-late twentieth century competition between the Soviet Union and the United States for supremacy in outer space exploration. And the final and main stage of it was the Moon Race.

In the beginning American President John F. Kennedy suggested Nikita Khrushev to send a joint Soviet-American mission to the Moon (as well as to launch more advanced meteorological satellites together) but Khrushev refused suspecting that Americans just wanted to worm out secrets of Soviet space technologies.

In fact, the Moon Race was a weird competition between two sprinters, when one of them (the USA) runs openly for everyone to see the distance he had covered already and how long was still left. Another one (the USSR) run inside a tunnel and nobody knows when he started and what distance had been covered. Moreover the Soviet leaders denied the fact of their participation in the race, perhaps, to make their rival get relaxed and destructed, and, consequently, loose the competition. The fact that the Soviet Union had been participating in the Moon race was declassified and reveal to public only in 1990 after a downfall of the Communistic regime.

American Program

The Apollo Program was designed in 1961 to land humans on the Moon and bring them safely back to Earth. President Kennedy announced his support for the Apollo program, and on July 20, 1969 the Apollo-11 team – Neil Armstrong, Edwin E. Aldrin and Michael Collins – landed the Moon. Six of the missions (Apollos 11, 12, 14, 15, 16, and 17) achieved the goal. Apollos 7 and 9 were Earth orbiting missions to test the Command and Lunar Modules, and did not return lunar data. Apollos 8 and 10 tested various components while orbiting the Moon, and returned photography of the lunar surface. Apollo 13 did not land on the Moon due to a malfunction, but also returned photographs. The six missions that landed on the Moon returned a wealth of scientific data and almost 400 kilograms of lunar samples. Experiments included soil mechanics, meteoroids, seismic, heat flow, lunar ranging, magnetic fields, and solar wind experiments. This program is still the only one when a human happened to visit an alien astronomical object.

The spacecraft used in the program was made up of (from top to bottom) the Launch Escape System, the Command Module, the Service Module, and the Lunar Module inside the Spacecraft Lunar Module Adapter. These components were assembled atop launch vehicles including the Saturn I and Saturn IB (earth orbit checkout missions), and the Saturn V ("Saturn Five") designed by a pioneer of space launch technologies, former German engineer Verner von Braun, who created V-2 and launched a space rocket to a stratosphere in 1942. The Saturn V was designed to put a 47-ton payload on a trajectory to the Moon and deliver two astronauts to the Moon surface. (The Soviet carrier rocket N1 could deliver only 33- ton payload with one astronaut onboard).

The Saturn V had a thrust of at least 34.02 MN (3340 tons) consisted of three stages—the S-IC first stage, S-II second stage and the S-IVB third stage—and the instrument unit. All three stages used liquid oxygen (LOX) as an oxidizer. The first stage used RP-1 for fuel, while the second and third stages used liquid hydrogen (LH2). The upper stages also used small solid-fueled ullage motors to separate the stages during the launch, and to ensure that the liquid propellants were in a proper position to be drawn into the pumps.

The **S-IC** was built by The Boeing Company at the Michoud Assembly Facility, New Orleans. It was 138 feet (42 m) tall and 33 feet (10 m) in diameter, and provided over 34 MN (7.64 million pounds force) of thrust to get the rocket through the first 36 miles (61 km) of ascent. The S-IC stage had a dry weight of about 288,000 pounds (131,000 kg) and fully fueled at launch had a

total weight of 5.0 million pounds (2.3 million kg); its acceleration was about 2.68 $^{km}/_{s.}$ The **S-II** was built by North American Aviation at Seal Beach, California. Using liquid hydrogen and liquid oxygen, it had five J-2 engines in a similar arrangement to the S-IC, also using the outer engines for control. The S-II was 81 feet and 7 inches (24.9 m) tall with a diameter of 33 feet (10 m), identical to the S-IC, and thus is the largest cryogenic stage ever built. Its acceleration was 6.84 $^{km}/_{s}$. The S-II had a dry weight of about 80,000 pounds (36,000 kg) and fully fueled, weighed 1.06 million pounds (480,000 kg). The second stage accelerated the Saturn V through the upper atmosphere with 5.1 MN of thrust (in vacuum). When loaded, significantly more than 90 percent of the mass of the stage was propellant; however, the ultra-lightweight design had led to two failures in structural testing.

The **S-IVB** was built by the Douglas Aircraft Company at Huntington Beach, California. It had one J-2 engine and used the same fuel as the S-II. The S-IVB used a common bulkhead to insulate the two tanks. It was 58 feet 7 inches (17.85 m) tall with a diameter of 21 feet 8 inches (6.60 m) and was also designed with high mass efficiency, though not quite as aggressively as the S-II. The S-IVB had a dry weight of about 25,000 pounds (11,000 kg) and, fully fueled, weighed about 262,000 pounds (119,000 kg). This stage was used twice during the mission: first in a 2.5 min burn for the orbit insertion after second stage cutoff, and later for the trans-lunar injection (TLI) burn, lasting about 6 min. The third stage was especially meant for the Moon geology exploration.

The Saturn V weighted 6,699,000 pounds (about 3,000 tons) in total and was meant to carry 145-ton payload into low earth orbit and to set a 47-ton spacecraft on a trajectory towards the Moon. The first launch of the Saturn V took place on December 9, 1967. There were 12 successful launches of the rocket out of 13.

On December 21, 1968 the Apollo 8 was launched. It took the spacecraft three days to travel to the Moon orbit. It was the first time a manned craft orbited the Moon.

On July 16, 1969 the Apollo 11 was launched and four days later on July 20, Armstrong and Auldrin landed in the area of the Sea of Tranquility and Armstrong became the first human to set foot on the Moon. Their Lunar Module, Eagle, had spent 21 hours and 31 minutes on the lunar surface while Collins orbited above in the command ship, Columbia. It was then that Armstrong uttered his famous line "That's one small step for a man, one giant leap for mankind" six and a half hours after landing. The three astronauts returned to the Earth with 21.6 kg (47.5 lbs) of lunar rocks and landed in the Pacific Ocean on July 24.

The Apollo 12 was the sixth manned flight in the Apollo program and the second to land on the Moon. It was launched on November 14, 1969, four months after the Apollo 11. Mission commander Charles "Pete" Conrad and Lunar Module Pilot Alan L. Bean performed just over one day and seven hours of lunar surface activity while Command Module Pilot Richard F. Gordon remained in lunar orbit. The landing site for the mission was located in the southeastern portion of the Ocean of Storms next to the unmanned U.S. spacecraft Surveyor 3. The astronauts took pictures of the alighting area and picked and removed from the Surveyor 34,4 kg (76 lbs) of lunar soil and rock samples. The mission ended on November 24 with a successful splashdown.

The Apollo 14 was the eighth manned mission in the Apollo program and the third mission to land on the Moon (a mission with two EVAs (Extra-vehicular activity) or moonwalks). The nine-day mission was launched on January 31, 1971, and reached the Moon on February 5. The Lunar Module landed in the Fra Mauro formation, as this had originally been the target of the aborted Apollo 13 mission. The two lunar EVAs collected 42,9 kg (94.5 lbs) of

moon rocks; within the framework of the enhanced research program several surface experiments including seismic investigations were carried out.

Apollo 15 was the ninth manned mission in the program, the fourth mission to land on the lunar surface and the eighth successful manned mission. It was the first of long-term missions on the Moon with a greater focus on science than had been possible during previous missions. It was also the first mission where the Lunar rover was used (later used in the Apollo 16 and Apollo 17 missions, too). That time astronauts brought home 76,8 kg (169 lbs) of lunar rocks. The mission began on July 26, 1971, and finished on August 7. NASA called it the most successful manned flight ever achieved.

Apollo 16 was the tenth manned mission in the Apollo program. It was the fifth mission to land on the Moon and the first to land in a highland area. The spacecraft was launched on April 16, 1972, arrived to the Moon in four days (despite a malfunction in the Command Module which almost aborted the lunar landing, Apollo 16 landed successfully in the Descartes Highlands on April 21) and came back on April 27. This advanced mission brought 94,7 kg (208.8 lbs) of lunar rock samples. Also it included three lunar EVAs.

The eleventh manned space mission in the NASA Apollo program was the Apollo 17. It was the first night launch of a U.S. human spaceflight and the sixth and final lunar landing mission of the Apollo program. The mission was launched at 12:33 a.m. EST on December 7, 1972, reached the Moon on December 11 and successfully came back on December 19. It remains the most recent manned Moon landing and the most recent manned flight beyond low Earth orbit. It also broke several records set by previous flights, including longest manned lunar landing flight, longest total lunar surface extravehicular activities, largest lunar sample return, and longest time in lunar orbit.

The Lunar Roving Vehicle (LRV) or lunar rover.

According to Steve Garber, who supervises a web-site devoted to the History of NASA, a final cost of the Apollo program was $ 20 - 25,4 billion (which made $135 billion in 2005).

Soviet Program

To provide a priority of the first flyby trajectory manned mission to the Moon the USSR was going to launch the Zond-7 spacecraft within the scope of the Proton – Zond program. It was planned to be launched on December 8, 1968. But as previous unmanned missions were not very successful due to fallibility of both spacecrafts and carriers, the planned mission was concealed despite the crew applied to the CC CPSU for their Moon mission to be launched to be able to overtake America. Unfortunately, even if the permission were given the Soviet Mission wouldn't win the first (flyby) stage of the Moon Race as on December 20, 1969 the carrier "Proton" of the unmanned craft "Zond-7" blew up.

The N1 or 11A52 (also known by NATO as G-1e or SL-15) was a secret Soviet 2 735-ton superheavy carrier rocket meant for sending the Soviet mission to the Moon. The project of the N1 began in 1959 under the direction of Sergey Korolyov at his Experimental Design Bureau – 1, and later, after his death under Vasiliy Mishin. The original design proposed a 50 ton payload intended as a launcher for military space stations and a manned Mars flyby using a nuclear engine upper stage. The N1 was the smallest of three projected designs; the N2 weighed 7000 tons, the N3 (12000 tons) and N4 (18000 tons), which would replace Korolyov's "workhorse" R-7 rocket; however no actual development was carried out, the N-series became just a "paper project". Only N1 was produced at the "Progress" plant in Kuibyshev. Vladimir Chelomei also proposed his UR-200 project as well as Yangel his R-56 but both of them were not accepted.

Vasily Pavlovich Mishin

Vasily Pavlovich Mishin (1917 –2001) was a rocket engineer, chief designer and a prominent astronautics pioneer, member of the Academy of Sciences, Hero of Socialistic Labor, Lenin prize and State prize winner, full member of International Astronautics Academy. Among his awards there are orders and a Korolev Golden medal (so-called № 1). Mishin was one of the first Soviet specialists to see German V-2 (A-4) in 1945. Right there in Germany he met Sergey Korolev. Mishin worked with Korolyov (who became the general designer of long-range ballistic missiles) as his deputy on the design of first Soviet ballistic missiles, carrier vehicles and spacecrafts; together they developed the first Soviet ICBM and the Sputnik and Vostok programs. Mishin became head of the Korolyov's EDO-1 (current Rocket and Space corporation "Energy") after Korolyov's death in 1966. Mishin was in this position till 1974. He continued his educational and research work as the head of rocket department at the Moscow Aviation Institute.

His contribution into the Soviet rocket and missile technology made launch of the first Soviet intercontinental missile R-7 possible in August 1957, as well as the first sputnik orbital injection on October 4, 1957 and the Gagarin's flight to space on April 12, 1961

Mishin was in charge of big projects and researches concerning development of ballistic missiles (starting from the R-1 which was a copy of the V-2 with a 270 km (168 mi) flight range. The very first launch of the missile took place in 1948, and in 1949 a series of geophysical rockets (R-1A, −1B. −1V, −1E) had been developed (those rockets delivered experimental equipment at a height of 110 km (68.5 mi)), the R-2A rocket (range – 590 km (366,6 mi)). In October 1950 an atmospheric probing had been carried out up to 210 km (130,5 mi) high, and since March 1953 researches in space had been performed. In 1953 Mishin

supervised the development of the R-11 mobile ground-launched missile (the first of the "Scud" series) with a flight range 270 km (167,8 mi). The R-11 used high-boiling fuel which made this missile to be stored and transported safe with a full tank. The first Soviet long-range missile R-5 Pobeda (‘Victory’) developed in 1953 was a single-stage missile with a detachable warhead, and in 1955 the EDB developed the nuclear submarine-launched R-11 FM. This famous missile became a progenitress of Russian Navy missilery.

The nuclear R-5M was tested on February 2, 1956. The R-5M made other counties show more respect to the Soviet Union as many strategic targets in Europe became easily reachable. The R-5 series brought Mishin a Hero of Socialistic Labour title.

1957 was marked by one more Soviet missilery achievement, as the intercontinental two-stage ballistic missile R-7 ‘Semyorka’ (launching mass – 280 metric tons) had been developed. This kind of weapon was quite a big event for the national defense system. It was the R-7 which launched the first satellite. The R-7 found a long application in the Soviet and then Russian space programs. The R-7 family consists of both missiles, and orbital carrier rockets. On the base of it the Vostok was developed. The Vostok was used for launching heavy satellites, first unmanned spacecrafts to the Moon and manned missions. R-7 derivatives also include the Voskhod and Soyuz rockets, which have been used in all Soviet, and later Russian manned spaceflights.

The next R-7 modification was the four-stage Molniya (Lightning) launch vehicle. It was used for launching unmanned interplanetary missions to Mars and Venus, and for launching satellites of the Molniya family responsible for radio and TV communications with Far East and Eastern Siberia. Also Molniya was able to carry much heavier soft landing spacecrafts to the Moon.

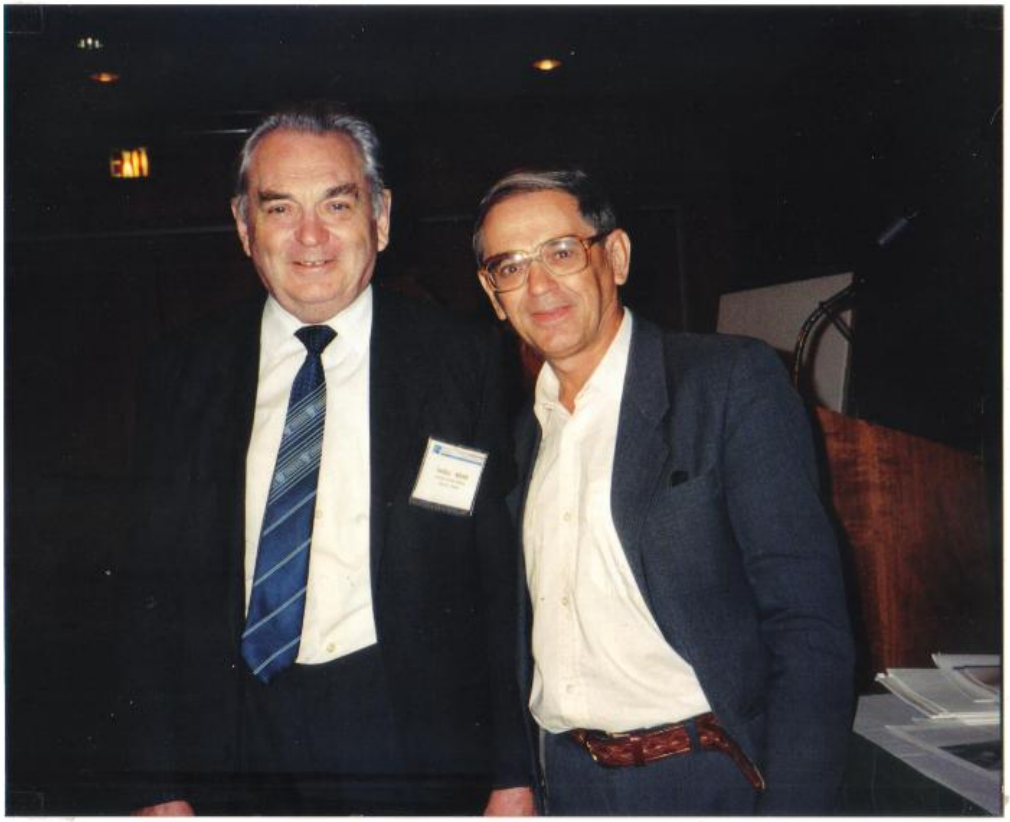
Based on the Vostok, the two-stage Soyuz orbital launch vehicle was built in 1966; it was a member of the R-7 rocket family. It was a rocket with four liquid-fuelled strap-on boosters clustered around the first stage. It could carry a payload of about 7.3 tons into near-Earth orbit. This rocket made such advanced missions possible as manned spaceflights, perform extravehicular activities and orbiting Soyuz spacecrafts docking. The world's first ICBM became the most often used and most reliable launch vehicle in history.

The improved Soyuz space rocket complex was used in programs Salyut, Soyuz, Soyuz – Apollo, Salyut-6 – Soyuz – Progress, Mir and ISS. Later the next generation of this family – the Soyuz-U2 was developed; it was equipped with the upper-stage rocket Fregat (Frigate) designed and produced by the Lavochkin NPO. The Soyuz-U is a unified, single vehicle capable to carry manned and unmanned payloads. It is still in use today, making several launches a year.

The projects mentioned above were intended and implemented when Korolev was alive. He worked on those projects together with such outstanding researchers and engineers as V.S. Avduevsky. V.P. Barmin, K.D. Bushuev, L.A. Voskresensky, A.M. Isaev, V.I. Kuznetsov, A.Yu. Ishlinsky, V.P. Makeev, G.I. Petrov, N.A. Pilugin, B.V. Raushenbach, M.F. Reshetnev, B.E. Chertok and many others. An important part in this creative union belonged to Academician Mishin. His technical solutions were not just original, but very rational and they still remain to be the core of the design, research and development. Vasiliy Mishin took part in such big national projects as the Salyut space station, Soyuz space complex, Progress, Zond, standard unified upper-stage rocket “D” with nontoxic fuel which was used for launching communication satellites Venera, Vega, geostationary satellites Raduga, Gorizont, Ekran, etc. A lot of his time, efforts and creativity Mishin devoted to development of the N-1 heavy carrier (launching mass 2

820 metric tons) and the L3 manned lunar complex (95 metric tons) which was supposed to be launched to the Moon by the N-1.

Mishin was responsible to implement the Soyuz projects of Korolev but as a whim of the Soviet leaders was in question many times he gave a go-ahead for launching imperfect untested vehicles in order to satisfy the government. Of course, Mishin was afraid to loose his position as his power and authority couldn't be compared to the Korolev's. Being the EDO-1 Chief designer (1966 -1974), Mishin showed lack of spirit several times making concessions to high-ranking officials which excreted him by demanding spectacular launches dedicated to this or that State celebration and anniversary. Wanting to meet the government's needs Mishin made decisions to launch crafts which were not quite ready to be in service, as he practically had no choice. That led to a series of failures. In particular, there were two big tragedies when four Soviet cosmonauts died. His faintheartedness appeared to cut both ways: the N-1 lunar rocket and the Soviet Moon program failure were the main reason for Mishin to be dismissed and replaced by Valentin Glushko in 1974. Vasiliy Pavlovich was very cut up by that event; after his dismissal he devoted himself to theoretical researches at the Moscow Aviation Institute where he founded the Aerospace department and trained many engineers, Doctors and Professors.



Professor Alexander Bolonkin with Academician Vasiliy Mishin, Chief designer of Soviet space technologies.

The N-1 (*AKA*: N-1 11A52;N-1;SL-15;11A52;G-1) Russian heavy-lift orbital launch vehicle was originally meant for inserting the heavy orbital station (75 metric tons) into circumterrestrial orbit, in future it was planned to assemble there a heavy interplanetary

spaceship to fly to Venus and Mars. When the Party had released a decision to participate in the Moon Race, the N 1 was boosted to become a carrier for the expedition spacecraft L3. There were four test launches of the N 1. All of them failed due to problems with the rocket's first stage. In 1974 the Soviet manned lunar program was closed and in 1976 the N 1 further development was also canceled.

The N1 launch vehicle included five stages, each equipped with oxygene-kerosene jets. Glushko in his EDO-1 had neither infrastructure nor technological facilities for developing and producing risky and costly advanced high-energy oxygen-hydrogen LREs for the N 1, instead he was ready to produce more powerful and toxic heptyl-amyl jets. In any event, the EDO-1 was not going to deal with engines for the N 1, so another EDO headed by Kuznetsov was entrusted with that task. This EDO managed to develop only oxygen-kerosene jets. At all the stages fuel was kept in spherical tanks attached to a carrying shell.

Fully loaded and fueled, the N1-L3 weighed 2 788 metric tons (6.1 million lb). The lower three stages of the N 1 were shaped to produce a single truncated cone just over 10.3 m (33.8 ft) wide at the base, while the L3 section was cylindrical at about 4.4 m (14,5 ft) wide. The conical shaping of the lower stages was due to the arrangement of the tanks within, a smaller spherical kerosene tank on top of the larger liquid oxygen tank below.

The first stage, **Block A** (launching mass – 1880 metric tons), was powered by 30 NK-30 engines arranged in two rings, the main ring of 24 at the outer edge of the booster, the inner of 6 at about half diameter. The engines were the first ever staged combustion cycle engines. The control system was primarily based on differential throttling of the engines, the outer ring for pitch and yaw, the inner six on gimballing mounts for roll. The Block A also had four grid fins, which were later used on Soviet air-to-air missile designs. In total, the Block A produced 43 meganewtons (9,700,000 lbf) of thrust. This exceeded the 33.7 meganewtons (7,600,000 lbf) thrust of the Saturn V.

The second stage, **Block B**, was powered by 8 NK-15V engines arranged in a single ring. The only major difference between the NK-15 and -15V engines was the engine bell crank and various tunings for air-start and high-altitude performance. The upper stage, **Block V** (*V* being the third letter in the Russian alphabet), mounted four smaller NK-21 engines in a square.

The fifth stage, **Block D** (*D* being the fifth letter in the Russian alphabet) with the launch mass of 18 metric tones was equipped with one engine RD-58 producing a 8,5-ton thrust. The engine of the "D" block was supposed to work for 600 sec and allow the multiple starts.

During the N 1's lifetime, a series of improved engines was introduced to replace those used in the original design. The first stage used an adaptation of the NK-15 known as the NK-33, the second stage was equipped with a similar modification known as the NK-43, and finally the third stage used the NK-31. The resulting modified N 1 was known as the N 1F. In comparison with the American Saturn V, the N 1 is slightly shorter, more slender overall, but much wider at the base. Generally the N 1 produced much more thrust than the Saturn V. However, as it used only kerosene fuel in three of its stages, it had somewhat lesser overall performance than the Saturn; the N 1 could place about 95 metric tons of payload into Low Earth orbit, whereas the Saturn V could carry into orbit about 130 metric tons.

The domestic alternative of the N 1 launch vehicle of Korolev were the projects of similar vehicles (Chelomey's UR-200 and Yangel's R-56) which remained unimplemented.

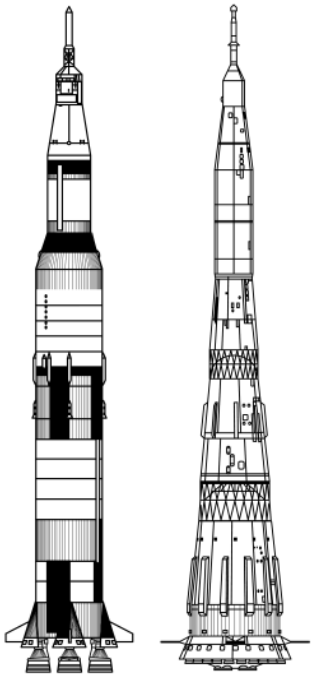


Fig.1.

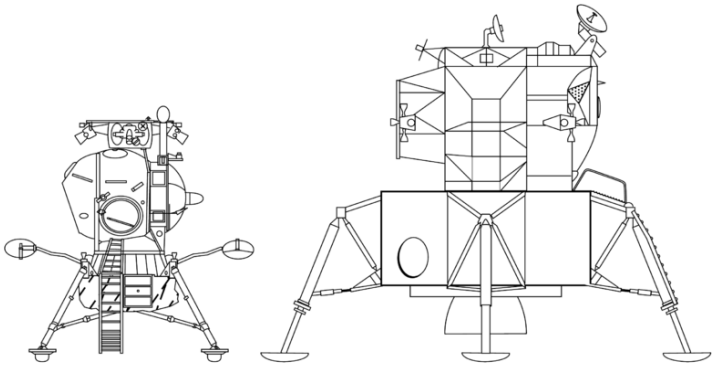


Fig.2.

Fig. 1 Saturn V (left) and N 1 (right) scaled down
Fig. 2 Soviet L3 (T2C-LC) lunar module (left) and American Apollo module (right)

N-1 Launch history

Febryary 21, 1969. The first launch of the N 1 (Vehicle serial number 3L) with the unmanned Zond-M failed. Due to unexpected high-frequency oscillations in the gas generator, one of the pipes broke apart and a fire started the aft section (engine 2). This fire reached the engine control system which at the 68.7 s of flight sent the command to shut down the engines. The rocket exploded at 12,2 km (7,6 mi) altitude, 69 seconds after liftoff. The emergency rescue system was activated and did its job properly, saving the mockup of the spacecraft. All subsequent flights had freon fire extinguishers installed next to every engine.

The second launch of the N 1 (vehicle serial number 5L) with the unmanned Zond-M and the dummy lunar spacecraft (T2C-LC, 11F94) also was unsuccessful: at liftoff a loose bolt was ingested into a fuel pump in the Block A, which caused one of the engines to fail. The events of July 3 1969 were very similar to the previous launch: after detecting the inoperative fuel pump, the automatic engine control shut off 29 of 30 engines, which caused the rocket to stall. The rocket exploded 23 seconds after shutting off the engines, destroying the launch tower and launch pad in the biggest explosion in the history of rocketry. 2,600 tonnes of fuel had the power of a small nuclear bomb. The destroyed complex was photographed by American satellites, disclosing that the Soviet Union was building a Moon rocket. The rescue system saved the dummy spacecraft again. After this flight, fuel filters were installed in later models.An emergency committee headed by V.P. Mishin later concluded that the main reason of the accident was an oxidizer pump failure. It took two years to analyze the results of tests, perform additional calculations, researches and experiments and restore the launch pad.

In December 1968 the USA at last pulled ahead in the Space race and won the first (flyby) stage of the Moon race when Frank Borman, James Lowell and William Anders had orbited the Moon 10 times on December 21-27.

In almost a year the USA had won the second (landing) stage of the Moon race. On 16 July, 1969 the Apollo 11 spacecraft was launched from the Canaveral cape with Neil Armstrong, Michael Collins and Edwin Auldrin jr. onboard and four days later on July 20 they reached the Moon and on July 21 Armstrong went out to walk on the Moon surface. There was a live broadcasting all over the world except the USSR and the People's Republic of China; about 500 million of people watched the event over TV. As we know, later the USA successfully sent five more lunar missions including missions with the lunar rover and unmanned spacecrafts and lunar modules. Every time they brought several dozens of Moon rocks to be investigated.

On June 27 1971 the Soviet N 1 (vehicle serial number 6L) had been launched for the third time. The mission included the lunar unmanned landing craft (T2C-LC, 11F94) and the L3 dummy lunar complex. The vehicle experienced an uncontrolled roll immediately after liftoff beyond the capability of the control system to compensate; the vehicle was destroyed 51 seconds after liftoff at 1 km (0,62 mi) altitude. This time the vehicle had dummy upper stages without the rescue system. The next, last vehicle had much more powerful stabilization system with dedicated engines (in the previous versions stabilization was done by directing exhaust from the main engines). The engine control system was also reworked, increasing the number of sensors from 700 to 13,000.

It took less than a year to develop special minor side rudder engines to control the rocket's list angle. The engines worked on producer gas and fuel pumped from major engines.

Professor A. Bolonkin and academician Boris Rauschenbach – main space theorist of the USSR, he was in a concentration camp in 1942 – 1948 years.

On November 23, 1972 there was the fourth and the last launch of the N 1 (мehicle serial number 7L) with the lunar unmanned orbital spacecraft (7C-LOC, 11F93) and the landing spacecraft mockup (T2C-LC, 11F94) of the L3 lunar complex. This time the payload was supposed to be heavier, the substantially troubleshot and improved launch vehicle was named N 1F. Its flight was controlled by an airborne computer receiving commands from a gyroplatform

(designed by N.A. Pilyugin). The new modification was equipped with special rudder engines and fire-control units. Feedback gaging and probe systems were additionally equipped with new compact radiotelemetric equipment. The vehicle contained 13 000 different sensors. The start was flawless and in the beginning everything was OK. The engines ran for 106.93 seconds after which pogo oscillation of the first stage caused engine cutoff (a problem which also plagued the engineers of the US Saturn V) at 40 km (24,85 mi) altitude; a programmed shutdown of some of the engines to prevent over-stressing of the structure led to an explosion of the oxygen pump on the engine number 4. That caused the first stage to separate 7 seconds before the preset time. The vehicle disintegrated. The mission failed though in theory the rocket energy resources were sufficient to put the spacecraft to orbit.

Note that most of the failures occurred due to Kuznetsov engines malfunction. The Kuznetsov's EDB encountered the problems of cavitations and oscillations in a fuel supply system which I described above telling about Glushko and his EDB.

However, the USSR had lost the Moon race. Despite for the L3 orbital station and new complex N-1F-L3M there were developed technical solutions concerning long-term lunar expeditions by 1979 and the Soviet lunar base construction on the Moon surface, Glushko (who became a chief designer in NPO "Energy" in 1974 instead of Mishin) decided to stop developing the manned lunar program. In 1974 at CC CPCU Politburo sufferance he cease all work on the program and later on the N 1, its general carrier.

Summing up the results of this peaceful competition I can say that the USSR came off worst in this race not because our engineers and designers were behind their American colleagues. It was a defeat of the system itself. The Politburo and Party leaders were interested only in propagandistic side of our space achievements. The CC CPSU demanded to perform spectacular launches to dedicate them to some state celebration or anniversary, that is why the preparations could be done hastily, the crafts and vehicles were not properly tested and immature. This usually caused the mission failure or catastrophe (though our mass media always proudly announced about "successful launches"). You are sure to remember about a flight of Vladimir Komarov (1927 – 1967). An outstanding manned flight was urgently wanted by the CC CPSU for the umpteenth time. The Soyuz-1 was known to be a new and heavier type of spacecraft, built as part of the Soviet attempt to land a man on the Moon. To cut the long story short the Soyuz-1 space flight had been dogged by problems from the beginning, and the craft was not ready for manned flights. But objections from the engineers were overruled by political pressures for a series of space feats to mark the anniversary of Lenin's birthday or at least the 1st of May. In the course of preflight preparations a lot of troubles and malfunctions had been revealed. Having found that out, a cosmonaut which was supposed to pilot a craft fell ill; he was grounded as his blood pressure rose so suddenly and Colonel Komarov was commanded to fly instead of him. Being an experienced pilot, he was supposed to be the most skilled candidate to fly to the Moon. On April 24, 1967 Colonel Komarov was thought to be testing the Souz-1 spacecraft when the disaster happened. The Soviet Union had to announce the catastrophic failure of its latest space mission, with the crash of Soyuz-1 and the death of the cosmonaut on board. Vladimir Komarov was the first known victim of a space flight. He was an experienced cosmonaut, on his second flight, and had completed all his experiments successfully before returning to Earth. But within seconds of landing, just after he re-entered the Earth's atmosphere, the strings of the parachute intended to slow his descent apparently became tangled. The overheated spaceship hurtled to the ground from four miles up. According to BBC it was likely that Colonel Komarov had been killed instantly on impact.

Americans and Germans happened to record his last cry of despair. Komarov died cursing the spacecraft designers and flight controllers, but most of all the Central Committee and the Party which actually sent him to this mission. A tape from a West German tracking station bearing some of Komarov's brief phrases was forwarded to the Command-Measurement Complex of the Soviet Union after the disaster and was reported to contain the word "killed", mixed in with Komarov's distraught transmissions, among other flight data recorded on radio by the West Germans. But no words were spoken on the parachute system. There were words on the rise of temperature inside the ship. The recording was made, apparently, on one of the last orbits, if not the final one. A message of condolence from the Communist Party in Moscow described him as "a loyal son of our motherland and a courageous explorer of space." He has been decorated posthumously with a second Gold Star for heroism, and his ashes had been buried at the Kremlin wall - one of the highest honours accorded to a Soviet citizen. But the CC CPSU never forgave his bitter words addressed to the Party and never marked a year-mind of his death.

Above all, the Soviet industry was too weak and feeble to go on competing with the American one. We suffered a lack of finance, average Soviet engineers lived in far not so good conditions as their American colleagues (remember my story of getting a room in an ramshackle house – that house had been demolished short after I moved in). We, the engineers were badly short of necessary stuff, especially electronics. Our heads had neither possibilities nor desire to develop, implement and test innovations suggested by their subordinates. All they could do was to copy American innovations.

Despite all those obstacles our designers were doing their best to develop Soviet technologies and the Soviet Union continued to dominate the space race for another two years (launching 3-4 times as much satellites as all the other countries put together every year), until the United States put the first man on the Moon with the Apollo 11 mission in 1969. Of course most of Russian satellites were for defense purposes.

Since the break-up of the Soviet Union, Russia and the United States have increasingly pooled resources and technology in space. The two nations shared a joint permanent home in space, the International Space Station, launched in 2000. It replaced the previous symbol of the Soviet space programme, the space station Mir.

I think this part of the book would be incomplete without mentioning Konstantin Tsiolkovsky (sometimes spelled as Ciolkovsky or Ziolkovsky).

Konstantin Edwardovich Tsiolkovsky (1857-1935)

K.E. Tsiolkovsky was a true visionary and pioneer of astronautics. He theorized many aspects of human space travel and rocket propulsion decades before others, and played an important role in the development of the Soviet and Russian space programs. Konstantin Tsiolkovsky was born on September 17 in the village of Izhevskoe, Russia. His formal education was terminated tragically at the age of 10 he lost his hearing as the result of scarlet fever. Unwilling to accept defeat by his handicap, he began to educate himself at home. His extraordinary success at this venture was recognized by his family who then sent him to Moscow to complete his education. Because of his proficiency in mathematics and the sciences, he eventually won a teaching post at Kaluga.

Tsiolkovsky, the schoolteacher, was consumed by his passion for the sciences. He tried his hand at science fiction and with the inspiration of Jules Verne's stories began to write of interplanetary travel. He soon introduced real technical problems into his writings, such as rocket control in moving into and out of gravitational fields. Tsiolkovsky evolved from fiction writer to scientist

and theoretician. Hypotheses and calculations followed on a broad spectrum of matters: gyroscopic stabilization; escape velocities from the earth's gravitational field; the principle of reactive action; and the use of liquid propellants for rockets. His "Tsiolkovsky Formula" established the relationships between rocket speed, the speed of the gas at exit and the mass of the rocket and its propellant. This fundamental principle remains basic to contemporary astronautics.

At the age of17, while living in Moscow, he first dreamed about the possibility of space flight. He was, in part, inspired by the novels of Jules Verne. Since that time he started to think about the problems of space vehicle design. His great purpose was not simply to go into outer space, but to live in space, for humanity to become a space civilization. In 1876-1879, after his coming back to his father's home, he lived in Vyatka and Ryasan. After passing his exams, he received his Teacher's Certificate, and went to work as a math teacher in Borovsk, Kaluga Province. Till 1892 Tsiolkovsky lived in Borovsk and worked as a teacher. At that time he began his scientific research in air balloon building, life in free space, aerodynamics and philosophy. Tsiolkovsky also represented the ideas of Russian Cosmism and manned space exploration. He suggested that the cosmic space should be populated by means of space stations and advanced the ideas of ‘cosmic lift’ and hovercrafts. It was in Kaluga that he became a well known scientist, and where he wrote and published his theories of space flight and inter-planetary travels. In Kaluga he wrote his Cosmic Philosophy, and he dreamed about the far distant future of humanity, including the eventual conquest of space and our leaving the cradle of the planet Earth for the stars. He was sure that human life should get out of its ‘cradle’ to explore the space and live on far-away planets. Konstantin Tsiolkovsky is generally considered the father of astronautics and rocket dynamics. Entering the world more than one hundred years before Sputnik became the first object rocketed into space, he prepared the way for it and all space exploration that followed.

On November 17, 1919 five men burst into his house. They searched the house and brought Tsiolkovsky to the Lubyanka prison where he had been interrogated for several weeks. Being an aged deaf handicapped person and, besides, living in a small provincial village he was absurdly accused without any solid evidence of espionage. Some time later he was suddenly released (according to some percolated information he was interceded for by some big shot).

In his apartment he arranged the First aerodynamic lab in Russia. In 1897 he built the first Russian open-jet wind tunnel and developed experimental techniques for it. In 1900 a financial support of the Academy of sciences allowed him to perform experiments with simple models and found resistance coefficients of a balloon, flat plate, cylinder, cone and others to describe the airflow behavior.

In 1903 he published his paper titled “*The Exploration of Cosmic Space by Means of Reaction Devices”* (Russian: Исследование мировых пространств реактивными приборами). Tsiolkovsky calculated that the horizontal speed required for a minimal orbit around the Earth is 8,000 m/s (5 miles per second) and that this could be achieved by means of a multistage *rocket* fueled by liquid oxygen and liquid hydrogen. In his further papers (1911 and 1914) he developed some ideas of rocket theory and liquid-propellant rocket engines.

Tsiolkovsky is considered to be the author of jet propulsion equation (Tsiolkovsky formula). But Ivan V. Meshyorsky was the first to publish the formula for variable-mass body motion (“Dynamics of Variable-Mass Point”, St. Petersburg, 1897).

Tsiolkovsky had been developing the idea of the air cushion since 1921, publishing fundamental paper on it in 1927, entitled "Air Resistance and the Express Train" (Russian: Сопротивление воздуха и скорый поезд). In 1929 Tsiolkovsky proposed the construction of

multistage rockets in his book “Space Rocket Trains” (Russian: Космические ракетные поезда). However his method had been hardly applicable: 32 rockets were supposed to be launched and then fuel was to be pumped from one rocket to the other in the course of their flight; this way of space travel was pretty impractical as 31 out of 32 space pilots would die.

Some of Tsiolkovsky’s papers could hardly be called scientific, because the results of his investigations and calculations are represented not as formulas or graphs but as unclear tables.

Relying on the Hubble spectroscopic method (red shift) Tsiolkovsky denied the Einstein’s Relativity theory and the theory of expanding Universe. Also he denied time dilation in the Relativity theory. He wrote: “Time dilation on board of spacecrafts moving at a rate of sub-light seems to be either a fantasy or a mistake of non-philosophers' minds… Time dilation! What an oxymoron, what a nonsense!”

Tsiolkovsky was one of the first scientists who popularized space flights, his life was a feat. But most of his ideas were not grounded scientifically. Maybe someday we’ll be able to realize what he actually meant.

In 1919 Tsiolkovsky became a member of the Soviet Academy of Science. He received a government pension in 1920, and continued to work and write about space. Upon the publication of the works of German rocket pioneer Herman Oberth in 1923, his works were revised and published more widely, and he finally earned some international recognition for his ideas. He wrote over 500 scientific papers, and, even though he never created any rockets himself, he influenced many young Russian engineers and designers.

When Russia was passing through the period of space races and the names of rocketry engineers were top secret, Konstantin Tsiolkovsky was given a title of the father of cosmonautics. The Museum was arranged In Kaluga to honor his life and work, though he hardly had been honoured inter vivos. The main reason was that he has been dead already and officially announced all his works, all his papers to belong to the Soviet power, though out of 500 of his papers only several had been published. If he ever presented his papers on cosmism he definitely would end up in Kolyma labor camps.

This title could be equally granted to Yuriy V. Kondratyuk, the scientist from Ukraine. But he appeared to be a Jew and a son of bourgeois. He refused to join the team of Korolev as he was afraid the NKVD would burrow into his biography.

Moscow Aviation Technological Institution (MATI). Bauman Moscow Higher Technical School (MHTS)

I always was interested in research work. In Soviet times it was more or less acceptable to pursue science only if you had a PhD. Only big respectable Universities and Institutes were acceptable grounds for preparing a thesis and getting a Doctorate degree, because even such big well-known design bureaus as that one of Glushko did not have their academic councils to consider Doctorate and Professorate theses; heads of EDBs usually became directly Academicians having skipped Doctorate and Post-doctorate degrees. They had no opportunity to make researches as this was a job of research institutes of RAS. That sort of institutes was solving some narrow scientific tasks in case some construction problems appeared (like vibrations and cavitations in jets mentioned above).

Working in a EDB one could not afford spending time on theses as there were a lot of routine problems to be immediately solved. The fact that you would like to write a thesis and get a degree made bosses suspect that you were looking to take their positions, that’s why you

always could expect them to throw a spanner into your plans by declaring that you were divulging secret information of their EDB.

That is why in 1967 I decided to quit the EDB and go to work to the Higher Mathematics department of Moscow Aviation Technological Institution (currently Moscow State Aviation Technological University). It was no great shakes, but there were taught subjects relating to space and aviation technologies and control systems. I was supposed to teach higher math. Such a comprehensive two-year course required much more efforts than specialized courses which were just one term long.

But there was an advantage: teachers of math were included into a selection committee which was responsible for entrance examinations (applicants to technical colleges were and still are supposed to pass math), so I got an excellent chance to get to know the background of entrance exams pretty closely. Besides, many wealthy parents usually invited an individual teacher to prepare their kid for exams. Of course they preferred Institute and University teachers. My pupils usually passed exams successfully and I had a lot of proposals. It took 3 – 6 months to prepare one entrant. This helped me to improve my living conditions and leave a shared flat.

Post-Doctoral Dissertation

My post dissertation (pot-doctoral thesis) was devoted to new optimization methods and their application to problems of control system dynamics. It really was a brand new trend which made one single complex out of various optimization problems and their definitional domain. The optimization problem definition itself in my thesis was absolutely non-standard.

The classical approaches this problem is following:

Problem A. *Find a minimum of the given objective function.*

Together with problem A the following problems are considered:

Problem B. *Find a smaller subset contains the all points of the global minimum.*

Problem C. *Find a subset of better solutions where the function is less that given value.*

Problem D. *Find a lower estimation of function.*

These non-classical approach B, C, and D require innovative solutions, different from the well-known methods.

The author offers a new mathematical method for the solution of these problems.

The new methods have turned out to be much more general, so that while solving one of the above problems, another may be solved in passing, which may help in the solution of the former. Thus, if a satisfactory lower estimate found, it can be compared with various engineering solutions and give rise to one very close to the optimum.

This method is applied to many mathematical problems of optimization. For example, functions of several variable, constrained optimization, linear and nonlinear programming, multivariable nonlinear problems described by regular differential equations and equations in partial derivatives, etc.

One can easy get from the given method to many well-known methods of optimization, for example, Lagrangian multiplier method, the penalty function method, the classical variation method, Pontragin's principle of maximum, dynamic programming and others.

At present, the most of researchers in optimization fields are using the traditional optimization problem – find a minimum of the given function (Problem A). They look a single, local minimum. An engineer, however, is usually interested in a subset of quasi-optimal solutions.

He must make sure that the optimum does not exceed a given value (Problem C). Also, a good estimation from below will indicate how far a given solution is from the optimum solution (Problem D). An addition an engineer usually has other considerations that cannot be introduced into a mathematical model or can lead to impractical complications. Approach C provides him with some choice.

Problem D is also of particular interest. If an estimate from bottom closes to the exact infinum of the function is found, the optimization can frequently be reduced to finding a quasi-optimal solution by trial and error.

Solution of the Problem B can significantly simplify the solution of any of the above problems, since it narrows the set containing optimal solution.

These non-classical Problems B, C, and D require innovative methods, different from the well-known method of variation calculus, maximum principle and dynamic programming. This new method is general, so that while solving one of the above problems, another may be solved in passing, which may help in the solution of the former. Thus, if a satisfactory estimate from below has been found, it can be compared with various engineering solutions and give rise to one very close to the optimum.

My theory was based on my Functional Deformation method (objective function) allowing a complex problem to be replaced by a series of simple problems so that their solutions would provide data necessary for the initial problem solution. According to this method, all the possible solutions of the given problem could be divided into subsets of solutions, exact or approximate, and a solution region with the absolute minimum could be specified as well as a global minimum lower estimate. The theory was stated in terms of the set theory, which made it quite general and allowed us to obtain all the known methods (such as the classical variations calculus, Pontryagin principle of maximum and Bellman dynamic programming equation) out of it. A textbook based on this thesis was published by MHTS in 1972 and meant for upper division courses, engineers and researchers. Its microphotocopy together with my dissertation is kept in the Moscow State Library (Ф-801-83/809-6).

The dissertation and book consists of three parts (10 Chapters). The first part describes new method of optimization that has the advantages at greater generality and flexibility as well as the ability to solve complex problems which other methods cannot solve

This method, called the “Method of Deformation”, solves for a total minimum and finds a solution set near the optimum. Solutions found by this method can be exact or approximate. Most other methods solve only for a unique local minimum. The ability to create a set of solutions rather than a unique solution has important practical ramifications in many designs, economic and scientific problems because a unique solution usually is difficult to realize in practice.

This method has the additional virtue of a simple proof, one that is useful for studying other methods of optimization, since most other methods can be delivered from the Method of Deformation.

The mathematical methods used in the dissertation allow calculating special slipping and breaking optimal curves, which are often encountered in problems of optimal control.

The author also describes the solution of boundary problems in optimization theory.

The author wrote the text-book about his method. The mathematical theory is illustrated by several examples. The book is replete with exercises and can be used as a text-book for graduate courses. In fact the author has lectured on this theory using this book for graduate and post-

graduate students in Moscow Highest Technical University named after Bauman and New Jersey Institute of Technology (USA).

The second part of the dissertation (and book) is devoted to applications of this method to technical problems in aviation, space, aeronautics, control, automation, structural design, economic, games, theory of counter strategy and etc. Some of the aviation, aeronautic, and control problems are examined: minimization of energy, exact control, fuel consumption, heating of re-entry space ship in the atmosphere of planets, the problems of a range of aircraft, rockets, dirigibles, and etc.

Some of the economic problems are considered, for example, the problems of a highest productivity, the problem of integer programming and the problem of linear programming.

Many economic problems may be solved by the application of the Method to the Problems of non-cooperative games.

The third part of the book contains solutions of complex problems: optimal thrust angle for different flight regimes, optimal trajectories of aircraft, aerospace vehicles, and space ships, design of optimal regulator, linear problems of optimal control.

This book is intended for designers, engineers, researchers, as well as specialists working on problems of optimal control, planning, or the choosing of optimal strategy.

For engineers the book provides methods of computation of the optimal construction and control mechanisms, and optimal flight trajectories.

In addition, the book will be useful to students of mathematics, general engineering, and economic.

My dissertation was presented to the department of Mechanics and Control Process of Leningrad Polytechnic Institute. The Head of this department was Professor Anatoly Isaakovich Lourje (1901-1980), a well-known researcher, corresponding member of the USSR Academy of Sciences. Among his achievements are fundamental results in the automatic control theory, optimization, elasticity theory, vibration theory, stability theory, pin-type rod theory, theory of thick plates and theory of shells. The supervising organization was the Moscow Institute of Space Researches, USSR AS. I had my thesis presented and discussed at seminars in many leading research institutes of Moscow, in particular, in Institute of Mechanics (by Academician Ishlinsky), in Institute of Applied Mathematics (by Academician Moiseev), in Institute of Mathematics (by Academician Pontryagin), in Institute of Space Research (by Shatrovsky, PhD), in Institute of Control Systems (by Academician Petrov). When I proposed Petrov to become my scientific adviser he asked whether I was through with my thesis. And I made a big mistake. I said that it was complete. Then he replied that as far as it was complete the question of a scientific adviser was simply not on.

Many academicians and well-known scientists wrote positive reviews to my thesis. The main part of my new theory was published in the collected articles of the USSR Academy of Science, Siberian Branch.

In my thesis I solved many practical problems of aviation, astronautics, rocketry, theory of control, game and conflict theory by the suggested method. In particular, I solved the problem of a spacecraft's reentry avoiding different exotic sliding modes but considering *spacecraft heating* as the major reentry factor. However I was strongly against making my dissertation top secret. My author's abstract contained a phrase: 'a series of aviation problems is solved'. A censor's reaction was like "by this you disclose a type of activity of your institute". It sounded ridiculous because a full name of my institution was written on the cover making it obvious that

the institution deals with aviation problems, but my reasoning was left unreplied. I had to remove the word ‘aviation’ and re-write that sentence like ‘a series of *technical* problems is solved’.

Soon after the Head of our department in MATI became Krotov. He was a newly-fledged Doctor with the dissertation on wrong reenterings and landings of spacecrafts. Before he came our Head was an associate professor whose main achievement was a Hero of the Soviet Union title obtained in the World War II. This time Krotov once again suggested that I should enter his ‘scientific gang’. Of course, I refused and we became deadly enemies. He invited Vladimir Hurman - his devoted fawner and a member of his gang - to work at our department. As to me, I had to move to a Math department of Bauman Moscow Higher Technical School (current Bauman Moscow State Technical University). It was in 1970.

Somehow Krotov managed to find out that I presented my thesis to LPI (Leningrad Polytechnic Institute) before he came to work to MATI, and decided to demonstrate what would be with those who refused to join his gang. He did not have a copy of my thesis to read and he had no idea what was written there, but he called his gang and within two days they collected a portfolio with negative reviews. All of those Krotov’s “reviews” never laid eyes on my paper, it was confirmed by the LPI Academic Council records, and, besides, reading of such a big and complicated paper (it contained 200 proved theorems) would take some time (especially considering that a travel to Leningrad from Moscow takes 8 hours by train), but definitely not a couple of days.

Of course all their “reviews” contained nothing particular, neither examples, nor certain mistakes or results from my paper. There were only generalized phrased like “too poor”.

Krotov together with his favorite Hurman and a portfolio of negative reviews produced by his gang specially came to Leningrad to listen to my oral presentation of the thesis. Even in that travel they couldn’t help cheating: their arranged their travel to Leningrad as an official business trip so that MATI covered their travel and accommodation expenses. To say nothing of deranged classes due to their absence.

During the debates at my presentation Krotov and Hurman made a terrible clutter constantly saying that everything is wrong without giving a single example! A little later they changed their tactics and Krotov declared that Bolonkin’s doctoral thesis is cribbed from his. When members of the Academic Council asked: “Then, according to what you said, Bolonkin cribbed wrong results from your paper?” he could say nothing.

Finally more than 2/3 of members of the Academic Council voted for my dissertation and it was sent to the Supreme Certification Board to be confirmed officially (1971). The only reason why the confirmation had been delayed till 1988 was my arrest for reading so-called ‘anti-soviet’ critical literature and 15 years in prison labor camps.

In 1972 while working in MHTS I wrote In MHTU I wrote a book for students and engineers entitled “New Optimization Methods and Their Application”, MHTU, 1972, 220 ps. («Новые методы оптимизации и их применение», МВТУ, 1972г., 220 стр.), where I included many exercises on application of this method. Also I gave lectures on this method at professional development courses for engineers and teachers. I don’t know the destiny of that book as it was supposed to be published soon after I had been arrested. When I was released, a KGB man gave me a copy of this book. Also I managed to find out that the Lenin Central Library in Moscow converted the book into a microfilm (Ф-801-83/809-6).

Krotov together with his Hurman were drummed out of the Institute because of their squabbling behavior. The institution administration did not like that they went on business trip to Leningrad especially on purpose to fail the dissertation presented from MATI. Krotov did not

manage to become a member of the Academy of Science even a corresponding one. Hurman was lucky enough to get a job in Irkutsk. Krotov didn't happen to become new Lycenko (Fake scientist who made enormous harm to Soviet science. Pet of Stalin).

With all this background, their complaints that they were treated so unjustly due to their Jewish origin sounded at least unfounded.

Part 2. In Soviet Concentration Camps

Alexander Bolonkin had everything one can wish for: interesting job in the most prestigious sphere of space engineering, advanced degree of Doctor of Sciences, material well-being. He possessed all this and he resigned all this standing up against the regime in the years when the end of its existance couldn't be predicted. He began struggling and lost everything. A new life of political prisoner, with all its dreadful aspects, began.

Doctor of Historical Sciences (Ph.D.) Vladimir Gusarov

"TWO LIVES OF ALEXANDER BOLONKIN – A SCHOLAR AND A POLITICAL PRISONER"

/From the series of programs of Russian-American radio in the USA /

/ 4 programs, each of 45 minutes duration/

Contents

1. Preface

The victory of democratic forces in the Soviet Union in August of 1991 had put an end to the bloodiest and the most dreadful regime in the history of humankind. It caused a death toll of 60 million people. The social order was based on total hypocrisy, falsehood, violation of the primary human rights and bloody repressions. The Communist party, self-proclaimed as the torch, the flag of all laboring men, ceased existence. The risky menace of basing our “bright future” and “people’s happiness” on the ashes of all mankind in a disfigured world contaminated by long-lasting nuclear war radiation diminished.

We must always remember this struggle—the personal torments, bodily and psychological sufferings and taken-away potential lives of decent people who were fighting against the existing regime in seeming hopeless individual situations.

Here are some short recollects about my former life in Soviet concentration camps and as a state-confined internal exile. I would like to apologize to the people I could not mention because of limited, highly focused content of this note. My full memoirs were confiscated in 1982 by the KGB and have yet to be returned to me. Hence, I must extract all that I can just from my own memory, which naturally do grow dimmer with time’s relentless and erosive passage.

2. Acceding to remedial activity

In 1970 I got acquainted with Jury Jukhnivets. He said to me that he was a student of Moscow University, but he was expelled from there for critical speeches and then he was working as a freight loader. He told me something about the movement for human rights in the Soviet Union and offered me some samizdat[1] materials, particularly the ***“Chronicle of Current Events”*** – a magazine issue, printed by a typewriter, with revealing information about the many clandestine repressions in the USSR.

Truly, I was filling up with horror as I read that truthful data. I was shocked by the cruelty which those “fighters for people’s happiness” (as the Communist powers proclaimed themselves to be all the time and everywhere) were chasing, even hunting, people who held and showed other than Communist-approved views, or just interchanging some disagreeable—in the view of officially-sanctioned Communists—societal information.

Soon, Jukhnivets asked me to store samizdat and prohibited literature for a period of time. He could not keep it at his home, because he was registered and watched by the KGB. He brought a whole trunk and I was reading it for a month without

[1] Some typewritten documentation published at home and quietly distributed in a closed society

a break. I learnt about the activity of the Communist Party and its “most honorable” and “most prominent” leaders, about such doings that made my hair stand on end—all the widely known Nazi crimes paled beside these national events. Being indoctrinated by Soviet schools in the spirit of fighting for happiness of the working class, I saw that the worst enemies of that class were the Communist Party and its corrupted leadership, that the greatest fraud in the history of mankind was happening as I lived!

I decided to help that movement every way I possibly could. By that time, Jukhnivets acquainted me with Valery Balakirev, a teacher at collage. And he, in his turn, subsequently acquainted me with his friend, the engineer-electrician Vladimir Shaklein. They were both registered in KGB watch-lists because they had signed a plethora of protests against the long-stand and continuing violation of human rights by the USSR’s government.

Balakirev introduced me to a geologist from Leningrad, Georgy Davydov and his wife Lera Isakiva. Georgy Davydov was once arrested for keeping the forbidden samizdat literature and KGB gave his friendly neighbors his instructions to spy on him as a way of protecting themselves!

One of my acquaintances, who knew about my interest to the forbidden literature, sent to me a student, Sergey Zarya, who was interested in it too and, on his own showing, was expelled from the University for the attempt of creating illegal group.

I was quite a good photographer and I quickly learnt document reproduction. By that time some seditious works began to come into the possession of intellectual Soviet would-be users from abroad. They cost extremely high. It became more profitable to the seamen of the foreign trade fleet, to tourists and people on assignment trips to import the proscribed political literature rather than commercially valuable (barter) pantyhose and electronic watches. Of course, it was more dangerous than ordinary contraband, but the gains were substantially greater.

One to three books were enough for an intellectual to begin changing literature on the principle: you give me this; I give you that just for reading. This process was greatly simplified for us. Usually one needs weeks for careful reading a thick book. But people reluctantly gave such books for long terms (that literature was in demand!), one could easily get a samizdat book just for one or two evenings. This was a usual task of Valery Balakirev. But Jury Jukhnivets brought a lot literature too.

Having got the book for several hours they rushed to me, I put the book under the self-made reproducing installation and re-photographed it for 1 or 2 hours. After photo-printing, reading of the forbidden contents began, and then the book was returned to its originating author—the person who had laboriously typed it first.

Using that method we made photo-films and copies of many foreign books, periodicals, samizdat materials and foreign magazines. For example, the book of Conquest “The Great Terror”, Avtorkhanov’s “Technology of Power”, Djilas “The New Class”, Marchenko “My testimony”, Berdyaev “The Origin of the Russian Communism”, foreign magazines “Posev”, “Grani”, “Vestnik PSKHD”[2] and Soviet backstreet magazines such as the “Chronicle of Current Events”, “Svobodnaya Mysl” (*Free Thinking*), “Democrat”, “Luch svobodi” (*The beam of freedom*), “Veche”(“Meeting”) and so on.

[2] RSKHD – Russian Student Christian Movement

By that time Balakirev made acquaintance with the son of ideological worker of Central Committee of Communist Party of the Soviet Union. With his help he received Soviet illegal typographical translations of foreign political books. In particular, by that means we got photo-film and photo-copy of Willy Shikling “Khrushchev’s hand organ. Getting in mankind's hair”, translated from German, published by “Progress” Publishing House, 1964, 144 pages. (It was the book about Khrushchev’s methods of propaganda). We also got the full publication of de Gaulle’s “Memoirs” (France’s famed President). Later, the book was published in the USSR after massive editing by the Communists!

Soon we collected quite a wide library consisting of hundreds, if not thousands of banned books.

Photo-films—that is, photographic negatives—were very convenient because everybody receiving them could then make all necessary printings by himself.

Certainly, everything read was not taken on trust. I aimed to check what possible by myself. In one of samizdat compositions I came across a phrase that the first five-year plan was not fulfilled. Just on that time on my Department of Mathematics in the Moscow Technical University there were special celebrations devoted to the successful fulfillment of the regular five-year plan (1965-1970). I took a newspaper of 1965 with the directives for 1970 and a newspaper of 1971 with the information about the succeeded results. From 47 indices mentioned only 3 secondary were fulfilled. For example, the plan of selling of furniture (in rubles) was carried out (and even exceeded). But, the report’s state-approved compilers conveniently neglected to inform its interested readers that the official plan was exceeded only by the rise in furniture prices!

Many important issues were done only for 15-20%, though in general concerning the quantity of production the plan was fulfilled for approximately 50%.

I was shocked by the insolence of the authorities and surprised by the naivety of the readers. At the official meetings Communist Functionaries were touting data about the grand progress of the USSR, about the successful fulfillment of the five-year plans and none of the educated people, not to mention ordinary working class, had a single thought to compare the pre-arranged and the succeeded indices! In consequence I assured myself the same was about any other Soviet five-year plan. None of them was exceeded or just fulfilled by half.

The terrible blow was checking of plan of “Building Communism” by 1980, taken on the 22d congress of the C.P.S.U. in 1961. There were given halfway indices that were to be reached by 1970. Neither of them was fulfilled. At best, the fulfillment achieved was about 15-20%. Not only the students and the pupils but also all the working class were made to learn the program of “Building Communism” by heart. I don’t ever recall an instance when somebody actually tried to check the statements about its successful fulfillment and tried to compare the planned and the reached points.

Secondly, I tried to check a Soviet asseveration about the unprecedented growth of Soviet welfare after the “socialistic revolution” and the awful poverty of working people in the countries of the “rotten capitalism”. In particular, I decided to test the communistic saying that from 1913 to 1970 the payment of Soviet workers had become 180 times bigger. (All the data I give from memory). Even if Russian workers were poor in 1913, they were not dying of hunger and the increase of payment by 180 times would

bring the upper wealth in the world. My commonsense prompted me to compare the prices to the major products and to the articles of prime—that is, of basic--necessity.

I tried to find the information about prices and payments in the USA and in the West countries in available Soviet literature. But all that was in vain. All the Soviet sources were full of statements about poverty, unemployment, lack of dwelling in the "countries of capital", but there were no exact numbers. After reading such literature I wondered, how the people of the country hadn't died out of starvation.

By that time I got to know that there was a special room, № 13, in the Lenin Library (Central Federal Library in Moscow). There one could find forbidden literature just for " Party officials" to use. That room was located at the uppermost storey of the Library in the Service Department. One had to go through very long passages to get there. It was explained to me that to use that specific literature I had to obtain an official, signed special application from my Institute with the name of the researcher. Any access to the special fundamentals was usually given for one year.

I made such an application to the theme "The research of growing wealth of Soviet people" and became an approved reader of that special collection of fundamental information. There I had written out many secret statistic data about the state of health of the Soviet people, about the cancer, tuberculosis, sickness rate, rate of venereal diseases, mental disorders, about alcoholism and drug addiction. I found the information about lack of medical staff, hospital wards, medicines, about the number of lunatic asylums, so-called "treatment-and-labor clinics for alcoholics" (that is, concentration camps for alcoholics).

A virtual treasure-chest of actual and realiable facts, there were the data about the prices at the kolkhoz markets of the country and secret reports of people sent on trade missions and other missions to many countries.

Unfortunately the information about the wages and retail prices to articles of prime necessity was absent even there.

Finally I managed to get foreign statistical compendiums and works of the UN Organization that contained the informative required material.

In the upshot I wrote a profound research work ***"The Comparison of Living Standards of Working Class in Russia, the Soviet Union and the Capitalistic Countries",*** articles ***"Public Health in the USSR and in foreign countries", "About the Results of the 8th five-year plan of 1966-1970", "Comparing the Results of the First Decade of «Building Communism" to the pre-arranged indices of the 22d Congress of C.P.S.U."*** and other informational materials.

Besides together with Balakirev we began publishing a social and political magazine **"Svobodnaya Mysl"** (*Free thinking)* which was mimeographed in great quantities. One of the issues of that magazine went abroad and was published in the collection of works "Volnoe slovo" (*"Free speech")* № 7, Posev, 1973.

Some samizdat works, mostly magazines, were typed on a pre-word processing manual typewriter. The copies were indistinct and hard to read. I realized that the movement against violating human rights was doomed to be an eternal amusement of the few intellectuals without proper copy-printers. But where could one find a duplication machine in the country, where all the copiers were affixed with seals at night and placed in the special rooms where only approved KGB members could use it. There was the

only one appropriate decision – to make sufficient copy-printing machines ourselves. It had to be easy to make and quite efficient.

For a long time I pondered while I was sitting in the Lenin Library. During Soviet times such literature was not published and it is clear that a prudent KGB tried to seize all the pre-revolutionary articles (before 1917) devoted to the theme. Still I found some information in the belles-lettres, old licenses (patents). At the some time and I learnt about the methods of enciphering, cryptography and conspiracy. All that was collected in the samizdat book of Sukhov ***"Simple Methods of Copying Technical Documentation"*** and in the series of samizdat articles devoted to the methods of copying, enciphering, cryptography and conspiracy.

I invented the method of mimeographing almost anew; I technically worked the method up, making it simple and effective.

The text was typed on the fibrous paper sodden with paraffin by a typewriter machine. The obtained matrix was put on the bland print and was pressed by the roller with paint. There appeared a copy below. The whole process required but a few seconds to complete. The components were sold at stores. Anybody could make or buy a photo-roller. Indeed, however, the quality of the imprints was quite low.

I ordered 7 or 8 rubber rollers to one of the skilled workmen of MHTU[3], gave them to Balakirev, Ukhnovez, Davydov, Zarya, Shaklein and taught them how to use the device. It was simple; actually it was made of the rubber roller only. Later KGB didn't draw its attention to that roller when conducting a search of Georgy Davydov's apartment in the beautiful city that was then named Leningrad.

After the invention of that device the ***"***Chronicle of Current Events***"***, underground magazines were published in hundred of copies by our group, not to mention other, connected groups. We began publishing the social and political magazine ***"Svobodnaya Mysl"*** ("Free Thinking"); I began issuing my book "The Comparison of Living Standards of Working Class in Tsar Russia, USSR and in Capitalistic Countries"; and Balakirev started printing, in sequential parts, the book of Conquest ***"The Great Terror"***. Almost everything was distributed free of charge and I incurred all the main expenses as I was the most well-off person in the group. Zarya even rented a flat, enlisted his friend Rybalko and organized a real mass printing-house. Unfortunately, he acted from selfish end desires and he sold secretly the printed literature to outsiders at very high prices. Until the arrest, our group had copied more than 150 000 pages of the forbidden political literature and photographs.

Soviet authorities became anxious when mimeographed prohibited magazines, books began appearing all over the USSR and searches seized not one single book but whole editions! The authorities understood quite well that one couldn't be a great propagandist producing 4-5 copies. But when almost everyone could make hundreds and thousands of copies without difficulty, that underground freedom of press could undermine the existing regime. Every member of KGB was enlisted and All-Union official pursuit commenced.

By that time I was registered in KGB as a reader of forbidden literature. In Leningrad I showed some samizdat material to V. Senyukov - my sister-in-law's husband. He was very interested and asked me to give him some reprints. I gave him

[3] MHTU = Moscow High Technical University named Bauman

the literature under the stipulation that he wouldn't show it to his wife, Valentina. He hadn't kept his promise. She took ***"The Daughter of the Tyrant"*** (about Stalin's daughter) to her work place, to boast before her friend. Then she remembered that friend's uncle works in KGB ran home and burnt everything in panic. When she was called to KGB headquarters, she told them that her husband received that literature from me. Still she said nothing to him about the summons. When he was pulled about, as though to social insurance company, he gave me away in his freight, but he was courageous enough to telephone me in Moscow and to disclose what had just occurred.

3. Propaganda leaflets

June 1, 1972 was 10 years from the day of great rise in prices for foodstuffs during 1962. During that rise our Soviet officials swore that it was temporary and *"two or three years would pass and the prices would be set even lower than they were".*

Jukhnivets decided to print, and to distribute, propaganda leaflets devoted to that dire event. I tried to dissuade him, but he was uncompromisingly resolute. He asked me to help him to draw up the text (which he later rewrote replacing facts by emotions) and to print several copies. About 3500 leaflets were made then.

On the night of the 1st June 1972 Jukhnivets and his friends distributed those lists in the mailboxes of six urban regions of Moscow. Next day, he gave the information and the samples of the leaflets to Petr Yakir, and he in his turn passed them to interested foreign journalists. On the 19th of June 1972, some foreign radio stations broadcast the news of the leaflets' existence and circulation.

I suppose it was the biggest leaflet distribution in the USSR since 1920. The hateful Central Committee gave instructions to the omni-present KGB to find the guilty persons, real or imagined. All Moscow KGB personnel was turned on its head.

Handing over the leaflets to Petr Yakir (son of famous Communist military chief marshal repressed by Stalin), Jukhnivets said that he was connected to the group of intellectuals that disposed of duplicating machines and was able to provide others with this technique and to print underground magazines and issues in very large quantities.

In July 1972 Yakir was arrested. Unfortunately, by that time he had ruined himself by drinking and wasn't able to live without alcohol. KGB promised him a sea of vodka if he confessed. He told about 120 volumes, including stories about our group. My telephone was immediately tapped and I began noticing the KGB surveillance.

4. Arrest. Investigation

In September 1972 Georgy Davydov was returning to Leningrad from a geological expedition in Siberia. He telegraphed us that he would visit Moscow in passing and we, in anticipation, prepared a reading parcel for him take on his further journey.

On 27th September he came to me, stuffed his knapsack with literature, photographic films and went to the airport. He had to wait several hours before the departure. Having decided to walk about the city, he left his things in the checkroom. That was a terrible blunder. It's hard to say if he had been followed from Siberia (he was

most surely spied on in the expedition) or he was followed (and didn't notice it) after meeting me.

Left: Bolonkin before arrest. Right: Bolonkin and his mother

In any case, KBG operatives decided to search his checked luggage—they surely must have jumped with glee over their luck—and at almost same moment the KGB arrested Davydov—within two hours at most—Balakirev, Zarya, Rybalko and myself were in KGB custody. Next day, Jukhnivets was apprehended and within two days Shaklein was extracted from his officially approved trip.

The search of my apartment lasted 10 hours. About 10-12 KGB operatives took part in it. Investigator Gorshkov S.N. headed the search. They seized prohibited printed literature, a typewriter and a radio. It's funny that neither of the hiding places was found, though the search was very thorough (they looked over every sheet of paper, tapped the walls, and disassembled all of my household appliances). Furthermore, I managed to hide my very important notebooks.

About 2 hours at night I was brought out of my room, set in car between two husky KGB men who brought me to the remand of a KGB prison in Lefortovo, a district of Moscow. There, I was stripped naked, my clothes were scanned in every fold, and they examined even my anis. "Do you seek the prohibited literature there?" I lost my temper, foolishly perhaps becoming angered by my undignified treatment. "As it should be", prison matron answered.

After the full examination, I was led to a dark one-man cell with iron bunk, table, both cemented to floor, and small barred window, curtained outside by sturdy iron shutters. Soon, Gorshkov's team was succeeded by another team of investigators paid by the KGB; this successor KGB team was led by Trofimov A.V. He resembled a rat that is ready to serve any regime for his own private profit, be it Fascism, racism or Communism. Only once a thought burst out of him: "You are saying about innocent victims of Stalin, but do you know how many NKVD workers Stalin had killed?"

"The dictators annihilate executers of dirty business first when covering their tracks," I answered. He never retuned to that topic again.

Sometimes Konkov N.I., the head of the Moscow investigation organization of KGB, joined the interrogation. He reminded me of a fattened pig by his physical dimensions and sloppy behavior.

I hadn't yet come across any intelligent person in the KGB. Only Petrenko, the superior of the KGB Lefort prison, was trying to play that role. He liked to summon dissidents under investigation and talk about his taking part in the famous Rokotov Case (underground clothes production), when communistic rulers used the retroactive force of the law and prosecuted the group of entrepreneurs.

Oddly, the prison guard searched the prosecuted only after the interrogation by Petrenko. Apparently, mutual spying had eaten through the whole KGB system. I heard the idle chatter of two KGB men, when one was inviting the other to drink with him. The person answered: *"I drink with you, and you will go and fink about me!"*

I was sitting in a three-man cell together with whistlers—those who had readily confessed. In general they were speculators, insolent bribe takers, people accused of robbing foreigners and parricide. The most conspicuous of them was Anatoliy Gritsai, accused of acquiescence for detection to the spy and attempted illegal frontier traverse. Having given up one of the great Western spies, who helped him in his escape to the West, he was in service of term in KGB prison, finking, psychologically working over people and cooking up charges against many persons.

Political prisoners were never put in one cell together. The food was awful; there was no medical care whatsoever. People were fully isolated from the outer world—indeed, sometimes there was made available for reading the Central Communist Party newspaper, the worthlessly incredible "Pravda". Sleeping on the iron bar bunk bed, equipped only with an extremely thin mattress, was a torture to my body.

The investigation continued for nine wretched months. Trofimov was annoyed and he continually reproached me: *"You begin remembering something only when you are driven into a corner by facts! So-and-so (he named one of the members of our group) snaps away the microphone and tells everything when I haven't yet finished asking the question!"* (Obviously, he was trying to induce me to believe that others were jabbering all that they knew, hoping that I would blab about others as well as myself to make him happy!)

The KGB was sifting all of my life's history, attempting to concoct and officially present as many charges of law and regulation violations as possible. They tried 12 assets: beginning with statute-banned trade (giving private lessons) ending with parricide (Balakirev told them that in case of arrest I allegedly was ready to tell foreign reporters Soviet technical secrets. But, how could I do that while being incarcerated?). Nevertheless, in spite of all interrogation and evidence-gathering efforts by the KGB, they couldn't allege anything except Asset 70 of RSFSR Criminal Code (anti-Soviet propaganda). Practically, I was almost the only prisoner in Political Mordovia Concentration Camp who had purely one 70 Asset, without any criminal "makeweights".

After the nine month-long investigation, I was served a verdict, cooked up by Trofimov. It was formed in one sentence of approximately 20 thousand words, where all the titles of "anti-Soviet" documents were written with small letter. None of the facts of slander was quoted. All of them were announced "anti-Soviet, slandering fabrications, defiling Soviet political and social system" not furnished with any proof.

Main building of Soviet Secret Police (KGB) in the center of Moscow. There is a special prison inside this building where was A. Bolonkin in 1972.

Even my quotations (with precise indication of sources) from the decisions of past C.P.S.U. (Communist Party of Soviet Union) conferences and CC[4] plenary sessions with promises of better living standards of people were called “anti-Soviet and slandering”. (All they were taken from official Communist publications with issue, page, and publication date). As all the terms indicated in those documents had passed long before, they caused laughing in the Hearing Room. When I asked Trofimov, how he could name the decisions of C.P.S.U. conferences “anti-Soviet”, he answered frankly: *“Bolonkin, you are a clever person! What had you been delving into the past C.P.S.U. meetings for? There are new meetings, new promises!”*

5. Trial

The trial took place on 19 - 23 November, five months after the investigation’s termination—that itself was an infraction of the law! Balakirev and I were judged in the building of People's Court in the Babushkas Region of Moscow; the chief justice was Lubentsova V.G. Other cases were singled out in separate legal procedures.

The entrance, staircases, and every corridor were guarded by armed KGB employees. In the hall, about ten KGB members behaved as a normal fake “audience”. Even my dear wife was kept out of the hall of so-called “open court”. Three times, the world-famous Academician Sakharov tried to get in the hall of court session, but was blocked from doing so.

In 1973 communistic rulers were playing “defusing” with the West. They conducted a Congress of Peace – Loving Forces in Moscow and organized speeches of Yakir and Krasin about their repentance. That’s why they lingered with our trial.

Court decision read: *“Concerning the accused Bolonkin court commission takes into consideration his actions in commission of crime – production of copying machines*

[4] CC – Central Committee (of CPSU).

for copying anti-Soviet documents in great quantities… and also large quantities of literature produced, copied and distributed by him in person and has found obligatory to choose punishment of 4 years of concentration camps of special regime and 2 years of exile". "Radio-gramophone, radio set "Spidola", photographic apparatus and typewriter must be turned to State income as the instruments of crime".

"*Concerning the accused Balakirev court commission takes into consideration that he made a frank confession both in course of investigation, and in court commission. By his behavior he COOPERATED in thorough and full revelation of the crime. The court commission had found possible to apply Asset 44 of RSFSR Criminal Code in his case and to choose punishment not concerned with deprivation of liberty".* He had a conditional sentence for 5 years.

Balakirev held all the connections in his hands; KGB began 12 new cases according to his testimony and was very happy.

Zarya and Rybalko were released in 4 months after the investigation as they made frank confessions and cooperated in revelation of the crimes. Vladimir Shaklein was granted pardon (before the trial) and released in October 1972. On the basis of his testimony KGB produced a new case against 3 members of his "Cultural and Educational Association".

Concerning Jukhnivets, KGB's "psychiatrists" gave him their conclusion that he was irresponsible of his actions a year before (in spite of the fact that they didn't observe him, when he distributed the propaganda leaflets) and that he was psychiatrically healthy in the time of court and could give testimonial evidences. He was released and was registered in psychiatric center (that is, under the constant threat of future placement in a dreary and dangerous psychiatric prison-clinic).

Thus, only I was sent to concentration camp out of all those arrested from the Moscow group.

Two people were arrested in the Leningrad group: Georgy Davydov and Slava Petrov. Their criminal procedure was less known and they were treated more cruelly. Though they had 4-5 times fewer items of prosecution than Balakirev and I, Davydov faced 5 years; Petrov was assigned 3 years of strict-security camp.

6. Concentration camp JH-389/17a

In February 1974 I was transported from Lefortovo KGB prison to Mordovia political concentration camp, about 500 miles East of Moscow. Before shipping me, they searched my person thoroughly, confiscating my notes. Late at night they brought me to the rear yard of Kursk Railway Station (Moscow) by the prison-van and in huge mass of prisoners they pushed me into the Stolypin (special prison) carriages. There, carriage guards searched me over again and took everything that was valuable. They beat me when I tried to protest against the robbery, and put me in a separate small compartment-cell as political prisoner.

At Potma (Mordovia), the train stopped at the high railway embankment and during our going out the guards amused themselves kicking the prisoners out of carriage and laughing till he moved down the embankment.

First concentration camp, where I was brought, was situated in the village *Ozerniy* and was encrypted as a main defense objective under the mailbox JH-385/17a.

Later, I made sure that encoding the information about the location under the mail boxes concerns all the concentration camps of the Soviet Union, including criminal ones.

Political concentration camp #35 in Perm

Political prisoners received me well. They were Egorov (Russian), Mikitko Yaromir (Ukrainian), Misha Korenblit and Ilya Gleizer (Jew), Rode Guner, Alex Pashilis, Vilchauskas Brotislav (from Baltic countries), Graur Valeriy (Moldavian), Mikelyan Suren (Armenian) and others. There, too, I met Slava Petrov. Lots of reputable people were there: members of national liberation movements, religious people, imprisoned for the attempted escape from USSR and World War II Nazi collaborators.

Forthcoming political prisoners quickly and completely apprised me of all current camp affairs and the history of the place as they knew it personally and, of course, I told them all the old (1.5 years) news from the Outside!

We labored long hours six days a week sewing hand-mittens. Rates of output were very high for elderly people and every year production quotas were increased by at least 10%. The food was poor and unvaried (bad porridge and oats). We felt the lack of animal protein, animal fat and vitamins. But, most of all, we felt the lack of information. Our attempt to make a radio receiver failed because we did not have the necessary technical details to build a functioning set.

Besides, continual surprise body searches by our guards—sometimes several times during the course of a single day—made that undertaking very dangerous (additional punishment).

We had to be content with an official political hour lead by the semi-literate spokespersons provided by the camp officers, who stammered lectures sent from their leaders. We were prohibited to ask questions in public. To know something one had to stay and to speak with them privately. But they often couldn't explain even the things they read. So, without a doubt, there were no people wishing to be politically informed.

Misha Korenblit was a participant of a famous airplane case, when the group of Jewry bought all tickets to the airplane and tried to fly to Israel with the help of their own pilot. Alex Pashilis and Rode Guner were advocating for separation of their occupied

republics, and Candidate of Biological Science Ilya Gleizer was sent to concentration camp just for unwillingness of living in the USSR.

I was especially shaken by the life of Old Believer priest Mikhail Ershov, who had died in that camp. I read his verdict and wondered how one can be sent to prison just for prayers and organizing a chapel.

I was given the bunk near Vladimir Kuzykin, former officer of soviet troops in Germany, accused (us he told) of distributing anti-Soviet literature and who worked at the cushy lob as a sewing-machine maker.

I entrusted my notes to him and they were rendered to KGB, though he assured me that he had burnt them. Later he was charged with finking and, it seemed to me, got an early discharge.

I made friends with Slava Petrov. He was involved in similar case of Georgy Davydov in Leningrad. He was just a plain worker, who helped Georgy in distributing literature. He got the smallest stretch – 3 years. Davydov himself was sent to a concentration camp near Perm (Urals, central USSR). Slava said that they applied to him psychotropic preparations—drugs—causing talkativeness. However, judging by his verdict, they didn't manage to understand much of his chemically-induced loquaciousness. Maybe he didn't know more.

In his verdict I found myself identified as a witness for the prosecution, though until that moment I hadn't ever met him! When I was asked at the trial (it was a common trial for him and Georgy Davydov), I claimed that I saw Petrov for the very first time in my life there. I wrote a protest to the Supreme Court of RSFSR, where I accused them of fabrication and I demanded they strike me from witness list, as *"I didn't want to sit with the judges at the Nuremberg dock for Fascist criminals".* I never received an answer.

Slava cheered me up in most difficult situations. I remember when he, in agreement with us, handed in an application to the head of the prisoner group Pyatachenko that he wanted to become a member of a Section of Inner Order (groveler's organization, created by the administration for terror and spying). KGB and the supervisors of the concentration camp were confused. But it was impossible to let an evident anti-Soviet person hear the instructions to the super-grasses (prison snitches). He was politely rejected as one who hadn't proved his true reform

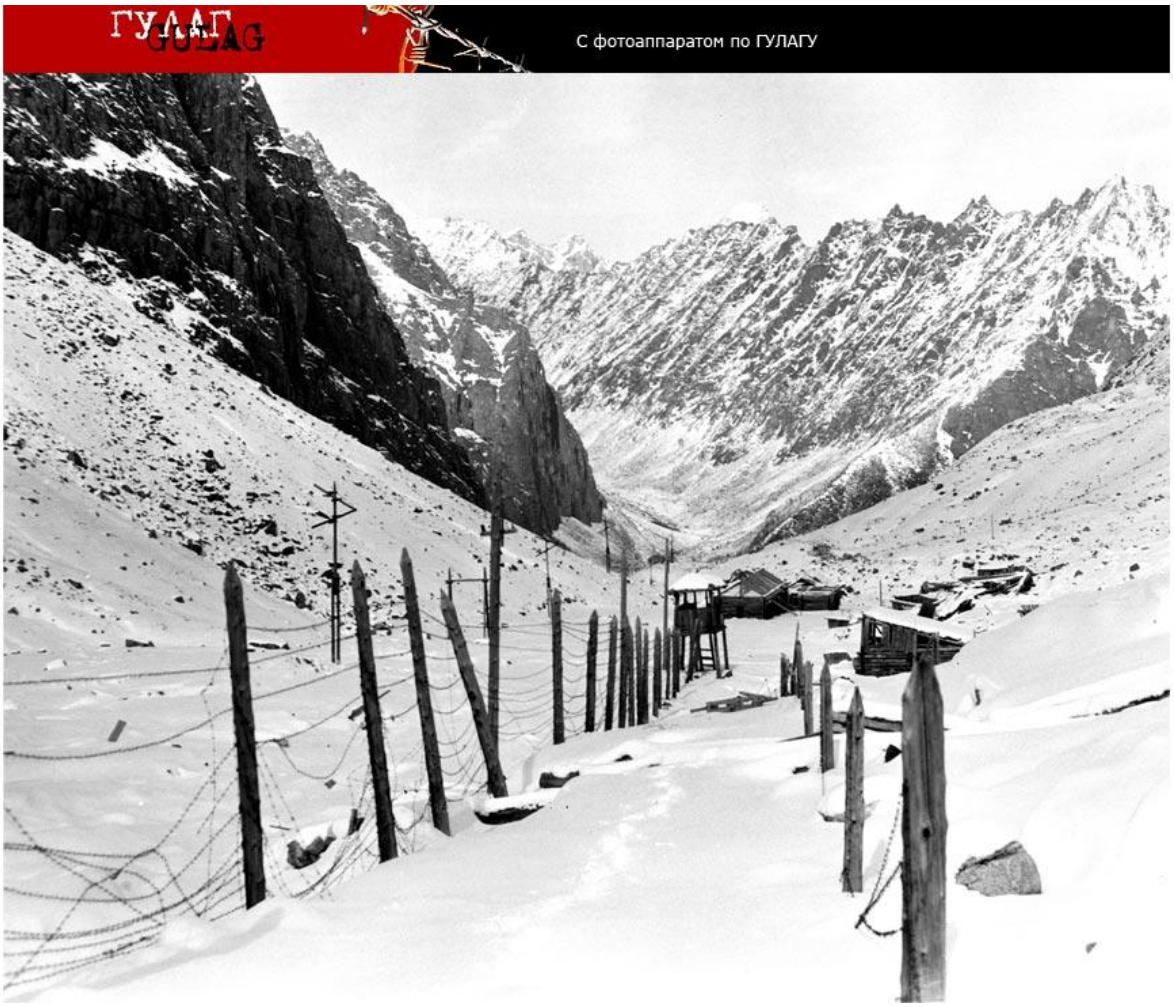
The concentration camp undermined his health greatly and he died in 1989 leaving alone his paralyzed mother.

Graur Valera was a participant of the group that demanded to return Moldova to Rumania. They made contact with Rumanian leaders, who waited two years and then suddenly delivered them up to the pervasive Soviet KGB.

7. Concentration camp hospital

After several months in camp, and due to a drastically worsening state of health, I was sent to concentration camp hospital in Barashevo, a village in Mordovia, where I stayed until November 1974. That hospital was an important junction point where all ill political prisoners from Mordovia and Perm concentration camps were congregated. There I made close friends with such remarkable people as Edik Kuznetsov, an organizer of the famous airplane escape attempt, Igor Ogurtsov, the leader of the "All-

Russian Christian-Democratic Union", Vasiliy Stus, the acclaimed Ukrainian poet, and others, equally distinguished



Derelict Soviet concentration camp located in Marble Canyon. Main production is uranium austenite (ore). The terrifying truth about this concentration camp remains a big secret in modern Russia. Picture by Sergey Melnikov from http://gulag.ipvnews.org .

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During my stay in hospital I carried out coordinating work on the organization of synchronous hunger-strikes and protests in many concentration camps, on news and other information interchange, on teaching political prisoners cryptography, enciphering, connection and information transfer to the outside world. The most important action was the organization of the first Day of Soviet Political Prisoner and simultaneous hunger strikes in this connection within the political concentration camps in the USSR. Sometime in September 1974, Edik Kuznetsov was brought to the hospital from the special regime camp in Sosnovka, Mordovia (JH-389/1-6). He was kept in a solitary cell and was allowed to walk for a short period only once a day. Though there were lots of spies amongst us, I met him and discussed that idea. He proposed 30th October as the Day of Political Prisoner in the USSR. I reported about that to all concentration camps. A report was sent to outside world too. That commemorative/memorial/recognition date was announced to the world-public via many non-Soviet radio stations by Academician

Sakharov. Hunger strikes, discussions and demand of political prisoner status took part in all political concentration camps.

In that hospital I became acquainted with many political prisoners: Matviuk Kuzma (Ukrainian), Popadnuk Zaryan, a young fellow, former university student. Osadchiy Michail underwent his medical treatment there. He told us a lot about the bloody stifling of an open rebellion in Kolyma (East-North of Soviet Union near Alaska, USA).

Kharkov. Corpses are in a telega (cart). The corpses from nearest concentration camps delivered in concentration camp hospital morgue by same telega and jailer demanded from Bolonkin to unload them.

It's natural that an organization of the Day of Political Prisoner had its consequences, as well as stirring up prisoners and the huge leak of information to the outside world. In November I was caught, sent to concentration camp ЖХ-389/19 in settlement Lesnoy (Mordovia). From that moment, all of my wandering from penalty isolation wards to penalty cells began. The head of the Mordovia concentration camp, the KGB officer Vladimir Drotenko, used my refusal to carry corpses from mortuary to support his personal order. I've read the report on that theme. It turned out that administration was constantly taking care of me, sent me to the hospital and at the same time made me work as a boiler stoker in the prison bath, carried great political-pedagogical work with me, explained the blessings of the Communism and I, being so ungrateful, not only rejected the way to correction but also rejected to bring corpses to carts.

I managed to do something for prisoners in hospital in relation to life conditions – I repaired and cleaned out bath heating system, which hadn't been repaired and cleaned for several decades and there was awful cold in the bath.

It was hard to see how people suffer in the hospital, where the "treatment" was formal. I felt especially uneasy for Ukrainian poet Vasiliy Stus, whom I made close friends with. He had developed gastric ulcer, and felt continual pain. He suffered a lot

and needed medicines desperately. But they said there were no medicines and forbade to pass him medicines which his wife brought to him, even such sedative analgesic as *Vikalin*.

8. Concentration camp JH-389/19

Concentration camp JH-389/19 in the settlement Lesnoy was several times larger than JH-389/17a. In general, there wooden cases for wag-on-the-wall clocks of a 19th Century pattern were manufactured. I hadn't seen them long before, even in the backward USSR, and I wondered if someone needed those antiquities in our electronic century at all.

There I got acquainted with many remarkable people who later became my life-long friends. They were Paruir Airikyan, Sergey Soldatov, Vladimir Osipov and many others.

We spent long days and months together with Paruir Airikyan in penalty isolation ward (so-called punishment cell) and penalty cells (officially - the room of prison-cell type and in reality – special inner camp prison of high strong regime). Therein, close friends and relationships were cemented forever. He amazed me by his resistance, fortitude and utter devotion and love for his native Armenia. All Armenian prisoners admitted his authority. Neither tortures nor malicious insults of the crude KGB management could break him. All Armenia knew him; many outstanding Armenian cultural workers wrote to him, risking their careers.

Sergey Soldatov was the founder of the Democratic movement in Estonia in the brief Brezhnev times. I think he was an author or a co-author of the **"Program of Democratic Movement of the Soviet Union".** Our group was accused of distributing that document. Apparently, he was one of the publishers of the underground magazine **"Luch Svobodi"** *("Beam of Freedom")* and many fundamental documents such as **"Memorandum of Democrats to the Supreme Soviet Congress of the USSR",** which was mentioned in our verdict too. He was an erudite, who knew a lot about politics and history. He was an idealist in his way of thinking.

Volodya Osipov served his time for publishing the revealing magazine **"Veche" ("**Meeting**")**, which was also mentioned in our verdict. He was verily a Russian, a highly religious person who stood upon the ideas of the Slavophil, Russian self-consciousness. In his thinking and expressions, he was close to ideas and beliefs of the internationally regarded Russian writer Solzhenitsyn, and he was always speaking in support in his own viewpoint and articles.

There was lots of Jewry demanding departure to Israel. For example, famous writer Mikhail Kheifits, Kaminskiy Lassal, a participant of the foiled Leningrad airplane migration case, the members of the Democratic Movement (such as Kronid Lyubarskiy who had been brought to another concentration camp not long before my own arrival), members of liberation movement of Ukraine, Baltic countries and nationalists of all the USSR republics. Almost all types of underground trends, ferments and movements in the USSR from monarchists to "true" Communists and "Communists - Leninists"—Lenin was the first Soviet communist leader who died in 1924—were there, not enjoying the State's hospitality.

Unfortunately, the necessary briefness of this brochure doesn't let me dwell on them or even list the names of all outstanding people I met whilst a prisoner. Most of them were ardent enemies of the ruling Communist regime. In the hard conditions of concentration camps and the KGB terror many of us endured, there truly were friends, helping me to survive, made common protest actions, spoke in support of the mercilessly persecuted, went on hunger-strikes when someone was tortured particularly viciously.

I will always remember the inner warmth I felt for my friends when I returned to the barrack, after a 15-days' hunger strike stay in an excruciatingly cold punishment cell, and found waiting for me food and hand-made greeting cards with sympathetic words my friends.

There were a lot of defectors, cooperating with the Nazis during World War II, people accused of parricide (for example, Yuriy Khramets), diplomat – deserter (Sorokin, Petrov) who returned under the "firm" promise of Soviet Government, that he would be safe and sound, religious people (Evgeniy Pashnin) and criminals, who believed in tale about wonderful life conditions in political concentration camps, who became "political" abusing Soviet Authority and transferred from criminal camps.

Many of them soon became the KGB's "third ears". No political prisoners communicated with them and the only thing they could fink was what some person did and whom that person conversed.

When I went to the toilet at night (all the conveniences were located outside the barracks) some spy inevitably accompanied me to the outhouse.

Criminals who became political soon understood that the conditions in political prison were even worse than in the criminal facility, as it was fully isolated from the outside world and its administration was so terrified by the observant KGB that it refused to intrigue with any prisoners.

Even the head of my group talking to me in his office mentioned: "I hope there's no KGB's microphone in my room".

My letters to relatives and friends were confiscated as slandering. Sometimes I couldn't send one letter half a year. Then I made an experiment. In our scanty library I found a complete set of Lenin's works. The KGB thought it might help political prisoners to understand how great Communism was and how wrong they (prisoners) were not to endorse it. I took the volume with Lenin's correspondence and began rewriting his letters to Gorky (well-known Russian writer), Krupskaya (Lenin's wife), Armand (Lenin's mistress and communist revolutionist) and others and gave them to the ignorant censor as MY OWN work. I didn't change a word in those letters. Some really long ones were abridged, some names were omitted. Neither of Lenin's letters passed the censorship! All of them were confiscated as "anti-Soviet", "slandering", and "cynical". As a result I was brought to a psychiatrist, because only a sick psyche could cause me to write such letters, said the KGB. I avoided diagnosis "mentally incompetent" only when I said that those letters had been copies of unforgettable Ilyich's letters!

Sometimes pedagogic delegations were sent from the Soviet republics. They narrated oral descriptions of the wonderful life of all Soviet peoples. Ajrikjan dissuaded his delegation so much that they stopped coming to him at all. Once an agitator from Moscow Municipal Committee of the CPSU was sent to me. He came with refreshments to create heart-to-heart talk. I knew that agitators are usually given 3

rubles for refreshments of one political prisoner. When I had counted the cost of everything brought, I asked, where 2 more rubles were. The dedicated Communist was confused. I didn't manage to support heart-to-heart talk with the person who tried to profit by a hungry prisoner.

My written verdict was the biggest of all Mordovia political prisoners' verdicts in size (it contained about 20 pages of compact text). It was even bigger than verdicts of 10 other political prisoners. It contained more than 40 items of accusation, 5 names of written, copied or kept documents and hundreds of distributed copies in each item. I managed to take it out of Lefortovo KGB prison and show it to many people. I succeeded in taking this unique document with me after my discharge. Now it is handed over to a library in the USA.

There were a lot of interesting dissidents and wonderful people in that Mordovia political camp. They were Fedor Korovin, Artem Yushkevich, Herman Ushakov, Azat Arshakjan, the Ukrainian Vasil Ovsienko, Vasil Lisovoj, young persistent man Ravinsh Majgonis and others. There were interesting people among fugitives, "parricides", members of liberation movements, deserters ("vlasovtsy"[5]), and religious people.

Unfortunately there is no opportunity to dwell upon the sorrowful destiny of those people, who suffered a lot for their dissidence, unwillingness of living in the Communistic heaven, their religion or fighting for liberation of their homeland republics.

9. Penalty isolation ward and penalty cell

Political actions, protests, hunger strikes followed one another. Not only free dissidents, but also foreign radio stations got to know about many of them the same day. KGB got it on the nose from Central Committee of Communist Party and began somewhat frantically rushing about in search of intelligence gatherers, isolating the suspected. In total I was kept (only in Mordovia concentration camps) in penalty isolation ward 110 days and 9 months in penalty cell (special internal camp prison).

Punishment cell was a torture cell, where a prisoner suffered not only from hunger (though it came down to starvation and hunger hallucinations), but mostly from cold. One was placed there in dirty thin cotton prisoner's clothes. There was no bed and the temperature was low. Wooden plank bed was unfastened from the wall only for 8 night hours. Chill tormented prisoner's exhausted body. It was especially difficult to endure the nights. One had to jump out of bed 5-10 times, do exercises to warm up a little. It was hard to fall asleep even in warmth on those rough wooden planks with splinters and held together with rusty iron screw-bolts. The food was scanty – 450 grams (roughly, one pound) of raw brown bread. The huge iron close-stool potty produced such odors that it made the natural act of air breathing difficult and unpleasant.

It was a bit better in a penalty cell. One got bedding for 8 night hours and a tureen of watery nourishment for dinner.

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[5] Vlasovets – a traitor of the Soviet Union, a participant of anti-Soviet military formations fighting on the side of Fascist Germany during World War II. They received that name after the general - lieutenant A.A. Vlasov, former commander of the 2nd Shock Troops of Volkhov front, who gave up in July 1942 and began fighting for Fascists.

We had to polish wooden cases for wag-on-the-wall clocks by hand. That gave cause for administration to punish us, at any convenient time, for failure to carry out "rates of output". Some cases were not counted, rated as improperly polished.

One of the reasons to next dispatch to punishment cell was a refusal to give the "necessary" testimonies against Andrey Tverdohlebov. Moreover, I behaved defiantly with that case investigator: after long wrangles I insisted on writing the testimonies myself. I wrote that Andrey was a remarkable person, that his case was fabricated by the KGB; that we, political prisoners, resumed our gratitude for his remedial activity; that Human Rights were being violated in the USSR and so on.

After such testimonies I was dragged to penalty isolation ward. As I knew later, my testimonies were not included in Tverdohlebov's case and the case investigator noted as though I refused to testify.

I was the single Doctor of Science in Mordovia political camps in those times and all the coming directors were brought to penalty isolation ward as to the Zoo to see me as some exotic animal. I remember one general from the Ministry of Internal Affairs who couldn't understand what I lacked under the Soviet regime; I grappled with him (by words, of course). I remember MIA[6] colonel, specialist in locks. After his visit my cell was enriched with one more lock, its sixth!

Time and again, a public prosecutor came, once he had a claim: *"Last year about 650 complaints came from Mordovia Penal Colonies. 440 of them were written by you, 168 by Ajrikjan and 42 by other prisoners. What's the matter? I don't have so many workers to answer you".*

Of course, all those complaints about administrative outrage were useless, as well as the requirements to observe at least scanty Soviet law. Only once we succeeded a little in that. In penalty cell guardhouse I saw "Nutrition norms for prisoners", there was written that we eat 30 grams of meat every day. That table was hung prominently on the wall so as to be visible to the members of visiting committees. I began writing to chain of command asking "where was the meat"? What idiotic answers I received: that meat is full of bones and that it is being boiled up to 60%. Finally, the heads gave up and began giving small bit of meat as large as a fingertip (they contended that it weighed 16 grams – after boiling away) to prisoners in prison camps. That bit was not enough even for a mouse. But if you were utterly exhausted and hadn't seen meet for years then even such small bit could bring you a minute of delight. All following generations of prisoners in penalty cells were grateful to us for that small victory

Of course, there were a lot of political prisoners, who considered that it was better to be humbler than the dust, to refrain from irritating our KGB guardians, not to get to penalty isolation wards and penalty cells and thus not to suffer, trying to preserve their health. Most of all, they were people who acquired the status of "political" by accident for incautiously criticizing the ruling Soviet regime, reading "spicy" literature or even for disagreement with factory and other bosses. KGB machine was vindicating its existence and sometimes crushing innocent people. But I don't think there was any sense in fighting. Finally concentration camp outrages and tortures were made known and this revelation disturbed world-public (and Soviet public opinion - through foreign radio stations). Not without reason, everything in the camp was spinning around one

[6] MIA - the Ministry of Internal Affairs

question. Functionaries of the dreaded KGB tried to isolate us, and we tried to bring the information to the non-Soviet world.

Very "good" punishment cell (Concentration camp #36). It has small wash-hand-stand and bund for drain. A. Bolonkin was more one year in punishment cell where was only a big fetid filthy cask with defecations.

Too, there were lots of ordinary people in concentration camps. For a long time I was sitting in the penalty cell with Petr Sartakov, a worker. He described his staying at Stalin concentration camps and tried to pass this description to an American, and was subsequently imprisoned for that effort. He strived to be a competent person, tried to liberalize, to become educated.

10, Concentration camp in Barashevo

At the end of 1975 when I was in a camp zone, a patrol caught me at writing a list of gerrymander, theft and stealing of concentration camp administration. The heads of the camp became alarmed. They saved their skin. Doctor Sjaksjasov whom I met that evening with two cans of paint exclaimed: “That really is too much if you put me in that list!” Next day I was given 5 minutes to make ready in guards’ presence, I was searched and sent to concentration camp in Barashevo (Mordovia). There were kept especially dangerous political prisoners.

Most imposing of all those political prisoners was Vyacheslav Chernovol from Ukraine. We conversed about our confinement conditions, discussed different past undertakings, took part in some joint actions, and shared a bread crust. He was a former journalist and knew well Ukraine life-styles, history and culture. He loved Ukraine, and was a born politician with broad outlook and deep understanding of historical events and processes. I can’t even count how many hours we spent in conversation, walking the perimeter of the camp’s barbed wire fence. I had never heard of a single escape plot and I was amazed by that huge complex and expensive

system of guarding soviet concentration camps. First there came two rows of barbed wire, provided with signaling. Then there was ploughed land, a high solid fence topped with barbed wire, then one more similar fence. Between those fences a killing system of high-tension electric wires was strung and multiple watchtowers furnished with machine guns was situated. Then, more barbed wire was strung so that nobody—anti-smuggler defense—could ever enter the concentration camp from the outside.

Slava related to me the case when a KGB guard tried to bug his conversation with Stus, who was imprisoned in that camp before. They summoned Stus and announced that he be got ready for deportation the next day. They took away his quilted jacket as if for searching and gave him another in return. It was naturally that on that day they began discussing their own and common plans, talking about communication lines, agreeing upon methods of connection.

Slava expressed his surprise at the change of his quilted jacket, began feeling it and found micro transmitters as large as a pea. They tore them out and dug a grave for them at once. In several minutes KGB workers ran and took the quilted jacket away. He showed me microphones' burial place.

In that concentration camp we managed to hear the trial on former KGB workers **Braverman** and **Pachulija**. Braverman was the head of KGB investigating department in the city of Leningrad as well as the Leningrad Region. Pachulija was the head of Abkhazian KGB. Both of them were closest Berija associates (former head of the USSR central KGB). And Braverman was put forward for rank of a general.

When in Khrushchev's exposing "cult of personality" Berija was proclaimed to be an "imperialistic spy" and public enemy, they were convicted for torturing and killing people under investigation.

They both became "third ears" and got a snug little job. Pachulija became a librarian, Braverman a comfortable office worker.

Even defectors disdained them, not to mention political prisoners; they had to communicate only with one another and scribbled denunciation saying that the other understands a new Central Committee resolution in a wrong way.

There came a trial to reconsider the cases, generally, KGB cases. Slava and I sat in first line. But the heads drove us out however hard we had tried to protest saying Fortunately, room for boiled water, joined to barrack was divided from the courtroom by thin plywood partition. We got there and heard everything.

Our head hair stood on end when we knew what those "guardsmen of the law" did. Pachulija even hit upon an idea of throwing people to holes putting them at the mercy of rats. They were judged not for fabricating cases and tortures, but for killing people under investigation. Pachulija tried to prove his innocence telling that he built a road to Stalin's cottage, which he hadn't visited even once.

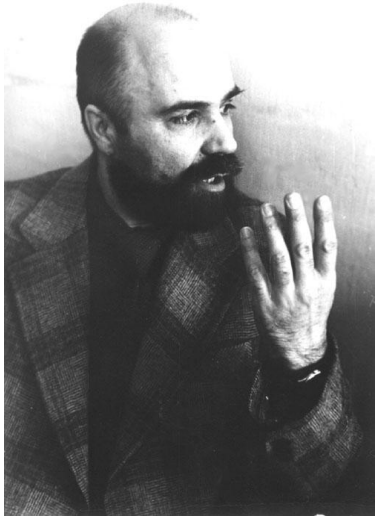
The court reduced Braverman's time of confinement because of his "reform" and "good behavior". The court refused to reduce Pachulija's stretch only by personal request of Georgadze (Supreme Soviet Secretary) as Pachulija had tormented his close relatives to deaththat everyone who wishes could visit the "open" court.

Nobel Prize academician **Andrei Sakharov -** designer of Thermonuclear bomb and defender of Human Rights,

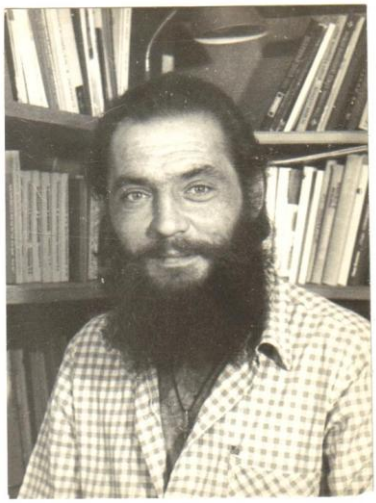
Viacheslav Chornovil He was candidate in Ukraine President when Ukraine received Independence. He perished in strange car accident.

Vasil Stus. Famous Ukraine poet. He was Candidate for Nobel Russian Prize. He was tormented to death in Soviet concentration camps.

Sergei Soldatov - author of "Program of Democratic Movement of the USSR".



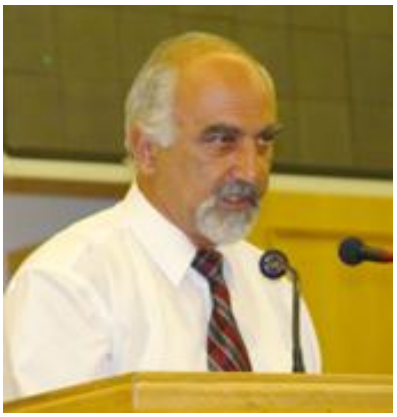
Igor Ogurtsov - leader of "Christian -democratic Union" in Saint - Petersburg.



Viacheslav Petrov - worker from Saint-Petersburg (Russia)

Eduard Kusnetsov - writer.

Ilia Gleizer - biology



Paruir Airikian - party leader.

He is editor of newpaper "Vesti" in Israel now.	Scientist. He is living in the USA now.	He was candidate in President of Armenia.

11. Road to exile

Half a year before my discharge, according to the KGB's standard procedure, I was sent to the inner camp prison JH-385/19. That procedure was invented with the purpose that the concentration camp latest news couldn't come enter from the outside and was applied to especially dangerous criminals only.

On the day of my discharge many political prisoners gathered by the fence dividing isolation cell from production area. Each of them tried to shout good wishes, requests and news at parting. I knew Sergey Soldatov, Volodja Osipov, Artem Yushkevich and others by their voices.

But I didn't go to the non-Soviet outside Free World directly after my internment sentence at the final concentration camp. A whole month of exile in Siberia and wandering over the prisons of almost all Soviet Union was ahead. The place of my exile was kept secret. It was rumored that I was transported to Irkutsk and I knew that I was in Buryatiya (Siberia) only after arrival there.

That deportation was a continuous nightmare. They transferred me from one transit prison to another: Potma, Chelyabinsk, Novosibirsk, Irkutsk, and Ulan-Ude. Transfer was by prison transport, the wretched Stolypin carriages, moving always at low speed, stopping for 2-4 days on every span. About 20-25 people sat in a compartment without windows; it was isolated from the corridor by an iron fender. Normally that compartment was supposed to suffice for four passengers. There was no food for 2 -4 days. We received a slice of bread, a herring and a teaspoon of sugar (beet or Cuban cane) before the next stage of the arduous trip. The guard brought freshwater and took out to the toilet about once a day, not asking when we want, but doing it according to their schedule and whim. I slept sitting since all the nighttime resting positions were forcefully occupied by tough criminals at the start of the journey.

Abuse (physical and verbal), body and waste stench, random body searches, criminals and guards robbery accompanied every span.

Indeed life wasn't sweet in transit prisons. Prison-vans were stuffed with prisoners to the eyeballs: 20-30 people in one car. Taking into consideration that about 2/3 of inner body was partitioned off for gunner and 2 solitary cells one might be amazed at how so many people could get into the iron box as large as 4 square meters with all their personal possessions. That box had no chinks but the train engine's exhaust penetrated. Moreover some young criminals began smoking makhorka[7]. Usually in a minute I began suffocating and throwing up. I lost consciousness frequently. That humiliation lasted several hours, not to mention hours of transmittance the prisoners from the carriage guard to the prison-van guard and from the prison-van guard to the prison guard.

Every person was called, asked name, patronymic, asset, stretch, compared photo at sealed papers and searched over.

In one of the transit prisons I was put in small standing cell, which walls were upholstered by with sheet-iron, resembling the vegetable/cheese grater. After that long

[7] makhorka – a bad sort of tobacco

and hard stage, I was groggy. But I had to stand strictly vertically because at the least movement sharp thorns got stuck into my body. It was impossible even to knock at the door, as it was covered with such sheet-iron too. For the entire night I was an unwillingly listener to wild cries, sound of glass beating coming from the neighboring cell, where the guards were beating the prisoner. Whoever he was, he went mad at dawn.

The guards let me out of there only in the morning. I was hardly conscious. Jailers laughed ("You are like Lenin") and brought me to the cell.

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When I asked the chief warder why they hadn't done it yesterday, he answered: "We forgot".

Next time I was put in a penalty isolation ward with incuse windows. Wind blew snow into the cell and I nearly froze to death.

In one mass cell a toilet was made as a high pipe. One had to climb up there by the ladder. During the process the others could not only "take pleasure in smelling" but also in looking the whole procedure from below.

I won't even mention such repugnant details as striping to the bare skin before women working in prison who searched everywhere for newly made caps (tattoo).

12. First exile

In 1976 after 4 years of cruel imprisonment in political concentration camps of high security I was brought to exile in Siberia, in a village called Bagdarin of Buryat ASSR[8] and handed over to the local police station authorities. There I spent a worrisome night in the lockup. Then they kicked me out to the street without giving any hint of a place to stay. I had no money and was recognizably dressed only in soiled and shabby prison clothes. It was very cold, as always in October in Siberia. They graciously permitted me to sleep and eat with scourges, bums and hooligans arrested for 15 days.

That little wooden house had probably been a village bath previously. It was located in the closed off police station backyard and was converted to a cell with bars on windows, closed for night use. Usually it was overcrowded and prisoners slept side-by-side on the attic's the dirty floor, covered by their worn-out ramshackle clothes.

All people imprisoned for 15 days already knew that a new political prisoner came to Bagdarin. They were very friendly, tried to pour more skilly, abused soviet authorities and the most embittered (those who were beaten black and blue by police) threatened to burn down that house.

First day I was out I telegrammed collect to Irina Korsunskaya and in a day I received a little money order. That allowed me to change my lodgings to a squalid wooden local hotel—a place far from 5-Star service and lodging!

Rumors spread fast in such small and tight-knit settlements as Bagdarin. The maintenance staff of the hotel treated me well. Lubov Govenko, the hotel's administrator, felt great pity for me. She helped me to settle down (calm) and to subsist at the start, though she was summoned many times to the KGB office for a demonstrative oral browbeating. I was treated with considerable kindness and pity by

[8] ASSR - Autonomous Soviet Socialist Republic

many people, strangers really, in spite of all the false stories and alarming rumors peddled by the KGB operatives. But people were afraid to show their attitude to me in public. When once a super-grass saw a person talking to me tête-à-tête, that person was summoned or dragged to the KGB and they began finding out what we had spoken about, made a person write explanations, browbeat him and solicit the necessary testimonies about picking on the Soviet authority and appeals to blow it up. After that, some persons avoided meeting me.

Regional town Bagdarin represented a small village of little wooden houses with population of about three thousand people. The house of a district committee was the only two-storey building. There were two shops, a small canteen, service centre, school, KGB regional department (highly essential to Soviet state personnel) and no industry. Small village Malovskiy that included about a thousand homesteads was situated near it. The village was surrounded by thousands of square kilometers of taiga.

According to the law, local authorities had to find work for me and give me lodgings. Somewhere in two weeks police official Vaganov set me up in geological survey group (GSG) in village Malovskiy and settled me in GSG dormitory.

I was attached to general worker Vinnikov E.K. – secretary of party organization in GSG. My duties were to carry a measuring rod after him and to keep it strictly vertical in indicated places. Of course, they couldn't find better—more appropriate employment—for a Doctor of Science in the USSR. Later it became known that Vinnikov was obliged to spy, ask provocative questions and write denunciations. It means he had to do it according to the Soviet decree of 1918, as all the members of the Communist Party (in contrast to ordinary Soviet people).

Vinnikov turned out to be a very eager super-grass not only in my relation. He wrote reports about workers, complaining of life and work conditions. However other members of the party were no different from Vinnikov. For example, Palienko G.S. or deputy party chief Turgenko's L.A. wife. In the reports they didn't write things that happened in real life, but the things KGB told them to fabricate to construct a new damning case.

The dormitory I was settled in was a wooden building with a long corridor and two rows of rooms on both sides. Builders, gold-miners, visitors and scourge lived there. Almost every day they were engaged in hooliganism, drinking and scuffles. They boozed and made uproar on holidays, every half a month (in the day of prepayment) and in the day of receiving salary.

The rumor about my technical education circulated fast and many people began bringing household appliances (radios, refrigerators, and washing machines) for repair. I hadn't practiced that before. But I was an aviation engineer and knew physics well, so I examined them and repaired them in many cases. People thanked me and gave either food or money. Soon many heads of local offices came to me asking to repair their typewriters and other office equipment. Glukhov Petr Fedorovich helped me greatly. He was an economic executive of the mine, exiled during Stalin times. Tearfully he told me the sad story of his life, that he was exiled to Siberia after the war, his family was destroyed. He found a new wife, created a new family, but he couldn't leave Siberia.

I put right the mine's printing machines and was using one of them for some time. I was printing letters and complaints with it until the ever-watchful KGB gave the

instructions to take it from me. After that Fedorovich gave me an old broken typewriter. I toiled very hard, finally put it to right and used it till the next KGB arrest.

At first it was hard to exist, I needed money to buy food and clothes. My wife didn't send me a ruble, an old shirt of the thousands rubles I had saved. And I was very gratified to Moscow-living Lisovskaya Nina Petrovna, Romanova Avgusta Yakovlevna, Salova Galina Ilyinichna and other dissidents whom I hadn't known before for their timely help and uplifting moral support. Many people wrote to me, about 2-5 letters a day and I had an ongoing large correspondence duty. Soon, even foreign letters began reaching me by post.

Once, a young fellow in traveling clothes and with a big knapsack came to the room where I worked (fortunately Vinnikov was out of the room at that moment). It turned out to be Sasha Podrabinek – a messenger of the Moscow dissidents. He decided to travel over Siberia and to visit some exiled people during his vacation. I hadn't met him before. I was aware of a provocation by impersonator, so I rang up to Galya Salova and asked Sasha to speak with her on abstract theme not naming himself. She knew him by voice and said that he was a remarkable person.

Sasha brought to me a Japanese shortwave radio – a present sent by Moscow friends. I had asked them to send me that radio long before so that I knew the truth about world events. Unfortunately, Siberia is situated far from Europe and I could listen only to the special Far Eastern 3-hour programs "Voice of America" (probably broadcast from Japan) that were badly distorted by Ulan-Ude radio suppressors (radio interference, jamming).

Sasha stayed for two days. He was in a hurry to visit many more people, and soon his vacation was scheduled to end. He brought me up to date about the latest events and enlightened me in some medical questions. That particular knowledge proved very useful to me later. We snapped a photographed as a keepsake. His visit remained a secret. When I saw him off, there were no KGB workers at the small local airdrome and he flew safely away without any surveillance "tail".

I had to travel tens of kilometers on taiga for my job, making measurements in gold-mining regions, and spent nights in little wooden houses. It was especially hard in winter. All the day, I was frozen by the frost, cold wind, from creeping over the snowdrifts in shabby clothes with the measuring rod and equipment that seemed extremely heavy by the end of the day. All these things resulted in my continual illnesses and diseases. I was 40 years of age and was ill with chronic bronchitis stimulated by the cold punishment cells. There I knew all the goods of Soviet law. It turned out that a discharged prisoner had no right to paid medical certificate during 6 months after his discharge. That was when they most often most often, they did not have any state support.

Head of the GSG Parshin A.P. and, most probably, the KGB, where all my observations of Siberia frosts were brought as abusing the Soviet country, carried me to loaders. Together with my workmate I had to load and unload 5-7 meter logs by hand to and from automobiles in winter. I came to the doctors, who were forced to give me a certificate about contra-indication to hard physical labor. After that, I asked for another job. Somewhere in March of 1977, I was set in service centre of Bagdarin as a mender of electric household appliances (electric stoves, irons). As I knew later that was done on purpose.

They settled me in a deserted decayed house near the service center. It was divided in three sections. Two of them belonged to the center; I was settled in the middle one (of approximately 2.5 by 2.5 meters). In another (a bit larger) section lived a service center charwoman, Turkova, with her husband and a child, and in the third section lived an old man and old woman with a wicked dog.

That house hadn't been repaired beginning with pre-Revolutionary times, its roof resembled prison bars and torrents of water were pouring all over the ceiling during rain and melting of snow.

At first I bought ruberoid and made the roof and small inner porch, than I removed the heaps of dirt and wine and vodka bottles, which the former mender Erdineev A.B. had left there.

There were two houses used by Armenians near to my house. They organized a gainful building group on repair and building houses. They earned a lot – about 500 rubles a month and they spent that money during their free time, drinking hard and having fun with girls, deflowering a number of local school girls. One of the local KGB workers took part in their boozes too. Later one of the Armenians confessed that he instructed them to spy on me, on my visitors and came to him regularly to receive the "information". My other neighbor Turkova was also instructed to spy on me. In consequence they made Turkova sign the "necessary" to KGB testimonies.

Armenians were "caught on the hook" by the vigilant KGB, being got on some machination with gold. Two of them (Akopyan G.B. and Oganesyan G.A.) signed those "necessary" testimonies. Oganesyan did his best. I spoke to him once or twice, but I had never discussed any politics with him and with anybody in Bagdarin.

Later the leaders of their group were accused of writing up and put to prison. I must do justice to one of them, Robert, who hadn't signed the slander in spite of his difficult position and the KGB's unrelenting pressure.

However, the shadowing was rendered not by my neighbors only. Coming to work, I found at my place clumsy notes of center workers, where they wrote to me that KGB required them to spy and to make reports on me. The head of the service center Golovanov N.V. who had built himself a huge house of stolen material hastily hid the sheet of paper when I came to him. I knew then that he was writing regularly the obligatory denunciation.

What could one write about a person, who didn't speak about the present power at all? Afterwards when I read the testimonies of so-called "witnesses" produced as accusatioins, I understood that KGB had special samples of phrases like: "was slandering heavily about the home and foreign USSR policy", "propagate slandering ideas, denigrating state and social system", "committed inimical-provocative ideas", "misrepresented the truth", "praised foreign way of life", "was slandering about life in the USSR" and so on which didn't mean anything in particular. But one wasn't allowed to rummage in all those things.

While at the concentration camp in Barashevo of Mordovia ASSR I was surprised how semi-literate supervisors knowing nothing except abusing language could write such a thorough report. It was when I refused to carry corpses and they wrote (in general words) that they tried to educate me in true Soviet spirit, rendered pedagogical work with me, tried all humanistic methods but I, being a hard case, didn't listen to their exhortations and sink into rejection of labor. And poorly rewarded for their strong

efforts, they had to demand punishment for me. I understood that they had patterns of reports that they just had to insert the surname and sometimes the misdeed itself.

However not only former criminals such as Ardyneev, semi-literate neighbors, Armenians, CPSU members and the heads wrote those reports, but a local “journalist” some drudge named Gilbuch earning his living by illegal photography in Bauntovsk region too. I always wondered what set them in motion: naivety, belief that they serve the leading regime in the world or just the desire to have some profit in service, some fringe benefits or security against the KGB. How could they look in their victims’ eyes? Why were they the main support and hope of the “leading” power in the world? How many of them appeared, came to the surface and flooded the whole country. And their quantity increased from one generation to another!

The hut in which lived Bolonkin and two local families

to get my book out of the KGB archive. In Moscow’s Lenin Library only the book’s microfilm version, encoded as item number F-801-83/809-6, r

Many dissidents, convicts’ relatives and just strangers wrote to me in exile. They expressed their pity, offered their help. I received about 2-5 letters a day and answered them. Sometimes letters from abroad reached me. It was clear from their contents that only a small part of these letters came to me. My letters, especially foreign reached their destination even more rarely. In concentration camp the post paid me 50 kopeck for every lost letter after check-up on my writ. I based my requirements on such fundamental postal documents as “the USSR Communication Statute”, the “Postal Rules”, the “Rules of Compensation Payment for Lost International Postal Mail” and made an interesting revelation that the Post must pay 11 rubles 76 kopeck for every lost international registered letter, while the price of sending it off was 16 kopeck. I ascertained that only 30% of my international letters reached their destination. By the way, even my most innocent letters that included only one Soviet postal card failed to achieve their address.


A. Bolonkin in exile (Village Malovskii, Siberia, 1977)

Somewhere in 1969-1970 I had given my book ***"New methods of optimization and their applications"*** devoted to mathematic method of optimal regulation worked out by me to the publishing house of Bauman MHTU. In 1972 it was edited and published. Then thundered my arrest and accusation on the most seditious Soviet asset "anti-Soviet agitation and propaganda", related to especially dangerous state criminals. One might think that mathematical book has nothing to do with it. But the authority wanted to sponge out the physical evidence and organic memory even of the names of disagreeable people. Almost the whole edition was obliterated. My works were prohibited; they were not to be quoted and referenced by anyone. When I was in exile I asked the publishing house to return me my manuscript. But only the remains of my rough copy were returned. Than I brought an action against them requiring them to give me my manuscript, to pay me the author's emoluments or to repair the damages caused by their breach of contract. After long wrangling and complaints I received a subpoena. I rushed along to police to get an exit permit according to the law. But there was no law in that country. They promised to find everything out and in a day they showed me the telegram from Judge Sorina of Bauman Region of Moscow, where it was written in black and white that the subpoena was sent for the sake of appearances. I began requiring the investigation of the case in my presence according to the code of civil procedure. But the court didn't care a damn for a law and for the code. In spite of my protesting telegram they held a court session in my absence. I was refused in all items of my list at the ground that my manuscript had never been published. I couldn't find my book in any Soviet library, nor in a bookshop. Twenty years later, approximately in 1983, I managed

I read in the “USSR Communication Statute” that if a person doesn’t receive an answer to the writ for international letters after half a year he has a right to bring an action against the Post enclosing the application and a copy of a writ (or a receipt of mailing such an application).

As the Post didn’t answer my writs during the required term at all, I brought an action against the Post to the regional Court of village Bagdarin according to paragraphs 99, 103-105 of the “USSR Communication Statute”.

Judge Vinogradov requested all the Postal rules and documents and assured that I was completely right. The head of Bagdarin Post Tudypov couldn’t say anything clearly except that that the Central Post Office didn’t or hadn’t answered their inquiries. But Soviet International Moscow Post Office situated in Komsomolskaya square, rather Central Reclamation Bureau of this Post Office considered answering the inquires of subordinate office beneath its dignity.

Evidently it was the first time when, in that state of slavish mass psychology, appeared a stalwart man who took it into his mind to raise a claim against the Post for the lost international letters. It is clear to the meanest intelligence WHO had “lost” those letters and the name of that organization inspired fear in the Soviet people.

The Post couldn’t produce any receipt of handing over my letters to the foreign postal department. Vinogradov temporized but was compelled to call court examination. In court Tudypov declared that the post lost my letters. Vinogradov had nothing to do but to award me 50 rubles for the five lost letters.

Second time I declared for 150 rubles and the court had to find it correct. Third time I got 300 rubles. After that I decided that it would be fair if I received my Doctor’s wage - 500 rubles every month. So I began sending 48 similar registered international letters every month. Many of them had nothing except the Soviet postal card; others sent, for example, to the Academy of Sciences in various Socialistic countries, contained just one phrase: “In accordance with Helsinki agreements I ask you to render me assistance in departing the USSR”. Other letters sent to the Embassies of Western countries included postcards with the following text: “I congratulate the Women of the Embassy on the 8th of March”. I usually sent such letters as insured and valued them at 30-50 rubles. Just imagine what an insane person could congratulate the Women of the American Embassy on the 8th of March? Soviet propaganda alleged them to be cruel materialists, warmongers! KGB just threw them away. I decided to take that as an opportunity.

But, when the sum I required for increased the budget of the local Post office bawled out murder, KGB tried to wangle. Post lingered about a year with my next claim for payment about 2 thousand rubles. By that time I was arrested again. Finally after numerous complaints I was adjudged that money but I was not informed about that judgment! Court decision came into force but was reversed in two months. Apparently, the court received an instruction to reject similar claims. The repeated Court of Oktyabrskiy Region in Ulan-Ude (Judge Belyak) rejected all my claims: *“Bolonkin didn’t prove that his letters were lost!”* I tried to appeal to their logic, to the commonsense. I was told that it was not me who had to prove that my letters were lost, but the Post had to prove that it handed over the mail and produce recipient’s receipts or at least foreign Post Offices’ receipts. But all was in vain. I even showed the letters of the recipients

where they wrote that they hadn't received the given mail! It seemed to me I was in a deaf-mute society. A communistic court could trample on any logic if needed.

All the following claims were rejected on the same basis. And appellate organizations didn't answer at all.

During my exile to Bagdarin I began writing my memoirs about the investigation, the court, about staying in Brezhnev-run concentration camps, about my experiences and saw from the moment of my arrest, about the acts and literature over which I was arrested. After half a year I had written out in small hand 10 pupil copybooks. I titled my manuscript as ***"Ordinary Communism".*** I showed it to nobody and kept it in the yard heap of garbage, camouflaged under the washbasin. I understood that I couldn't publish it in the USSR. I wanted to keep it till a better time or at least to hand it over to post-terror's posterity when those times might come.

The main task of any dictatorship, especially the bloody regime, was to conceal its own evil deeds and to slander its victims. Stalin was extremely effective in doing that. He brought to the grave tens millions people. The major weapon and defense of those victims was publicity, informing the community about the murderous acts of the powerful elite.

In the 1960s to 1970s, the bloody repressions hadn't reached Stalin's scale due to one reason. There were people who collected the information about the persecutions and arrests of dissidents gave it publicity. They were caught, arrested, accused of anti-Soviet thinking, slandering and put into prison. But other people took their places. Just remember, the illegal bulletin "The Chronicle of the Current Events" that made known the political cases and repressions. Hundreds of people suffered from publishing that bulletin. Many times, the KGB arrested its publishers, but every time there appeared new people, courageous replacements or reinforcements, who continued the deeds of the jailed associates. The bulletin existed about 15 years in spite of numerous KGB's promises to put an end to that in half a year.

And all the leaders' efforts to show the USSR as some socialistic heaven where the workers enjoy their happy lives in the pauses between the heroic labors and glory their communistic benefactors went to the dogs.

Many trading organizations of the settlement had stored up a great quantity of out-of-order appliances for several years: they were refrigerators, radios, wristwatches, and so on. All these non-functioning things were the deadweight to the balance.

Some part of those appliances arrived defective, another part (for example, refrigerators) was crushed and scattered on the journey. Some were simply stolen. Once I saw a radio-gramophone which pasteboard back cover was pierced and all valuable mechanisms were absent. One had to pay a pretty penny to send it back for repair. Besides, there was no guarantee that the equipment would come back in a good state after a long traveling on awful Siberia roads. I was a real treasure to such organizations. They began importuning me with repair requests.

To make assurance doubly sure I went for consultation to the local lawyers, in particular, to regional Judge Vinogradov A.N. I was assured that everything was legal and I had to reach understanding in writing. I signed several contracts with the organizations where it was clearly stated that those organizations are responsible for the accuracy of payment and that they *"are obliged to pay for my work in accordance with the present prices".*

The repair was difficult because of the lack in details. I had to write to the plants, to “Posyltorg”, buy discarded household appliances to get the required component. Usually in delivery transportation refrigerators’ doors got deformed and nobody wanted to buy such units. Some deformed doors I replaced by the doors from the bought old refrigerators or by the doors my fellow driver brought me from Ulan-Ude menders. In November 1977 I left the service in the center and went on to do contract work. At the very least, I saved considerable sums of money to our state by that repair although my income was paltry. In total for two years I was in exile I earned about 1000 rubles, 600-700 of them was spent for buying repair parts. Thus I was paid for my work about 300 rubles yearly, or 15 rubles a month.

13. Second arrest

In the beginning of June 1978 my period of staying in Siberia came to an end. It was so because they were driving me to the exile destination more than a month and set me free only in the end October 1976 instead of 21st of September. And every day of imprisonment was equal to 3 days of exile.

From other exiled political prisoners’ experience, I knew that at the end of the term the KGB usually made provocation and fabricated a new incriminating case. I behaved warily, without getting involved in any conflicts. In general I stayed at home. Moreover, a month before the end of the exile term, I planned to disappear, to settle secretly at my friend’s and to depart from Siberia after the end of the exile so that they couldn’t impute me an escape. If so, the most they could accuse me of was that I didn’t register myself in police for have a year. And that was an administrative delinquency. I could have claimed sickly forgetfulness.

But as it turned out, someone had already guessed about that. Anyway, the authorities took the lead over me. On the 15th of April, 1978 a woman from the accounts department of the service center came to me and asked to go with her there to clear up the vagueness in some book-keeping document. I went there suspecting nothing. There was a police investigator Kornev Anatoliy. He showed to me the certificate of audit. It was said there that the repairs I made for the organizations were illegal as there were no contracts in the accounts department. Quickly, I grasped the evil KGB’s plan. All the contracts were taken from the accounts departments and destroyed. Now, they could accuse me of anything they wanted. I said to Kornev that I had the second copies of the contracts at home. It was a bolt-from-the-blue to him. He cursed that they loaded him with that case and ordered that I had to go with him to the police station to clarify everything. In the police station, they searched me, took my documents and set me inside a single lockup.

Next day, after sleeping on the plain wooden plank bed, I was brought to a public prosecutor, Bargeev A.A., who signed the search warrant at once and they brought me to my house. The lock on the door was all twisted, someone had already tried to get into my house.

I found the second copies of the contract and demanded from Kornev to include them in the search protocol. We wrangled for about half an hour. But all was in vain. My copies of the contracts botched up the whole show and he didn’t agree to include them. Many other documents were not inserted. The only thing I managed to press

successfully was to write the numbers of the receipt copies for the fulfilled work. But that fact didn't prevent the disagreeable receipts from disappearing. The court was deaf to my requests about finding out where they went or just to compare the search protocol with the present receipts. Many shop and sending receipts for the components disappeared or were left without any attention, because if the court took them into account the sum of earnings ("theft of socialistic property" in their words) would be too scanty.

The only thing I managed to defend – they didn't do away with the second copies of the contracts and they were included into the papers of the case. I achieved that by writing tens of claims and applications to all the organizations and threatening a hunger strike. Obviously, the KGB didn't dare to eliminate them and fabricated the accusation that I repaired fewer appliances than I was paid for. An investigator from Ulan-Ude sent to help Korneev after my notice: "If I was paid more than I had to get, you must put to prison those who 'overpaid' me and deduct the excess from me" boldly answered: "We need to can you, not them!"

14. Ulan-Ude remand prison

Approximately on the 20 of April of 1978 I was brought from Bagdarin to Ulan-Ude remand prison. There I was delivered to the guards and locked up in a preliminary box of the guard department. Soon, two people—Gavrilov and Oleichik as drunk as David's sow—were brought to the prison. They were bawling, and behaved outrageously, Oleichik especially. But the warders treated them quite well. If an ordinary prisoner could be beaten for the slightest objection, for wry glance or just for the guards' amusement, so handling with Gavrilov and Oleichik was extremely surprising. As I knew afterwards they were "third years" (used by the criminal investigation department in prison and in lockups to terrorize the new prisoners and to give false evidence if needed). They were paid with rations of tea, vodka, drugs and, judging from their state, the inspectors didn't begrudge vodka payments for them. Those people were brought because of my arrival and put into my cell.

I was interested in where officers of the criminal investigation department took the drugs and money to "thank" "third ears" for their activity. Alexandr Gavrilov, who shared the cell with me for several months (longer than anybody else), finally stopped pretending. He explained me that the officers were taking the potion from the drug addicts, finding the stuff in parcels, or just getting from others, such as friends, for handing over to prisoners.

As for vodka and tea, they were bought on those 15 rubles of the salary that was set for "third ears" "work". Officially that fund was called "The encouragement fund of the best" or "reformed". If super-grass's salary were transmitted on his banking account and they could buy the things in the stall as the others, but in that case officers could take that money from the cashier as if to supply the "best". Alexander Gavrilov and many other super-grasses told me that they are swindled by the officers who give them one bar of tea costing 1.5 rubles and making them sign that they received the products costing 15 rubles. The rest they put in their pocket. If the "reformed" began arguing, he received nothing at all, as there were lots of people willing to take his place.

But, sometimes, officers of the criminal investigation department behaved even more meanly. The super-grass got the bar of tea, signed, and then a supervisor searched him, took the bar and returned back to the officer. He rewarded the next super-grass with it. Later, he was searched and that bar retaken. Sometimes the same scam was done with the drugs, with the only difference being that a disagreeable super-grass or a person who made a slip could be accused of taking or distributing drugs.

However officers “thanked” the super-grasses not only buying tea, vodka and drugs. It was not the only and the main way to express their “gratitude”. Supervisors and officers got a substantial profit from robberies of people on trial by super-grasses’ or prisoners’ hands. A person was arrested in ordinary clothes, which was expensive. It could be mink cap, sheepskin coat, expensive coat or jacket, imported suit, pullover, cardigan, running shoes or foreign-made shoes. When the arrested person was brought to the prison, he was relieved of all money, valuable things, forced to leave watches in the checkroom. It was proper to leave valuable civilian clothes in the checkroom in return for prisoner’s clothes. But usually it wasn’t done. And the storekeeper was the same prisoner who could steal and sell to officers good clothes dirt-cheap. As the keepers constantly changed, it was impossible to prove anything or to find the tracks or paper trail.

Thus the majority of people under trial came to the cells in their civil clothes. If they had anything valuable, supervisors set them for some time “by mistake” to the cell with super-grasses or prisoners who skinned him. I often saw and experienced the same thing myself when I was sent warm socks and hand mittens.

Super-grasses passed all those things to the supervisors for a bottle of vodka or for a bar of tea. Even officers were disposed for profit from that sinecure. After such robbery, a person under investigation was returned back to the common cell if there was no need to pump some information out of him.

Another means of “feeding up” super-grasses was to rob the delivered parcels. Those who have ever brought parcels to prisoners know well what unbounded harassment, obvious and subtle humiliations and personal insults were connected with that humane task.

Sometimes, a mother or family-shocked by the sudden arrest of a relative who had got into a tight scrape, came with some money for a monthly parcel (if the investigator deigned not to forbid). It was hard not only to procure a bit of sausage or 500 grams of butter for them. They had to rise early, spend whole nights in prison queues, listen to wardress’s insults; beg her not to throw away these or those foodstuffs which suddenly become “forbidden”. Cut up foodstuff, opened factory-made cans, which were usually searched in hope of finding something prohibited finally got to the prisoners. On her way the prison matron could take or change some food. The supervisors wouldn’t mind to profit by that – anyway a prisoner couldn’t check what was missing.

The officers fed the super-grasses in the following way. Before giving the parcel they transferred the prisoner to super-grasses’ cell and then they brought a parcel there. The “third ears” pounced on the parcel together with its owner (they said everything in the cell was common), after that the person was brought into his cell. Good if they permitted him to take something with him from his own parcel (they said it wasn’t right to take the parcel with you).

But the most awful rumors were about so-called press-huts, special cells with informers where people were thrown to admit the accusations. They were subject to mockeries, beating and terror, and sometimes even to murder. Officers just called it a “self-defense”. Subsequently in hospital I faced one of many such cases when the person beaten within an inch of his life in a “press-hut” had died.

On some occasions officers went on direct infringement of the law, throwing informers to objectionable juvenile offenders—detained children. It appeared that we in the Soviet Union could arrest children beginning with 14-years of age. But they had to be contained separately till 18 years according to the law. They broke that law and set children in cells to “third ears” who had only one desire - to rape, satisfy the lewdness, to teach them to smoke, to transform them into informers, criminals, to become their "heroes", serve as an example for them.

Many informers tried to hide their surnames and used nicknames, which they had invented themselves. In particular, Oleichik had a nickname "Dark blue". He used it in dialogue with other arrested people and in talking through the broken windows with other cells. He never used his surname and was terribly dissatisfied when one of the supervisors declassified him, having named him in my presence by his surname.

In general, the mania to nicknames drew in all criminals. Once I heard when a young guy got in prison for the first time and could not think up a nickname and shouted in a window: “Prison, prison - give me a nickname?” Only an obscenity was heard in reply from the cheered up criminals. They frequently supplied others with nicknames, even political prisoners, placed in their environment. They knew that I was a Doctor of Cybernetics, but they confused that title to the doctor and frequently addressed me for medical advice. When I tried to explain to them, that I was the expert on cybernetics they hardly understood it and a word “senior lecturer” was a deep dark secret to them. However, in a concentration camp (on official terminology in correctional labor colony) they addressed to me “San Sanych” though behind my back they named me “professor”.

In Ulan-Ude prison I faced direct false evidence. Once some Suponkin and three informers Alexander Gavrilov, Ilya Isanjurin and Oleichik were placed in the cell with me. He told us that he was accused of a murder, but he wasn’t related to that crime. The conversation occurred in my presence. Several months later I learned that Suponkin was convicted on the basis of Oleichik’s, Isanjurin’s, and Gavrilov’s testimonies—as though Suponkin had told them he had murdered. It was a usual reception for the cases when a person was arrested, but nothing could be proved. Not to admit to the mistake, not set him free and not to spoil the reporting on disclosing crimes, they acted in that way. And when such serious crime as murder took place the "guilty" should be necessarily punished. I know that sometimes tens of innocent people suffered, those who were not connected to the given crimes and were arrested simply on suspicion. Investigators cooked up charges against all of them. The accusation frequently had no relation to the reason of arrest as it was in a well-known case of Peshehonova (atrocious murder) in which about 30 of her passing acquaintances suffered. The chief of Ulan-Ude criminal investigation department Ivanov was especially impudent and put thousands of persons out.

15. Second trial. Concentration camp OV-94/2

The court headed by the Judge Zhanchipov E.B. took place at the beginning of August 1978. I made a statement that it was ridiculous to judge the person for paying him more than was necessary, I spoke about criminal methods of investigation, destruction of confirming receipts, forging of documents, false examination, political underlying reason of that "case". I was roughly interrupted and that very day they took all my extracts from the case; notes to legal process, copies of complaints, all paper and pens. My oral protests in court were interrupted by public prosecutor Bajborodin, who loudly shouted in court that I was an anti-Soviet criminal. In short, they condemned me to three years in concentration camps. I hadn't admitted myself guilty.

They sent me from Ulan-Ude to a tree felling concentration camp in Irkutsk area. About 2 hours they carried us in North direction from station Resheta of Siberia highways by the branch line that hadn't been marked on any map. That entire time along the railroad stretched concentration camps. The official address of the camp:

665061, Irkutsk region, Tajshetsky area, Novobirjusinsk settlement, Institution N-235/12.

In that concentration camp, I stayed for about one month and due to the sympathy of the head of first-aid post, almost all this time I was in hospital. Then the camp authorities and Correctional Labor Colony Management of Irkutsk area decided that they didn't need one more political prisoner and sent me back to Buryatiya (both places are located in Siberia).

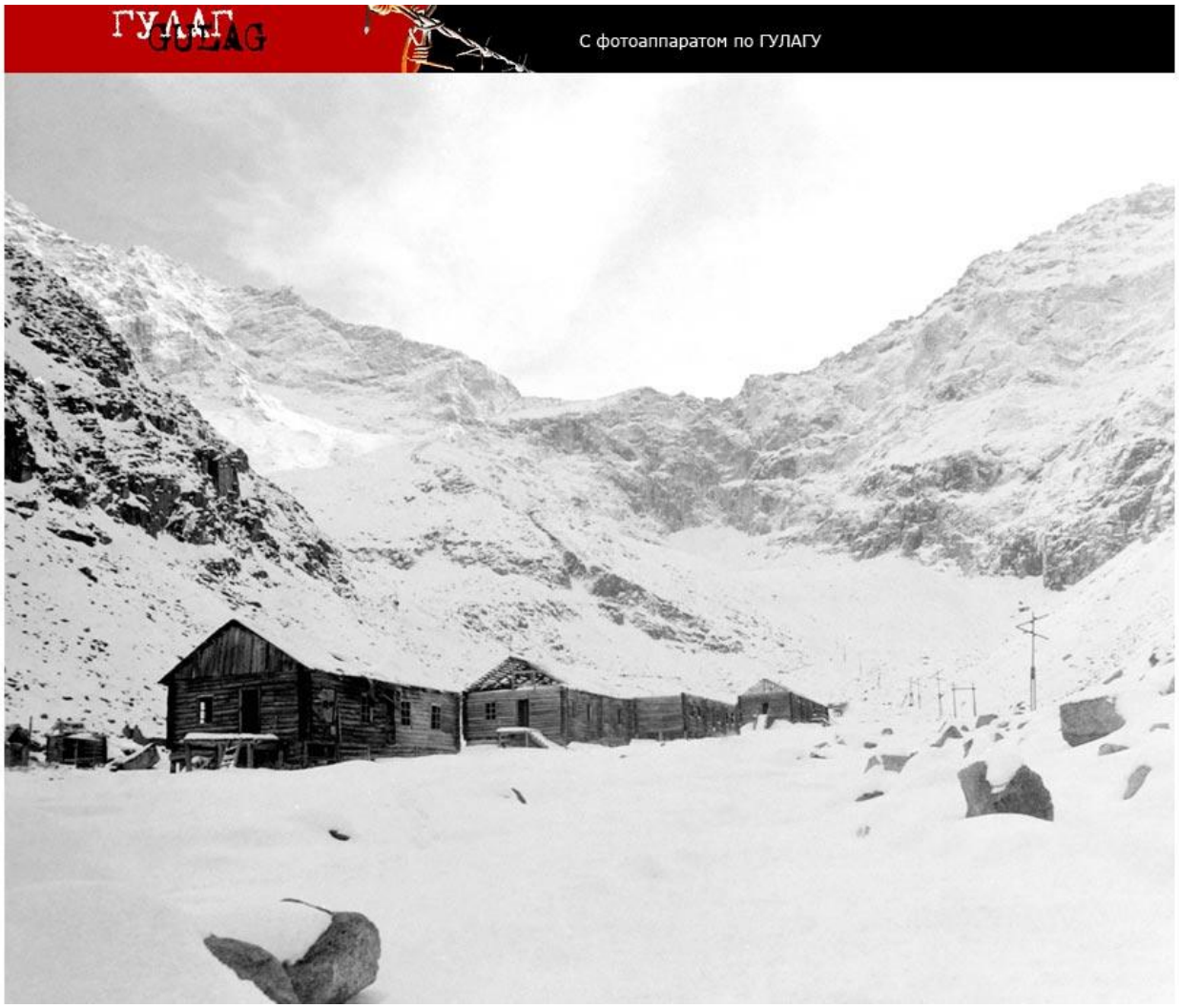
There they brought me in concentration camp mailbox OV-94/2 in settlement Southern near Ulan-Ude. The chief of this "exemplary" concentration camp Leonid Druj distinguished oneself by awful cruelty. Once I had counted up, that for several years after first taking his position he had written out the prisoners about 150 thousand man-days of stay in a cold punishment cell, not counting hundreds of thousands of man-days in intra-camp prison of special regime.

He gave only one kind of punishment – 15 days in a punishment cell – being the reason of it a ridiculous official report of supervisors or simple toadies-prisoners ("arm-band wearers", "red"). Any attempt to explain something, was answered by the growl: "And you... are dissatisfied! 15 days more!!"

As a result, about 90 % of prisoners suffered gastric distress and illness, about 20% tuberculosis, about 10 % venereal diseases. Suicide was quite frequent, especially in isolation wards and penalty cells. For example, prisoner Bogdanov couldn't endure tortures and hung himself in the punishment cell.

The tyranny of the "red" reigned in a concentration camp. They beat "muzhiks"[9] and those who did not want to enter in SIO (section of the internal order) i.e. to become "red".

[9] Muzhik – "a small (non professional) criminal man". The word is used in this meaning only in Russian prisons and concentration camps.



Typical barrack (houses) for communist prisoners in Soviet concentration camps.

Work in communist concentration camp

"Well" for 30-45 minutes per day walking in political concentration camp #36 (Perm region). Below is excursionist. In same "well" A. Bolonkin walked more 3 years.

Druj didn't disdain any possible fraud. In particular, using work of prisoners, he produced under the orders of the nomenclature (Communist and Soviet commanders) for a symbolical payment wonderful furniture sets, repaired motor vehicles, sold "written off" materials and thus held in dependence the Heads of the Ministry of Internal Affairs, Office of Public Prosecutor and top management Buryat ASSR, including a regional committee. And, as a matter of fact, all management of the Buryat republic was connected by cover-up and represented a united mafia.

Finally (already after my discharge) Druj was caught on bribes, but got off an easy fright and was sent on pension with honor. Nowadays he lives in a 3-room apartment in Ulan-Ude, 670000, Borsoev street, 29-37 (Phone: 2-93-12).

But even being a pensioner, he keeps those habits and he treats people as cattle. Once I saw when he ignored a lengthy shop queue gave the check to the seller. When I asked: "Why haven't you stood in a queue?" He answered with a child's naivety: "I have not noticed it!"

Convicts told that Druj ordered to collect all cats in correctional institution in a bag, threw a bag in a fire-chamber of boiler-house and observed as they cry in pain while in the fire. Other events happened in my presence. Someone found prisoners' bowls in a hole of isolation wards toilets (excrement pit). Druj ordered to put the food in them.

However his deputy Kruglov N.J.—living now in Ulan-Ude in avenue of 50 years of October 22-19, phone: 9-46-07, and also the chief of criminal investigation department Bykov B.A. (Ulan-Ude, 670033, Krasnoflotskaya street, 26-15)—did not differ from him much. Cruelty was inhering especially to ACC (the on duty assistant to the chief of a colony) Polyakov (settlement Southern, Bagdata street, 15, 30083, 248), who studied at Ulan-Ude Technology Institute where I worked during the second exile. He wanted to put me in a punishment cell because I had picked up the dusty scraps of "Rules of behavior of prisoners".

It was surprising, that all these people when casually meeting me after the discharge did not feel any confusion even in the period of Gorbashev's Perestroika. They didn't even think that their actions towards political prisoners could be considered criminal.

From all the maintenance staff of the concentration camp only doctor Baklanov Nikolay Artemjevich was kind to me. But his possibilities were rather limited.

Druj, being a Jew, tried especially hard to gain the bountiful favor of the KGB. He wished to direct my destruction. About 9 months (285 days) he kept me lightly dressed in a cold punishment cell on a pound of brown bread and water; and the rest of the time, almost 2 years, I spent in an intra-camp prison.

It is impossible to describe those tortures and mockeries I endured. I was held in cells with ice-covered walls in worn prison clothes, placed in an unheated box with its external door coated with ice and was opened for 2-hour "airing" when the temperature outside was 40^0 C degrees below zero. They placed me in the dark, damp cell with wood louses, cockroaches, and a smelly close-stool potty. The 6 square meter cell was filled with 6-8 people so we had to sit and sleep on a filthy floor.

Criminals, especially "red" ones, were encouraged to beat and terrorize me. My requirements of the single maintenance got the answer: "it is not supposed". And my complaints were simply thrown out.

I recollect my stay at Druj concentration camp as a continuous nightmare. The matter wasn't only in the constant famine that led to hungry faints. The main torture was cold causing a fever and spasms of the exhausted body. I was allowed to wear only pants, a T-shirt, thin cotton prisoners' trousers and a jacket. And that was all. The walls were covered with ice, the door to the corridor was opened for "airing" and the rooms were cold. The temperature in the cells could stay barely tolerable only due to bodies of prisoners. And what heat could the hungry person and his spoiled stomach could radiate?

It was especially cruel at night. One had to lie curled up, having pulled jacket on head and trying to breathe under it so that the heat was kept about the head. One needed to wake up in 1.5-2 hours of a wild fever, to jump on, skip and wave hands to warm up a little and to stop the nearly uncontrollable body shakes.

By all these tortures the KGB and the hated Druj tried to achieve only one goal: repent and speak on television.

All my complaints in the Office of Public Prosecutor, other institutes and personally to the public prosecutor on supervision for Correctional Institution Grishinu I.A. (Ulan-Ude, 670015, Pavlova street, 65-30, ph. 2-11-32) were thrown out or remained unanswered.

16. Third arrest and fabrication of "a new case"

Ten days before the end of the second term, they brought me ill (hardly keeping on legs) from penalty isolation cell and presented new accusations. They said I agitated criminals in concentration camp against the Soviet authority. But how could I agitate being constantly in a one-man punishment cell, and why did I have to agitate those who were put to terrorize me and how could multiply convicted people, spending all my life in

Soviet concentration camps undermine Soviet authority? However these reasons were ignored.

About 40 “active” criminals signed the testimonies necessary to the KGB’s case against me. As rewards, they at once received their parcels, mail, and appointments to visit relatives. Among them, there were such especially trusted, appointed to cushy jobs prisoners as robber Smirnov S.V., gangster Nizhmakov J.L., murderer Rabzhuev V.D., bribe taker Mironov V.E., the homosexual (“cock”) Tolstonogov S.M., et cetera.

Many of them, for example, Smirnov S.V., Rabzhuev V.D., Nazarov V.P., Rybikov V.D., scribbled the false denunciations even earlier. I never, ever spoke a word to many who signed the testimonies arrayed against me in court. Moreover, I didn’t have any idea of agitating them against the Soviet authority (which majority of them hated anyway), of undermining it or of killing Communists. Democratic movement would have discredited itself forever if it commenced to involve criminal elements like communist Bolsheviks.

But logic was not necessary to the KGB inspector Kozhevin V.A. He was not ashamed to charge me even with corresponding with Ginzburg A.I., Korsunskaya M.V., Shihanovich J.A., Lyubarskiy K.A., Podrabinek A.P., Romanova A.J., etc. when I was in a concentration camp and in exile, denunciations of KGB agents Vannikov E.K., Polienko G.S., Tugarina L.A., Erdyneev A.B., Gilbuh, and others during my stay in settlement Bagdarin. It was typical, that they had not charged those denunciations when fabricating their second case in 1978, and kept them for the following case.

However my neighbors in settlement Bagdarin, the Armenians Akopyan G.B. and Oganesyan G.A., who were caught on hook by the KGB for frauds with gold and had signed false indications too.

The manuscript of memoirs ***“Common communism”*** about my stay at Mordovia concentration camps and the photo where I held a poster “*I Demand departure from a communist heaven to a capitalist hell”,* found by Najdanova T.B lodged in my room after my arrest caused special judicial and KGB hatred.

For the sake of justice, it is necessary to note, that not all criminals agreed to become perjurers. Prisoners Avramenko I.V., Kurenkov V.R., Vlasov M.P. refused to sign the “necessary” evidences and had suffered cruel torments and tortures in penalty isolation wards and penalty cells.

In investigatory prison of Ulan-Ude, I was kept in full isolation only with informers, subjected to continuous terror and tortures. I recollect all my stay there as a continuous, never to be forgotten nightmare. I had seen enough and had heard such things that even non-Death Camp Nazi prisons and concentration camps would seem a toy in comparison to those mean and hypocritical methods used by communists Ivanov, Kodenev and others.

Being sick and completely exhausted, I denied all accusations and solicitations of the KGB about my private repentance and any public appearance on TV during eight months of investigation. On 9-th month Kozhevin brought thick volumes of the “testimonies” of “witnesses” collected against me and said: “Here is your case. Confess or you will receive 15 years, and we shall create conditions that you won’t live more than one year, or do appear with repent and become free!”

I was condemned on case alone and my “repentance” could damage only my own reputation because all intellectual dissidents knew by what methods it was usually

achieved. After several days of thinking, I decided to agree. Taking into account that it was 1982, and the period of worldwide “publicity” and discharge of political prisoners was still very far, I can absolutely truly tell, that if I had not agreed, I would not be alive now.

Certainly, then I met people who blamed me for that, but usually they were those who were not ever imprisoned, or the people repenting and betraying others on investigation, but whose repentance was not given publicity. Usually publicity was given to the repentance of the dissidents who were widely known abroad and in the USSR. I can accept condemnation of those who spent the same years in prison, were subject to tortures, torments and mind-deadening mental pressure as I was. But I do not know such people. The repentance of the overwhelming majority was not brought to publicity not to make an impression, that there were a lot of political prisoners in the USSR, and for the proof of sincerity of these people they were forced to spy on their friends.

They treated me medically and fattened me on better food in the prison hospital for more than a month so that I looked fit. Then, they brought me to the KGB offices, and forced me to dress in a clean shirt, a tie, and a jacket. I was ordered to sit down at the table so that my shabby prison trousers and tarpaulin boots were invisible, and gave me the text 5 minutes before the record. Having fluently run it I asked to exclude mentioning dissidents, but I was strictly answered, that the text to be read is dictated by authorities in Moscow and it had to be spoken exactly as written. During the recording session, I tried to omit some lines and to alter some text but Kozhevin followed along carefully on his copy and forced me to read the text again.

I do not know what they arranged and edited from those two records for I was in prison during the broadcast. Having been discharged, I ascertained that communistic scribblers quoted in their articles ostensibly my statements which I never said, and by virtue of the belief could have never said. Nobody informed about those articles and I learned about some of them only after my arrival to the USA.

I have brought an action against authors of the articles known to me being in Ulan-Ude, but all my applications were not taken into consideration at all.

Nevertheless, despite my repentance and the valueless promises of the KGB, I was convicted for the third time and condemned to a year in a correctional labor colony (the period of investigation and court procedure) and 5 years of internal exile.

17. Second exile.

Authorities then placed me in the second exile to Ulan-Ude and employed me as a senior scientific employee in East-Siberian Technology Institute (ESTI) on the faculty of computer engineering, which was headed by the senior lecturer Muhopad Jury Fedorovich.

At that time, I was the only Doctor of Science in Buryatiya. Basically I cooperated with factory "Teplopribor”, (Heat Devices) rather with its engineering department (under the management of Gluhoedov J.N.) and a department of new techniques in development of new devices and appliances. There were contacts with huge Ulan-Ude aviation factory, shipbuilding and locomotive-carload factories, with the Buryat office of the Siberian branch of the Academy of Sciences. They were compelled to send me on

scientific affairs in business trips to an academician city in Novosibirsk and even, infrequently, to Moscow.

For the period of the exile, from the moment of the discharge (the end of April 1982), and up to the end of 1987, I had made 13 inventions in the field of astronautics, engines, heat engineering. Some of them had been made state secrets at once.

Certainly, I was exposed to continuous spying of the prevalent KGB. The employees of faculty had been ordered to watch me. Any of my statements, even something innocuous such as “the weather is bad today”, was interpreted as running down the conditions of life in the USSR with the purpose of undermining Soviet authority. The informer of KGB senior lecturer Zubritskij E.V. tried especially hard. Some heads of institute and even KGB curator in ESTI Leskov A.S. (Ulan-Ude, Geologicheskaya street 16-15, ph. 3-68-32) told me about his denunciations of me and other employees.

As soon as so-called “Perestroika” in 1985 began, I wrote the application for refusal from television performance, said in what methods it had been coerced, and declared, that there was none of my own words in the text composed by the pervasive KGB. That application was sent to many central newspapers, but none of them published it.

In 1986-87, that application was handed over to Sergey Grigorjanets, the editor of the newspaper “Glasnost” (Publicity) and to Peter Starchek, the associate editor of “Express-Khroniki” (Express chronicles). The brief message on it appeared in the annual “Messages from the USSR”, 7-19, 1987.

As it was already said, I tried to prosecute communistic newspapers and authors of the pasquinades covering my case and quoting ostensibly “my” statements, but my applications were not accepted.

After all that, and after handing in an application to departure from the USSR, the management of the institute, regional committee of the CPSU had hardened their attitude towards me. I was refused departure and the KGB then began to fabricate a new case. On behalf of criminals of the concentration camp, Druj organized the collective letter with the requirement to bring to me to court as not going to reform and continuing to slander the Soviet authority. Soon, however, he was caught bribing, and was transferred as an instructor to a juvenile colony, and then he was (with Honour) settled with a personal pension. He even kept all his militia ranks. However, by that time, Perestroika gained sufficient force, the authorities began discharging political prisoners and chairman of Buryat KGB department Vereshchagin G.I. hadn’t dared to make a new political case. Probably, he was prohibited to do it by powerful persons in Moscow.

In the determined 6 months after the refusal in departure, I wrote the new application in a very sharp form. I remember there were such phrases as: *“Why do you seize me as dogs. Anyway I was and I would be an enemy to your fascist-communist regime and I would always struggle against it”.*

After the passage of some months the departure clearance came. I moved to Moscow and, in the beginning of June 1988, I finally left the USSR together with my new wife Olga.

Already after my departure Anatoly Golovkov's article ***“Time for reflection”*** appeared in “Ogonyok” #4, 1989, page 6. For the first time in official Soviet press was

put a question about the illegal condemnation of dissidents during the Brezhnev period and labeling them as “apostates”, “slanderers”, “and agents of world imperialism” and “enemies of the people”. My “case” was described and the question from rehabilitation of all victims of Brezhnev’s arbitrariness was put.

After my arrival in the USA, I published a number of articles in the Soviet and foreign press in defense of political prisoners. These were the articles ***“About rehabilitation of victims of communistic arbitrariness”*** (the newspaper “The Soviet Youth” from August, 7 1990), interview ***“While the Communist Party is in power there cannot be a true democracy in the USSR”*** (“The Soviet youth” from October, 19 1990), article ***“Memorial Day of victims of the Bolshevism"*** (the newspaper “The New Russian Word” from September, 7 1991), et cetera. There were organized demonstrations near the Soviet representative’s office at the United Nations Organization in New York City and letters in protection of people, whose cases were concocted on purely political causes. Certainly, it is difficult to expect something from former communists who “beclouded” themselves as unadulterated “democrats” with the purpose of retaining their power, and began to wreck the national economy, to worsen ordinary conditions of life of the population, to cause regional revolts and then foster totalitarianism again.

We cannot but hope that they will fail to do that and the republics of the former Soviet Union will become democratic, civilized and prospering states closely cooperating among themselves and observing human rights. I cannot but hope that the victims were not vain.

Alexander Bolonkin
1990

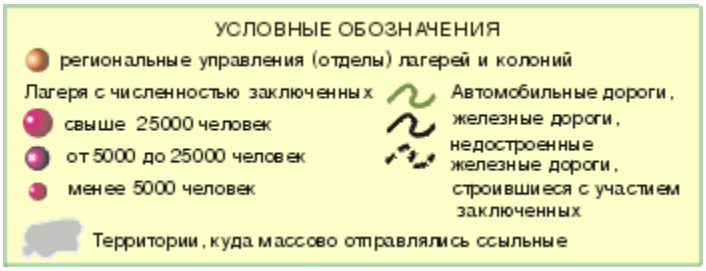
Ph. /Fax 718-339-4563 USA. E-mail: aBolonkin@juno.com ,
or aBolonkin@gmail.com
http://Bolonkin.narod.ru or http://geocities.com/Bolonkin1
Address: A. Bolonkin, 1310 Avenue R, #6-F, Brooklyn, NY 11229 USA.

Communist concentration camp in the USSR

http://www.memo.ru/history/NKVD/GULAG/maps/ussri.htm

Map of some communist concentration camps in the USSR
http://www.memo.ru/history/NKVD/GULAG/maps/kazakh.htm
(that is only small part of Soviet concentration camps. More Detail map is in
http://hro.org/editions/karta/mapgulag_big.jpg)
About 60 millions of Soviet people were obliterated in the USSR

Обозначения:
http://www.memo.ru/history/NKVD/GULAG/maps/legenda.htm



Notations:

◯ concentration camps more 25,000 men
⬭ concentration camps from 5,000 to 25,000 men
○ concentration camps less 5,000 men
- - - unfinished railway constructions made by prisoners

⬬ regions of mass exile people

Appendix 1
(On the materials of radio station "Svoboda")

1. "AMNESTY INTERNATIONAL" STATEMENT

13.3.75 LONDON In connection with forthcoming visit of chairman of All-Union Central Council of Trade Unions SHELEPIN to Great Britain English branch of the International public organization "International Amnesty" has placed a letter in the London newspaper "Times".

In the letter, signed by the chairman of branch POLE ESRTREIHER and director DAVID SIMPSON placed information that when SHELEPIN arrives to the Great Britain, it is necessary to tell him politely but firm what Englishmen think of imprisonments in camps and prisons of heterodoxies in the Soviet Union.

In 1973 the senior lecturer of the Moscow Aviation Technology Institute, Doctor of Science ALEXANDER BOLONKIN had been sentenced to four years of the imprisonment for he ostensibly called workers for strike as a token of the protest against economic system in the USSR.

In the end of the letter it is pointed that when SHELEPIN arrives to Great Britain, members of the English branch of the organization "Amnesty" should make attempt to meet him and to express their concern about similar cases of violating human rights in the Soviet Union.

Radio ***"Svoboda"***

2. THE LEAFLET OF CIVIL COMMITTEE

The three leaflets of Civil committee published further were distributed in Moscow in the beginning of June, 1972. On June, 19 messages on these leaflets were transmitted to the West by the foreign correspondents accredited in Moscow.

The editors of "The Free word"

This leaflet was written by Yuree Yuchnovetch. On the night of June, 1 1972 more than 3.5 thousand similar leaflets were spread by him in letter boxes in 8 areas of Moscow

CITIZENS!

We hardly make both ends meet!

June, 1 1972 is 10 years from the date of increase in prices. They have been raised right after the XXII congress of the CPSU on which "the Program of construction of communism" was accepted. Talkers promised: "within first ten years all strata of Soviet people will be prosperous, will be financially secure… we'll do away with lack of dwellings by that time".

And suddenly in 62— rise in prices! They began to whine:

"This is an interim measure... There is no doubt, that in the near future it will be possible to reduce retail prices".

And we had a hard fight to make the two ends meet!

Ten years passed. The prices still grow. We are being robbed everywhere! The Soviet and party top devours huge means. Closed sanatoria, cars "Chaika", special food ration, dachas, and special hospitals— here are their privileges!

And we hardly make both ends meet!

To "Friends" abroad — grain, oil, meat, sugar, fabrics, guns, tanks, rockets.

And we hardly make both ends meet!

Citizens! Struggle! Let the struggle of workers of capitalistic countries be an example to you! Let Poland of December 1970 be an example to us! Let strikes and statements of workers of Moscow, Leningrad, Novocherkassk, Temirtau, Chirchik and Kaunas be an example to us!

STRIKE! GO TO THE STREET! FREEDOM! FREEDOM! FREEDOM!

3. Alexander A. BOLONKIN'S APPEAL TO N. PODGORNYJ

The most bloody, false and hypocritical regime!

To chairman of Presidium of a Supreme Soviet of the USSR Podgorny N.V. Copies:

To the governments of the countries which have signed the Helsinki agreements

from the former political prisoner, Doctor of Technical Sciences Bolonkin A.A.

Address: 671510, settlement Bagdarin of Bauntovskiy area Buryat ASSR, poste restante, to Bolonkin A.A.

Mister Podgornyj!

As I know, the instruction to fabricate against me any (most desirably criminal) "case" is given to the local KGB office.

Not having satisfied with a fabrication of political "case" against me in 1972, beatings, tortures, mockeries and hard labor in your prisons and camps, you do not want to leave me alone even after my 4-year stay in the confinement, to enable me to leave your "socialist heaven" for "a capitalist hell". This is the roughest violation of the Helsinki agreements, the General Declaration of Human Rights of the United Nations, the International Pact on the Civil and Political Rights, the Soviet Constitution.

Once and again I confirm my refusal of the Soviet citizenship, I continue to demand departure from your "heaven" and I still think your totalitarian regime to be the most bloody, false and hypocritical one from all which had existed in a history of mankind.

Damn it forever!

May, 1977 ***A. Bolonkin***

4. Appeal of academician Sakharov in A. BOLONKIN's defense

AS №4319. Andrei Sakharov. "Appeal in A. BOLONKIN's defense", Gorky, 3.5.81.

Appeal in Alexander BOLONKIN's defense

Alexander BOLONKIN is arrested in a concentration camp in ten days before the end of the second term. He is accused on second part of Asset 70, of the Criminal Code of the RSFSR /slanderous lies with the purpose of undermining or weakening Soviet public and a political system/, that threatens him ten years of the confinement and five years of exile more above those nine years of the most severe tortures and unfair reprisals through which he has already passed. Mathematician - cybernetician

BOLONKIN was arrested for the first time soon after he defended his thesis for a doctor's degree on the theory of control. He was accused of distribution samizdat magazine “Chronicle of the current events” and then, in 1973, he was condemned for four years of camps and two years of exile. That verdict was completely illegal, as the “Chronicle” is just an informational magazine and it does not have purposes of undermining or weakening the system. BOLONKIN’S thesis for a doctor's degree wasn’t approved by the Certifying commission, and the manuscript of his monograph was stolen. On way to camp he was beaten, his arm was fractured. After 4-year stay in camp and almost full term of the exile, one month to the end of it, he is arrested and condemned on falsified accusation for three years of camps. And again he will be judged, this time in a camp court - with usual in such cases false evidence of other prisoners, caused by threats, beatings or promises of inspectors.

I address to mathematicians – Alexander BOLONKIN’S colleagues in the USSR and in all countries, to all scientists, to all honest people. I address to the Heads of all governments which have signed the Helsinki Act, to all state and public figures, art and business workers who can influence the Soviet heads, I address to Amnesty International. Speak in support of Alexander BOLONKIN.

May, 3 1981 **Andrei SAKHAROV**

Nobel Prize winner

5. Appeal of Elena Bonner and other members of Moscow group “Helsinki” in A. BOLONKIN’s defense

AS №4333.- 4 members of Moscow Group (E.Bonner and others). Document №166. “Alexander Bolonkin’s Imprisonment become termless” (Moscow), 30.4.81.

Moscow group of assistance to execution Helsinki Agreements in the USSR

April, 30 1981 Document №166

Alexander Bolonkin’s Imprisonment become termless

Alexander BOLONKIN is arrested on April, 10 1981, ten days before the end of the second term of holding in custody verdict in concentration camp near to Ulan-Ude. The chief of KGB investigatory department PROZOROV informed Bolonkin’s wife, that legal proceedings against him on the second part of Asset 70 of the Civil Code of the RSFSR is instituted and investigation is conducted.

Alexander BOLONKIN /1933/, the mathematician - cybernetician, Doctor of Technical Sciences /his brilliant dissertation wasn’t approved by Certifying commission in connection with his arrest; in 1973. Certifying commission deprived him a rank of the candidate of sciences /.

In September 1972 BOLONKIN was arrested and condemned to four years of confinement and two years of exile on the basis of the second part of Asset 70 of the RSFSR Criminal Code /anti-soviet agitation and propaganda / for possession and distribution samizdat literatures and documents.

After the discharge from concentration camp BOLONKIN was in exile in settlement Bagdarin of Buryat ASSR where he worked in a workshop of a service centre.

On April, 20 1978, 26 ten days before the end of the exile term, BOLONKIN was repeatedly arrested and condemned on artificially created accusation in private business activity and theft to three years of the confinement and 26 days of exile. During stay in concentration camp Alexander BOLONKIN /on the first, and on the second verdict / was repeatedly exposed to persecutions of administration: placed in penalty isolation wards and penalty cells, deprived of appointments, etc.

BOLONKIN declared hunger-strikes of the protest time and again.

On April, 20 1981 the wife (1) and the 14-years son (2) waited for Alexander Bolonkin's discharge. Instead of the news about his liberation they received the message on his new arrest, for the third time already.

As none active propaganda including "anti-soviet" one is possible in the conditions of concentration camp, the accusation on Asset 70 of the Civil Code of the RSFSR is simply absurd.

Second part of the Asset 70 of the Civil Code of the RSFSR stipulates imprisonment for the term up to 10 years with the subsequent exile up to five years.

As Alexander BOLONKIN had already served time on that Asset he will inevitably be declared a dangerous recidivist that will cause serving punishment in inhuman conditions of a camp of special regime.

After 9-years stay in camps and exile Bolonkin's health is fully undermined /chronic gastritis, a cholecystitis, rectal inflammation, and a new long term can become a lifelong term for him.

We draw attention of the heads of the governments which have signed the Helsinki Act, scientists of all countries and world community to Alexander Bolonkin's tragic destiny to make all possible for his discharge.\

Members of Moscow group "Helsinki":

Elena BONNER
Sofia KALISTRATOVA
Ivan KOVALEV
Naum MEIMAN .

- -

1. Margarita (Chronicle 40:20, 46:109).
2. Vladimir; 1965, according to the verdict to A.Bolonkin and V. Balakirev of Moscow City Court from 22.11.73 (AS №2631:1); 1968 ("The list of USSR political prisoners... News from the USSR").

Reprint of the original photocopy from AS.

6.From radio broadcast of radio station "Svoboda"(RFE-RL)

RADIO SVOBODA: ANCILLARY MATERIALS OF RESEARCH DEPARTMENT PC 86/81 **May, 8 1981**

ALEXANDER BOLONKIN IS THREATENED THE THIRD TERM

Vishnevskaya

The Nobel prize winner academician Andrei Sakharov has addressed to the scientists and to the governments of the countries of free world with an appeal to support Alexander Bolonkin who is threatened with a new term - up to 10 years of

imprisonment with five years of the subsequent exile - on accusation in “anti-soviet agitation and propaganda” /Asset 70 part 2 of the Civil Code of the RSFSR /. That new (already third) accusation had been presented to him 10 days before the end of the term on his second verdict, on April, 10 1981 /I/.

Alexander Alexandrovich Bolonkin was born on March 14, 1933. Before the first arrest he had been the senior lecturer of the Moscow high technical school of Bauman, Doctor of Technical Sciences., the author of about 40 scientific works. Bolonkin was first arrested on September 21, 1972 and since then he wasn’t free for a day, but was in confinement with almost 2-years break to the exile in Transbaikalia in Eastern Siberia.

The first court procedure on Bolonkin’s case took place in Moscow on November 22, 1973. Bolonkin and his sidekick Valery Balakirev were accused on Asset 70 part 2, the Civil Code of the RSFSR. Particularly Bolonkin was incriminated: listening to and distribution of transfers of foreign radio stations in Russian; producing of the multiplying device mimeograph and copying “the Chronicle of the current events”, magazine “Democrat”, a leaflet signed by “Civil committee”, “My Testimony” by Anatoly Marchenko, “Will Soviet Union exist till 1984?” by Andrey Amalrika, translation of the book of Robert Konkvista “The Great Terror” and other materials.

Besides in 1971-72 Bolonkin distributed approximately 15 his own samizdat works signed by various pseudonyms with criticism of social regime and standards of living of workers in the USSR. In particular, under A. Vasiljev pseudonym Bolonkin wrote the great work under the name “Comparison of standard of life of workers in Tsar Russia, in the USSR and in the capitalist countries. Statistic data” /2/.

Together with the accomplice Balakirev Bolonkin issued samizdat magazine “Svobodnaya Mysl” (*Free Thinking)*. On November 22, 1973 the judicial board on criminal cases of the Moscow city court sentenced him to 4 years of concentration camps of a strict regime and 2 years of exile/3/.

At the end of September, 1976 Bolonkin was banished to settlement Bagdarin in Buryat ASSR. Before the end of the exile he was arrested for two months on accusation of “theft of his own salary”. During investigation Bolonkin was beaten “and threatened to be killed by the hands of criminals” if he didn’t confess to a crime. The court took place on August 4, 1978 in settlement Bagdarin. In court he was deprived of texts of the law, extracts from the case, and wasn’t allowed to speak. According to Bolonkin’s words many of the documents presented by him had disappeared from the case, and a number of other documents were forged by the inspectors. That time Bolonkin was sentenced on the basis of Asset 93, part 2 of the Criminal Code of the RSFSR “the theft of the state or public property accomplished by swindle” to the maximal term of punishment according to that Asset - to 3 years of camps of strict regime and 26 days of exile/4/.

The punishment on the second verdict Bolonkin spent in “institution” OV-94/2-B in a settlement Southern of Buryat ASSR. In this camp Bolonkin was several times placed in penalty isolation ward /penal isolator where it is possible to put a person for the term up to 15 day / and twice for 6 months in penalty cell / a room of cell type[6] /. As a result of cruel treatment Bolonkin caught dysentery, was ill by chronic bronchitis, radiculitis, gastritis and other diseases. On May, 6, 1980, almost one year before the third “arrest”, Bolonkin sent a letter to the General public prosecutor of the USSR and Minister of Internal Affairs of the USSR where he warned:

The administration without ceremony says that for the remaining year of my confinement they will bring me to my grave, undermine my health, or fabricate a new case/5/.

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2. AS №1670.
3. Verdict on Balakirev and Bolonkin's case **see** AS №2631; about the court **see** "Chronicle" # 30, page 5.
4. AS1*3624; PC 125/78 "Second trial of Alexander Bolonkin"; "Chronicle" # 51, page 31-32.
5. "Chronicle" # 53, page 95, "Chronicle" # 55,page 28; "Chronicle" # 56.page 112-113; "Chronicle" # 57, page 87-88; "News from the USSR", editor Kronid Ljubarski, 1980, ##18-41 and 20-30.
6. In total Bolonkin was 1 year in penalty sell (SHIZO) and 2 years in penalty ward (PKT – special camp prison)

7. To Alexander Bolonkin (poems)

Valeriy Rubin

Перед пропастью страшной
обмирает душа...
Я Болонкина Сашу
обнимаю, спеша.

То ли передо мною
он на миг постарел,
то ли перед страною,
где он столько сидел.

Вот он — в сером костюме,
поприбавил морщин...
Я его после тюрем
провожаю один.

Объявляется вылет
и не выдержать мук,
сколько в карцерах вынес
этот доктор наук.

Не подумаешь, встретя,
что колючкой крещен...
Это в наше-то время?!
А в какое ж еще?!

Вот уже он с вещами,
переходит черту...
Невиновных — прощают,
никогда — правоту.

Вот его у оконца
человек обыскал...
На энергии солнца
он поднимает корабль.

Вот он встал вдруг и замер,
поднимает кулак...
Мол, уходит не насмерть!
Но для нас это так.

Вот он издали машет,
как на том берегу
и помочь тебе, Саша,
я уже не могу.

1988г.

Valeriy RUBIN (1938-1991) is a famous soviet poet and writer. He published his works in the leading Soviet literature magazines “Noviy Mir” (*“New world”*), “Znamya” (“*The Banner*”), “Unost” (“*The Youth*”). In 1981 he published series of the critical poems in the western magazine “Continent”. Then they were read on radio “Voice of America”. He was persecuted for that in the USSR. He died in 1991. In 1994 his book “Obysk” (“Search”) was issued.

Michael Litvin (2004)

Ты страною своею был бит и гоним.
Много лет лагерей, а финал:
Никогда не вдыхать больше родины дым,
Где за правду полжизни отдал.

Помнишь, БУРов мордовских зловонную пасть?
Был унижен ты, но не сражен.
Хоть и маску сменила преступная власть,
Может зря все же лез на рожон?

Ты уже не внутри, но еще и не вне,
Чтобы памяти голос затих.
Кто у власти был – тот и сейчас на коне,
Ну а прочие все – при своих.

Ты прости если что-то сказал я не так.
Надо нам эту песню допеть.
Выпьем водочки, вспомним проклятый Сиблаг,
Шахты клеть, произвола плеть.

Рано тлеть нам, душа еще хочет гореть,
(Ей до срока не выгореть в шлак)
Ведь свободы приспущен истерзанный флаг
И России пока - болеть…

Meeting of former Soviet political prisoners in Israel 1994. Right is Alexander Bolonkin, middle is Anatoli Tsceransky (he will be a Israel Minister for industry), left is member of Estonia parliament.

Meeting of former Soviet political prisoners in Israel 1994. Left is Alexander Bolonkin, middle is Viacheslav Chornovil (he was candidate in Ukraine President), right is Suslensky - president of Israel-Ukraine Association.

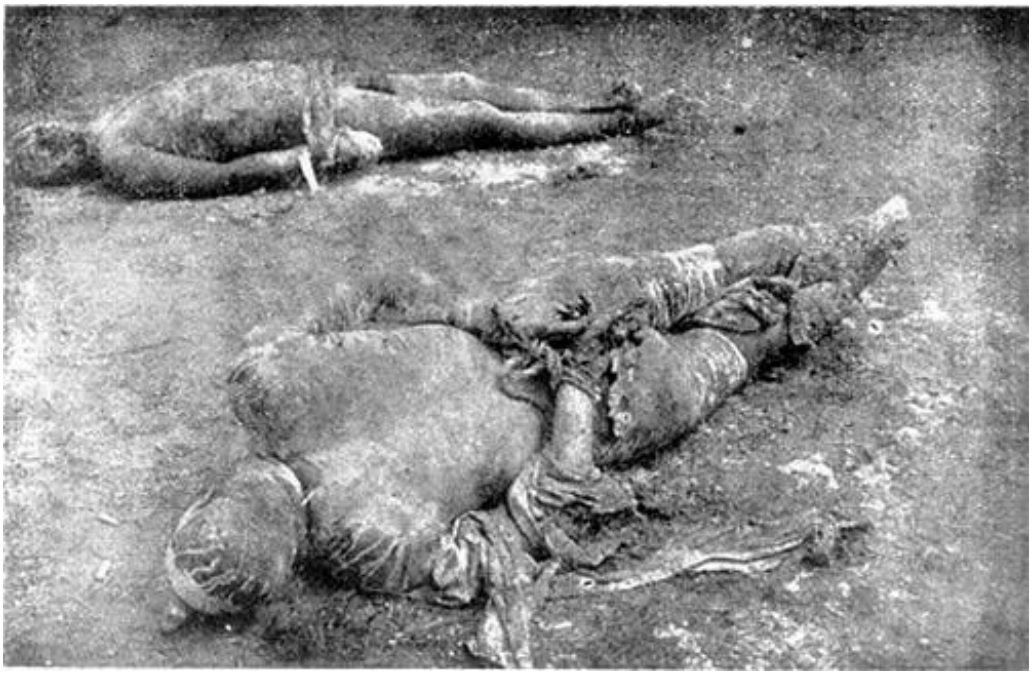
Left is former Soviet political prisoner Sergei Kovalev - former member of Russian Congress (Duma) and adviser for Human Right of Russian President Boris Eltsin. Right is Alexander Bolonkin, 1996.

Appendix 2

Barbarities of communist secret police in the USSR

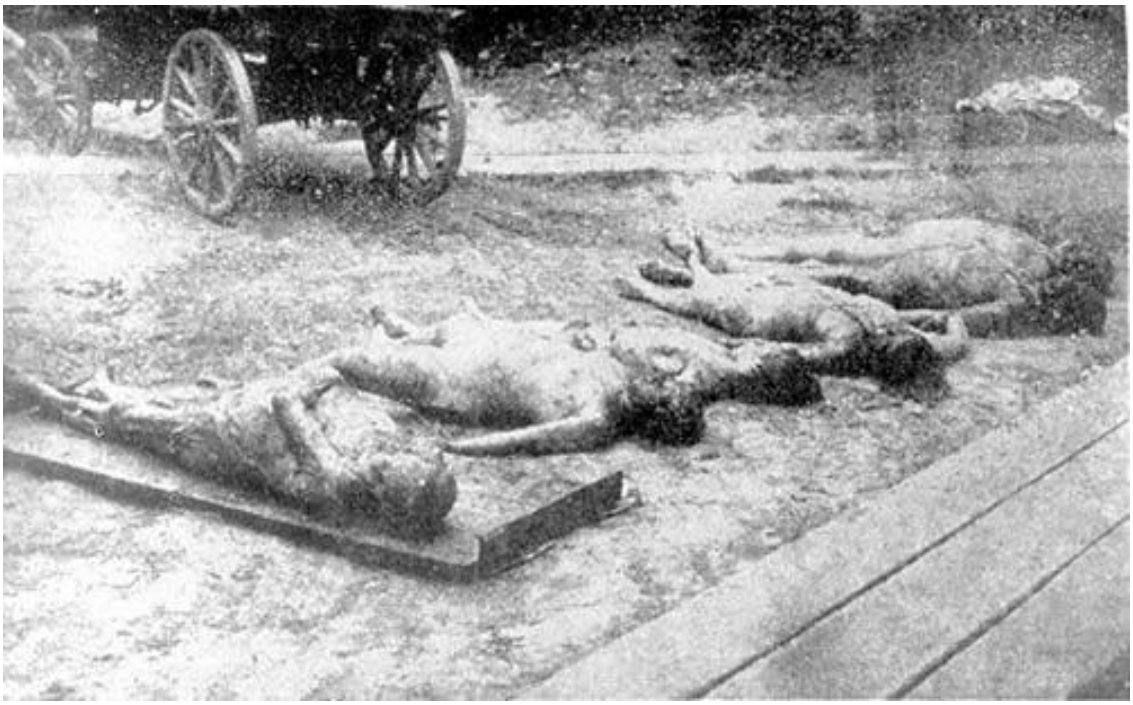
After getting its independence from the USSR, Ukraine authorities disclosed some of the barbarities of the Soviet Union's Communist secret police. Below are pictures of some grave excavations.

Corpses of 4 peasants-hostages (Bondarenko, Plokhikh, Levenets, and Sidorchuk). Their faces were disfigured and their genitals were mutilated.



Peasants I. Afanasuak and S. Prokopovich were scalped while alive. Afanasuak (he is closest corpse) has scorches from a red-hot saber.

Corpse of hostage Ilia Sidorenko (from c. Sumi). He has fractured hands, ribs, cut genitals. He was tormented to death by communists in Kharkov.



c. Kharkov. Corpses of women-hostages tormented to death. The second from left is S. Ivanova. The third is A.I. Karolskaia. The fourth is Khlopkova. All were alive when their breast were cut off. The pudenda fissures are parched and have carbon residue from burning.

Corpses of 3 worker-hostages from a strike works. A. Ivanenko (in middle) burned out eyes, cut-off lips and missing nose. The others have had their hands severed.

Corpses of hostages found in Tyalpanov house of Kherson communist secret police.

Courtyard of Kharkov communist secret police (Sadova Str. 5) with the corpses of executed nameless persons.

Excavation of common graves about the building of Kharkov communist secret police.

Appendix 3

SOME STATISTICAL DATA AND EXCERPTS FROM DOCUMENTS Cheka - OGPU - NKVD - KGB Leninist-Stalinist period

Communists (and their followers) have always concealed and destroyed any traces of their criminal activities and governance. After seizing power in 1917, all Russian laws were replaced by the phrases "revolutionary legitimacy", "revolutionary conscience" or "revolutionary expediency". It was a total arbitrariness of power with no appeal, a terrible time. Most of the people locally in charge were criminals. Communists robbed and shot without trial any person simply for the fact that the victim was rich or educated person or a person opposing the unlimited arbitrariness, or a simple hostage. Up to 1926 local authorities were not even required to prepare documents and communicate to the central authorities the number of those executed. Tens of millions of people were destroyed. According to many researchers, during the communist rule, more than 60 million people in Russia (from approximately 180 million Russians) died of repression and an artificial famine, The history of mankind did not know more savage treatment of a nation. Moreover, unlike Hitler's "national socialism" that destroyed 11 million (including 6 million Jews frankly regarded as a kind of national prey or designated victim class), Leninist-Stalinist "socialism" destroyed the very people (including farmers, workers, soldiers and intellectuals), it allegedly governed in the name of—people who theoretically could be dissatisfied with the robbery, food confiscations and the new order's new elite.

Information about the vast majority of these crime were not made, evidence was destroyed and details are still considered confidential. Only for a short period in the Yeltsin era (the first President of Russia, 1989), some minor archives were open. But such heinous crimes were being unveiled that the archives was closed immediately and again cleaned.

So I quote below only excerpts from some of the known documents and research historians, who give only pieces of the picture of communist tyranny and a small part of those sacrifices and suffering of the population of the USSR. Materials are mainly drawn from radio broadcasts, "The name of Stalin." The reader will find more comprehensive materials on the site “Ekho Moskvy” and the “Memorial”.

Radio transmission: Statistics of repression
Archivist N. Pobol

About the shooting.
In during 15 months in years 1937 - 38 special meetings of secret police and other courts murdered about 700 thousand people.

On the death of prisoners in concentration camps:
N. Pobol: Many people were killed in concentration camps and exile. Mining operations were in Kolyma (Far North of Russia). Here, the powers that ruled extracted gold, polymetallic ores, and later uranium. The prisoners worked in the mines at low temperatures. They died typically within a single season. This is perfectly described by

writer Varlam Shalamov. He described the situation of prisoners in book *Kolyma Tales*. If Stalin had not died in 1953, nobody who got there would have returned back to the mainland.

On the famine: In 1932 - 1933-- grain was completely removed from the peasants in many regions for sale abroad and for building up the tank industry. As a result, 8 million died of hunger in 1932 – 33. As result in 1934 - 1935 the Soviet Union had more tanks than the rest of the world put together (The Communists call this "industrialization of the country" - *Comment by AB*).

N. Pobol: 27 million Soviet soldiers (only military) were killed during the War (WW2) from the latest data. (About 2.6 million German soldiers died on the Soviet front - *AB*). About 4 million were killed in six months. From autumn 1932 to April 1933, 8 million people died from starvation. 8 million people died of the agricultural population of Ukraine, Kazakhstan and North Caucasus. This is two times more than in the same period in during the war. And that's not counting the millions of once affluent (dispossessed) farmers who have been exiled. They too were dying somewhere in this time frame in Siberia.

Taking care of children.

N. Pobol: This is 1934, when it is already the most severe famine took place. There is a document dated July 19, 1934. In the orphanage Rykov District (Uzbekistan), 46 children died in April, 14 children died in May from malnutrition. At the same time, food and money were looted from the orphanage. So, in the 2nd quarter from the 120 kilograms of vegetable oil (for the children) 94 kilos was taken by the communist party activists.

... Another famous moment: 6000 people were arrested (as underclass people) taken to the island Nazin. Nazin located in the lower reaches of the Ob River below Kolpashevo. 6,000 people were driven to this island. No food. People were handing out at most a little flour. As a result, 3.5 thousands died. That was in May, but it's Siberia. Somewhere in late May and in June it began to snow, and almost all were killed.

Food norms (limits):

N. Pobol: This feeding rate of children dispossessed in Siberia. After the arrest of their parents children were sent to orphanages. In the orphanages, the authorities –on paper--must give a child in a month 7.6 kg of flour, 800 grams of cereal and 1 kilogram of fish. That is, consider: 800 grams of cereal and 1 kilogram of fish per month. These figures from the meeting of the Politburo (the Supreme Authority of Communists) were given. The Commission approved these paltry rates in February 1932. Authorities did this because the mortality rate among children dispossessed reached 10% per month or 80% per year.

For example, prisoners are taken to concentration camps: Lithuanians, Estonians, ethnic affairs - in the sentencing category "10 years of imprisonment." And they are, these poor young people, and then they die of starvation within a maximum of 3 - 6 months. All reports of authorities read: "Pneumonia," "heart failure" and the like.

Here I speak of induced famine - an enormous artificial demographic catastrophe. And there were three in Russia in XXth century: World War I and the civil war, especially the latter; Dispossession of kulaks (the destruction of the working peasantry) and the

Second War (WW2). I say nothing of 'routine losses' in 1932, 1937, 1938, in general, all these years.

On caloric intake of the population of the USSR:
Before the Revolution, was 3,000 calories per person per day. When you start the industrialization and collectivization in the late 20's - early 30's, the level of calories on average was little more than 2400 calories a day.
300 known death lists, signed by Stalin personally. This is 44,000 people. But this is a drop in the ocean.

Radio transmission: the Gulag for great constructions of communism
Interviewee - a historian, Ph.D., director of the Center of Economic History, professor of historical faculty of Moscow State University, Leonid Borodkin.

On the education effort.
Communists were shouting that they re-educate the prisoners by work. Well, what education was received by the prisoners who build Norilsk Combine? The prisoners of the Norilsk camps - about 100,000 prisoners in the permafrost zone, where they often work takes place at minus 40 degrees and winds of 20 meters per second? Few would survive.

On mortality.
Here you can highlight the peaks on the graph of death. One peak - it is the hunger in the years 1932 - 33. When the prisoners had almost no food. There is a first peak to a 15% mortality rate - is, of course, on the order of 10 times greater than normal mortality. And a huge peak in the 1941 - 42 years. When every quarter of the year 25% of prisoners of the Gulag (General Directorate of concentration camps) died just from diseases associated with hunger.

On the composition of the prison.
The documentation of the authorities of the Gulag are by the nature of crime reporting, as follows: "For the counter-revolutionary crimes" - is, basically, Article 58 (mostly critical comments. - *AB*), and further: "For the service, officials and other household crimes", and then separately:" Of these, banditry and armed robbery. "So, for example, the January 1, 1939 figures. Here, in the first category, Article 58 - 34,5%. The second category, which was said - 65,5%. But, banditry, armed robbery and so on - 1,4%. That is, in fact, the majority of inmates in 1939 - the people who were under the law of the spikelets (after harvesting the collective farm fields were spikelets—plant matter that was barely edible and would not sell well in normal times.. Hungry people collected them. They are offered fare in concentration camps - *AB*), often sentenced for minor accounting irregularities. (Later, a huge number of prisoners went to this hell for being late for work for 20 minutes. *Comment by AB*).

On the productivity and contribution to the Gulag.
Contribution to the industrial building was about 10 - 15% in the USSR, but if we take the eastern and northern areas, it is half the building. Performance of management did

not suit the NKVD, and Gulag archives hold an entire folder of letters, signed by the People's Commissar of Internal Affairs and to the head of the Gulag, letters to the government "Allow us to pay wages, because the efficiency of labor falls. And we do not condone the cost themselves. “

Document, is dated November 11, 1941, Special report said. "Sovsekretno"(Top secret) - written above. A document signed by deputy chief operations officer of the Gulag NKVD captain of the KGB, and the text is as follows: "In the name of the Deputy People's Commissar of Internal Affairs of the USSR, the Commissioner of State Security 3rd Rank Comrade Merkulov. It was reported that when conservation Vatigorskogo camp for sick inmates in 6 district organized a separate area where patients are placed in non-heated, get malnutrition. Among them: Ubiquitous lice appeared daily; 20 prisoners died. The corpses of the dead are not removed within 10 days or more. October 13 this year in the area of the site were 100 corpses. "

Known figure: In the camps during the existence of the Gulag died 1.6 million prisoners (it is a lot of more in reality – *AB*)..

Radio transmission: the Gulag during World War II

Guest - Doctor of Historical Sciences, Professor of History Faculty of Moscow State University, Leonid Borodkin

The essential role of the gulag before the war, and in the years after the war - is the construction of industrial enterprises in the industrialization process (*more precisely, of militarization. - Comment by AB*) 30's, and during the war. This industrial building, this lumbering, this production of valuable minerals such as gold in the Far East or in Norilsk Nickel.

One of the questions was: "What happened to the gulag, when the Germans began to move quickly and capture new territories?" I must say that much of the camp is in those areas, areas where the Germans had moved. And during the first months of the war was the evacuation of several dozen camps. 750,000 prisoners were transferred from those areas where advanced military action. And the chief of the Gulag in the report wrote that often in difficulties with transportation, they had to overcome the distance on foot up to 1000 kilometers for deployment in new locations. (The majority of the prisoners died. The majority of prisoners and suspects fell from exhaustion and were simply shot on the ground. The Germans opened graves and used it in their propaganda. - *Comment by. AB*).

L. Borodkin: A continuing theme of the economy, I still would like to mention that during the war years it was held by the Gulag construction of aircraft plants in Kuibyshev - they still work. Metallurgical plants were built in Nizhny Tagil, Chelyabinsk, Aktobe, Norilsk plant went into operation in these years. Theological aluminum plant, the North-Pechora railway line, a strategic railway Saratov - Stalingrad, in the Kuibyshev refinery, and so on were built. Objects are quite serious. And because the male population was largely diverted to the front, these works were done in the Gulag.

I want to clarify that this report (MVD) were carefully hide the facts and figures that give an idea of this catastrophe that has befallen the prisoners of the Gulag in 1942 and 1943. In 1942, 24.9% of all the dead were the Gulag prisoners. It's more than 300 thousand. And next year, in 1943, still 22.5% - it's still about 300,000 - have died in one

year. This, of course, to the Gulag unprecedented numbers. Peak before accounted for 1933 the year when 15% of prisoners died in one year - but it was a great famine -- this year died from hunger 7 million of our citizens, and the famine also touched on the Gulag. But in the last 2 years, when over 2 years almost half of the contingent of the Gulag died from hunger, from pellagra from diseases associated with malnutrition, bloody colitis - that are most often seen in archival documents of the diagnoses.

From a document drawn up by the captain of the KGB, the chief operations officer of the Gulag, the document is dated November 1, 1941. He writes: "The morbidity and mortality among the prisoners of the North-Pechora camps of the NKVD are rampant. In August of this year, 322 died in the camp inmates, in September, according to incomplete data 692, and so forth, the transfer to a thousand. "The greatest number of deaths have occurred as a result of the disease pellagra, and gemokolitom at full depletion".

L. Borodkin: Well, that's now published archival documents of this fund, the Gulag, about which I have mentioned. Red seven-volume edition "*History of the Gulag*" was released a couple of years ago. One of the volumes called "*The population of the Gulag*." There are published circulars that came out of the leadership of the Gulag to the places in the camp, where described in detail what rules granting inmates a day. Food there is, of course, simply amazing. There, for example, an average of 10 grams per day of meat and 80 grams of fish. (*This does not mean that inmates receive these rates. The standards of the USSR prison also says that prisoners are allegedly on a daily basis get a 30 grams of meat. But for all the years of imprisonment only after numerous complaints were given to me once on the true ration of just 2 - 4 grams of meat in a day. - Comment by. AB).*

The document from January 3, 1942, signed by the deputy head of the Gulag NKVD KGB Maj. He writes: "On the question of the admissibility of removing gold dentures from the dead prisoners in the gulag explain. The first gold dentures with deaths in custody are subject to removal. " Next few paragraphs, the procedure is furnished, there is someone who writes the protocol. And in the end stated: "The decision shall be gold in the corresponding nearest branch of State Bank and the receipt of the deposit of gold State Bank attached to the original act."

Over the years the Gulag in it died 1.6 million prisoners. How many of them died after leaving camp, we do not know. Someone, perhaps a month, someone in a year - health of all was undermined. But there passed through the Gulag by various estimates 15 - 18 million people (*not counting the exiled, forcibly displaced, deported and raised in the so-called labor army. - Comment by. AB)*. Of them, of course, some were more than once. But significantly, returning to our topic, note: if at the beginning of the war the proportion was political, as we have already noted, 28% by the end of the war, the year 1945, their share reached 43%, and it was already almost half. This percentage has increased even after the war, because in the gulag began to receive large numbers of prisoners from the Baltic states, from western Ukraine, "Forest Brothers" (partisans of the Baltic states and Ukraine).

But here I have a few words I would like to add. Where are the products of labor over the years of war prisoners? What kind of work did they do? And so, in a nutshell. Construction of railways - 448 thousand prisoners, industrial construction - 310 000, camp timber industry - 320 thousand, Mining and Metallurgical Industry - 171 000,

airport and road construction - 268,000 people. These industries, these objects are, basically, the absorbed labor of the prisoners of the Gulag.

Radio transmission: Stalin and the NKVD
Interlocutor historian Nikita Petrov

Petrov: The whole Soviet system was kept going solely on total control, ie awareness. In the 20 years there was a clear gradation - the difference between an agent and informer. Informant - a person who just works somewhere in the plant, factory, a handicraft workshop in high school, in social organization, anywhere, and tells everything he sees around him. And nothing more. He says it to a resident (a controller).

The agent - a person who gets the job, which usually works in a hostile environment. For example, among the Trotskyists (supporters of former Chief of the Red Army). But in the informants took anyone so long as informed that it is necessary and timely. I can say that about in 1945 - a figure that is taken by me from the documentary sources - nearly a million informants were in the country and perhaps hundreds of thousands of agents. That is, for example, the application of one guideline security officer at the All-Union Meeting 1954, the year in the KGB has been said so: In Moscow and Moscow region, one of ten people was in the informant or agent networks.. That is, the country was, in fact, just infiltrated by these agents. And when we see some concrete examples of punishment for inadvertently saying a word, we understand that this is the result of informers and agents.

At the time, Ezhov had, of course, the maximum number of executions, and 700 thousand killed in only 15 months.

"*Memory Books*" were published in each region. These "*Memory Books*" we have accumulated in Moscow, and the Memorial is working, and brings it all into a single electronic disk. And there are now 2.8 million families.

One feature of Soviet power that remained constant:-The State never said what she did, and never did what was said. The complete mismatch or disconnect between story and the fact that we have seen in reality. Even this joke alluded to the fact, remember?

"Heal me, either from the hearing or from the view, because I did not hear what I see."

Stalin defined the role of the OGPU — as a political-military tribunal. The extent of their power and the level of its abuse did not happen in other countries.

Radio transmission: **Stalin and the deportation**
Visiting **Pavel Polian** - a geographer, historian and presenter of a column in the newspaper Novaya Gazeta.

Stalin deported entire nations, millions of people scattered to different places, to deprive the country. They were deprived of everything. Up to 40% of them perished during the journey and very much in the new harsh places, where there was no shelter and sustenance.

N. BOLTYANSKAYA: So I look that we, our students write: Who were deported: the Crimean Tatars, Chechens, Ingush, Kabardian, Greeks, Turks Meskhetian, Volga Germans. Who has forgotten?

P. FIELD: First were the Koreans, then were deported, as I call them, preventive subjects (whose loyalty Stalin questioned) That is, when the war started, Germans and Finns were deported totally. As were some of the North Caucasian peoples and the peoples of the Crimea. If you go by history, we have obtained the Karachay, the Chechens and the Ingush, Vainakhs then Balkars. Yes, before that I forgot to say about Kalmykia.

P. FIELD: After the Crimean Tatars and Turks-**meshitintsy.**

N. BOLTYANSKAYA: And the Greeks?

P. FIELD: The Chechen-Ingush deportation was prepared the most carefully. It was the the most massive, deliberate action. Beria himself was at this time in Grozny, was 2 or 3 of his vice, including seasoned Serov, who has already picked up a lot of experience, to run operations against the Volgo-Germans. And I must say that, mind you, there is a war, that these 110 thousand soldiers about who carried out the operation, mainly employees of the internal troops of the NKVD, but partially, and the army ...

And those who could not be deported, especially the elderly, were burnt in the village Haibach. According to various estimates, 300 - 700 - there are different estimates. For the week of February 1944 was taken, deported 500,000 people, half a million Chechens and Ingush in the freight rail cars. But on the ground were not warned, even the local authorities, in general, nothing was prepared for them. That is, people were thrown directly into the taiga or to the deserts. And people died.

AN VERT: In 1948, the year was to check how much is left, for example, people who were expelled from the Caucasus. A quarter already lost over 4 years, ie about 150,000 - they simply are not alive. In general, children and the elderly. And especially was horrible deaths of children. For example, we know that in the year 1930 - 1931 were deported 1.8 million peasants. On January 1, 1932 left an estimated 1.3 million.

In the Soviet Union, 6-plus million people were deported to Siberia within the country and the deserts of Kazakhstan. And if we take into account the deported people abroad, much more.

P. FIELD: Several hundreds of thousands of civilians were deported to the Soviet Union at the end of the war and in the early period of peace from the south-eastern Europe, mainly but not exclusively, persons of German nationality. Civilians, I repeat, not prisoners of war. So-called mobilized and interned internees arrested. And many people forced to work under the policy for 'Procedure for Closing Gaps in the employment mix'. That is it exactly the same situation as with 'Ost-arbeiters' during the war. (Russian slaves in German war industry)

Radio transmission: **Stalin's repressive policies**.
Interlocutor **Nicholas Werth**, the Center for Scientific Research of France, author "*History of the Soviet State*"

The Communists issued a decree on June 4, 1947 against the plundering of the so-called sotssobstvennosti (Act of spikelets). It began to be applied against the starving farmers, who after the harvest gathered in the fields remaining spikelets. According to this decree, a half a million ordinary people have been planted, and very often it was the widow of farmers who lost their lives in war, which simply tried to survive. They were planted on 6 - 7 and even up to 10 - 15 years.

For a quarter century, more than 20 million people passed through the Gulag, and

another 6 million were deported to special settlements, more than 6 million have fallen victim to famine and so on. Total 32 million. One in four adults from living in this time was repressed in various forms.

90% of the people who mined gold, were prisoners. The inmates did all logging. So-called "Construction of communism" basically was a work of the prisoners. More than 50% of industrial enterprises in Siberia, inmates built. Entire cities like Komsomolsk-on-Amur, mostly built by prisoners (official histories claim - "Komsomol volunteers").

Radio transmission: **Victims of Stalinism: mass release and rehabilitation**
Interlocutor: **Mark Ely**, Associate Director Franco-Russian Center Humanities and Social Sciences in Moscow.

After the death of Stalin, Khrushchev asked the prosecutor and Interior Ministry the data on how many people were arrested on the 58 th article charge of alleged attempted counterrevolution. And figure out - "3,770,000 people" from 1921 to 1953.

Radio transmission: **Stalin and the generation of winners (veterans of WW2)**
Interlocutor historian **Dmitry Faust**

In 1947, Stalin cancels the Victory Day. And he resumed only in 1965, on the 20 th anniversary of the Victory, is already under Brezhnev.

D. FOSTIER: The fact that ... men returned from the front with the feeling that they deserved another life - absolutely everything in it were convinced: the collective farms will be lifted within a year or two - all were convinced. We are convinced that people's incomes rise, they now earned the confidence of his government - naive people. They did not understand the problems of the Stalin leadership.

In 1936 he had established "Orders and money." Each war veteran, returned from the front with medals and awards, and received some minor pennies for those awards that are on his chest. Let's say, "For Valour" - 5 rubles, "Order of the Red Star - 15 rubles - the monthly surcharge, regardless of money. For the "Order of Lenin" - 25 rubles were given.

In 1947, Stalin cancel these payments.

During the war, soldiers for every destroyed tank, self-propelled gun, and others allocated to the savings account a large sum. And at the end of the war was made monetary reform and exchange old money for new at the ratio of 1: 10. Tightly inflated *(comment by AB).*

The number of Soviet Army on May 9, 1945 was approximately 13 million. Demobilized soldiers slowly for many years. Up to 10% of war veterans turned out in the camps.

Disabilities,, without arms, without legs, was a huge amount. Take the figure is not 1945, we take a figure later - in 1954, almost 10 years after the war, Kruglov, Minister of Internal Affairs, reported to Khrushchev: Nikita Sergeyevich, a lot of disabled people begging rides on trains. We are in 1951 arrested a hundred thousand people in 1952 - 156 thousand people in 1953 - 182 thousand people. " 70% of them - war invalids: legless, armless, eyeless. 10% - professional beggars, 20% - sunken into a temporary need." An insane amount of people made crippled by actions and inactions of the State.

And suddenly in front of the population the authorities began to catch the war veterans just like rabid dogs on the yards, on back streets, railway stations. The veterans who no

arms, no legs, adorned with decorations. Veterans who are not to blame for their situation: the house looted, destroyed, families destroyed, the family was gone, he was missing - maybe he does not want to go back to the house to not be a burden. And these people are simply caught. Disabled loaded into rail boxcars. The young soldiers simply catch and throw them into wagons, and the injured veterans flew in roughly.

In 1946, were evacuated several hundred veterans from Moscow to Valaam. In 1949 - perhaps as a gift to Stalin - for them evacuation was made thoroughly. Thus were cleaned up the streets. Not all people with disabilities were delivered to special homes; some to repression aimed at trying to organize so-called "incorrigibles"

Some communist decrees and data

Enslaving workers (enslavement of peasants into collective farms has been done before - farmers were without passports and could not go anywhere. The authorities Introduced a system of residence permits - needed to allow to stay in this place. - ***comment by AB).***

25 June 1940 issued a decree: for 20-minutes late to work and AWOL now assumed from 2 to 4 months in jail. And for absences - six months hard labor with the withholding of wages quarter earnings. At that time it became prohibited without permission to change their place of work.

Draconian decree was repealed only 3 years after Stalin's death - in the spring of 1956. April 25, 1956 Presidium of Supreme Soviet of the USSR adopted a decree on the abolition of judicial accountability of employees for voluntary departure from the enterprises and of institutions and for absenteeism without good reason. On 1 January 1941, according to prosecutor Victor Bochkova USSR, the Soviet Union in the courts were opened cases against 2 million 476 thousand 241 people. Of those convicted of 1 million 955 thousand 790 people. Including absenteeism - 1 million 648 thousand 575 people for voluntary departure from work - 299 942 people.

Historians say about Soviet proletariat under Stalin that they were serfs. And more and more severe were conditions as time progressed.

December 26, 1941 Presidium of Supreme Soviet of the USSR adopted a decree - "The responsibility of employees of enterprises of military industry for voluntary departure from the enterprises, in which the withdrawal from work without permission from his boss **is equated with desertion and punished by imprisonment from 5 to 8 years .**

In January 1941, the decree of absenteeism was extended to the refusal of overtime load, by switching to low-paying jobs and for the emergence to service in a drunken state.

October 18, 1942 People's Commissars of the USSR adopted a resolution on reduction of leave entitlement bread industrial workers convicted of truancy. "For those whose daily rate is the maximum of 800 grams of bread ration was cut to 300 grams. And who relied at least 400 grams, lost 100 grams.

Appendix 4.

NKVD - KGB: Death experiments on humans.

Since the early 1920s the KGB was actively engaged in research of poisons for killing people. The First Secret Toxicology Laboratory was established in 1922. It was called the "Special Office". Professor Ignatius Kazakov was the director of this laboratory. He contacted N. Bukharin, a member of the Central Committee (CC CPSU) and an editor of newspaper *Pravda* (main newspaper of communists), G. Yagoda, the Secretary of the Interior (NKVD Chief) and B. Menzhinsky, a Chairman of the OGPU (State Political Department). Menzhinsky had a chemical laboratory in his dacha, where he constantly worked.

The main developer of this method Gregory Mayronovsky was born on 9/24/1988. In 1920, he joined the RCP(b) (Communist Party). In 1922 he graduated from the Moscow 2-nd medical institute in Moscow. Since January 1935 Mayronovsky headed the toxicology laboratory of National Institute of Experimental Medicine (VIEM). In August 1937 Mayronovsky was mobilized by the Central Committee of the Communist Party to work for the NKVD-KGB (secret political police). Mayronovsky was responsible for organizing a special toxicological laboratory of poisons and narcotic substances within the 12th Department of the GUGB NKVD (GUGB - General Directorate of State Security).

Until 1937 that Toxicology Laboratory was formally located in the National Institute of Biochemistry (VIBH).

In 1935,Yagoda, the SU Secretary of the Interior had created its own toxicology laboratory of special designation. A Head of this laboratory was J. Serebryansky, a KGB Senior Major. In November 1938 the laboratory was disbanded after an unsuccessful attempt to poison Leon Trotsky (former Soviet leader) in Paris and allegedly wanted to poison the new Secretary of the Interior Nikolai Ezhov according to the orders of G. Yagoda, the former SU Secretary of the Interior. Serebryansky and Yagoda were shot.

The laboratory at VIBH (called "the cell") in 1937 was place under control of M.P. Frinevsky, the Deputy Secretary of the Interior. The laboratory was a part of the 12th Department of the NKVD, which was headed by S.B. Zhukovsky, a senior KGB Major. On February 17, 1938 Frinevsky poisoned an unwanted chief of the Foreign Department of the NKVD Abram Slutsky right in his office. He announced that Slutsky allegedly died of a heart attack. After the removal of Ezhov, Zhukovsky was arrested and executed in 1940.

In June 9, 1938 the 2nd Special Department (Opertehniki) of the NKVD was created; it was headed by M.S. Alekhin, Maj. KGB, and the special laboratory was placed under its authority. Alekhin invited doctor Gregory Mayronovsky to work at the laboratory, who used to work with chemical agents (mustard gas) for the Red Army and NKVD. Alekhin was arrested and shot in 1938. E.P. Lapshin became a head of the 2nd Special Dept of the NKVD.

Mayronovsky soon became the head of the group (since 09/15/1938), and then the head of the special toxicology laboratory "X" (since 1.5.1938).

Mayronovsky successfully moved up the career ladder. On May 14, 1943, he became the Head of the 5th Dept of the Fourth NKGB - MGB Authority (MGB=KGB - Ministry of State Security - the new name of the NKVD).

In February 1943, Merkulov (the First Deputy Secretary of the Interior) submitted an application for conferment of the degree of Doctor of Medicine and the title of professor to Mayronovsky without defending a thesis on top secret papers of great operational significance (for poisoning people and cruel experiments on prisoners. – *A.B.*). Academician A.D. Speransky, Corresponding Member of the Russian Academy of Sciences F.N. Grashenkova and four professors gave a review of praise. Academician Speransky wrote: "His works are of

the exclusive value" (we had to have really a huge fear of the NKVD to praise them for deadly experiments on prisoners! – *A.B.).*

Thus, on 17 February 1943 Mayronovsky got his PhD, and immediately became a professor. At the same time he received the rank of colonel in the Medical Service.

The laboratory of Mayronovsky was located in Kuchino (a suburb of Moscow) and in Second Meschanskaya Street. Later, the laboratory had received an additional room in Varsonofevskom lane next to Lubyanka street and the Kuznetskiy bridge. The rooms were disguised as some very ordinary hospital. There they were busy not only with poisons investigations but also developed the toxic substances for the Red Army. It was very convenient that the NKVD could supply an unlimited number of prisoners to be used as experimental material. All of them were doomed, even those who managed to survive, because any information concerning such experiments was not supposed to leak out.

Among the laboratory staff there were Sergei Anichkov, PhD (he was a prisoner and lived directly in the laboratory); Mikhail Filimonov, Alexander Grigorovich, Emelianov; Professor Muromtsev, the Senior researcher, later an Academician, and Assistant V.M. Naumov. Later the staff of the lab was increased up to 20 people.

The laboratory had a large room in a building in Varsonofevsky lane. The room was divided into five chambers. The prisoners were delivered to the lab almost every day. The procedure looked like a regular medical checkup. A "doctor" sympathetically questioned a "patient" about his health giving advice on how to improve the “patient’s” health, and immediately offered to get "cured". Then they watched the man writhing, screaming, suffering torments – sometimes it took few days. If the victim did not die within 10 - 14 days, they would finish him by the conventional method.

“Scientists” of the NKVD searched for the poison that could not be detected. They had tested dozens of different poisons. Each poison had been tested on 10 "experimental men" (prisoners). It is just difficult to imagine how many people suffered from those “scientific” experiments.

In the end, the researchers found the poison (karbilaminholinhloril) with the desired properties (code K-2). That poison killed the victim within 15 minutes and leaved no trace.

First Mayronovsky gave that poison to a prisoner with food. Immediately began a stomach upset. The burly strong man was dashing around the cell like a wounded animal. Obviously, he understood everything. The prisoner yelled, ran to the iron door with bloodshot eyes, fiercely banged on it with his fists and feet, and then again fled to a close-stool. Saliva was flowing out of his mouth. Independent forensic pathologists made a conclusion that the death was caused by amyocardia (heart muscle weakness). Mayronovsky even didn’t care about asking the name of the man he killed. After that, testing of this poison had started: it was added into food, drinks, intramuscular injections, etc.

Filimonov, who worked in a foreign intelligence service, sent a proposal to make a “stinger” - a walking stick with a built-in poison sting. An implementor was found nearby - in the cells of the NKVD inner prison. He made a light elegant stick - quite a masterpiece. Later many other "stingers" were made. Syringes loaded with poison were made in a form of umbrellas, pens, pencils, lighters and other useful everyday items. Perfecting their “invention” the researchers killed dozens of "accidentally" stung prisoners. Later the NKVD-KGB used this method to eliminate the iconoclastic personalities of the Soviet Union or objectionable people abroad. The NKVD-KGB also developed the poisoned bullets and silent guns. In 1978 the Bulgarian intelligence service in London killed the BBC reporter and dissident George Markov by injecting him a portion of ricin with an umbrella. Soon after in Paris a KGB agent shot in Vladimir Kostov, the former editor of the Bulgarian State Radio, with a pellet filled with ricin. That day Kostov was lucky to wear his thick wool jacket which prevented the poison to penetrate deeply into his skin, and Kostov survived.

After the fall of Zhivkov (Communist President of Bulgaria) in 1989 in the building of the Interior Ministry of Bulgaria the stocks of Soviet stinging umbrellas were found. Note that the Soviet poisons were used in 1978, just several years before *Perestroika* (Restructuring). In a post-Perestroika period some radioactive substances (polonium) were used by Russia in London for the purpose of killing of Litvinenko, a former KGB agent who had refused to return to Russia. And in 2002 a poisoned letter was used by the FSB to eliminate Khattab, the commander of Chechen gunmen.

Mayronovsky liked to tryout his methods of killing on victims himself. He had shot in one of the victims with three different poisons. In 1954, during interrogations, Academician Sergei Muromtsev, who killed 15 prisoners, said that he was struck by a sadistic attitude of Mayranovsky to their victims. Note that poisoned bullets were banned by international agreements, but the Communists had never been stopped by any international conventions or agreements.

In 1942 - 1944 years Mayronovsky tested on his victims a so-called "truth serum" (hloralskopolamin-CS and fenaminbenzedrin) - chemicals paralyzing man's will, disabling brake centers in a human brain and causing uncontrolled talkativeness. These substances are very harmful to humans, but the KGB or the experimenters never cared about this fact. Interrogators in both prisons of Lubyanka (# 1 and # 2) actively used these medications. In particular, the KGB used these substances in 1946 for "honest and truthful" testimony while interrogating political prisoners arrested in Eastern Europe. In 1973, the "truth serum" was used to make Vyacheslav Petrov, a member of our group, loosen his tongue.

In 1945, Malinowski and the corresponding KGB agents were sent to Germany to study Nazi methods of extermination (poisons, toxic agents, concentration camps). After two months of the study Malinowsky reported home that the Nazi methods were "significantly poorer than ours."

One hardly can tell you the exact number of victims of the NKVD-KGB special laboratory since all the documentation was destroyed immediately, the bodies were cremated, and the causes of death stated false. Among them there were not only Soviet citizens, but also German and Japanese prisoners of war, Poles, Koreans, Chinese, etc. For example, we know that the three anti-fascists who had left Nazi Germany for the Soviet Union to fight against Hitler, were used in those experiments. The number of victims was really enormous, but only about 250 people were managed to be identified. The "truth serum" was tested on Japanese prisoners of war and detained diplomats, too.

Perhaps, now you understand why one could hardly work for a long time and keep one’s state of mind more or less healthy in this laboratory. Filimonov began to drink heavily after 10 "experiments". Muromtsev was not able to continue his work after 15 "experiments". Employees Schegolev and Shcheglov committed suicide. Dmitriev and Mag became disabled. Filimonov, Grigorovich and Emelyanov became alcoholics or mentally ill. Filimonov several times found himself in a psychiatric hospital with hallucinations about poisoned dying prisoners, and about those whom he shot.

As to Mayranovsky, who never suffered any pangs of conscience apparently due to its absolute absence, he continued working in the lab and was generously showered with Communist awards. In 1943 he was awarded the Badge of Honour; in 1944 he got the medal "For Defense of Moscow" (?) though in 1944 German troops were about to be defeated – they were defending Berlin, but not attacking on Moscow. In November 1944 Mayranovskiy together with NKVD leaders P. Sudoplatov and N. Eitingon was awarded the Order of the Red Star (Established on 6 April 1930, the Order of the Red Star (Russian: Орден Красной Звезды) was an order of the Soviet Union, given to Red Army and Soviet Navy personnel for "exceptional service in the cause of the defense of the Soviet Union). In 1946 he was awarded the Order of the Patriotic War 1st class and the medal "Partisan of the Patriotic War” 1st class (?).

In 1946 Mayranovsky was dismissed and removed from the leadership of the laboratory. And in 1951 in the houses of Mayranovsky and his bosses KGB agents had found a large quantity of poisons and toxic substances stolen from the lab. On December 13, 1951 Mr. Mayronovsky was arrested and accused of committing embezzlement and of preparations of poisoning the whole Central Committee of the SU Communist Party, spying for Japan and illegal (?) killing of 150 people.

He had been sentenced only to 10 (!) years of prison. Of course, he was deprived of all his awards, ranks, and his Doctoral degree and professorship. Over the whole period of his imprisonment he was persistently sending numerous petitions to the authorities asking to allow him to continue his work aimed at building Communism and the brighter radiant future for the whole mankind. In his petitions he wrote: "All my adult life was devoted to the only goal - building Socialism and Communism." Mayronovsky was released from prison in December 1961. He was denied to reside in Moscow, so he settled in the city of Makhachkala, Dagestan and died there three years later in December 1964. After his release, he and then his sons, sought his rehabilitation.

Reference: A. Kolpakidi, *KGB Terminators*, Penguin Books, Moscow, 2008.

Append 5.

Repressive policies of Khrushchev

Broadcast: Khrushchev's Repressive policy.
Interlocutor: **Alexander Cherkasov**, a board member of the Human Rights Society "Memorial".

After Stalin's death, the number of imprisoned people had been greatly reduced and then increased sharply in 1957. In 1957, 1,798 people were sentenced under Article 58.10 of the Criminal Code (anti-Soviet utterance, anecdotes – *A.B.*). In 1958, about 1,200 people were convicted. In 1959 several hundreds of people were convicted. That's a lot. Only about 3,000 of people were sent to concentration camps and prisons. And then repressions began decreasing. In 1964, only about 200 people were arrested and repressed.

If we take the reports of the KGB made for the CC CPSU, we'll see that there were 100 prophylaxied (intimidated by the KGB) men per one convicted.

People trying to escape abroad had always been considered as traitors of the Motherland. Khrushchev's camps were overloaded with people who had tried to escape from the Soviet Union. Those were the people who realized that here in this state with these political leaders it is hardly possible even to breathe.

There were many riots in different places: in Novocherkassk (1962), Tbilisi (in 1956, in spring right after the XX CPSU Congress), Murom, Alexandrov (I'd add here rebellions of young workers in Temirtau and the events in Grozny, 1958 – *A.B.*).

Three men were jailed for reading poetry in Mayakovsky Square in the end of the 60s.

Many people were placed in psychiatric hospitals and given injections of psychotropic drugs to make them crackpots. It had been often practiced under Stalin. For example, Alexander Yesenin-Volpin, a writer, was locked up in a mental hospital-prison for writing letters to the Central Committee and seeking the truth. Sergey Pisarev (one of the old Bolsheviks, a commissar in a Civil war of 1917) was under investigation in 1937. An investigator of the secret police (NKVD) broke his spine. In those times Pisarev was writing the truth. He was released. Being a commissar at the front, he again was writing the truth as it was. Further, he had

regularly been put in a special prison hospital for psychiatric patients under Stalin and Khrushchev and it feels like in Brezhnev times, too.

Head of the Department of Cybernetics of Frunze Academy Major General Grigorenko was trying to creatively develop the decisions of the XX Congress of CPSU. Khrushchev put him in a special psychiatric hospital. Under Khrushchev Vladimir Bukovsky, who along with Kuznetsov and V. Osipov participated in organizing poetry readings on Mayakovka square, was also sent to a mental hospital.

Broadcasting: **Novocherkassk uprising in 1962**.
Interlocutor: **Vladimir Kozlov**, Deputy Director of the State Archives of the Russian Federation, author of "*Riots in the Soviet Union under Khrushchev and Brezhnev*"

On 1 June, 1962 the authorities announced a sharp rise in prices for bread, milk, meat and all the rest food. Prices have soared to a new record - by almost 30%. A little earlier the people had their wages cut by 30%, too. Workers were starving, living in barracks (wooden apartment houses), and housing problems in the city were not going to be solved.

The workers went round the plant calling all the rest personnel to stop their work. The number of protesters grew rapidly, they acted spontaneously; there was the slogan "Khrushchev for meat" and posters "We need meat and butter", “We need apartments to live" (there was no other way for the people in USSR to get apartments but only from state authorities).

The things were hotting up, tensions were growing, and local authorities sent telegrams to Moscow about the anti-Soviet rebellion. Khrushchev ordered Malinovsky, the SU Defense Minister to impose order on the city and, if necessary, to bring in troops. Attempts of the militia to stop the strike fizzled out. Tensions were growing more and more. In the evening national troops tanks and APCs (Armoured Personnel Carriers) were brought in Novocherkassk. In response, the striking workers burned the portrait of Khrushchev, realizing that the government was not going to negotiate with them.

The first arrests began at night. The detained workers were beaten up. On June 2 in the morning the workers organized a meeting at the plant. They decided to go to the City Committee of the Communist Party in the center of Novocherkassk and tell the city authorities about the workers’ troubles and needs. At the same time a high commission from Moscow arrived to Novocherkassk - there were members of the Central Committee presidium.

A column of about 5,000 people stretching for hundreds of meters marched to the City Committee house. People were singing revolutionary songs and carrying portraits of Lenin, flowers, red flags so the column looked much like a peaceful demonstration rather than an angry mob of rebels. Some people were carrying slogans demanding to raise wages and lower food prices. There were women and children in the column. People passed 3 cordons with tanks and soldiers, came up to the City Committee building. The troops were in the square already.

When the demonstration came closer to the Committee building the troops opened heavy fire at the strikers from machine guns and sniper rifles from the rooftops and attics of neighboring houses. The Kremlin, Nikita Khrushchev personally ordered to open fire for effect. It was a real massacre. Snipers fired on women and children, several kids who climbed trees to see what's going on were killed. An old man passing by a clubhouse fell down with a bullet in the head. A pregnant woman walking in the city park had also been shot. The soldiers killed a hairdresser in the next door house, a few more people were shot right by the militia building. People tried to hide behind the portraits of Lenin, but this did not save them. That day was called "Bloody Saturday" in Novocherkassk by analogy with “Bloody Sunday” of 1905 in Russia.

26 people were killed and more than 40 injured. The strike was suppressed at the cost of human lives. Dead bodies were taken (secretly under cover of night) out of town and buried on 3 derelict cemeteries in the Rostov region. The dead wrapped in tarp were thrown into a large

common pit in one heap. Blood stains in the city square could hardly be washed away. Instead the square was covered with a fresh layer of asphalt. The wave of arrests had started. People marked in the pictures taken by NKVD agents in the crowd, were arrested at night, as under Stalin. 7 people were accused of banditry and organizing the insurgency. They had been given the capital punishment which is the death penalty. Including a worker who spoke at the meeting, but did not participate in the demonstration - his family did not let him out on that day. All the victims were buried in a common unmarked grave 200 kilometers away from Novocherkask. More than 100 arrested people were sent to high-security concentration camps, the majority were sentenced to 10 or 15 years. And the rest country was living with no worry, eager to reach the brighter future and to build Communism. There were no official reports about the tragedy in Novocherkassk, instead people were sharing rumors in their kitchens. Mass media had not published any articles or reports about the event. The first article about the tragedy had been published only in 1989.

Khrushchev ordered to assume all the possible measures so that the news about the tragedy would not leak out to the West. Even any mentioning about the event was forbidden under pain of execution. Five special powerful radio stations were installed in Novocherkask to generate radio interference and prevent radioamateurs from going on the air and telling about the tragedy. KGB agents in civvies were perusing every letter.

There were many other mass riots and rebellions. Some of them are described in the book "*Riots in the Soviet Union under Khrushchev and Brezhnev*" by V.A. Kozlov, Siberian Chronograph, 2009. Some chapters there are devoted to political disturbances in Georgia after the XX Congress of the CPSU, Political marginal mutinies, riots of believers. Much of the book is devoted to the urban riots and unrests of last years under Khrushchev, most of which were unknown to the general public until now or there were only rumors. Among them there are, for example, Krasnodar events of 1961, "burial" riot in Murom, riot in Alexandrov, events in Biysk (still in 1961). A separate chapter is devoted to Novocherkassk riots of 1962 known today. Also the book tells about riots in Krivoy Rog and Sumgait in 1963. The final chapter is devoted to the mass rebellions of the second half of 1960's - early 1980's.

Annex 6.

SOME DATA about KGB on the post-Stalin Human rights and Dissident movement in the USSR

After Stalin's death, a wave of mass repression against innocent people decreases. Some of them were even released. Particularly high-communists were even rehabilitated.

The main work of the KGB became the fight against people trying to know the truth, receiving or distributing the so-called "anti-Soviet slander" information, the literature (ie, the truth about the communist regime), the speakers for the observance of human rights. KGB pursues the common people who expressed dissatisfaction with the existing conditions of life.

Only a small part of the information about the repression of KGB is known at present. Below are the data published in the book "*History of the KGB*" by A. Severny, Moscow, Algorithm, 2008. This is a book of author who sympathizes the KGB and he is trying to whitewash the "glorious" Soviet secret authorities. Therefore, these parts contain very small part of reality. Unfortunately, I must to use the false terminology of KGB (for example, "anti-Soviet" although in fact people wanted to ensure that power has become a genuine Soviet, this is considered "false" even though people have written the truth, etc.).

KGB condemned 1416 people under article 70 of the Criminal Code of the RSFSR (Rasian Federation) (anti-Soviet agitation and propaganda) in 1958 (p. 171). KGB arrested

8664 people for the period 1959 – 1966, and 4,879 persons for the period 1967 - 1974. - (p. 173).

Post-Stalin leader Andropov's KGB presented him as a savior from future prison of hundreds of thousands of people (p. 174). All these people were guilty only of the fact that they expressed dissatisfaction or criticism of Soviet life in the private circle. After intimidation ("conversation") to the KGB, they began to realize that they were surrounded the informers (secret agents) of the KGB. People began to understand that they can not trust thoughts or a vision of negative facts to even friends and relatives.

KGB had 25,375 employees in 1954 in the so-called "counterintelligence." On June 25, 1954 the KGB had 734 branches. Andropov has demanded the creation of another 200 branches and an additional 2,250 people (including 1,750 officers), as well as 500 cars. He organized a fifth (Political) Department of KGB (p.179).

1967. In 1967, the KGB reported about distribution of 11,856 leaflets in the USSR. In addition, the Armenian SSR KGB confiscated 6,255 leaflets. During the year, the KGB found 1198 anonymous authors. KGB confiscated more than 114,000 letters and parcels with "anti-Soviet and politically harmful literature" in the international post office (page 94 - 95). In 1967, the KGB recruited 24,952 agents, which is about 15% of the entire intelligence apparatus (p. 96). In 1967 the KGB had prophylaxis (ie intimidated - ***Comment by. AB***) 12,115 people, most of which allow speaking the anti-Soviet and politically harmful nature (that is objectionable statements. Think of the denunciations of secret informer - AB .) (p. 97). In 1967, the KGB took 11,103 people to work in agencies and to serve in the troops of the KGB, of which 4,502 people taken by the officer positions. KGB selected and appointed 601 people at the senior of the nomenclature of the CPSU Central Committee (CC) (p. 100). (Note that the CC itself, therefore, was literally filled with KGB agents -***Comment by AB***)). In 1967, 5,665 of the KGB has been awarded orders and medals of the USSR. 24 officers and generals assigned to the generals and the military ranks. (What is merit? The period was peaceful. It is means, they arrested and put into prison the discontented people. -***Comment by. AB***).

1975. In 1975, the KGB confiscated 290,000 ideologically harmful materials. KGB intimidated 20,000 people. 25 active Zionist and other anti-Soviet inspirators shares were expelled from the country. 114 foreigners were expelled from the Soviet Union for attempting to conduct ideological subversion (contact with dissidents. - ***Comment by AB***). 679 foreigners were not allowed into the USSR (p. 280) (interestingly, through its overseas agents of the KGB identify their critical attitude toward the Soviet Union. - ***Comment by AB***). KGB revealed the formation of 30 groups of ideologically harmful orientation among students (p. 281) (secret informers are everywhere! - ***Comment by AB***). During the year in the country 1729 authors produced and distributed 10,206 copies of anti-Soviet documents (6,476 leaflets, 4,255 letters and 475 titles). In Moscow and other major cities the KGB exposed 1277 authors who produced 6602 anti-Soviet and defamatory document: 3211 leaflets, 3,045 letters, 347 inscriptions (p. 282). In 1975, the KGB found 53 anti-social group, which had 482 members (in 1974 the KGB has established 74 groups with 222 participants) (p. 283). 715 anonymous prophylaxis (ie intimidate -***Comment by AB***) and 135 anonymous users are taken in the design (Shadowing? Arrest? - ***Comment by AB***) and 76 anonymous authors were judged (in 1974 - 95).

1976. KGB revealed 98 Pentecostal anti-Soviet sectarian leaders among the believers. KGB compromises some KGB intercepted 11 attempts to create a politically harmful groups in the Soviet Army and Navy. Sought out the KGB found 1318 anonymous anti-Soviet authors. 69 of them KGB prosecuted. KGB intimidated 18,000 people who committed politically damaging actions. During the year the country have been 4,673 cases of the spread of 10,229 copies leaflets (two leaflets everybody? - ***Comment by AB***), 2150 anonymous letters, as well as the perpetration of 540 inscriptions of the anti-Soviet, politically harmful and libelous content (eg, truthful account of lack of meat in the stores. - ***Comment by AB***). KGB found 1,318 authors, extension 6968 "anti-Soviet, libelous, harmful" documents. Suppressed the activity of 65

"hostile" groups. KGB found 104 members and alternate members of the Communist Party and 178 members of the Komsomol (Communist organization for young people), which were anti-Soviet (p. 284 - 286).

1977. From the report of the KGB chairman Yuri Andropov to CPSU Central Committee. KGB has taken decisive action against any kind of renegades, disguised as so-called "defenders", "democrats", fighters of civil liberties and human rights who tried to carry out anti-Soviet activities under the guise of various "groups" and "committees". 28 of them brought to justice.

In Ukraine, the Baltic republics and Armenia's KGB, has uncovered 32 nationalist groups. In Moscow, Leningrad and other cities of the KGB to prevent the formation of youth groups of ideologically harmful direction. KGB discovered and thwarted several attempts to establish such groups in the army ... KGB tracked down 1,309 of the authors and distributors of anti-Soviet anonymous Documents ... (p. 286).

1978. KGB has arrested four foreigners for their contacts with human rights activists and dissidents, 100 foreigners were deported, many were denied entry into the USSR (ie, the KGB has introduced its agents into foreign human rights organizations. - AB). KGB found 2,088 cases of the spread of 10,708 leaflets, 4,764 anonymous letters, 653 labels of anti-Soviet, politically harmful and libelous content (p. 289).

1979. For the year 4660 anonymous authors have proved that in 2150 cases were distributed 11,445 leaflets, labels and letters. KGB found 4,206 authors. KGB has uncovered and stopped the activities of 39 groups. Among the anonymous found 107 members and alternate members of the Communist Party and 144 members of the Komsomol (Communist Union of young men). 55 persons prosecuted into prison (p. 290).

1980. From the report of Andropov to Central Committee of CPSU. KGB destroys groups: the "Commission of Inquiry into the use of psychiatry for political purposes", “Group facilitate the implementation of the Helsinki Accords "," Committee to Protect the rights of believers"," Religious and philosophical seminar, "Free trade unions”, revive ... illegal publication "Intrigues", "Chronicle of Current Events", "Jews in the USSR".

In Ukraine and the Baltic republics KGB prevents actions of nationalists, eliminated four illegal publications. KGB forestall the attempt to create a national groups in Armenia. Georgia abolished the KGB national group distributed anti-Soviet “slander” (ie truthful. - *AB*) materials. KGB paralyzed the issue of illegal publications, "Bell."

KGB agents compromised the human rights movement in Abkhazia. At the early stage the KGB preventing the creation of nationalist groups in the republics of Central Asia and Kazakhstan. KGB strangled activity of the Jews, as well as officers from among the Crimean Tatars, Turks and Germans. KGB crushed the guide and printed base Baptists. KGB eliminated the sect of Jehovah's Witnesses. KGB eliminated six the church printing houses, 19 printers, destroying more than 30 bases, warehouses, bookbinding and typesetting departments.

KGB found 1512 the anonymous authors and distributors of anti-Soviet and “slanderous” documents (p. 291).

As we see the dissident movement in the USSR was sufficiently broad. But through the complete control of all information on TV, radio, press, jamming of foreign broadcasts, the prohibition to travel abroad and the iron curtain, the vast majority of Soviet citizens (and foreigners) did not know anything about internal repressions, and most Soviet citizens believed that they are the happiest people in the world. Soviet propaganda was assuring: America's workers are dying of starvation, live in slums and the Negro is hanged in each column. America has occupied the whole World. And the workers in America and around the world are dreaming of the hour, when the Soviet army would come and liberate them from the yoke of capitalism.

Part 3
Abroad. NASA and U S Air Force Research Labs

Leaving the USSR

Living in Ulan-Ude in exile I applied for a departure permit. Of course, this didn't improve an attitude of the Director of my Institute and the Communist Party Regional Committee towards me, it became even worse. I was not given the permit and the KGB started to fabricate new evidence. Druj, a labor camp director forged a letter signed by imprisoned felons demanding to arraign me on charges of keeping casting aspersions on the Soviet power as I did not get corrected and still did not set my feet on the right path. However, the *Perestroika* (the policy or practice of restructuring or reforming the economic and political system in the former Soviet Union in 1985-91. First proposed in 1979 and later actively promoted by President Mikhail Gorbachev, perestroika originally referred to increased automation and labor efficiency, but came to entail greater awareness of economic markets and the ending of central planning) already had been in full swing by that time. Political prisoners were to be released, and G.I. Vereshchagin, a Head of Buryat KGB department had been nibbling at the idea of fabricating a new political suit against me. I believe this passed me by just because he was simply forbidden to do that by his Moscow leaders in the light of political changes in Russia.

Soon after my arrest my wife annulled my registration in our apartment (it was possible because I was imprisoned) and arranged our divorce. Of course, when I was released and came back to Moscow the local authorities refused to reinstate my job and registration in the two-room apartment.

In 1980s one could immigrate only to Israel according to the Helsinki Declaration (a significant step toward reducing Cold War tensions) aimed at restoring families split by different circumstances. My Jewish friends, former cellmates, managed to send me an invitation from my fake 'Jewish relatives', so 6 month after I got my last refuse I decided to send another application. This time it was strongly-worded, something like "*you are like watchdogs catching hold of me. Whether you like it or not, I was and always will be against your Fascist-Communistic regime anyway, and always will be struggling against it*."
In several months I finally was allowed to leave the country. Emigrants were forbidden to take alone practically anything: any documents and education certificates, pictures and even books, to say nothing of other belongings. Each trifling book was required to have a special permitting certificate to confirm that it was of no value.

Many people used Israel as a loophole to get out of the Communist Paradise. I still remember enormous lines in the Central Lenin library in Moscow where one could get that permission for books, and even bigger lines for visas at a foreign embassy – in those times Israel was represented by the Swiss embassy, because the Soviet government broke off diplomatic relations with Israel. People were worn out by collecting innumerable stupid documents confirming this or that, constant lining up, suffering humiliation in OVIR (a Russian abbreviation for the Visa and Registration Office), by demands to give their accommodation to the state and so on. Besides, emigrants were supposed to pay a big ransom for their freedom – the sum was something about an average annual wage – of course it was under the hypocritical pretext of some tax or levy. A plane ticket to Vienna cost 10 times more than same kind of tickets for domestic flights even for longer distances. An exchange rate for a foreigner was $1 vs. 0,70 rubles; an exchange rate for a departing person was 10 rubles vs. $1, and, besides, there was a limit of $100 per adult person. A direct exchange with foreign tourists was strictly forbidden, a speculator in foreign currency

could be punished by imprisonment. If you were not able to explain where you got your foreign currency you could be imprisoned as well. There were special "currency shops" (usually called *Beryozka* (Birch tree)) where foreign tourists could buy things for their currency. If a Russian customer entered the shop, security checked him for any foreign currency, and at the exit he could be arrested in case security found some currency in that person's pockets. My friends warned me that all the departing people were thoroughly searched at the customs, their diplomas and education certificates were taken away as well as other things including jewelries.

I passed our Diplomas to the Swiss embassy for sending to Israel. I carried my silver and gold medals awarded for my aircraft modeling records and my wife's medals for work and study and a filmed copy of my Doctoral thesis to the American embassy.

When I arrived to the USA I managed to get all our certificates and Diplomas back thanks to my friends in Israel. They wrote me that there were no record books to register that sort of incoming documents, so they had to search through a huge unordered heap of documents in the office to find my certificates. With regard to the American Embassy, the US Foreign Ministry offered to write directly to the U.S. by regular mail to the American Embassy in Moscow (ie, through the Soviet KGB?!). Everyone in the USSR including babies and dopes - except Americans – knew that ANY message to the American embassy goes through the KGB, that's why I had nothing to do but to resort to cunning and wrote a letter to the US FBI telling that I had sent very important military information in cipher; in my letter I asked to find those documents and give them back to me.

In a couple of months I received a reply informing me that an official who had been receiving my documents quitted from the American embassy and they had no idea (!?) where she was at that moment. Do you really think the KGB wasn't able to find the Soviet official who had been working at the embassy of the major USSR's enemy? Such an official had to pass through a thorough detailed checkup and even having quitted or retired every KGB official was to be registered and kept under surveillance.

It was the first time I faced an American disorderliness and carelessness and their reluctance to understand the Soviet reality. I always found the Voice of America reportages pretty feeble and insipid as well as "America" magazine articles; this magazine was supposed to be available for average citizens in the Soviet Union (and, of course it wasn't) same as "The Soviet Union" magazine was distributed in America and Europe according to the exchange convention. Dissidents complained that American broadcasting stations were headed by American university graduates who didn't want to get to know the Soviet Reality as it was and were not going even to consider the dissidents' advice and ideas. Programs of BBC and Немецкой волны were much more interesting, topical and informative.

Vienna, Austria

Together with my new wife Olga I left the USSR in the beginning of June 1988. We had been thoroughly searched at the customs office, our belongings being examined piece by piece, my wife had been driven to tears as a custom officer demanded her to give up her gold-plated ring – the only memory left from her mother.

Finally, we arrived to Vienna with a group of emigrants, picked up our baggage and left the airport to meet representatives of the Hebrew Immigrant Aid Society (HIAS) responsible to accommodate and take care of emigrants. I wondered why we didn't go through the customs this time; the HIAS representatives who met us were confused by my question and replied: "If you need a policeman – there he is at the corner of the street."

We were accommodated at a hotel. HIAS paid for everything including our meal. We stayed in Vienna for about a month, enjoyed ourselves, went sightseeing, visited palaces, museums and temples, and the wonderful Vienna Opera house. I was astonished at clean streets, huge Christian temples and acts of worship there, it was curious to see in one of the museums pictures of the German army entering Austria and hundreds of thousands of Austrian people cheering the Nazi troops (according to the Soviet version Austria was occupied by force of arms); the goods were displayed right by the entrances of shops and nobody guarded or watched them, attractive advertisings of call girls, market places abundant in various kinds of fruit. In the end of the working day some farmers gave unsold fruit and vegetables to emigrants for free. Teenage girls laid out on the beaches topless.

There were many charity organizations providing us with lots of clothes given for free by Austrian citizens especially this purpose. I've never saw any Austrian taking these things, but most of emigrants were grabbing heaps of clothes with both arms. Later in the airport they had to throw most of that bulk away as an excess baggage weighing more than the limit allowed on an aircraft was liable to an extra charge. I saw one ridiculous woman from Algeria who picked somewhere a large TV set cardboard box to stuff it with heaps of rugs enough to open a ladies' outfit store. I wondered why did she need all that? I saw the same sort of phenomena in the USA, too. Some of Soviet emigrants took armfuls of free foodstuff from charity organizations. When I asked one old woman what for did she need a full sack of bread she replied that she had a lot of children to feed. But I didn't think she told me the truth as she was too old to have under-age children, and if she ever had any they were supposed to take care of her food but not vice versa. Once again I got added evidence that the lower is a state's cultural level the more developed is a prehensile reflex of its representatives.

There was a huge piece of rock in one of the central squares. It must have become a keystone of some monument which was going to be built. It was a sort of a tourist's attraction: the one who would guess its approximate weight could be given a tidy sum.

Some quick-minded kids of emigrants shook down quickly in their new surroundings and found a good way of earning pocket money by performing acrobatics in crowded places. Usually it did not take them much time to raise money enough to buy some ice cream and sweets. All the emigrants were supported by HIAS. The Tolstoy Foundation responsible for Russian emigrants was too poor to support anyone.

HIAS made attempts to make sure that emigrants under their charge were true Jews. Jews are not a nation (it was just a preconceived idea in the USSR), they are people practicing Judaism, the Jewish religion; for instance, there are Negros (not African Americans, as they have never been to America, but simply Negros) reckoning themselves as Jews and wanting to reside in Israel. Emigrants were asked simple questions concerning Hebrew holidays and history of Judaism. They rushed around to ask each other about those holidays and main historical events. I think this fact revealed how ridiculous were anti-Semitists in the Soviet Union ostracizing Jews because of their nationality. There were just a few true Jewish believers in the USSR.

HIAS was trying to persuade the emigrants to go to Israel, but there were just a few people wanting to get to the Promised Land. Most of people were eager to go to the States. But the US law said that only those who are persecuted because of their nationality or political or religious beliefs could gain a refugee status.

I was an only ex-political prisoner among thousands of the Soviet emigrants who came to Vienna together with me. All the rest were in the guise of "persecuted Jews". Jews are not Negroes, they are hard to select from all the rest especially as many years of living in far away

places among people of different nations had influenced their lifestyle and everything. Even if a person was Russian and his or her passport was certifying the holder's nationality, that person could easily say that he or she was a Jew, and this record in the passport was made on purpose not to be persecuted.

Of course such people were asked what exactly that persecution was. Most of them could say nothing else but stories about anti-Semites throwing burning matches into their mailboxes. Some of them told that they were refused to be enrolled into universities because of their nationality. One guy said that somebody had thrown a brick into his window (and this version was gladly taken up by all the rest). But when I asked where he lived he told that his apartment was on the ninth storey. To cut the long story short, most of them appeared to be fake-persecuted emigrants. There were quite a lot of them who had a car, an apartment and a summer cottage (dacha) in Russia and believed that they would get three cars, apartments and cottages (or even more) in the USA. Some people considered themselves "persecuted" just because they have been fired after applying for a departure permit (exit visa) and getting a refusal.

Italy

In August 1988 those of us who did not want to go to Israel and insisted on going to the USA were brought to Italy. At a railway terminal in Vienna we were guarded by armed soldiers as Austrian government was afraid of Arab terrorists – remember we were considered to be Jews.

In Italy we were accommodated in Ladispole, a satellite town of Rome. There were pretty many soviet emigrants as it took several months to get a permission to enter the USA. HIAS paid for our accommodation (usually a room) and food. Also they arranged a school for kids and computer courses for adults. Excursions were arranged by some privately owned company. We seemed like staying at a resort, especially I liked beaches with fine black sand. HIAS representatives summoned us to attend a local synagogue. Other churches (especially Catholic) also tried to attract public to their temples and gave gifts to those who came. Some of emigrants started to run from one church to the other and made the HIAS representatives indignant.

I made some money as an editor of a little newspaper for Russian emigrants and a teacher of math at school. Once I heard that civil rights activists were going to arrange a rally in support of Soviet Jews and send free buses to our town to pick up the participants. I put an ad about the event in my newspaper and many emigrants went to Rome. Of course they were not much interested in that rally, but were attracted by the opportunity to see Rome. I was rebuked by HIAS because it was Saturday and real Jews are supposed to have a rest on Saturdays (Shabbath).

We entertained ourselves by visiting a cinema where we were shown Russian films purchased especially for emigrants long time ago in the Soviet Union, most of the films were propagandistic, telling about happy life in a highly developed Socialistic paradise. Americans did not know the Russian language, they did not have a Secretariat or Department responsible for ideology, and didn't care what movie to show. The last straw that broke the camel's back was a nice movie about glorious acts of good Soviet Chekists (officials of Cheka, security officers, KGB) – I got outrageous and went to complain and explained what sort of films they show (by the way, among those so-called refugees wanting to escape from the Communistic regime I was the only one to protest against such movies).

There was one old man together with us waiting for permission to enter the USA. For that he was supposed to claim political asylum and sign up a special application. He disagreed to sign

up those documents and said that he came just to go sightseeing in America. Embassy officials tried to explain him that in this case he should simply buy a tour and cover all his expenses himself (of course he couldn't afford that in those times). I have no idea how that story ended.

Another old man received an invitation from his children living in the USA. Those children were requested to cover their father's travel expenses but they refused.

The USA

In October 1988 the U.S. Department of State permitted us to enter the USA as political refugees. Note that being a political refugee you would have a lot of privileges - a refugee (who was not granted American citizenship yet) could receive all the allowances provided for poor American citizens. This made an income enough for subsistence. That is why our emigrants had to stay in Italy to wait for being granted this status (as persecuted for convictions and nationality). As I told before we were let out of the USSR without money, so it would be impossible to live abroad without any support.

We had to sign documents stating that we would return the sum spent on us by the American government. There were many Soviet emigrants on a plane together with us. When our plane landed passengers applauded.

First in America we were accommodated in a hotel, some time later we managed to rent a cheap apartment in Brookline and started to attend free English courses. We received a welfare (an allowance for the poor, something about $ 400-500 per month), also the state paid our apartment rent (Program 8). Also we were provided with food stamps (ration cards covering about $120 per person), Medicaid (free medical care and medicines). In those times that Program 8 was easily obtainable and your welfare aid time was unlimited. That sort of welfare programs was popular mostly among Afro-Americans. A "poor" person could afford an inexpensive car.

Jewish "refugees" felt like in paradise. They were offered employment assistance, but they kept their pants on and were in no hurry to get a job. Moreover they started swindling. To increase their welfare aid they arranged pro forma divorces and phony mutual home help and bedside nursing (caretakers and sitters were paid by the state also).

Legally any American citizen can have an interest-free loan (several thousand s dollars) for a further education after finising school. It was enough to cover expenses of a full course at a college or university. And nobody ever sunk that debt and never returned money to the state.

There was a cloud of spongers sucking a national budget dangling after the Soviet emigrants. Welfare receivers were enticed to attend Torah studies, English courses, professional training. The emigrants were not familiar with American laws and didn't know how important it was to read application forms completely and thoroughly, otherwise they would find out that there was a clause allowing the Torah/English course owners to use their (welfare receivers'**)** personal loan. Emigrants were surprised and excited about a 500-dollar 'scholarship' they received at those courses. There were a lot of vendors and private practitioners offering to welfare receivers their medical care and then delivering long bills to the state.

I found a job of mathematical analyst in an insider trading company. The company purchased stocks, bonds, and futures if they were rising in price and sold them when the price got high enough. If the price started to decrease they went a bear. Also it was very beneficial to borrow stocks when their prices were expected to go down, buy them at a low price and then give them back to a lender at a contract price. Different foundations and fat cats lend their money to the company hoping that in an open trade they earn more than in a bank. The company was really prosperous. Unfortunately it was in a neighboring state and to get there I need to take a

suburban train and then walk. Some time later I got the same kind of job in famous Shearson Lehman Hutton (American Express). Their office was in the World Trade Center, Downtown Manhattan, destroyed on 11 September, 2001.

I was responsible for making optimal investment portfolios – quite a standard work. Practically no one of traders had any idea about the Probability theory, they just relied on their experience, skills and intuition. My work was boring. At my earliest convenience I changed my job and moved to the famous Courant Institute of Mathematical Sciences at the State University of New York. The institute gave a temporary job to emigrants at the instance of The New York Academy of Sciences so that emigrant researchers would be able to find a more suitable position.

Rehabilitation

After I left the USSR the "Ogonyok" ("Flashlight") magazine #4, 1989 published an article of Anatoly Golovkov "Time of Deliberation". It was the first time the Soviet mass media published a material concerning unlawful imprisonment of civil and human rights activists and dissidents of Brezhnev's times, and about labeling all of them like apostates, turncoats, detractors and mudslingers vilifying the Soviet Motherland, world Capitalism spies and public enemies, etc. In particular, the article touched upon my case and raised a question of rehabilitation of all those who fell victims to the Brezhnev lawlessness.

In 1990 I was fully exonerated, and in 1992 I was officially informed about that. Many times - according to provisions 13 and 16 of the Rehabilitation Law (for rehabilitated people their former places of residence are to be reinstated immediately) - I applied to the President of the Russian Federation, Mayor of Moscow Luzhkov, Prefect of Eastern administrative district of Moscow I.I. Evtikheev trying to get back my double-room flat (or get an equivalent one), on repeated occasions presenting all the necessary documents; once I even was entered on the special list of the Moscow housing department as a top-priority person… But in 1997 at a prosecutor's request I had been taken off the list despite my TOP priority (Record #27, 12 September, 1997).

Article 39 of the RF Constitution guarantees that the right of **any** person to be socially secure in old age, sickness and disability, loss of a breadwinner and other legal cases shall not be violated.

I worked for the USSR more than 32 years. Since March, 14, 1993 (when I got 60) for more than 18 years me and my wife (who was awarded the USSR Labor Veteran medal) are still seek fairness and soliciting for our pension guaranteed by the Constitution. But we are always refused because we are non-residents.

In the civilized countries retired people receive their pension benefits regardless of their place of residence or citizenship status. And only the Russian Federation, the legal successor of the Soviet Union refuses to pay pensions to non-residents deprived of their citizenship under compulsion long time ago by the USSR.

After my rehabilitation I also tried to sue the state for compensation of my 15-year deprivation of liberty, tortures and torments. But for 18 years already I have been receiving only humiliating runaround messages. I sent my last claim to the Moscow City Court on 12 April, 2010, and it was redirected to the Presnensky district court of justice (Presnya is a borough of Moscow). Since then I have been seeking fairness from this court.

Instead of a court decision I received only a reply from the Moscow social protection department which (according to Government Ordinance #160 issued on 16.03.92) can offer me 75 rubles (which is **$2.5** (!!!)) **per month** of penal servitude with backbreaking work and torture

cells (***but*** only in case the RF government gives me a document certifying that I *really* had been imprisoned. I still had not received it, I am unlikely to receive anything at all). But that compensation is not supposed to be more than $300 (10,000 rubles) – even for 25-50 years of hard labor of an innocent person. This sum is 250 times less than was my official salary in Moscow before I had been arrested, 5 times less than a minimal payment for 1 hour of work in NYC, 5,000 times less than a salary of an average engineer in America and 500 times less than a current engineer's salary in Moscow! This is a sum paid to an American schoolboy for 12 minutes of distributing ad leaflets in the street.

Provision 15 of the Law of Rehabilitation (issued on June, 26, 1992) states the following: "*…a one-time indemnity is to be paid at ¾ of the statutory minimum wage per month of imprisonment, but not more than 100 statutory minimum wages".*

According to the Law (http://www.buh.ru/info-14) the minimum wage in Russia is **4330 rubles ($144)** per month (since January 2009); but for rehabilitated civil rights and democracy strugglers this wage is only **100 rubles**! Having accessed to power even such scum of the earth as Stalin and Hitler granted privileges to their supporters and recompensed for their injuries and deprivations. Having come to power due to other people struggling for democracy, the current Russian "democratic" government just kicked out those who had suffered for the democracy and hypocritically deprived them of their rights.

For instance, in 2000 a minimum wage in Russia was 132 rubles, and since 2009 it became 4330 rubles. But for the rehabilitated people it still remains 100(!) rubles. What a mockery! The current Russian power hypes up and ballyhoos about equal rights of all the citizens (which are inscribed in the Constitution, too), but for the rehabilitees who had been suffering in labor camps they prepared a compensation 4330/75 = 58 times less than a minimum wage of an average Russian citizen.

An average person may object, that prisoners are "put" in prison, so they must "lay" or "sit" there. Why on earth do they need to be paid for?

The thing is that I am speaking about ***rehabilitees***, i.e. those who have been officially admitted by the state to be imprisoned ***guiltlessly***. Second, the Soviet prisons and labor camps were arranged not for having a sit and relaxing but for ruthless exploitation in severe conditions of Siberia and Utmost North where even a fooled Soviet citizen would hardly like to live and work despites Northern salary increments, bonuses and material benefits.

For you to feel what it was like I can describe a day in a labor camp where I was "put" (it was known as P.O. box N-235/12; an official address of the camp was Penitentiary N-235/12, Novobiryusinsk village, Tayshet district, Irkutsk region, 665061).

We got up at 6 o'clock in the morning. From 7 till 9 a.m. – formations, roll calls with handing over to the convoy, then we were delivered to a lumbering in tarpaulin-topped trucks. We worked at the lumbering from 9 a.m. till 6 p.m. having a short break for a bowl of skilly soup. Then – from 6 till 9 p.m. – evening formations, roll calls with handing over back to the camp guards and repeated recountings in case someone's missed or miscounted. Note that this took place in Siberia where it could be -40^{o}C (-40°F) in winter, with cutting blasts of unsparing winds, and we were wearing just thin collarless quilted jackets spending 14 hours a day outside. This was our everyday routine, without weekends and holidays. Of course, nominally according to the regulations we were supposed to have one day off, but no one dared to claim for it being afraid of pressure and punishments.

In the evenings we had scanty supper and went to sleep at 10 p.m. In the long run most of people became handicapped if they were lucky enough to survive in the labor camps.

Now you have an idea for what kind of labor one is supposed to be paid (as I said above) 75 rubles ($2.5) per month, but not more than $300 even if one was a life-term prisoner.

International Association of Former Soviet Political Prisoners and Victims of the Communist Regime

Some time after I moved to the USA I founded the International Association of Former Soviet Political Prisoners and Victims of the Communist Regime (IASPPV) (http://iasppv.narod.ru). The goal of the Association is to organize assistance to former Soviet prisoners of conscience and victims of the Communist regime and their families in the USA and the former USSR and protect their rights. In particular, our Association demanded the Nuremberg trial-2 to be arranged to try the Communist regime and Communist executors.

An American section was represented by 20 former victims of the Communist regime. But soon we have been joined by organizations from Russia, Belorussia, Ukraine, Baltija, and now the Association numbers about 20,000 members. Of course, most of them are aged and ill who gradually die out. Generally speaking all the ex-repressed were subdivided into two different categories – repressed in Stalin times (majority) and repressed in poststalin times. The first ones (philistines, especially ex-Party activists) believed that Stalin turned away from the right Leninist way; the second ones (human rights activists and dissidents) realized that the Communist regime cannot be different.

When the Association started its work the pro-KGB agents raised a great stink and began falling over itself in its efforts to do down the Association together with me, human rights activists and dissidents (see the material about V. Albreht, M.Malinin, S.Nikiforov, V.Lebedev and others; for instance the article "Die, you, the KGB scum, one cannot say better!" (*Interesting Paper*, USA, http://iasppv.narod.ru/Ip17.htm). Michail Malinin, for instance, wrote that it was right to convict the dissidents, and now they should not be rehabilitated but pardoned and, at the best, granted a remission. Together with Sergey Nikiforov (mentioned by Solzhenitsin in his "First Circle" as a KGB snitcher) Malinin arranged a sham association of ex-political prisoners in the USA including only two members – the President (Malinin himself) and the Executive Director (Nikiforov). They were busy with begging for donations and endowments from American banks "to help ex-political prisoners" i.e. themselves.

The KGB appreciated Malinin's services greatly. He was given an apartment with a telephone in the center of Moscow. No one of ex-prisoners of conscience could boast of such a care. Some time he served as a supergrass for Edward Limonov, the leader of National-Bolsheviks in Moscow, then was sent to the USA with a new mission.

I cannot help saying a couple of words about the emigration's attitude to former human rights fighters who strived for all of them to obtain a right to immigrate to the USA. Most of those emigrants never thought about who made their emigration possible and who are they obliged to. Here in America they look at the ex- prisoners of conscience and civil rights fighters as at some jerks.

When our Association asked for help through Russian-language newspapers only two people (out of 2 000 000 000 Soviet emigrants!) sent $100 each (which wasn't enough even to pay for an ad in a paper) and another two people sent "thank you" messages.

No one Soviet emigrant (except his friends, relatives and ex-political prisoners, though in New York there were about a million of Soviet emigrants by that time) came to the funeral of Alex Murzhenko who was sentenced to 20-year custody for an attempt to escape from the USSR by plane (it was a famous Leningrad Case; after it had been made known the Communist power

had to let out hundreds of thousands of emigrants due to the world public pressure) and who died of cancer in New York.

The situation was clearly described in one of my articles in the late 1990s.

Appendix. My article (the late 1990s).

Dr. Alexander Bolonkin,
The President of IASPPV

God grant that your Fatherland may not defame and kick you out.
Evgeny Evtushenko

No good deed will go scotfree.
Popular wisdom

Outcasts
or Communist Victims are out of Law

It is a well-known fact that Soviet dissidents made the biggest contribution into a downfall of the Communist regime, into the struggle for the right to exit (leave the country) and deliverance of the world from the Communist nuclear threat. The keenest activists had spent tens of years in ghastly prisons and labor camps, many of them died; others were kicked out of the country almost naked. But were they acknowledged by the "democratic" power? Did they receive any sign of gratitude from the current CIS government, emigrants, the USA government and the world?

Some history. The history of mankind proves that dictatorships and totalitarian regimes are the biggest threat to the world's peace. Of all the examples you may best of all remember Hitler (the Nazi occupation of Western Europe), Stalin (the Soviet occupation of Eastern Europe), Mao-Tze-dung (the occupation of Tibet, Korean and Vietnam wars) and others. Especially dangerous are dictatorships with nuclear weapons, as the decision of applying these weapons is made mostly by a scoundrel dictator alone.

The former Soviet Union had produced nuclear weapons and means of their delivery three times more than all the rest countries put together including the USA. Thus our country constituted a menace for the mankind, nature and the entire environment and life on the planet. Just think, suffering from senility and marasmus Brezhnev and Andropov, a patient on life support could easily buy the farm together with the entire mankind.

Dictatorships with nuclear weapons are practically impossible to get destroyed from the outside, as, agonizing, they surely will apply the weapons. Such a regime can be defeated and reformed into a peaceful democratic society only from the inside by efforts of its citizens those who are eager to save the mankind and our Earth from a nuclear catastrophe.

During the Communistic times more than 60 million (accurate data is 66 million) of people were killed in the Soviet prisons and labor camps. As far as in Stalin times practically all the opposition was completely suppressed, 99% of people put in labor camps had nothing to do with politics, or there were apparatchiks - the party's faithful dogs and even NKVD executors. The Iron Curtain was so dense that the civilized world knew nothing about GULag, and even did not believe scrappy rumors coming sometimes "from beyond" and admired the "workers-and-peasants power" - not without reason Communist Parties in Western countries were growing by leaps and bounds; in France and Italy they enlisted many millions of members.

When Stalin died the Party elite and members of the bureaucratic establishment scared by the death of their Leader introduced some sort of justice – at least for appearances' sake; moreover, the need in western technologies made them loosen the Iron Curtain a little bit and

allow foreign specialists, businessman and tourists to visit Moscow, Leningrad, Kiev and some other cities easily. The Party started to play "détente" (easing of hostility and strained international relations) and "coexistence".

All those "decorative" easings and tension lessening made a dissident movement start in early 1960s. These were single heroes or small groups, practically self-murderers openly defending human and civil rights, struggling for free exit of the country, freedom of speech and belief, meetings and information, for democratization of our society's life and, finally, for the adherence to the Soviet Constitution. This was their key difference from the people repressed in the Stalin times. Taking their lives in their hands these new dissidents transferred to the West the information about repressions. Though Western mass media published this information seldom and quite unwillingly the fact caused much anxiety of Communist leaders as it definitely spoiled the reputation of a flourishing and thriving "true democratic" Socialistic society with a "toilers' power".

Outcasts. Human rights activists and dissidents were severely persecuted for telling the truth to other people, for criticizing the existing orders and regime, exposing lawlessness and writing books and articles disliked by authorities. Most of charges brought against dissidents sounded weird and absurd. For instance, I was imputed guilt of making anti-Soviet, slanderous and libelous excerpts from past Communist Party conventions and Plenary sessions of the CPSU Central Committee promising and assuring of rising in living standards. When I was in the labor camp my absolutely innocuous letters were not sent because they were alleged to be anti-Soviet. Then I began to copy letters of Lenin to Maksim Gorky, Innessa Armand, Nadezhda Krupskaya and tried to send them as if they were in my own name. Can you imagine that all of them were withdrawn as anti-Soviet, slanderous and calumniatory. Finally I was taken to a psychiatrist, as the camp administration considered that only a deranged person could write such letters.

In prisons, labor camps and specialized psychiatric hospitals were very severe conditions, the administration made dissidents do a stretch again and again to cause them contrite formally. Yuriy Galanskov, Marchenko, Vasiliy Stus and many others never came back from prison. But those who survived and were released just couldn't come back to their civil life – many of them found their domicile registration annulled, they were out of their work and had no means of subsistence. The most active were deprived of their citizenship, their apartments were taken away, they had to pay a big ransom and buy extremely expensive tickets to be thrown abroad half-naked or to be exchanged for Communistic spies caught abroad. This was a destiny of Vladimir Bukovsky, Petr Grigorenko, Yuriy Orlov, Paruir Airikjan, Valentin Turchin, writers Sinyavsky, Daniel, Solzhenitsin, Voinovich and many others.

The "Democracy" Age. The Communistic regime fell down due to efforts of civil rights activists and dissidents, their valiant self-sacrifice and public opinion awakening both in Europe and inside the former USSR. It seemed like the new power shouldn't forget those people whose valiancy and self-renunciation facilitated the new government to come to rule the country. But this new government consisted mostly of former Communist leaders; busy only with dividing the power, national property and the country they hardly were able to recall the casted away former political prisoners. They never thought about giving back the apartments, the sum of ransom and the citizenship taken away from the dissidents. In other words the way back from abroad for the dissidents was closed, because in order to come back to the native country one would need a place to dwell. Trampling on the UN International Covenant on Civil and Political Rights (Article 9 Section 5) the CIS government decided not to pay the ex-political prisoners worthy indemnities for terrible years spent in labor camps, imprisonment and exiles.

And that tiny indemnity ($2.5 for a month in a camp but not more than $300 despite one spent in camps 25 years) meant for the dissidents is connected with pretty big expenses, as you need to come to Russia (a plane ticket costs about $800), accommodation (a hotel charges about $50 per day)(price of 1995 year), preparing and sending all the necessary documents to the local authorities, several months of waiting. As you may see these expenses are many times more than those scoffing indemnities.

In June 1993 while holding the floor in the UN assembly Eltsin declared that Russia became a **rightful state** and was going to pay pensions to those former residents who currently live abroad. In practice that pension was supposed to be paid only to those who left the country AFTER 1992 which means that old and ill ex-political prisoners who had been working more than 25 years for their Motherland and casted away from their own country earlier were automatically chiseled out of their right to a pension. Isn't it a mockery considering that practically all of them were deprived of their citizenship, they paid a ransom equal to their six-months wage and now in order to get their Russian passports *back* they have to pay a fortune and twice as much for formal requesting lots of redundant documents.

So in present days the situation is paradoxical: those who left the country after 1991 and who were granted a refugee status in the USA reserve a right to their flats in Russia, belongings, pensions, benefits and allowances. But the new democratic power took care that the ex-politprisoners who had been struggling for those rights and paid for them with their blood and sufferings do not enjoy these rights.

Ok, Communists are Communists despite their new guise or names. They don't care what to build – Communism, Capitalism, Nazism or Fascism and what name to be called. Long time ago they have realized that the main thing is to remain in power (doesn't matter what kind of), at that it makes sense to hold shares and possess private capital, and in the name of Freedom and Independence become 'unaccountable hosts and proprietors' in their republics. They always hated their victims and tried to get rid of them. They feel very close with executors like Anatoly Trofimov, an ex-KGB interrogator who locked up hundreds of dissidents. These 'dermocrats' (it's a play of words, 'dermo' is 'shit' in Russian; many people in modern Russia call their democratic power like that) granted him a highest military rank of Colonel General and made him a deputy director of the newly-created Russian FSB (FSS - Federal Security Service, can be also abbreviated as FSB – Federalnaya Sluzhba Bezopasnosti), (former KGB), and a director of the Moscow FSB. At these positions he had been trying hard working off his bonuses and keeping on persecuting the dissenters (you needn't look far for examples – there are lots of recent suits of such people as Novodvorskaya, Orekhov, Sablin, Nikitin and others).

Emigrants' "gratitude". The most urgent right obtained by the Soviet dissidents was the right to emigrate. They did their best to attract the world's attention and inform the world public about the situation in the country. Due to their struggle, self-sacrifice and heroic efforts in 1970s and 80s the Soviet government had to permit at least Jews to emigrate. Before the *Perestroika* began more than 300 000 people had been granted Israel visas; most of those people now live in the US. By 1993 the number of Soviet emigrants living in the US reached one million. Many of them made a fortune but having acquired great wealth they forgot what they could be if the human right activists didn't strive for their right to leave the country. When it all comes down, due to the efforts of the dissidents the world was saved from the nuclear holocaust. And the downfall of the Communist regime with the *Perestroika* became possible only due to the dissidents, too.

Many of the emigrants gathered wealth and became millionaires. But those who still are on welfare and SSI live far much better than most of regular people in the former USSR. These emigrants should seem to be a little bit grateful to the dissidents for their opportunities in America; and, as I said before, as soon as the ex-dissidents appeared to be in a worse situation than all the rest emigrants, those emigrants and refugees should seem to provide help and care to those ex-dissidents, especially as only a couple of tens of old and ill people is in question.

However, all our efforts to attract the emigrated public's attention so that they would help those old and sick people turned to be in vain. Out of a million of emigrants who came to the USA since 1970s no one took up the call. We appealed to many Soviet emigrants who became quite rich in America but no one of them gave us a penny. A typical example is "Public Travel Club". Marina and Rita Kovalevs, its owners, made a pretentious advertisement of their company over TV throwing thousand dollars to just the first comers, but refused to give some money to support the former dissidents.

All the emigrated fat cats (who easily paid a $1 500 application fee to become a member of the so-called First Russian American Council nicknamed "Millionaires' Club") ignored our appeal.

One of the former ex-politprisoners noted bitterly: "We thought that we fought for *humans* but they turned to be just *sovki*…" (Sovki - *pl*. of Sovok – a dustpan; *disdain*: the Soviet Union or a person with a Soviet upbringing, person with ingrained Soviet mentality. Derived from the similarity of roots in the words 'sovok' and 'Soviet').

Of course, at all times dodgers were the very first to use the noble achievement benefits and the good things of life. But you may be surprised by their multiplicity and especially by the facility with which they acquire their welfare and other good things of life, while real human rights activist lead a wretched life unable to get a refugee status for years. Also I was surprised by the attitude of most of Russian newspapers in America, all of them refused publishing our appeal to help former dissidents. Generally, they publish our materials very seldom. But quite many of them, such as ("Ракурс Айзека Фромера" or "Рекламный Курьер") Isaak Fromer's Viewpoint or Publicity Express willingly publish articles of advocates and apologists for Communism and KGB-FSB, such as Michail Malinin and Sergey Nikiforov throwing mud and casting evil aspersions on our Association and famous dissidents like Solzhenitsyn, Sakharov, Kovalev, Bonner ("dirty Jewish pig"); also these newspapers like to publish scribbles of impudent and brazen Pavel Shub the sovok who never missed a chance to kick the ex-politprisoners.

I happened to live in American provincial towns and see how eagerly Americans respond when they are called to help sick and poor. In the place where we lived 300 families raised hundreds kilos of foodstuff, lots of clothes and donated considerable sums of money. On Christmas eve a truck full of nicely decorated gifts was sent to homeless. Someday we will promulgate the lists of rich emigrants aspiring to the positions of representatives and heads of the Russian community but having no desire to help old dissidents whose blood was shed upon their way to the USA.

Some of you may think of old comics: in the next world Heaven was separated from Hell by a high brick wall. One geezer decided to make a hole in that wall, but he had no other tool but his head. People only laughed at him: "Hey, you, are you mad? Ya don't think you may breach this wall, do ya?" But when he managed to make a hole in the wall and fell down bleeding with his head broken, the crowd of people rushed to the hole treading that guy into a mud.

It distresses me to realize that the all the Soviet emigrants are like that crowd. Our Association has been founded five years ago and since than time no one of emigrants who became rich never donated anything. Actually, only several volunteering geezers devote their time to the organisation and give some money to support its struggle. Once in one of my previous articles I managed to insist that an editor wouldn't cross out my call to support the Association. What do you think the result was? Out of a million of emigrants only one not very rich person sent us ten dollars; another one sent several foodstamps. Ah, yes, one more guy called to say: "You are wrong to think like that about all of us! Despite I am on welfare I am going to send you 20 dollars. My son is a doctor, he will surely send you 100 dollars and so will do all his friends the doctors!" Some time later he called again to say that not one of them wanted to give even a penny. As to himself, he decided that he isn't worse than the rest and didn't send anything, too. Nobody answered our call to support an idea of creation of the Memorial devoted to Communistic repression victims. Also nobody wanted to save the exhibition "GULag Archipelago" though pictures there had been willingly bought and sponsors could make a pretty good profit.

I remember one KGB official who had been interrogating me; once he indulged in confidences with me and noted: "You, the dissidents, idealize people too much. Just you wait, people will hit you much more painfully than the KGB". The time showed that he was right. There was not a single person who took compassion on the ex-political prisoners and was eager to help them, although there were hundreds of thousands of people who in bygone days never missed a chance to throw mud into dissidents at meetings and in mass media, required to punish the slanderers- defectors-turncoats-and-American-imperialism-adherents as strictly as possible. As you may see, Stalin and Hitler turned to know the human nature much better than naïve idealistic dissidents struggling for human rights.

US Administration's gratitude. The US Administration refuses to grant a refugee status to the ex-politprisoners and dissidents fighting for democracy reasoning that nowadays Russia became a country of "democracy". Some members of our Association who have been living in the USA for more than five years still are not able to get the refugee status, their requests and applications are never replied.

The efforts of these people delivered America (and the whole world) from the nuclear holocaust threat; the US Administration saved about $ 150 billion of its defense budget. But when in connection with a welfare reform we tried to ask the Administration - by way of exception – to put them on welfare and allow them to enjoy standard benefits of entitlement programs, we didn't receive any coherent answer.

In old days due to the Soviet propaganda *sovki* were absolutely sure that "subversive activities" of the dissidents were generously paid by the US imperialism. Anyone could be loaded with money (and the CIA's responsible for that!) just by chattering around about drawbacks of the Soviet system. Alas, this was the same sort of a fairy tale as was a tale about insidious imperialists harboring plans of attacking and destroying the peace-loving Soviet Union. All the support came only from private individuals and from the Solzhenitsyn Foundation, and was pretty tiny. It even couldn't cover the expenses of mailing a 5-kilo (11 lbs) parcel to each political prisoner just once a year.

By the way, even now many people think that the US Administration do cares about freedoms and democracy in other countries. Well, to some extent, it does… The thing is, those issues are interesting to the American legislation only in case some certain community struggles for those freedoms because Congressmen are afraid of loosing their voters.

I can give you a simplest example. Uncle Sam (together with the free world) doesn't want to confer a right on residence (to say nothing of a refugee status!) to refugees from Communistic Vietnam, getting away from their Communistic "paradise" in frail junk boats under coast guard gunfire and surmounting hundreds of miles by sea on their way to the "liberty" coast. A half of them dies in the sea or of coast guard bullets, another one which reaches the "liberty and freedom" is sent back to their Communistic Vietnam where they are waited by prisons and death.

There is no stable Russian community in America and it hardly can be created out of those *sovki*, and the US Administration does not care about their troubles. The only thing it concerns and fears of is revival of Communism in Russia. But currently this threat cannot be taken seriously as the former USSR is so fragmented, weakened and broken now that it hardly can represent a menace for the USA.

Once one *sovok* emigrant told me: "You were so short-sighted and stupid to struggle for civil and human rights. You'd better just sit and wait – as we did – for these rights to be observed! It was inevitable, wasn't it?" Maybe, he was right. But do you really think it was inevitable ***by itself***?

A. Bolonkin

PS: Having read this article, one of my friends noted: "Do you think any newspaper will agree to publish this article? All of them bow to the wishes of philistines wanting to hear only how good they are. And even if it is published, those *sovki* will surely throw mud into you afterwards! Don't you even hope that ex-politprisoners will ever receive any help. Nobody heeds such a truth!" OK, let's perform a little experiment and send the article to all the Russian-language newspapers. Let's start with the Russian Daily - *Novoye Russkoye Slovo* (*New Russian Word*), and then publish the result.

PPS: *N.R. Slovo* and most of newspapers refused publishing the article. It was published in *Obshaya gazeta* (*General Newpaper*) in Russia and *Evening New York* in the USA published a part from article. As a result two people sent us some support. But all the pro-KGB folks made a great stink about it and, as was predicted started mud-throwing into the dissidents, our Association and personally me (you may want to see the materials about V. Albreht, M.Malinin, S. Nikiforov, V.Lebedev and others at http://iasppv.narod.ru).

Car blow up. Anatoly Trofimov

After I arrived to the USA I had published (both in the Soviet and foreign press) a series of articles defending and supporting the ex-politprisoners and dissidents, including the following articles and interviews: "Rehabilitation of Communist Lawlessness Victims" (*Soviet Youth*, 7 August, 1990), "While Communist Party Rules the True Democracy is out of the Question in the USSR" (*Soviet Youth*, 19 October, 1990), "Bolshevism Victims Memorial Day"(*Novoye Russkoye Slovo* (*New Russian Word*), 7 September, 1991) and many others. A lot of material about offences and violations of the KGB, about hypocritical policy of new power shielding the maleficent policy of Communists and articles denouncing the Communistic past of new Russian leaders have been published in newspapers and at the official site of our organization (http://iasppv.narod.ru). Also we had a hand in organizing demonstrations at the permanent Soviet mission to the UN and letters in defense of those who had been trumped-up charged and persecuted for political reasons. Of course it is impossible to expect any constructive steps from the former Communists who for the purpose of holding in power immediately turned into "democrats", and started to destroy the tottering economy of the country; the purpose was quite

clear – to make the conditions of life so unbearable that people would stir up and incite riots, and finally come back to the totalitarianism again.

My former KGB interrogator Anatoly Trofimov who was doing his best to imprison hundreds of human rights activists and dissidents received a rank of General (a top rank in the Russian Army and Interior Ministry troops) and was made a RF KGB (FSB) Vice-chairman. Our Association was seeking the Nuremberg trial-2 to be arranged to try this person for fabrication of false political cases and for the deaths of those who struggled for civic rights. Of course Trofimov and other FSB leaders did not like it. I was decided to be destroyed. There was an editorial of the Russian Daily - Novoye Russkoye Slovo (30 November, 1995) about that: Yesterday, on November, 13 at 5 p.m. Alexander Bolonkin, the President of the International Association of Former Soviet Political Prisoners and Victims of the Communist Regime drove to the public library. As usual he parked his car in front of the library where he spent about ten minutes.

"I drove back home along the 1st street," told the professor, "when suddenly something blazed up under the bonnet, the engine pegged out and the front part of my car turned into a fire. A 10-feet flame crest had burst out of the engine, I had a narrow escape. I was lucky enough to stop a passing car right away; a driver had a cell phone and called the police and 911. The emergency service, police and fire brigades came in several minutes. The traffic was closed, and the police asked passing by people to move aside and not to come closer as the car was expected to blow up. Soon the fire was extinguished. I wasn't injured much, though I was significantly singed. Finally, I was taken home and my car – to a scrapheap."

Professor Bolonkin is a former teacher of the Bauman Moscow State Technical University and ex-political prisoner who had spent in prisons, camps and exiles of GULag 15 years in total. In 1988 he immigrated to the USA and five years later got a US nationality. Dr. Bolonkin makes researches in aviation, astronautics and cybernetics. Two years ago he was invited to work on an important project in the biggest USAir Force research center at Wright-Patterson Air Force Base where many years ago the Wright brothers built and tested the first plane.

The professor is sure that there was an aimed attempt upon his life. Being a person of science, he decomposed 100 per scent of the accident into probabilities of different versions; a share of spontaneous inflammation was about 1-2%. "The thing is, I am an experienced driver, I've been driving a car for 40 years and never heard about engines blazing up so strongly," explained prof. Bolonkin. "Second, an engine is made mostly of metal and technically there is nothing in it to burn and produce such an intensive flame."

Answering the question who might benefit from his death professor Bolonkin said that besides his research and educational activity he is involved into human rights movements, he is the President of the International Association of Former Soviet Political Prisoners and Victims of the Communist Regime including about 30 000 members. He added that 90% of the accident probability could be referred to a revenge of the former Soviet KGB (current FSB) where the position of a deputy director was recently given to General Anatoly Trofimov.

"Our Association was strongly against giving him that position," said Alexander Bolonkin. "All his life Trofimov worked as interrogator in the Moscow KGB and sent to prison hundreds of dissidents including S. Kovalev, K. Lyubarsky, S. Grigorjants and me. At my initiative the International Former Political Prisoners Forum in Jerusalem claimed that Trofimov should be brought to trial for fabrication of false political cases. We are seeking the Nurnberg

judgment-2 to try the former leaders of CPSU and KGB, and Trofimov should be the first to be tried."

Wright-Patterson USAF base where the attempt took place is located near Dayton, Ohio. This place is regularly visited by US State Secretary Warren Christopher and lots of correspondents of American and foreign press. It is a place where the presidents of Serbia, Croatia and Bosnia came to negotiate. Finally they worked out a peace agreement; according to the US President 20 000 of well armed US soldiers are about to be send there to support this peace.

Currently 5 thousands researchers, engineers and other aviation specialists work at the base and its research center. Perhaps those Bosnian peace negotiations were arranged there because the base is appropriately guarded by the local police and military security. Taking into account that the base was receiving the top-ranking Balkan visitors and considering often visits of State Secretary Christopher to Dayton there should have been a great deal of secret service men from Washington.

But as the saying goes, too many cooks spoil the broth. Croatians, Serbians and Bosnians were safe in Dayton, but the Russian emigrant fell out of security's attention (picture from the newspaper: Bolonkin's car blown up).

Alexander Grant, Newspaper " Novoye Russkoye Slovo" (New Russian Word).

Bolonkin's car explosed

A true servant of the Communist regime Trofimov started to dig some discrediting evidence up on President Eltsin and his men; trying to dig up more dirt, he got into close contact with the criminal and thieves' world. Of course, Boris Eltsin didn't like that, and on February 20, 1997 he kicked Trofimov out of the FSB. Like a shot Trofimov became an active member of the Russian Mafia. But he went too far and started blackmailing criminal authorities. In April 2005 Trofimov and his concubine had been shot by his fellow mafiosi. Below I give a short article about Trofimov from the newspaper "Komsomolskaya Pravda" (Komsomol Truth. Some time after the Soviet Union was over many streets, places, towns, newspapers, etc which names were connected with Komsomol or Communist and its leaders were cardinally renamed. But this national newspaper is one of the few in Russia which remained its old name) and a IASPPV (International Association of Former Soviet Political Prisoners and Victims of Communist

Regime, http://IASPPV.narod.ru) article devoted to his death.

Newspaper " Komsomolskaya Pravda" about Trofimov.

Executor of Dissidents. Colonel General Anatoly Trofimov, a former head of the FSB Administration in Moscow region was nicknamed the Executor of Dissidents as most of his life he devoted to a struggle against dissenters. In 1972 he was working on a case of Alexander Bolonkin who had been printing *samizdat* (self-published) magazines (*samizdat* – derived from *sam* (self) and *izdat'* (publish). The clandestine copying and distribution of literature banned by the state, esp. formerly in the USSR and Communist countries of eastern Europe) "the Free Thought" and "The Current News Chronicle". Bolonkin took part in development of the Soviet rocketry.

According to his former colleagues, it was Trofimov who had a hand in sentencing Bolonkin to four years in labor camps and two years of exile. When the exile was over Bolonkin had three more tight security years added to his imprisonment (for "slanderous fabrications"), and then he was convicted of "anti-Soviet propaganda"… In total Bolonkin spent in prison 15 years.

The Kremlin Favorite. Relationship between Trofimov and the Kremlin wasn't so smooth. In the beginning Eltsin and everybody in the Kremlin trusted General Trofimov absolutely. In June 1996 *Executive Order 1025* ("On immediate measures for legal order strengthening and crime control stiffening in Moscow city and Moscow region") was issued and a special operations joint Staff was formed out of Interior Ministry troops, FSB, Federal Fiscal Police, Department of Justice was created to coordinate the law-enforcement bodies' activity. Trofimov was made a Deputy Chief of that Staff.

A Tiff with Chubais. But then the attitude of the Kremlin towards Trofimov started to change. The General and Anatoly Chubais, the Head of the Presidential Stuff had a tiff.

On 19 June, 1996 two activists from the President Eltsin election headquarters carrying a famous "Xerox box" with millions of dollars were picked up at the entrance of the RF Governmental House.

Giving comments on the accident Chubais said that it was an intention to disrupt presidential elections. The activists were arrested by Trofimov.

Chubais was said to insist on deposition of Trofimov from his position of Moscow FSB deputy director. Boris Eltsin dismissed Trofimov.

Celebrating the dismissal. On 20 February, 1997 Trofimov was dismissed by a specially issued decree of Eltsin. The decree, in particular, said that Anatoly Trofimov was fired for "flagrant violation, neglect and egregious breach of duty revealed in the course of RF Chamber of Accounts inspection".

So what? Like a shot Trofimov found himself a nice plum job of a deputy director in one big company. Later he changed jobs couple of times. His last job was connected with motor vehicles – his company wanted to monopolize trucking and conveyance of goods and passengers. Several times competitors warned the company that they were not going to allow such a takeover. But Trofimov was supposed to work out a scheme for successful solution of this task. Several days before he was killed the competitors had sent him a "black mark"- a luxurious Jeep of Trofimov had been severely damaged, but the General made little of the fact…

IASPPV has also reacted to the homicide of Trofimov (http://iasppv.narod.ru).

Death of Trofimov: Obituary of the Murderer

All the Russian language media were howling about wonderful person and brilliant specialist Anatoly Trofimov, the former CheKa and KGB official (CheKa (*Russian*: ЧК) – 'Extraordinary Commission (for combating Counterrevolution, Sabotage, and Speculation)' – an organization under the Soviet regime for the investigation of "counterrevolutionary" activities. It killed millions of people from its formation in 1917 until 1922 when it was replaced by the OGPU - 'Unified State Political Directorate') shot right on the steps of his house. The devoted old soldier, he managed to be risen to the rank of Colonel General and became a deputy head of the KGB! If his stooges hadn't been caught actually trading cocaine and hobnobbing with criminal authorities, this nice man had a good chance to become new Felix Dzerzhinsky "with a cold heart and clean hands", and maybe the President of Russia, too!

Such sort of fallacious "epitaphs" and "obituaries" come from one source – from his former henchmen and criminal partners. But those silver-tongued orators don't focus on an important fact making it drown in empty talks about arrests of Rutskoy and Khazbulatov (top political leaders of Russia proved to be guilty of crimes). The fact is that the brilliant General started his meteoric career standing knee-deep in blood of civil rights activists who struggled against the felonious Bolshevist regime.

Being a KGB interrogator, Trofimov demonstrated his exclusive shamelessness dealing with the issue of Dr. Alexander Bolonkin. The thing was that leading scientists were ones of the first to realize that our "Unbreakable Union" (those are the first words of the USSR Anthem) started sliding rapidly into an abyss.

First they were writing warning letters to the "servants of the people" in the Kremlin. But Communists just pinned activists' ears back and castigated them so that they wouldn't get into this business anymore; the Party leaders know better which way the Soviet working people should go to reach the total blossom!

Anxious scientists, nevertheless, continued sharing copies of their letters with those who hold the same views, also sending each other translated papers of overseas economists and secret instructions of the felonious Kremlin clique.

Party censors was striking out any slight hints about the coming catastrophe from official publications, that's why we had to print the alarming warnings manually on a fine tissue paper. We got only ten copies at a time, but the demand for "dissident literature" was huge.

Then young professor Bolonkin developed a simple copier which could produce thousands of *samizdat* copies right in the kitchen. He started from his scientific forecasts. Among them were selected quotations "CPSU Promises and the Reality", "Comparing living standards in the USSR, Russia before 1971 and Capitalist Countries".

Trofimov, the rookie interrogator, found it reasonable to insist that the young professor should be sentenced to 15 years for this amateur activity (17 years later Bolonkin was released and immediately had to go abroad).

After that Bolonkin's issue had been over the nimble flayer was promoted to a Head of the Dissident dept in the KGB. All the prison terms, loony bins and lethal "accidents" were arranged by that "marvelous professional". It was him who destroyed hundreds of best people. Their names will always be kept in our memory!

If that would occur in **some other** country, after downfall of totalitarianism, such a "professional" should be expected to be string up upside down right in the central square. But in Russia he was… promoted! He became a deputy director (quite a high position!) of the KGB-

FSB already, when his stooge accomplices had been caught red-handed. Instead of getting his comeuppance, he just received a farewell address of respect and was honorably transferred to the "Reserve of the High Command". Since then the General could run his business 24 hours a day without being scooped up…

The executor could have died peacefully in his warm bed unavenged were it not for his fellow criminals. They are not intellectuals, whom the comrade General used to imprison with impunity. A criminal world's punishment is immediate and ruthless when it comes to any baseness or bunco.

Anyway, too bad that the triumph of justice was so late! But it's better late than never!

Work for the Research Lab at Wright-Patterson US Air Force Base

The US National Research Council of the US National Academy arranged a special program for involving young postgraduates and Universities faculty into researches and scientific activities; this Research Associateship Program is supposed to give them a good opportunity to develop their ideas in National research centers and laboratories. The list includes about 100 national research centers and labs. Among them there are Army research labs (more than 10 centers), Navy research labs (4 centers), Air Force and NASA labs (8 centers), Chemistry and Biology, Environment, Energy, Health, Standards, Ocean and Atmosphere, Transportation, etc.

The annual contest includes topics suggested by those research centers and labs. If you win the contest you may be invited for 3 to 24 months (the period depends on your work success, a two-year term is maximal); work there is paid by the state at the doctorate salary rate.

I always had an intention to be involved in research work. To tell the truth it wasn't easy to win those contests as there always are too many applicants. Nevertheless I decided to take my chance; I can say that three times I won (I mean my solutions for the problems presented at the contests) and received a good opportunity to perform researches concerning the given theme for two years. In case you fail you can try again next time only in two years.

The idea to attract young scientists and college teachers to work in the state research centers was wonderful. But… as many other good causes in the USA it was spoiled by a mediator – the Association of American Universities (AAU) which had striven for getting some profit for itself from the Associateships Program so that up to 30% of money meant for the Program would be deducted in favor of the Association. Of course as any redundant bureaucracy did, the Association used corruption methods when selecting candidates. It was a sort of unnecessary mediator between a trader and a purchaser which gave permission to the latter what he or she should buy and what was the price and how much was to be paid for the mediation.

As to me, I saw one more drawback there. Researches and improvements were supposed to be done only within the framework of the given subject (which usually was quite narrow) included into a plan. Any brand new ideas, solutions, designs (and I believe that only they are able to make a breakthrough in technologies) were never considered if they had nothing to do with the subject. At best those new solutions could be sent to the higher level from which you could receive just a formal bureaucratic reply. I.e. I had to make researches strictly concerning the subject planned by somebody else beforehand, within the framework of the financed topic (it was a sort of things I had to do living in the USSR, too). Any researcher has his direct boss who also had to perform researches strictly within the assigned framework and watch his subordinates not to deviate from the financed topic. Some ignorant may think that a scientist is free to chose

what to do and what to research and investigate. It's nothing but a very wrong belief. You may do what you want but in your free time, not during working hours! But what can you carry out at home without modern expensive equipment? Only theoretical investigations.

Anyway, my work at American research centers was very useful, seminal and fruitful.

The first state-financed research center where I got to work was a laboratory in Wright-Patterson US Air Force base located in a small town of Dayton, Ohio. This is a place where the well-known Wright brothers had their first flight in 1905.

My wife and I rented a 2-storey house in a campus where lived average Americans and pensioners. Our rent was about $400 per month. There was a free swimming pool, sauna, gym, and basements for storing different stuff. As many American towns, Dayton was a clean, neat town with a good library, club, supermarkets, university, small civil airport and excellent roads. Of course all citizens got about in cars. Schools had large parkings for high school students.

Our next door was a guy from Kuwait. He told us that his small country trading oil makes such good money that its government pays its people just for being citizens of Kuwait. And if anybody wants to study his study expenses are to be covered, too. As that guy wanted to become an oil engineer, he was sent to the USA together with his wife and two children, his travel, accommodation and study expenses were covered as well as maintenance of his family. His knowledge left much to be desired and he often asked me to prepare his hometasks.

In the very first day we decided to have a little walk around to see the place. Pretty soon a passing by car stopped and a driver wondered whether something was wrong with our car and asked if we wanted a lift. Later on we happened to meet with such friendliness pretty often to realize it's quite common here. Once on my way to Los Angeles I got a flat tyre. Very soon a traffic police arrived and helped me to replace a wheel. I was said that this service is free of charge.

There were several families in our town from the former Soviet Union, but they were scattered all over the town and did not see much of each other.

What got stuck in my memory is the Independence day celebration on July 4. On this day in most towns all over the country a big firework is performed. In Dayton it was really amazing! Thousands of people gathered on the embankment to watch the astonishing firework performance. The show was even more spectacular than it used to be in Moscow on World Festivals of Youth and Students.

In New York, besides the big official firework on the Hudson embankment, people usually make their fireworks just in the streets, as fireworks are easy to buy everywhere before celebrations. And in Brooklyn on Brighton Beach people like to arrange fireworks almost every Friday at the seashore in Summer.

Our lab was huge and included lots of buildings, premises and facilities. More than 4000 civil researchers and 1000 military men were employed there. The lab was well-appointed and excellently furnished with state-of-the-art equipment. There was an airfield with combat planes nearby. Especially I was impressed by a big ordnance ground where Soviet tanks were fusilladed by the planes. All the employees came to work in cars. The cars have never been searched though my adviser Dr. N. Khot, American Hindu, noted once that a car can be searched. Of course, there were a lot of places to park a car so I did not have problems with parking.

The lab was performing lots of experiments and closely collaborated with NASA, with the Defense Advanced Research Projects Agency (DARPA), Department of Energy National Laboratories and Department of Defense. Important projects included the planes X-37, X-40, X-53, HTV-3X, YAL-1A, Advanced Tactical Laser, and the Tactical Satellite Program.

I was dealing with vibration rejection in complex systems, airplanes and rockets. Preparing my Doctoral thesis in the USSR I developed a new method of complex system optimization. My scientific advisor had chosen me just because he wanted to test that method. The method worked and, I'd say, put up a fine show. Vibrations were rejected 3, 5 and even 10 times quicker than usual. In 1994-1996 my scientific advisor and I made many successful oral presentations demonstrating open researches, in particular, at the 45th International Astronautics Congress in Jerusalem, Israel; at the AIAA/NASA/USAF/SSMO Symposium on Multi-Disciplinary Analysis and Optimization, Florida, USA, Sept.7-9, 1994; at the Conference devoted to Mathematics and Control in Smart Structures, San-Diego, 1995; ASME Design Technical Conference, Boston, 1995; Conference in San-Diego, 1996; World Space Congress in Albuquerque, 1996.

Our papers have been published in leading world journals, such as Acta Astronautics, Vol.38, No.10, pp. 803-813, 1996, and others. Of course here I am saying nothing about closed experiments which were useful for the existing designs.

During one of the Conferences in San Diego, Ca, my advisor Dr. Khot decided to show me Mexico as it wasn't so far. We took our passports and drove to the border check-point. There I saw quite an ordinary turnstile sort of that one can see in a subway in New York, and nobody guarded them. Anyone could cross into Mexico just to have a walk without asking for permission.

For a couple of hours we have been wandering about a small Mexican town which seemed to exist mostly due to American tourists. By that time I had got used to American wellbeing and saw a razor-sharp contrast between the US prosperity and poverty of Mexico, and I understood why many Mexicans want to get to the USA.

I wonder how it came that having started from the ground up practically simultaneously these two countries appeared to become so different financially. Comparing to rich and prosperous America, Mexico is just a poverty-ridden country despite natural conditions and geographical location are much better in Mexico than in most of US regions. It feels like liberty and democracy together with the citizens' mentality are the crucial conditions for rapid and continuous industrial development of the country.

On our way back to the USA we were stopped by a border guard. It took him some time to check our passports thoroughly and captiously collate our photos with the originals. Such strong measures are connected with a fact that many Mexican citizens want to move to the USA at any rate, despite in the States they could get only unqualified underpaid (but far better paid than in Mexico) jobs in farms or hotel service. In those days Mexican border was almost unguarded and thousands of Mexicans passed to the US illegally. Their path laid across an arid desert. After one illegal immigrant died of thirst, human rights activists demanded water pumps to be installed all along the illegals' way. Mexican immigrants were not much hindered on their way to the States.

In Dayton we celebrated our fifth anniversary of living in the US. According to American laws after 5 year of residence a person can claim to have a US citizenship. But before we were supposed to pass an exam on basic principles of the US Constitution and state system. It wasn't difficult at all, because we were given a list of questions long time ago and it always remained the same. To take the exam we had to go to Cincinnati. By the way the old Soviet emigrants in NYC attained the right to take this exam in the Russian Language (!).

An official ceremony of granting a citizenship was a solemn occasion and took place in a beautiful Centre of social and cultural activities in Dayton. Except my wife and me, all the rest were Mexicans and emigrants from Latin America. For me it was very important to be granted the citizenship as I worked at the US military base. Since I became a citizen, I could be admitted to secret experiments and assumed full liability for nondisclosure.

Left: by the entrance of Headquarters Wright Laboratory
Right: My wife and I in Jerusalem, Israel. World Space Congress.

AIR FORCE RESEARCH LABORATORY

Left: Laboratory Emblem

Right: the author with the H-bomb Mark-53

When I worked at the laboratory, couple of times the base was visited by scientists from Russia. I was invited to translate and help with communication. One of those scientists – a young researcher – was invited to make an oral presentation of his paper; another one was an aged professor who came to become familiar with a powerful laser facility. He was amazed by success of Americans in this field of science.

Right near the base there is the Astronautics museum, biggest in the USA. The admittance there is free. Inside and on the outside pad there displayed different airplanes and missiles from old historical ones to the newest including German trophies. In particular, one could see there the B-2 supersonic bomber, the Lockheed F-117 Nighthawk invisible plane, missiles, spacecrafts, models of A-bombs and H-bombs, cruise missiles. Also there are memorial signs awarded to squadrons and pilots in time of WWII. Inside of the museum there is a panoramic cinema with a huge screen. A big field near the museum is traditionally used for kite competitions and fireworks.

Among my overseas trips the 45th International Astronautics Congress in Jerusalem in 1994 was one of the most interesting. There I made two oral presentations on some of my researches. Simultaneously I took part in the International Forum of Former Political Prisoners in Jerusalem. The article which I published right after my visit was over reflects my impressions.

Jerusalem Impressions

The author spent 3 weeks in Israel participating in the International Forum of Former Political Prisoners and the 45th International Astronautics Congress. At the first he spoke as the President of the International Association of Former Soviet Political Prisoners and Victims of the Communist Regime, at the second – as a representative of the US Air Force Central Research laboratory. Below he shares his experience of spending time in Israel.

Having pried the purpose of my visit out, an Israel custom officer finally allows me in a waiting hall and very soon a giant Boeing 747 with 600 passengers on board takes off from JFK International airport. Evening New York is incredibly beautiful, from above it looks like a sea of lights. Looking out of the plane window, in a web of glittering lines I try to recognize familiar streets and places…

I am to make an 8-hour journey to a small oversea country which has been frequently spoken about by mass media for almost 50 years. During such a long flight we are supposed to be entertained by movies, earphones and radio with 20 channels of different music, food and drinks… But what do most of passengers want is just to snuggle down and have a nap.

In the International airport of Tel Aviv our IAFPPV delegation is met by Forum representatives. Some members of our delegation are accommodated at their friends in Jerusalem; the rest are taken to a hotel. I am picked up by Jacob Suslensky, a Forum convener. He is in love with his country and all the way from Tel Aviv to Jerusalem he tells us an ancient and modern story of places we pass by.

The next day is very important: it's an opening day of the Forum. An official opening ceremony takes place in an assembly hall of Hebrew Union College decorated with flags of 15 countries. Sitting on the panel I listen to public organizations secretaries speaking, then comes my turn to speak. There are many TV and press reporters in the hall. Nathan Sheransky, a Zionist Forum Chairman makes an impressive inspiring speech. After the official part is over he invites me and March Nicklus, a well-known ex-politprisoner and a current Estonian parliamentary deputy to a café. Then he invites us to go sightseeing and drives us to the most sacred place in

Israel - the Wailing Wall. We pass through armed solders guarding the site, let them check our bags and come closer to the ancient remains of the wall which saw remote ancestors of modern Jews. Israelites pray fervently. Each of them tries to find a better slot to put a piece of paper with their desires. As in a synagogue, men and women pray separately at the Wall.

Then we have a protracted but nice walk along stone corridors in some big house or dungeon of countless shops and little stores. An exchange rate of shekel to dollar is 3:1 but dollars are much more welcome than shekels. Shekel is a semi-converted currency, and only foreign visitors can exchange shekels back to dollars. Most of goods are more expensive than in the US (1,5 – 2 times!) so we buy just a couple of souvenirs.

The next day is devoted to the main scientific part of the Conference. We offer a set of resolutions to be discussed. Among them the resolution on fair compensation, on conviction of the CPSU, KGB (NKVD) as organizations committing an outrage upon humanity – killing 60 million Soviet people (Nuremberg Trial-2), on arraignment of the executors and conviction of KGB spies, procommunist and chauvinist agents placed into movements of political prisoners and repressed, on attempts to rehabilitate Laurenty Berija.

Also we discuss endeavors to restore Communism in the former Soviet Union and fascism in the world. Some of participants express their fear for their fathers and grandfathers safety, as those old people - members of the CPSU and VKP(b) - were sincere and true believers into all that Communist twaddle about our "radiant future". But we explain that regular rank-and-file communists are definitely not at stake in this case; here we mean arraignment and conviction of the KGB (NKVD) and CPSU as organizations which killed millions of innocent people, conviction of their leaders, of those who took part in repressions; we said we are going to state facts of their criminal activity. The Nuremberg trial-1 is a permanent obstacle on the way of fascism restoration, and a world reminder of Nazism evil deeds. The Nuremberg trial -2 would become a reminder for China, Korea and Vietnam, they would see that they face perilous times ahead for punishment will come for their crimes, for severe suppression of dissidents. The Nuremberg trial -2 could become the most serious formidable obstacle on the way of Communism and totalitarian rules restoration in Russia.

Most of the delegates agreed with that reasoning and after my speech at the final session the suggested resolutions were approved and accepted.

In the evening I noted my friends worrying. "Just you wait, Alex," they said. "You demand too much: a fair and just compensation, worthy pensions for elder people, veterans and war invalids, CPSU and KGB executors trial… Don't you forget: the KGB attempt to demoralize the Association from inside failed as well as a company of slander against you personally. Now the FSB has got only one more way left – to bump you off. Remember the fate of Fedorov and Zoya Krasilnikova!"

"OK," I tried to dismiss the matter with a joke A man can die but once."

Representatives from more than ten countries took part in the Forum. The delegation from Ukraine was most numerous. Sponsors gave an airplane at their disposal and they took a song and dance crew to Israel.

Sad, but the most offhanded and shameless appeared to be Russian authorities. For several long months they had been delaying the question of financial support for the Russian representatives. And when a deadline came the answer was: "We do not consider it necessary to spend tax and private money on that sort of event. As a result, representatives of the biggest associations (among them the Moscow Association of Unlawful Repression Victims (10 000 members), St Petersburg Association (more than 1 000 members), Bashkortostan Association

(1 000 members), and others) were not able to participate. To crown it all, right by the end of the Forum we found out that Trofimov, the former head of Moscow political investigation dept of KGB, who had locked up in prisons, camps and mental hospitals thousands of dissidents, the current "democratic" power has granted a rank of general and made him a head of investigation dept of FSB.

A part of our time was devoted to excursions arranged by the Forum conveners. Jerusalem is a center of three religions – Judaism, Christianity and Islam. Our guide showed us historical sites, temples, churches, synagogues, the place of the Last Supper and the way of Jesus to Golgotha, told us about the 6-day War and Jerusalem liberation, and how Israel was visited by modern CIS leaders.

We traveled about the country along the Jordan river and Jordan border, and then further up to the Syrian border – the very northern point of Israel. We were impressed by a boat trip across the Galilean sea and a magnificent concert of the Ukrainian troupe.

Most of the territory of Israel is hilly semidesert. Each tree is artificially planted. A climate in Israel is very warm and people here can harvest three times a year. Farmers of this little country provide foodstuff not only to their country but also export fruit and vegetables to Europe. The sore subject of the country is water. One of its main source is the river Jordan which flows to the Dead Sea from snows of the Golan Heights. Arabs even once tried to install powerful pumps along the river to dewater the country. The question of giving the Golan Heights up to Syria is very vital: in addition to its strategic importance militarily, the Golan Heights contributes significantly to the water resources of the region. This is true particularly at the higher elevations, which are snow-covered much of the year in the cold months and help to sustain baseflow for rivers and springs during the dry season. The heights receive significantly more precipitation than the surrounding, lower-elevation areas. The occupied sector of the Golan Heights provides or controls a substantial portion of the water in the Jordan River watershed, which in turn provides a portion of Israel's water supply. The Golan Heights are the source of more than 15% of Israel's water supply.

Also we visited a couple of *kibbutzim*, collective communities in Israel which were traditionally based on agriculture. Kibbutzim began as utopian communities, a combination of socialism and Zionism. A member of a kibbutz is called a kibbutznik. Every member has to work hard to go all the way from a farmyard worker to a Head and back. No one gets salary, but receives everything needed for life from the kibbutz. Perhaps, it is ideal for elder people but kibbutzim cannot compete with private farms and young people especially creative ones wanting some activity other than farming cannon stand even several years in such conditions. As a result, fruits in Israel are twice as expensive as in the USA. In recent decades, many kibbutzim have been privatized and changes have been made in the communal lifestyle. Kibbutz labor organization and productivity cannot be compared to *kholkhozes* (Soviet collective farms) in the former USSR (though kibbutzim are frequently called collective farms). We were shown computerized cowhouse with 270 milk cows giving 12 – 13 thousand liters of milk a year, and a record holder giving up to 17 thousand liters. I can remind you that in the former USSR best cows' milking capacity was 3 thousand liters a year, and 5 thousand liters was a record. A special sensor fastened to each cow's hind leg is used for computer control of milk quality and quantity, for early pregnancy detection and for ration calculations.

I was greatly impressed by Yad Vashem ("Holocaust Martyrs' and Heroes' Remembrance memorial"), the official memorial to the Jews established in 1953 to commemorate 6 million victims of the Holocaust. Huge shelves inside the museum are full of volumes with names of

Jews who died not only in concentration camps, but in their struggle against Nazism. Having found out where from we are memorial curators asked us to tell Jews in our neighborhood to send information about Holocaust victims to Yad Vashem.

Lots of photos and things in the displays remind about concentration camps, gas chambers and crematoria, about a sad fate of Warsaw ghetto. Walking away from the entrance, visitors proceed through the galleries featuring different chapters, items and stories from the Holocaust. The Children's Memorial is especially impressive. You feel like walking along a dungeon in full darkness, and only several burning candles reflecting in hundreds of mirrors makes an illusion of some movement high up in the skies. A voice from the skies reads names, age and country of children who died in concentration camps.

By the end of our visit there was a ceremonial initiation of three Forum participants into Righteous Among the Nations (Non-Jews who saved Jews during the Holocaust, at personal risk, are honored by Yad Vashem as "Righteous Among the Nations"), they were Roman Beletsky (Ukraine), Viktor Mel'nik (France) and Nina Marchuk (Ukraine). Beletsky saved 24 Jews during the Second World War, Mel'nik saved sick Jews in his hospital; for two years Marchuk had been feeding and hiding in her cellar a whole Jew family in time of the German occupation.

A Jewish prayer sounds very solemn, the three new Righteous slowly lay a wreath on a gravestone by the eternal flame. Commemorative trees are to be planted in their honour in the Memorial park. We are reminded once again that all the Jews who had been saved in time of the German occupation have to send their saviors' names and, possibly, addresses to Yad Vashem. The evening is full of events: an official party to honour the forum participants, a concert, the speech of the Mayor, then the participants exchange gifts and have some tasty refreshment.

What really strikes a stranger's eye in Israel is that there are many young people including girls with submachine guns. The population of Israel isn't big – it's just 4 million people, and girls are obliged to do a year's military service. By the way, the six-day war showed Israelites to be good soldiers. The older Soviet generation still remembers anecdotes popular in war and post-war with a Jew character wanting to serve only at the Tashkent front and asking to give him a curved rifle to be able to shoot from behind a trench breastwork or from round the corner so that not to stick his head. However, 100 million of Arab fanatics armed with the last soviet guns were not able to defeat 3 million army of Jews.

Despite lots of people wear guns in Israel crime is not rife at all. Looking at armed soldiers walking along the street I was thinking that the situation in Russia would be changed if soldiers could bring their rifles home and people could wear guns without any restrictions. Despite drunkenness and debauchery we definitely would get rid of excess crime rate.

I remember in Soviet times there was the shortest anecdote which sounded like "Jew the *kholhoznik*." What we have seen in kibbutzim completely ruined a traditional image of Jew disinclination to physical work of any kind and farming, in particular.

Today, farming has been partly supplanted by other economic branches, including industrial plants and high-tech enterprises. The country develops quite rapidly, especially this development is obvious in Jerusalem. There are a lot of construction sites, new buildings and roads are being built; Jerusalem is located on hills, its streets are curved and the city improvement and development isn't an easy and cheap task.

However these are not only tasks of the country. Foodstuff, clothes and some other things are almost twice as much expensive as in the USA, and an average salary of 1500 – 2000 shekels (500 – 700 USD) is considered to be quite well. Flats are expensive and are sold only for dollars.

Newcomers receive welfare benefit for only 6 month. Aliyahs sell cars half-price, though, causing aversion of indigenous population.

It's pretty hard to get a good job, too. Newcomers from the former USSR, mostly qualified specialists (as Israelites say, only dentists and musicians) with an only flaw which is a lack of language skills. All of them can hardly get a job according to their qualification.

Soon after the Forum was over I took part in the International Astronautics Congress where I made two oral presentations; one of them was devoted to a new nuclear jet for spacecrafts.

The fact that such an important congress took place in Jerusalem evidences that an international prestige of Israel has risen. A slogan of the Congress was "Collaboration and cooperation in the world of tomorrow". 1.5 thousand of scientists all over the world came to discuss problems of astronautics and space. Everybody were very much surprised and perplexed when Yuriy Milov, a Deputy director of the Russian Space Agency uttered a declaration that in 1995 Russia was going to launch 24 satellites, which was as many as all the rest world altogether, and was planning to continue developing new systems of carrier rockets and launchers… Why? For what purpose?

Those were hard days for Israel. I. Rabin, the Prime-minister, gave autonomy to Palestine where Yasser Arafat "ascended the throne". That made the Israel community split into two camps. One of them was sure that no one should trust Arabs anyway, as Arafat even kept a clause concerning destruction of Israel in his program. Another one wanted to keep peace at any cost.

When I was at the Congress Arab terrorists attacked civilians again not far from the place of our session. Two men were killed, 13 injured. But it was even more indignant outrage to seize an Israel soldier hostage and present an ultimatum to exchange his life into Arab sheikhs responsible for terrorist acts. People were sitting by TV sets for hours to wait for the news about this soldier.

In those days Knokh celebrated his 50th jubilee. In the late 1960s he was a participant of a high-profile Leningrad case when a group of Jews tried to hijack an aircraft to fly to Israel (the so-called Wedding operation). Lassal Kaminsky, Mikhail Korenblit, Boris Penson, Edward Kuznetsov and some others were participants of that operation… and my cellmates. In those times the Soviet law did not contain an article about hijacking aircrafts. So those guys were tried for stealing an aircraft (though all the countries send the stolen aircrafts back) and Kuznetsov and Dymshits were sentenced to be shot.

Only the world public's indignation stopped executions for reluctance to live in the Communist paradise and made the Soviet government let Jews go to Israel. I remember how glad were the guys in the camp to hear that our efforts, sacrifice and sufferings were not vain. While they were in the camp thousands of Jews left the country. Most of them, of course, went to the USA, the majority of those people acquired wealth and it feels very bitter to look into their eyes while they refuse providing support to old ex-politprisoners.

Knokh lives in the kibbutzim in a new liberated area. Our way to that place lied across an occupied territory. Mikhail Korenblit' s wife Margete drove the car and Mikhail himself took the front sit holding a pistol. I have no idea what he could do with this pistol if our car were shot from a machine-gun… But all of us felt more or less easy due to its presence.

25 of us gathered for a meeting, most of us were the former members of "aircraft escape" ("Wedding operation"). After having some refreshments and talks about the past and present we sat in front of a TV to wait for the news about the soldier captured by terrorists. The Prime-

minister and Minister of Defence spoke over TV at 12 o'clock at night and said that one Israel officer was killed in the course of the operation. The terrorists killed the soldier and all of them also were killed.

In Israel I interviewed several famous former political prisoners (current distinguished figures), my former cellmates. Also I interviewed prominent Soviet scientists and space programs managers at the Congress. Vyacheslav Chornovil, the Chairman of the People's Movement of Ukraine (Rukh) gave many details and Nathan Scharansky shared interesting information. Currently he is a Zionist Forum Chairman. This Forum had been sponsored by one rich man who gave it 20 million dollars; this money is used to support newcomers. Members of the Forum were busy with organizing protest actions against Israel welfare managers who blamed the Soviet aliyah for sending their retired parents to Israel while young people go to the States.

Also I had a very interesting meeting with Edward Kuznetsov. We met in 1974 in a camp in Mordovia. Together with him we were deciding on a date to celebrate a Day of Soviet Political Prisoners. After the date had been settled I passed that news all over the political camps and outside the camps. And Andrey Sakharov passed it to foreign correspondents. So, a national hunger strike just blindsided the KGB. Living in Israel Kuznetsov became a businessman and a co-owner and a Chief editor of "Vesti", a big Russian language newspaper in Israel.

I spent a very nice evening with my other cellmate Michael Haifnits, too. Currently he is a well-known in Israel radio reporter, historian and a writer. 1974 he was sentenced to 6 years in high-security camps and exiles for writing a foreword to self-published collected works of Joseph Brodsky. Also he is an author of the books "The Secret Police Secretary", "Time and Place", "Ukrainian Silouhettes" and others. He presented me his last book "Regicide in 1918" signing it "to Alex Bolonkin, my old friend and disciplinary cell mate" to put it on the best place in my bookcase.

Soon my three-week visit to Israel was over. Jerusalem, Tel Aviv, Haifa, Havamayam, Galilean and Mediterranean seas and almost one thousand miles along Israel roads. The same Boeing 747 is ready to take me back. So, farewell, Israel! Good bye, my camp friends! It's unlikely that I will see you again in this life! May god bless you with peace, wellness and good fortune!

Alexander Bolonkin, PhD, NYC, 1994.

Later my wife and I had a grand bus tour around Europe. We visited England, France, Germany, Spain and Portugal. My wife flied to Russia to see her relatives and to Germany to visit her friends, also she had been to a Czechoslovakian resort.

At Wright-Petterson I worked two years. Initially, according to the regulations, I was taken there for one year, but later my term was prolonged. I presented some of my elaborations at two international congresses and several national conferences, and published my papers in many leading international journals with Dr. Khot as a co-author.

As a matter of fact, I didn't happen to meet there any bright or prominent scientists. Most of employees in the lab were just average college and university graduates who got their positions due to laboratory extensions. My boss in the lab used to say that one third of us are active researchers; one third are neither fish nor fowl and one third are just mere living lumber. As I managed to see some time later, in the NASA and many other research institutions and scientific establishments there were quite the same ratio!

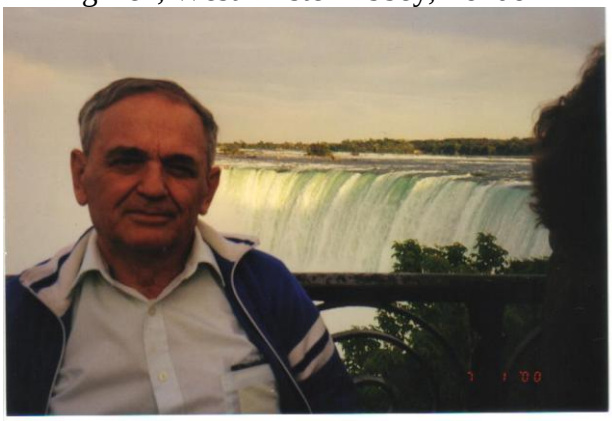
Some people may raise objections as the USA made significant scientific and hi-tech achievements. This is simply to explain: fat cats in the USA invest in science and prospective

technologies much, much more than any other country. It's like a roadgrader running across a snowy field and clearing the road for all the rest. The rest countries follow its way and keep to the beaten track using the ideas and technologies which had been tested and approved already, of course, in that case they spend much less money than the USA treading the initial trail. Again somebody may say that the USA doesn't share its technologies directly, for instance, it doesn't share their secret of the A-bomb. But I can say that there's no need to know everything in detail: a principle of this bomb is well known (enriched uranium critical mass), an uranium enrichment method is well known, too, but, what's more important a positive result is guaranteed as the A-bomb is developed and successfully tested already!

The author and his wife. Eiffel Tower, Paris.

Big Ben, Westminster Abbey, London

In Spain



The Niagara Falls, Canada

This method of development is simplest and cheapest especially for small and developing countries. Unfortunately, in this case a country is always far behind the others. This method is widely used by totalitarian regimes in order to produce more weapons and pull ahead in the arms race. The USSR, for instance, ballyhooing its peace-loving policy and dovish stance had produced a lot of offensive arms like A-bombs and H-bombs (three times as much as the USA and European countries). Working yet for the USSR defence industry I always wondered how stupid and narrow-minded of Americans it was to publish everywhere and widely spread their new technologies and results of their researches considering that the States were eager to disintegrate the Soviet Union and its economy, defence industry and everything.

I still remember an exhibition of new ideas and elaborations arranged by Boeing corporation at our lab. Boeing corporation suggested a project of vertical takeoff heavy payload subsonic aircraft with a wing turning vertical together with an engine. I envisaged the model's drawbacks at a glance: first – and obvious – was its high fuel consumption when taking off and landing, the second drawback was that it couldn't land on (and take off from) unpaved airfields. Air blasts generated by propellers would raise dust and pieces of rocks which would disable the engine right away.

I told to a project manager that I have some other scheme allowing the aircraft to take off vertically, fly safe for a long period of time and then land just like a helicopter, but as opposed to helicopters, this plane's speed wouldn't be so low, it could fly at a subsonic speed. The project manager did not try to arrange some kind of cooperation with me or sign up a nondisclosure agreement. All his efforts were aimed at finding out the idea my scheme itself.

It was in Dayton where I first visited an aviation festival – a great exhibition of aircrafts where sportsmen and paratroopers performed. My attention was attracted by the C-5 Galaxy, a huge military transport aircraft. Its maiden flight took place in 1968. Its takeoff weight was 381 metric tons, payload was 122 metric tons. 131 units have been built. One craft cost $ 168 million in 2010. Involuntarily I compared that aircraft with the AN-22 (especially as I was involved into its calculations). Its maiden flight was in February 1965. Its takeoff weight was 250 metric tons, payload was 80 metric tons. However, the AN-22 had a significant structural and practical advantage: the C-5 has its charging door at the front part, and the AN-22 – at the back. The AN-22 is able to drop by parachute any load including tanks, while the C-5 can be unloaded only after landing. I have no idea why American designers decided to implement such a silly solution. As to our designers they used a lot of innovations perfecting soft landing of heavy combat equipment onto unpaved fields (e.g. they used a shock-absorbing pneumatic platform and rocket braking before tanks hit the land).

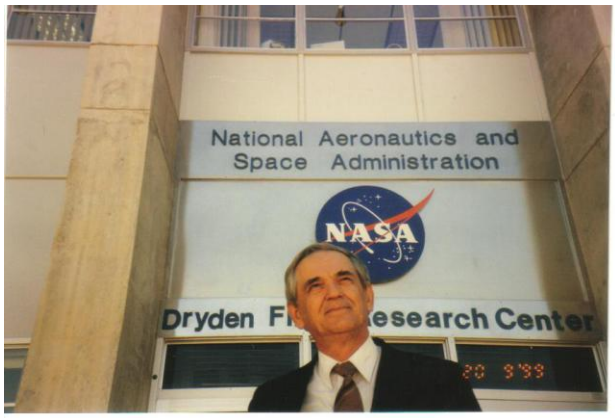
At the festival we were demonstrated a plane invisible for radars, advanced aerobatics, paratroopers performance, etc. Lots of people came from neighboring states to see the show. Generally speaking, the USAF and NASA try in every possible way to convince taxpayers that their money are not wasted. But, anyway, there are always pretty many people wanting to participate in demonstrations demanding to cut military spendings to zero.

NASA

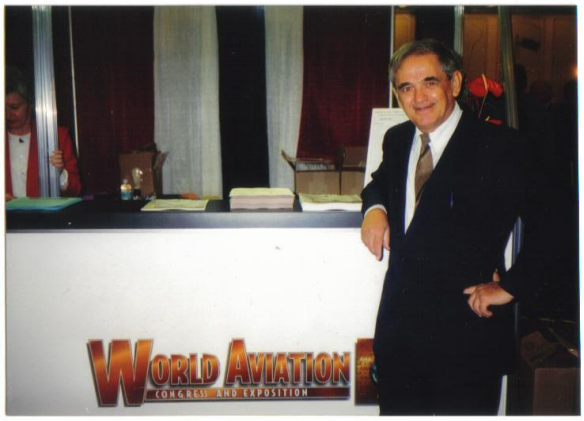
After my work at the USAF base in Wright-Peterson was over, I decided to offer NASA decisions of their announced current problems. The process appeared to be quite protracted: first I was supposed to write to project managers and disclose my innovations (after that I became useless to them); some of them made their announcement but did not disclose the fact that they

had no finance for additional positions, i.e. they simply hoped that applicants will disclose their ideas, innovations and methods of solutions for the given problems.

In about a year of such a correspondence the US AS National Research Council invited me to participate in an Aircraft Performance Improvement project. The manager of the project was Glenn Gilyard. I didn't like the theme of the project so far. I understood that one can hardly make any technological breakthrough on an already existing model. It is only possible to improve an aircraft performance by 1 – 2%. Glenn Gilyard said that if we improve the performance by 5% it will be a revolution!



NASA



Left: in NASA Right: at the World Aviation Congress and Exhibition

Anyway, NASA introduced almost all the aircraft innovations ever known, and the most of US planes are the best in the world. And NASA space achievements are out of reach of any other country. The name of the organization itself makes space and aviation engineers tremble. Of course, I was interested to work there and have a chance to look at it from inside. Especially as working in NASA I would have an opportunity to participate in some other collaborations and projects, in closed in-house seminars and discussions, share my ideas and opinions.

The fact that it is a completely civil organization attracted me, too, everybody knows that its slogan is *For the Benefit of All.* All its projects and results of researchers are openly published (which isn't very clever as they cost a lot of money). NASA was founded in 29 July, 1958 after the Soviet Union had developed on the quiet and launched the first satellite (sputnik); that launch initiated a great surge of interest in the world and was so much spoken about and the USA understood that it was a big mistake not to launch a satellite before especially as it had all the necessary facilities for that. Soon after a series of space programs (including Mercury, Gemini, Apollo, Skylab) had been developed in America. So the well-known Moon race started. The winner, as was expected, became Americans when in 20 July 1969 they set foot on the Moon.

NASA was supported completely by national budgetary financing, and it submitted to the US Vice-President directly. By that time it had about 18 000 employees.

All NASA photos and videos including those received from telescopes and interferometer are openly published as a benefit to society and may be copied.

Among the world space agencies NASA has the biggest budget. Since 1958 through 2008 NASA spent 810.5 billion dollars on different space programs. NASA budget for 2011 (and a budget year in the USA starts on October, 1) is supposed to be 19 billion dollars.

NASA has 8 big research centers and test facilities spread all over the country. They are Ames Research Center, Moffett Federal Airfield, Mountain View, California;
Dryden Flight Research Center, Edwards Air Force Base (dealing with Space Shuttle programs and aviation researchers), Los Angeles County, California; Langley Research Center, Hampton, Virginia; John H. Glenn Research Center at Lewis Field, Cleveland, Ohio and Glenn Research Center, Plum Brook Station, Sandusky, Ohio (test facility); Goddard Institute for Space Studies, New York City and Goddard Space Flight Center, Greenbelt, Maryland; Jet Propulsion Laboratory, California Institute of Technology, Pasadena, California; Lyndon B. Johnson Space Center, Houston, Texas (construction and launch facility); John F. Kennedy Space Center, Florida (construction and launch facility).

The most well-known and outstanding among the programs was the Apollo program with landing on the Moon surface. It set major milestones in human spaceflights. The Apollo 11 spacecraft reached the Moon on 20 July 1969 with Neil Armstrong and Buzz Aldrin on board while Michael Collins was orbiting above waiting for them. Five subsequent Apollo missions also landed astronauts on the Moon, the last in December 1972. In these six Apollo spaceflights twelve men stepped on the Moon. These missions returned a wealth of scientific data and 381.7 kilograms (842 lb) of lunar rocks. The astronauts were specially trained by geologist to be able to select the best and most suitable samples. Lunar experiments included soil mechanics, meteoroids, seismic, heat flow, lunar ranging, magnetic fields, and solar wind experiments.

One more NASA program of not less importance is the International Space Station (ISS) is an internationally developed research facility which is being assembled in Low Earth Orbit. On-orbit construction of the station began in 1998 when I still worked in NASA and it is scheduled to be completed by 2011, with operations continuing until at least 2015.

The ISS is operated as a joint project among NASA, the Russian Federal Space Agency, the Japan Aerospace Exploration Agency, the Canadian Space Agency, and the European Space Agency (ESA).

The station can be seen from the Earth with the naked eye, and still is the largest artificial satellite in the Earth orbit, with a mass larger than that of any previous space station. Its weight is about 370 metric tons, it is 51 m (167.3 ft) long, 109 m (357.6 ft) deep and 20 m (65,6 ft) high. Its volume is 837 m^3 (29 558.4 ft^3), flight altitude is 347 – 360 km (about 223 miles), speed - 7.7 km/sec. Usually the ISS crew consists of 6 members. The cost of the station project has been estimated by ESA as €100 billion over a course of 30 years, although cost estimates vary between 35 billion dollars and 160 billion dollars, making the ISS the most expensive object ever constructed.

The unmanned spacecrafts are also very interesting, they significantly enhanced our knowledge about space. The NASA unmanned programs include Mariner, Pioneer, Voyager, Viking, Helios, Magellan, Galileo, Hubble Space Telescope and a series of Mars programs.

The Voyager program is a series of NASA unmanned space missions that consisted of a pair of unmanned scientific probes, Voyager 1 and Voyager 2. They were launched in 1977 to take advantage of a favorable planetary alignment of the late 1970s. Although they were officially designated to study just Jupiter and Saturn, the two spacecrafts were able to continue their mission into the outer Solar system. Both of them have achieved escape velocity from the Solar system and will never return. Both missions have gathered large amounts of data about the gas giants of the solar system, of which little was previously known. On 12 November, 2010, the Voyager 1 was at a distance of 115.251 astronomical units (17.242 billion km, or 10.712 billion miles which is 111 times more than the distance between the Sun and the Earth), traveling away from both the Earth and the Sun at a speed of 17 km/s (11 mi/s), which corresponds to a greater specific orbital energy than any other space probe.

Some time later - on 19 January, 2006 - the New Horizons spacecraft was launched directly into an Earth-and-solar-escape trajectory. This is a NASA robotic spacecraft mission which is currently en route to the dwarf planet Pluto. It had an Earth-relative velocity of about 16.26 km/s or 58,536 km/h (10.1 mi/s or 36,370 mi/h) after its last engine shut down. Thus, it left Earth at the fastest launch speed ever recorded for a man-made object (although its specific orbital energy is less than that of the Voyager 1). The New Horizons flew by Jupiter on 28 February, 2007 and the Saturn's orbit on 8 June, 2008. It will arrive at Pluto on July 14, 2015 and then continue into the Kuiper belt. It is expected to be the first spacecraft to fly by and study Pluto and its moons, Charon, Nix, and Hydra. Once New Horizons leaves the Solar System, NASA may also approve flybys of one or more other Kuiper Belt Objects.

The Soviet Union was not able to send a mission to Jupiter or Saturn, so is Russia nowadays.

The Hubble Space Telescope (named after American astronomer Edwin Hubble) has greatly extended the frontiers of the studied Universe and allowed people to discover and observe thousands of new galaxies. It was carried into orbit by a space shuttle in April 1990. Although not the first space telescope, the Hubble is one of the largest and most versatile. Its weight is 11 tons. The HST was created with a relatively small budget of 2 billion dollars and has continued operation since 1990, delighting both scientists and the public.

The NASA series for exploring Mars is especially impressive. The Mars Global Surveyor (MGS) was designed and developed by NASA's Jet Propulsion Laboratory right when I was working for NASA; the spacecraft was launched in November 1996. It began the United States's

return to Mars after a 10-year absence. The Surveyor spacecraft used a series of high-resolution cameras to explore the surface of Mars during its mission, returning more than 240,000 images spanning portions of 4.8 Martian years, from September 1997 to November 2006. The Surveyor's cameras utilized 3 instruments: a narrow angle camera that took (black-and-white) high resolution images (usually 1.5 to 12 m per pixel) red and blue wide angle pictures for context (240 m per pixel) and daily global imaging (7.5 kilometres (4.7 mi) per pixel). The spacecraft completed its primary mission in January 2001 and was in its third extended mission phase when, on 2 November, 2006, the spacecraft failed to respond to commands. In January 2007 NASA officially ended the mission.

Another Mars project, the Mars Pathfinder (MESUR Pathfinder) later renamed the Carl Sagan Memorial Station, was launched on 4 December, 1996, just a month after the Mars Global Surveyor was launched. The Pathfinder required soft landing which is much more complicated than just making photos from the low orbit. The Mars Pathfinder mission was a "proof-of-concept" for various technologies, such as airbag-mediated touchdown and automated obstacle avoidance. Onboard the lander was a small rover called *Sojourner* that would execute many experiments on the Martian surface. It was the second project from NASA's Discovery Program, which promotes the use of low-cost spacecraft and frequent launches under the motto "cheaper, faster and better" promoted by the then administrator, Daniel Goldin.

There also was a project of a spacecraft which was supposed to penetrate deeply into the planet surface due to its high speed. Researchers were interested in water (i.e. ice) on Mars, and they hoped to find it under the upper soil layer of the planet poles. Unfortunately the experiment failed as the craft didn’t send signals from under the surface.

One more project being developed within the period of my work for NASA was that one connected with a little unmanned plane to be able fly above the Martian surface. In terms of engineering there's more than meets the eye: the atmosphere of Mars is very rarefied. Its density is 0.006 – 0.01 atm, and there’s no oxygen, it mostly consists of carbon dioxide. It means that the plane’s wing face should be rather big and oxygen for its engine should be carried onboard. Having entered the atmosphere the carrying spacecraft was supposed to open up and release the plane which was expected to fly above the planet surface several miles. I criticized that project as it seemed to be non-scientific but just populistic.

Even if that airplane would take pictures of the surface they hardly could be of any value for researchers as they would be made at random. The main idea of this project was to raise a ruckus and gain publicity: in 1905 the Wright brothers had their first flight and in 100 years (in 2005) the American plane was to fly above Mars!

I proposed a more technically and scientifically effective project involving a dozen of little balloons carrying minicameras and devices transmitting pictures and location coordinates to the satellite. Those balloons could float in atmosphere currents for months all around Mars and could take thousands of pictures (and not just pictures but close-ups) of different prospect areas in different seasons.

A part of Martian surface is covered with big canyons 7 – 10 km (about 32000 ft) deep, ruptures and ravines, so photos of their walls and layers would give inestimable information about geology, history minerals and natural resources of Mars.

But the project of that plane had been considered and approved long time before I made my proposal; ARES (NASA team) has been working on implication of this project for about 15 years, so the plane is supposed to be sent to Mars in 2011.

Glenn Gilayrd, my adviser, showed me a solar powered plane in a NASA hangar. It was a big and extremely light airplane sort of flying wing or tailless airplane. The plane had several electric motors with propellers; solar batteries meant for charging accumulators were attached to a vast upper side.

This plane had set many height and flight time records. Of course, this idea wasn't good for transport and passenger aircrafts as solar batteries power is not enough for these purposes. But it is more than suitable for spy and reconnaissance purposes, for aerial viewing and inspection when a plane is supposed to be high up in the air for a long period of time. The plane is still being improved.

Glenn usually invited me to see the Shuttle landing. Coming from the space Shuttles land on an airfield of the Dryden Research Center.

There's one more fascinating fact: Americans never made any secret of their flight tests. When new spacecrafts were being tested all the information including talks between a pilot and a control center were transmitted by cameras installed on escorting planes and spacecrafts and translated over the inner radio and TV. All the staff in NASA could observe a fly test of another brainchild. This looked really inspiring, challenging people to work hard and in good faith more than any material bonus.

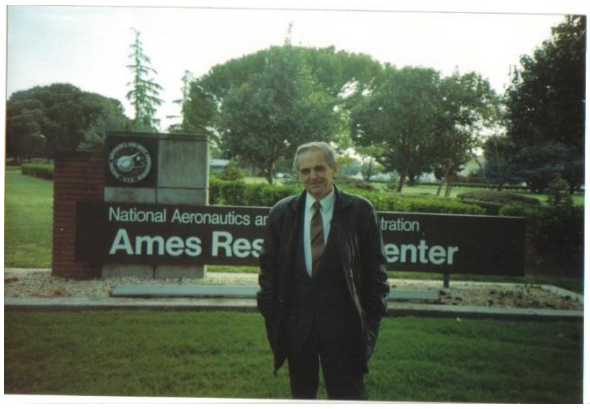
When I worked in the EDB (Experimental Design Bureau) of Antonov in the USSR, flight tests and maiden flights were never to be announced officially (of course, any radio broadcastings were out of the question). All we had was just a brief in-house report that a craft landed safely. Otherwise, in case the flight would have failed the enemy (including country citizens) could have found out about it! In the USSR space flights were to be announced only after a craft had been launched successfully.

As to the USA, as I told before, everything was (and still is) announced beforehand, so that thousands of tourists may come to the Cape Canaveral to watch the launch. Flights to the Moon, as you may remember, were also broadcast live and millions of people all over the world (except the USSR and China, of course) could watch and worry about astronauts. To some extent, the Communist leaders of the SU were right not to disclose all the launches in a row, as the very first satellite had been launched at the fifth try while all the previous four Moon rocket tests failed.

Glen took me to the NASA airfield where we watched a big transport airplane stuffed with various sensors and measuring devices to test different flight programs. Also I visited the other NASA Research Center (ARC) in California. It is a very big research center. I was astonished at their enormous wind tunnel which is really huge; a small airplane could be easily placed inside of it. It takes a huge amount of electricity so they switch it on only at nighttime and the entire county has to be deenergized when it is on. As against this tunnel, the wind tunnels in Soviet CAHI (Central Aero-Hydrodynamic Institute in v. Zhukovsky, Moscow region) looked like baby toys.

In times of my work for DFRC NASA started collaborating with Russia concerning aviation and space exploration. In those times Americans were testing and improving an engine for a hypersonic airplane (usual hypersonic speed is 5 – 15 *M* or 1,5 – 5 thousand m/s). The thing was Russia had plenty of old rockets and missiles which were to be utilized. The USA and Russia began collaborating with the view of saving the recourses, as the USA needed to test and

improve their hypersonic engine. To be tested properly it had to gain hypersonic speed, and this could be done only by means of rockets. As to Russia, their engineers got an access to test results and the design itself; Russia greatly facilitated that project as America saved a lot of money due to that collaboration.



NASA. Ames Research Center (ARC)

NASA. Kennedy Research Center

NASA. Kennedy Research Center

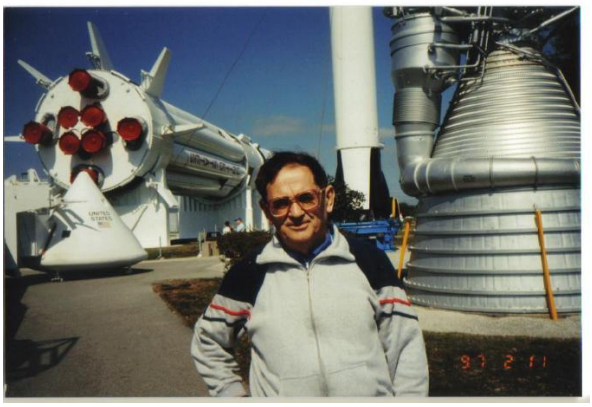
On board of the air carrier.Left: The Stealth plane

NASA. Kennedy Research Center

NASA. Kennedy Research Center

I was asked to translate letters to and from Russia. If such collaboration were permanent both sides would benefit from it: as we've seen already, lots of recourses would be saved and, besides, the progress of science and astronautics would be definitely facilitated. Unfortunately, this cooperation was temporary just when Eltsin was in office. Later the "secrecy mania" seized Russia again. You may not believe but it can be proved by the fact that pretty many people were

NASA. Kennedy Research Center.



NASA. Kennedy Research Center.

NASA. Kennedy Research Center. The Saturn V

NASA. Dryden Research Center

American missiles.

Engine F1, the most powerful rocket one camera engine in the world

indicted on spying charges, and besides, some Russian scientists were imprisoned (again!) due to FSB (just a new name of KGB) efforts. Although there is nothing to keep secret in current Russia but its backwardness. Also I was responsible for translating correspondence between DFRC and CAHI which wanted to propose to NASA the obtained data of stratosphere turbulence. Americans didn't trust Russians and decided not to buy those results.

Working in NASA I was delighted with a policy of openness, publicity and advertisements of their achievements. On weekends NASA research centers are often visited by schoolchildren and tourists. Lots of excursions are arranged to show all of them what does a center look like from inside and tell them about new achievements, elaborations and projects. The visitors can see there old and new aircrafts, have a lunch and buy souvenirs with an emblem of NASA.

At stunt flights organized right when I was at NASA lots of airplanes were presented including combat ones. Crowds of people came to see the performance where takeoffs, landings and flying had been demonstrated; to crown it all, even a bomb explosion had been imitated.

Couple of time I happened to read that there were also aviation performances arranged in the USSR in Tushino, Moscow. Unfortunately, I didn't happen to visit either of them so I am not able to compare. But I was told that at those performances only sporting airplanes and, at best, paratroop drops were demonstrated. Modern combat aircrafts usually fly high up in the sky at the May parades in Moscow, but those planes have never been displayed for public.

NASA Disadvantages

You may wonder what exactly did I dislike about NASA. Though, to tell the truth, this is a common custom of most of organizations in the world dealing with research planning and new project development. When I was a freshmen in NASA I was naively believing that I would be able to present my ideas and designs, have them discussed and then, possibly, included into NASA plans. When I came with that to a head of laboratory he said that they are responsible for flight tests of existing models and advised me to send my suggestions to some other NASA research centers working on that sort of topics. So I sent something but never received any reply. Moreover, on the NASA web site I found the address where such ideas and suggestions as mine were to be sent. I sent them a big package containing about 10 suggestions with detailed substantiation, of course, I didn't forget about writing down my e-mail and URLs of my projects and papers which relied to each of the suggestions. I even enclosed a stamped postcard with my address so that they would be able to inform me about receiving the package. Again, never to be replied. I think that the site developers had an idea of such a correspondence section and in the beginning some person perhaps was assigned to deal with this correspondence, but later that guy quitted or something and now all the incoming mail is just thrown away. But if this person is still in place and is snowed under with mail he or she definitely should see who is writing – just an amateur or a professional researcher, and anyway the receipt should be acknowledged.

Frankly speaking the question who and according to what criteria happen to get their suggestions projects rammed in NASA is still unanswered to me. It is beyond the scope of an average man. I believe these are big companies which are lobbying research grants, and, perhaps, generously kickbacking NASA bosses. Not without reason one of the former NASA boss became a member of a Directorate in big company with a salary three times as much as a wage he had in NASA.

When I tried to send my proposals to DARPA, I got a weird reply that my proposals were not in their plans(?!). Of course they were not! I did send them to DARPA to be considered, and – if DARPA finds them interesting – to be included into the organization's plans.

Also I thought I'd gift my numerous inventions to the state. I could not patent my inventions myself as a fee for a scrutiny of applications was too high for my salary. But there is a patent department in DFRS. I prepared several applications for aviation inventions made during my working hours and directly relating to my current researches, and brought them to the patent department to be sent. But an official in the department refused to take them saying that only inventions implemented by DFRC can be sent to be considered, but DFRC does not deal with aircraft design.

NASA Institute of Advanced Concepts (NIAC)

I got added evidence that other organizations try hard to leech onto the NASA budget. For example, USRA organized NIAC (NASA Institute of Advanced Concepts). Mr. Cassanova, its Director, made out of NIAC a good copious feedbox for his friends. For 8 years they had been financed by NASA – they received several tens of million dollars per year! 90% of money had been shared among those "friends" in the guise of fictitious researchers (http://NASA-NIAC.narod.ru , http://auditing-science.narod.ru). Cassanova organized a phony Scientific Council to make fictitious thesis reviewing. Four (!) times Mr. Cassanova granted one and more million dollars to each of his friends Howe S., Colozza A., Nock K., Cash W., Hoffman R., Winglee R.; the other his friends Dubowsky S., Kammash N., LaPointe M., Rice E., Slough J., Newman D. three times received one and more million dollars per person.

Most of their final "research" reports are nothing just a babbling which doesn't' contain any more or less substantial investigation results, instead there are lots of mistakes confirming poor skills and subject knowledge of the authors.

I can give a couple of examples:

1) S. ***Howe*** with his Antimatter Sail and Storage. A grant for that "invention" was more than $75 000 + $40,000 a modest fee for Mr. Cassanova (http://www.niac.usra.edu/files/studies/final_report/740Howe.pdf).

First the final report included only the Einstein formula $E=Mc^2$ which anyone may find in a secondary school textbook. After it had been criticized in press the author added some elementary graphs. The old idea of antimatter in the electrostatic storage is mistaken. It is unstable there. One milligram of antimatter costs billions of dollars. Mr. Howe even has no idea about what nuclear reaction occur under annihilation. Each page of that useless 10-page report cost taxpayers 10 thousand dollars. Cassanova and his company made a great fuss in media that they were about to create an antimatter engine, and Mr. Cassanova forked out a fair amount of money (about $100 000) to Howe once again.

2) ***Dave Newman*** had been a member of Cassanova's Scientific Council for pretty a long time and had quite successfully been covering Cassanova's criminal activities. So she was well situated to be rewarded with at least a million dollars! She had promised to develop some space biosuit. Well, Mz. Newman took an artist to draw a series a pictures nicely illustrating a method of sprinkling liquid plastic over a human for this human to be able to get to the outer space. But you hardly find a list of ingredients of this wonderful plastic and description of experiments in the "research" paper of Mz. Newman. This lady doesn't know even the basics of elementary physics, there is no wonder she couldn't surmise that wearing such a suit a person wouldn't be able to respire.

Nevertheless, Mr. Cassanova considers and appreciates this "stroke of genius" and forks her out one more million of dollars (not forgetting about himself, of course) (http://www.niac.usra.edu/files/library/meetings/annual/nov03/833Newman.pdf)

3) ***Omidi*** with his Cocoon Vehicle (better say, Electrostatic Sail) (http://www.niac.usra.edu/files/studies/final_report/636Omidi.pdf).

Mr. Cassanova was generous to grant him 75,000.00 dollars + $40.000 to grant himself for his trouble. Omidi's research is nothing but a complete mistake. He seems to have no idea that there is low-density plasma (solar wind) in space which would immediately discharge his balloon. Besides such an enormous charge would just blast it up despite the balloon would be made of some super-future-stuff; and its charging and maintenance would exceed any existing energy source capacity.

I could continue the list, as Mr. Cassanova gave away more than 150 grants. Once I suggested that he should publish the applications first so that they could be read and discussed in public, I also suggested that he should give grants AFTER a project is FULFILLED, so that it could be easily seen that the project is (or isn't) working and applicable. But that did not suit to Mr. Cassanova as in this case everybody would see that did he spend the state money for.

As you may read at http://NASA-NIAC.narod.ru , http://auditing-science.narod.ru , there is a very simple sufficient condition of detecting a scientific nature and content of any project and paper so that any person who is not related to science and researches may access it: any scientific work must contain full and comprehensive data allowing any researcher to trace and reproduce the project results. If there is a new formula (equation), then there should be its detailed derivation; if there are calculations, there should be given all the equations and source data, if there is a new statement there should be its sufficient substantiation.

In science nothing is treated as gospel, and even if something is stated by Newton and Einstein it isn't a reason to accept it just on faith.

But 90% of NIAC's applications don't comply with that criterion which means that they are useless and not applicable.

I'd advice to add one more requirement: an application which claims to be a scientific project or paper should have a short Conclusion (Summary) clearly pointing out a novelty of an invention or design obtained in the course of that research.

Personnel Selection in NASA.

In NASA I faced one more side of corruption which, unfortunately, is a common feature of any bureaucrat system. I am going to tell about personnel selection in NASA. Once NASA announced vacancies of project managers and engineers. I knew one guy with a Doctor's degree and a huge experience of research work, an author of many outstanding papers and inventions in aviation and astronautics decided to claim for a vacancy of a project manager. The reply was – not selected from among other candidates. Then he decided to claim for a vacancy of an engineer. The reply was – not enough points. He was terribly surprised and embarrassed because he was one of leading specialists in the world in his field of science. After he filed a complaint to the Congress about the matter, the Congress arranged collecting information about that "claims for a vacancy". They found out that the position of research project manager was given to a pilot who never wrote any paper or made any invention, and the position of engineer was given to a college graduate (Bachelor's degree) without any research experience, to say nothing of papers or inventions! I.e. in NASA people are just wangled into a good job.

An average person may not believe, as NASA performs such a great achievements! Don't forget – NASA itself doesn't design, develop or build anything. Its employees are just responsible to monitor and supervise projects financed by NASA, but all the designs and construction is made by contracting companies. NASA has a huge budget and constantly makes effective advertising of its achievements. But if we divide NASA's achievements by its budget we'll see that this rate is quite lower than that one of other similar agencies.

Mediators.

The other feature which I was surprised with in the USA is the amount of people wanting to become mediators. E.g. in the USA according to a law any research labs can attract outstanding scientists to participate in their projects financed by the state. This is a good field for USRA to meddle in; it makes a contract with state labs so that to select researchers for the labs (of course for a good fee, like it was with NIAC). The labs know (they have to!) the names of specialists in their field, and moreover, those specialists send their applications to the corresponding labs. The labs personnel dept seem to hold the age, but… no such luck! USRA also wants to push their protégées forward a bit of a wangle! To illustrate the situation better just imagine that you come to the shop to buy some stuff you need. Imagine you came and have already found the thing, the color and the size suit you… but here comes a mediator who starts to dictate you what you are suppose to buy and what price to pay and how much you are to pay for his "service". You may say it's bullshit. Agree. But this bullshit does exist in the USA.

I know one rather well-known researcher who wanted to get a vacancy in a state lab. USRA replied him that he is suitable for this job but they cannot hire him right away and but he could apply again in a year (which definitely meant that they wanted to push forward somebody else). So for a year that man was carrying out experiments and making researches publishing his results, and in a year he applied again. The answer was – not enough points. Agree, sounds weird especially after he had published his important results and considering he was quite suitable a year ago.

If they invite bids for contracts when some work is to be fulfilled, very often it if quite formal. This sort of contract is usually wangled to a company of a friend. And usually that company has neither required specialists, nor equipment. I have a friend, who being an experienced programmer was hired to work on a very big and complicated computer program. He was in debts so he agreed to make this work just for peanuts. Later he found out that his wage for that work was chicken feed compared to what the company earned, as the contract included only that very program.

I'd like to give one more example though it does not relate to NASA but it once again illustrates how important it us to become a mediator or to have somebody to push you forward otherwise there isn't a chance for you to get a contract!

Kindergartens. Low-income citizens in the USA receive medical service in two ways: Medicare and Medicaid. Medicare is meant for those who are above 65 and have no savings. Medicaid is meant for "poor" who have some income or welfare less than $780 per person or $1200 per married couple. According to Medicare a person is to cover of about 20% for his medical service and medicines. According to Medicaid a person is not supposed to pay anything. The "poor" enjoy both Medicare and Medicaid. As a result, the "poor" (generally they are "anti-Semitism refugees" from the former USSR) who never worked in the USA, appear to be much better off than so many of American pensioners who had been working for their Motherland for years.

Of course retired people receive their pension (which is some more than welfare payments for the "poor") but they have to pay for everything including apartment rents, food, medicine. And they seem to be in worse conditions than those refugees or American "poor"; but it's a topic which does not relate to this book.

The thing is that between the state and welfare receivers various mediators meddle. Those mediators conclude contracts with the government that they arrange "rehabilitation centers" for poor people. Welfare receivers call these centers as "kindergartens". They are driven there for free, they are entertained there, have lunch and excursions; also they are "treated" there by different redundant epithems, and then the state receives enormous bills. But when American tax payers try to rebel those mediators together with private doctors and hospitals set up a great howl in media that there are just so many "poor sick people who need badly their medical and other help". America spends on this almost the same amount of money as on defense. It sound weird and crazy but currently people in the USA got not interested at all in working and making their future pension. An army of co-called "poor" is rapidly increasing. The USA is getting into huge debts which sooner or later will drive it to a total collapse.

When the time of my contract with NASA was over my fellow-workers prepared for me a keepsake - a big poster with the Shuttle where each of them subscribed warm wishes.

Eglin Military Base and Research Laboratory, Florida

In January 2001 the National Research Council of the USA sent me to the US Air Force Research Laboratory in a small town of Fort Walton Beach, Florida. This base called Eglin and the town were located right at the Gulf of Mexico. The town was not very big but quite clean, quiet and cozy as most of small towns in America. There was an excellent beach with lots of good hotels and a dolphinarium.

Eglin seems to be the biggest American military base although its research labs are smaller than, for instance, in Dayton. Working in Eglin was much more exciting and challenging than in Wright-Petterson. The lab of Wright was mostly performing theoretical investigations, while the lab of Eglin was concentrated mostly on designing and improving aircraft armament.

My first scientific advisor at the lab was Dr. James Cloutier; he got retired a year later and his place was taken by David Jeffcoat. A department where I worked had a wonderful research team of Robert Murphey, Dr. Henry Pfister, Peter Zepfel and others. The department was headed by Robert Sierakovsky and our military head was Colonel Michail Ruff. If some occasion called for celebration my colleagues liked to arrange parties and did it quite often. The base was located right by the seashore.

I was surprised to know that soldier serving at the base lived in separate apartments. Living in Fort Walton Beach I used to visit some of my colleagues. As a rule they had houses with large lawns. There was no public transportation, so everybody got about in cars. People had no troubles with parking as there were large parking places at the base territory.

Near the base was a wonderful aviation museum. It wasn't far from my house and I often visited it. There were both old and new American airplanes including supersonic fighters and strategic bombers. Inside the museum there was a mockup of the first American A-bomb. Also there were the Soviet matchless fighters MIG (most well-known fighters in the world) which the USSR supplied to Arabs and Arabs re-sold some samples to the USA to disassemble and examine. After a breakup of the USSR lots of Soviet combat aircrafts were bought from the

“people's democracy” countries; some of those planes were taken to the base to be used in sham battles between Soviet and American fighters.

By the way there was one more military base in the nearest town, also there was a good naval air museum which I liked to visit, too. Fort Walton Beach reminded me Dayton especially on the Independence day when fireworks were let off. The difference was that fireworks in Fort Walton were arranged on the seaside which made a fantastic effect!

Combat airplanes

Strategic missiles

When I came to work at Eglin the base labs were developing self-guided glide bombs. With such bombs onboard a plane running over the target does not need to get into a dangerous air defense sector. A bomb is to be released high up in the air 60-130 km (about 80 miles) before the sight is reached; the bomb reaches the target itself.

Also the lab was busy with very useful and interesting elaborations of unmanned reconnaissance and strike aircrafts which showed themselves to be excellent combat aerial vehicles during Afghanistan and Iran missions. I join the opinion that the future belongs to unmanned combat aircrafts. Their flight characteristics are much better than of manned airplanes (including that it does not have to carry a pilot with his heavy life support equipment and armor protection). An unmanned aircraft is much lighter so the plane could be designed so that to operate under overloads unacceptable for a human thus drastically enhancing its

maneuverability. And no loss of lives! Besides it is pretty much expensive to train a skilled military pilot. Free press in countries of democracy often raises a great howl when a military man is killed somewhere in Afghanistan and a he is sent home in a box with a letter of President's condolence.

I am more than sure that technically developed countries will sooner or later start to produce combat robots to fight instead of humans. Those who have more perfect and better developed technologies and more robots will win.

In the laboratory I was responsible for developing artificial intelligence for unmanned combat aircrafts. In particular, strategy and tactics of air fights between a group of unmanned planes and a group of manned ones. Unmanned planes always overtook even in sham fights or when air battles were simulated on a computer. Their artificial intelligence seized up and assessed the situation much quicker and better and chose more optimal maneuvers and tactics than human pilots. In any case they could just ram more expensive enemy aircrafts.

Another important and exciting project I was working on in the lab was connected with micro aircrafts. Those elaborations were started by DARPA. Its goal was development of micro airplane for a single operator or a small military unit to launch and use for reconnaissance. It is very important in waging modern local wars when small combat units have to perform missions against terrorists in Afghanistan or Iraq.

However DARPA made all those collaborations according to the established rules and prescriptions for designing big planes what showed how narrow-minded the project managers were. They gave out lots of grants to different universities and those universities overloaded them with heaps of equations describing flights of flies, bumblebees and birds, microhelicopters and microplanes. Some of them even tried to create aircraft models which couldn't fly. Aviation journals published plenty of their pictures. Lots of ballyhoo all over the world. Picturesque stories about artificial bees which in the nearest future would fly into your house through a ventlight and a secret intelligence service would be able to find out about all your intimacies. About $200 million had been spent on the project. With a null practical result.

For further development the project had been passed to the USAF research laboratories. They also followed the way of DARPA concluding contracts with different universities and giving grants. One more portion of $200 million of state money had been wasted. I happened to present at one meeting where those who worked on the contracts presented their reports. There I heard nothing but lots of recondite discourses, there were even a mutual brainstorm for professors (again with a null result). Only one contract researcher brought a huge primitive aircraft model of about 1.5 m ! (5 ft) wingspan. It was a flying one, and seemed to be made by some beginner aircraft modeller. But when I suggested that we should go and launch it so that it would show as at least what was going on at the back of our building, they refused. I guess it was because that little airplane couldn't fly; it wasn't radio-controlled and couldn't show us the site. I wondered why they could not understand a simple truth that a person operating that model over the radio could direct the little plane correctly only in case he could see what direction it was flying. It means that except reconnaissance cameras there should be a special video camera directed forward for the operator to identify the plane's position in relation to horizon (as seen by a pilot).

I tried to propose a simple and cheap way to solve this problem considering that producing micro-aircrafts (aircraft models or radio-controlled toy planes) drastically differs from producing brand new big aircrafts which cost millions of dollars. And any skilled aircrafts modeller could

match the necessary parameters experimentally by practical consideration. Besides, details for aircrafts models are available at a next-door shop selling radio components. If NASA or any other organization could ever be so generous to promise, say, $100 thousand to those who would design a micro-airplane enable to show the site 1-2 km (about a mile) away, then aircraft modelers would easily and quickly create the required aircraft without the whole megillah and recondite theories. But when I tried to propose this I was “misunderstood”. Now I see, why: they have spent a half a billion on development of a micro scout plane, but here comes some Soviet emigrant and suggests that it could be done just for $100 thousand! Of course they didn’t want to worsen themselves!

Anyway time showed that I appeared to be right. A couple of years later in New York I saw aircraft modelers with little simple radio controlled airplanes and helicopters with electrical motors on batteries. The aircrafts perfectly did higher aerobatics including loops; some advanced ones could show the site below via video camera. They were made by average toy plants which never received a penny from the USAF or DARPA.

Working in Eglin I proposed, investigated and scientifically substantiated one more method of prolonged observations of a site (e.g. an American base in Afghanistan or Iraq), a battlefield or a place of nature disaster. By flare pistol a kite or balloon (made of some transparent stuff) on bearings was to be launched; equipped with a micro-camera it could hang above a site for weeks. Though I included in my report Heads of the base as my co-authors, the project had not been developed as nobody wanted to push for this invention to be financed and implemented.

Also when I worked in Eglin I happened to see the tests of the biggest superbomb GBU-43/B or Massive Ordnance Air Blast (MOAB), colloquially known as the Mother Of All Bombs. It was a conventional bomb developed in 2003 for the United States military. It was stuffed with regular explosives and was meant for destroying bunker, underground shelters and caves of terrorists in Afghanistan. Its weight was 10.3 tons, diameter - 1.03 m (3.4 ft), it was 9.17 m (30 ft) long with the effective casualty radius of about 150 m (492 ft). In a city this sort of bomb could destroy 9 blocks at a time. It was tested on a polygon tens miles away from the base, but we could hear it explode.

Only 15 bombs like that have been manufactured. One of them had been taken to the Persian Gulf but wasn’t used.

Later Russia also created a superbomb (FOAB) which was called the Farther of All Bombs”. It weighted 7.1 tons, less than American. It had different operating principles and was meant for destroying (burning) of manpower and major conflagrations. It contained liquid fuel to be pulverized by explosion within a range of 300 m (984 ft) and conflagrated. It caused a strong flare and lots of hot carbon dioxide. All living beings which didn’t get burned would die of suffocation due to a lack of oxygen, that’s why this bomb was called the thermobaric vacuum bomb.

Its operating principle had been known long before the American bomb was created. If such a bomb were developed in the USA there probably would be lots of fuss about inhumanity towards man. There were many protest actions against MOAB testing in the USA. Russian leaders declared that their bomb is four times more powerful that GBU-43/B. The Russian bomb was tested on 11 September, 2007 four years after American.

On the National Aviation Day a great exhibition and stunt flying were arranged at the base territory. As usual, lots of people drove from the town and outskirts to enjoy the show. The

visitors were given earplugs to protect their ears from a shock wave. As always there were plenty of exhibits including up-to-date elaborations and lots of advanced aerobatics.

As opposed to Wright-Peterson and NASA traditions, at Eglin there was a custom of arranging air-raid alarm drills. Thanks gods, they weren't unexpected, we were informed beforehand about the events. According to an alarm action instruction we had to leave the building and run (of course nobody did, everybody walked) to a certain place. There we usually loitered away for about an hour having a chat or something and then went back to our working places. As to entrance it was restricted, especially in the mornings. To get inside one had to have a pass. At the same time one could easily leave the base without being stopped or asked by a guard, and besides, any employee with a permanent pass could let in anybody else. A password to a computer and databases was given by a security dept and was supposed to be changed every two months. You could misenter your password only once. If you misentered the password again you computer would be blocked for 30 min. An access to a secret work was granted only to those employees who really were supposed to have it to carry out their researches, but not to anyone by default. A FBI questionnaire was really huge, even longer than in the KGB. It usually took (and I guess still does) several months to get a permission for an access. I found it pretty funny that a guy responsible for our security was wearing a t-shirt with a print "Agent KGB".

There were too much excessive formalities to a wonder, as well. Cloutier, my scientific advisor worked at the base for 20 years. When the next day after getting retired he came to the base to collect his personal things he was provided a special person to escort him to his former working place. According to the inner regulations a person with a one-day pass cannot get about the base without an escorting security man. On the other hand, on some holiday the employees' family members were freely let into the base territory to have fun and relax on the beach, have a ride on a motor boat and enjoy tasty generous refreshments offered by the base. Just to be on the safe side my advisor asked my wife to get in his car, but when we were entering the base our driver just showed his pass, all the rest people in the car were not requested to show any documents. As to going out, one could easily leave the base without showing any passes.

There was a good canteen in the base; I was pleased by the prices there which were pretty low. For $5 you could have a plentiful lunch, meat, fruit, ice cream, juices, etc.

I liked that working in the lab I had pretty much spare time to devote it to elaboration of things which I consider prospective and useful for the USAF.

Once all of us were called to gather in front of the base headquarters front door so that our collective picture could be taken. I still keep this photo to remind me about happy days of my work for the US Air Force and American science.

Once upon a time when some occasion called for celebration (it was either the Independence day or Thanksgiving) Colonel Michail Ruff, our military head invited the laboratory employees to come to his house for a party. I was curious to know about the way Big Brass lives and I asked to put me on the invitation list. My wife didn't join me as she was afraid of loosing her job in New York and decided not to beg off work that time.

Ruff lived in a military campus in a cottage provided by the base. At the gateway I was asked who I was going to visit, a security man called to the Colonel and then let me to the territory. The cottage of Ruff was quite the same as most of cottages where other employees lived. In California I happened to visit one captain married to a lady who came from the former Soviet Union. A military base provided the couple with a 5-room cottage with a garage. When he said that a house with 5 rooms is too large for two people the reply was that they had standard houses in the base.

It appeared that only two people came to visit the colonel that day – his orderly and me. I was pleased to see Ruff's two beautiful daughters. We spend a splendid evening, had a wonderful dinner, listened to some music and, by the way, found to have something in common – when we were little kids both of us dreamed to become astronauts.

Appendix 1.

Spurt in the Future

(some ideas, suggestions, elaborations and researches of the author)

BREAKTHROUGH TO THE FUTURE

INTRODUCTION

Below you will find some plainly expounded ideas and elaborations of the author. All these ideas elaborated personally by the author. Every day lots of suggestions and ideas are advanced and published, but most of them are quite primitive, the majority of them comes from ignorants, from those who are unable not just develop a design theory for these ideas, but estimate them in terms of physical laws, financial viability, cost and efficiency. Some of those ideas strike with their primitivism, disregard for basic physical laws and absence of elementary estimating calculations. As an example we can recall a weird idea to take and bring together all the comets of our Solar system and cosmic dust to make some sort of a solid spherical shell around the Sun out of that stuff and then send people there to settle down and live. One more example which attracted much front-page coverage in Russia and was widely debated in the mass media concerns traveling to alien universes using the Earth as a spacecraft, for that purpose nuclear charges were supposed to be exploded at the Earth's poles.

As to me, I don't think it is correct to consider authors of these suggestions as the authors of *IDEAS* in general. Sitting on a couch at home it's very easy to invent different wild ideas; quite another thing is to develop a theory, perform basic calculations or assessments, because for that you need profound knowledge in physics, mathematics, design and engineering, strength of materials, economy and other subjects, i.e. have a Higher technical education Certificate. But ideally you need to be a specialist in the required field of science. Of course when you come to detailed researches you may face some obstacles which were not seen in the very beginning. But if there is any need in some stuff with some improbable properties which are not discovered yet – these properties have to be pointed out. Any research or study must include a description of innovations within a framework of the stated problem.

Below you will find plainly expounded revolutionary ideas of the author proved by scientific theoretical researchers, calculations, papers and publications. The author considers it possible to tell in this book only about those ideas which are in current times realizable and feasible in most cases; besides implementations of some of these ideas may drastically change life of cities, regions and even mankind. The ideas are subdivided into two categories: Earth and Space.

TRANSFORMATIONS ON EARTH

ABSTRACT

Problems and opportunities of the human race existence have been a vital point and burning issue for many generations. We know of many schools, theories and teachings about the future of all mankind, disasters and calamities – beginning with the Malthusian theory about the Earth

overpopulation and finishing with modern theories of global warming (cooling) and decrease of the average IQ level. The main trouble of all these theories is that they are composed by those whose knowledge is far from physical and natural sciences; they do not consider exponential progress of science, engineering and technology which develop so rapidly that just can "knock down" all the theories based on static technology and society.

In this book the author tries to estimate some of the developed general technologies (currently realizable) and their effect upon the country, human life and a role of weapons of the future.

PREFACE

This short outline gives a popular description of currently (in 1 - 5 yrs) realizable technologies. Of course, the brief description will generate lots of questions, so detailed descriptions of these new ideas, methods, techniques and calculations are given in URLs and references below. Unfortunately most of them are in English which is indicative of Russian science lag.

Where possible, the estimation of projects and technologies is given according to the efficiency criterion: K = a ratio of productivity (efficiency, cost) of a new technology to the same value of an old technology.

IMMORTALITY OF HUMAN AND ELECTRONIC CIVILIZATION [25], [4-5].

It is also quite interesting to have a look at the far distant future of mankind and have a look at the process which has been started just recently but in 15 – 25 years will be on a full scale to be rapidly developed by the end of the current century. I am speaking about artificial intelligence, immortality of human and new electronic civilization (E- civilization).

In [4] the author indicates that if all the life of a person were recorded (nowadays it is possible) and then the obtained data were entered into chips of an artificial brain, in this case this person would live after his or her physical death eternally in a new electronic form. This creature would be more advantaged than a regular 'protein' human being. This electronic man would be able to record into his brain chips terabytes of knowledge in a fraction of a second, he could be extremely strong, easily travel in space and across the ocean floor, change his appearance at his will to become a lollapalooza, have an 'out-of-body' travel to other planets just by recording the contents of his brain into a body rented in a required world or universe. This man would be indestructible as he could have a copy of his brain contents in a special data warehouse to be able to resurrect at a preset moment of time in his previous or updated mode. He wouldn't need food, dwelling place, air and clean environment. He could multiply as quickly as he would want by just duplicating himself, etc, etc.

It is logic that such an electronic civilization would be so rapidly developing, that organic people just would not be able to compete with it, and prefer to get transferred to electronic creatures (E-creatures) before their physical body death.

Method of recording and saving of everything a person has seen and heard doesn't require big startup investments, so the process can be started right nowadays which will allow enterprising people earn billions of dollars [5]. There are portable devices for recording all the information seen and heard by a person.

Life recorder

These devices may also be upgraded in order to record a person's mood and conditions and, in case something is wrong, call an ambulance.

COUNTRY AND PLANET BEAUTIFICATION

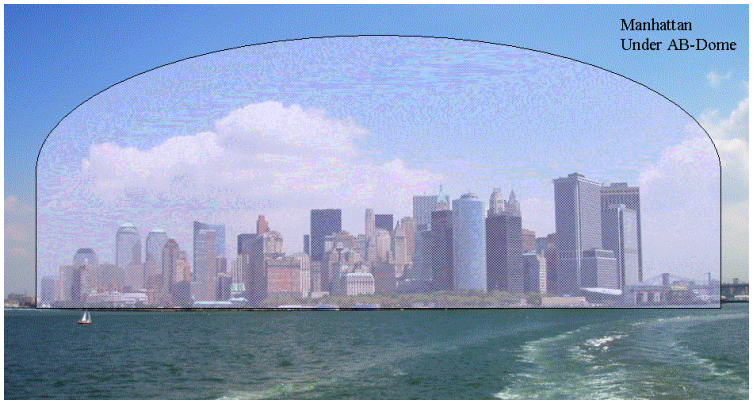
1. *A cheap method of turning of cold regions and deserts into subtropics*

In ([1], Part B, Ch.4) the author describes an inexpensive method of turning of Polar regions or deserts into subtropics. The implementation is simple: a required area is to be covered with a pneumatically stabilized climate-regulating transparent membrane hemisphere shell with a diameter 2,000 to 2,200 m and a height of about 150-250 m. The covered area would turn into a hothouse with a closed water cycle and a warm climate which can be easily controlled (eternal summer with 15-35^{o}C, with warm and dry daytime and moderate rain at night). Within this dome an air layer of 150-250 m is heated by the Sun so that this temperature is enough to maintain summer mode even during winter time at northern latitude. The paper also presents a patch-cover method to facilitate the discharge of rainwater and snow from the dome. The dome shell cost is about 0.1÷0.3 US$/m^2. You may want to compare this cost with a cost of one square meter in an urban house or apartment. People will save much more monies than if they invest in building construction.

Housing cost and central heating expenditures are definitely overbalanced by the amount of money people can save living under the dome. Remember that housing cost is always lower in warm regions of the world.

This method is also able to enrich extended lands (deserts or pergelisol). Note that the territory of Russia is the largest in the world. Too bad if it misses a chance to become the richest country in the world.

The author suggests that Gorky Park in Moscow (100 ha) should be covered with a non-woven (film) dome (an approximate cost is 1 million dollars) to give an opportunity to Muscovites and visitors enjoy exotic evergreen gardens and have a swim in warm pools while it's severely cold outside. It will turn the park into one of the wonders of the world.



A double-layer dome will turn the area of Manhattan to subtropics; it will protect the city from external attacks by tactical nuclear warheads, chemical and biological weapons

A construction of the Gorky Park dome will take a half a year and pay for itself in a month (you may wonder why didn't I write about it to Yuriy Luzhkov (former mayor of Moscow). I did! But nobody replied). The main thing is that constructing this dome they could master the technology of dome coverings and later cover Moscow and other cities in the European part of the country and Siberia. According to the research papers, this sort of domes is able to protect an area from acid rains, toxic gas and external attacks by chemical and biological weapons, tactical nuclear warheads (in case a shell is risen 4 ÷ 10 km high) ([2], Part 1, Ch.6). Its efficiency coefficient is several thousands.

The similar inflated constructions are designed for space hotels, Moon, Mars, asteroids. Quite interesting protective meshes are designed to protect military bases from shelling, bombardment or artillery fire of terrorists. They are also useful for a regular battlefront as they are meant for disorienting an enemy and prevent distant and aimed fire, while soldiers under the mesh could destroy the enemy without any obstruction.

Also the author presents a very inexpensive inflated mountain system protecting large areas from cold winds to make the local temperature $3\text{-}5^0$ C higher and bringing generous precipitations to arid regions ([2] Part 2, Ch.1).

The author designed methods of local and global climate control ([1] Part B, Ch.3) and proposes waterless irrigation methods, methods of floating cities construction for useful area extension.

2. *Gas Lines* ([13],[1], Part B, Ch.6)

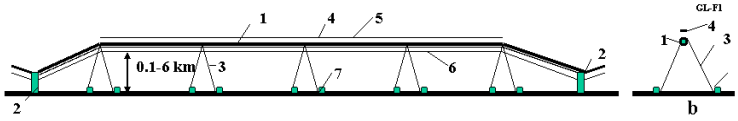
It's a well-known fact that the main income of the RF national budget is brought by Gazprom, however, expenditures are really huge. One kilometer of a gas line costs about $3 ÷ 5 million. Countries through which territories the gas pipeline is laid require transaction payments, steal gas, blackmail both a supplier and a customer (gas wars with Belorussia, Ukraine and Kazakhstan), besides, a gas line construction process takes about 4 – 7 years.

The author proposes a method of gas pipeline construction which costs ten times less and it takes just several months. Besides in this case gas lines are laid across neutral waters.

As far as methane is a lighter-than-air gas then the gas line is to be laid high up in the air using a thin film as a pipe shell. The gas pressure shouldn't be high, but as a film pipe diameter is 5 – 10 m, a capacity of this pipeline is quite comparable to a regular gas line. The advantages of this method are obvious. The film tube is attached to a supplier station. A ship having a coil of pipe onboard moves across the sea to a destination point (consumer). The pipe is gradually uncoiled and simultaneously filled with methane, lifts in the air and is cabled to anchors. The cost of the film pipe is many times cheaper than thick-walled pipes made of steel meant for high pressure of 100 and more atm.

Note that transmission of gas in a pipe of a big diameter under lower pressure requires much less energy than pressuring this gas to 100 atm and repressing in each 100 meters. A lift force of one cubic meter of methane equals approximately 0.5 kg. The lightweight film flexible pipeline can be located in the Earth-atmosphere at high altitude and poses no threat to airplanes or the local environment. The authors also suggest using the lift force to attach a monorail to the pipe line for cheap delivery of a various payloads (coal or oil in small tank containers) over long distances quicker than by plane.

The efficiency coefficient is about 100.



Notations: 1 – pipeline, 2 – compressor, 3 – cable, 4 – support wing, 5 – night light, load monorail, 7 – winch.

Low-cost aerial gas pipeline

3. ***Energe*** ([14], [1], Part B, Ch.2)

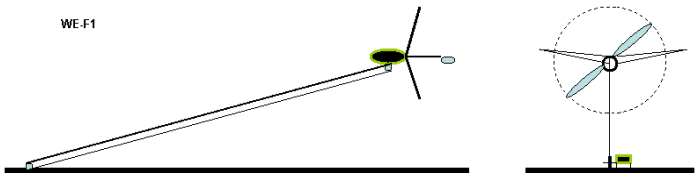
A problem of cheap pollution-free renewable energy is vital for industrial nations. Nuclear or atomic energy is much too dangerous – everybody remember the disaster in Chernobyl, Ukraine. This energy is not cheaper than energy produced for example by thermal power plants, but nuclear waste disposal still remains a vital question. Thermonuclear or fusion energy will be produced approximately in about 10 – 20 years and it will be more expensive than energy of fossil fuel power plants.

Energy of wind-powered plants is not cheaper than energy produced by thermal power plants, and, besides, winds are not under man's control and blow not the way we desire. Wind turbines are noisy and dangerous for birds.

The author proposes a low-cost and effective way to solve the problem of energy. The thing is that there are constant air currents in the upper atmosphere which are very strong, aloft wind velocity is 3 – 5 times more than wind velocity down here. The capacity of a wind turbine (propeller) depends on the cube of wind velocity. It means that the capacity of this propeller in the upper atmosphere will be 27 – 125 more than in the lower atmosphere. A reader may think that building of such tall (many kilometers) towers to support this propeller will cost a fortune. But in the presented case we do not need any tower – the propeller is supported by wings. The cost of this wind power plant is quite low and its productive capacity is high.

The main innovation of the offered project is in transferring the energy in Earth surface.

This method would provide the country with lots of energy and save millions of tons of oil and gas necessary to produce transparent film to cover domes for cold regions (the method was described above). The efficiency coefficient is several tens.



Usage of aloft wind

4. Transportation ([3], Part 2, Ch.1)

Any country needs low-cost and speedy transportation. Currently aircraft, cars, trucks, trains, and ships are used to move payloads from one place to another. However construction of railroads or highways is very expensive and may take years. This method is expensive and requires good highway systems and expensive vehicles, which limits the feasibility of freight delivering. Aircrafts use expensive fuel and have high capital costs.

The author offers a new, revolutionary method and installations for cheaper delivery of payloads and people from one place to another, accelerating vehicles to a desired velocity, and

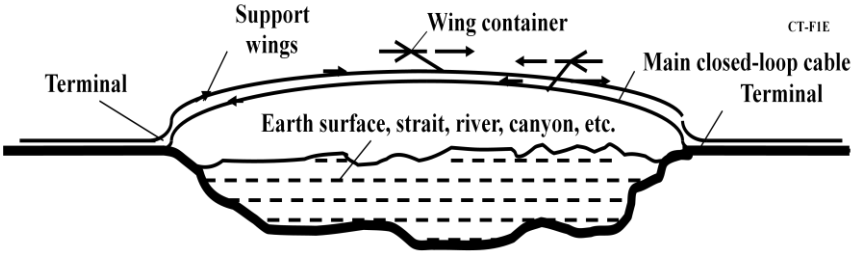
cheaper vehicles which do not require their own engine. The method uses a closed-loop artificial fiber cable path (which is 4-6 times stronger than steel) with the propulsion system located on the ground. The cable is supported in the air by a special wing support devices and payloads are and people are transported in winged containers and winged unmanned cabins which automatically attach to (detach from) the cable. You may compare a cost of one kilometer of a cable ($50) to one kilometer of a highway ($30 million), railroad ($1 ÷ 1.5 million), bridge ($100 million) or tunnel ($150 million).

The proposed system is unique with no references found for similar systems in the literature or patents.

At the present time, all vehicles (cars, trucks, buses, trains, aircraft, airships, dirigibles, sea ships) use engines located on the vehicle. Their engines require expensive fuel (for example, gasoline). The vehicle must carry both the engine and the fuel, which reduces the payload capacity. For example, for aircraft flying long distances the fuel weight may reach 30 to 40% of the takeoff weight, and the engine weight is about 10% of the full weight of the vehicle. As a result the payload is decreased to only 10–20% of the vehicle takeoff weight.

The proposed method maximizes the payload (no engine, no fuel in the vehicle), allows use of the cheapest form of energy (such as liquid fuel, natural gas, wind, or hydro-power stations) and cheaper vehicles. Unmanned winged cabins are ten times cheaper than airplanes, they don't need engines and high-paid pilots, and the system can work on electricity or other low-cost energy. It does not need expensive airports (according to statistics of 1998 the cost of Hong Kong airport was $20 million), too.

Such aerial high-speed cableways will allow people to connect shores of the Gibraltar, Vladivostok with Japan, Korea, China and America, Moscow with Vladivostok and capitals of Europe.



Cable airline or aerial bridge

TECHNOLOGY OF THE FUTURE [1-3],[27].

I am not going to tell about regular technologies of the future as far as they are too much said about all around. It is obvious that electronics and nanotechnology will make their next spurt in the nearest few years. It's interesting that due to the fact that the Russian government started to develop a project of nanotechnology budgeting, everybody around began to call 'nanotechnology' almost everything including cloths production.

Electronics is going to play a leading part in production of intelligent robo-solders and in human immortality.

1. ***Exploring Outer Space*** [12]

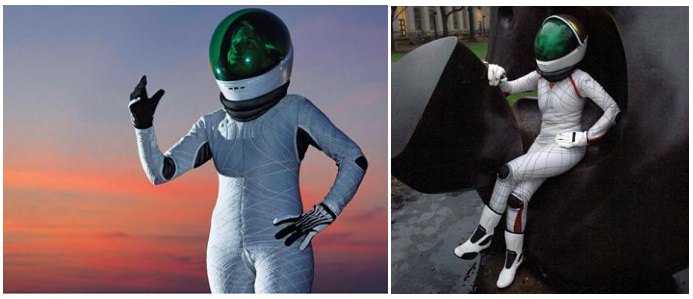
There are lots of new ideas connected with low-cost launches and space exploration [1 - 3]. I'd like to mention one testable idea which will allow people not just explore outer space but solve some earth problems. This is an idea of visiting space without a special spacesuit. Current

spacesuit designs are very complex and expensive “machines for living” (25M US$). Why do humans need the special spacesuit in outer space, or on atmosphere-less bodies of the Solar System? There is only one reason – we need oxygen to breathe. Human evolution in the Earth-biosphere has created lungs that aerate our blood with oxygen and delete carbon dioxide. However, in a particularly harsh environment, we can do it more easily by artificial apparatus. For example, surgeons when they perform surgery on heart or lungs connect the patient to the apparatus “Heart-lung machine”, temporarily stopping the patient’s respiration and hear-beat. A man can visit outer space without a spacesuit - a method can work if - with the use of painless suture needles – the person’s blood is passed through artificial "lungs", just as is done in hospitals today. We can design a small device that will aerate people’s blood with oxygen infusion and extract carbon dioxide. To make offshoots from main lungs arteries to this device, we would turn on/off the artificial breathing at anytime and to be in vacuum (asteroid or planet without atmosphere) or bad or poisonous atmosphere, underwater a long time. We can add into the blood all appropriate nutrition and, thusly, be without normal eating food for a long period of time.

In outer space we can be in conventional spacesuit defending the wearer from harmful solar light. Some type of girdle-like total body wrapping is required to keep persons in outer space from expanding explosively.

This idea may be checked with animal experiments in the Earth. We use the current "Heart-Lung" medical apparatus and put an animal under a glass bell and remove the air inside the bell.

The life possible in outer space without spacesuit will be easier, comfortable and entirely safe [12].



Visit in Outer Space without a Spacesuit [12].

FUTURE WEAPONS

There are lots of generously financed researches concerning nuclear, laser missile and antimissile weapons. These kinds of weapons are pretty much expensive so only very rich countries or countries with totalitarian regimes can afford them due to a poverty of the bulk of the population. I stop on one simple idea.

1. ***Low-cost Method of Shielding a City from Nuclear Warheads, Protection from Small Rockets, Missiles, Projectiles and Mortar Shells, Chemical and Biological weapons*** ([2] Ch.6, 8).

In the above section devoted to country and planet beautification you read about the transparent dome covering a city to provide constant summer weather. The excessive pressure of 0.01 atm within the dome makes the covering film shell able to be armored with pocket-retained stones that destroy (by collision or detonation) incoming rockets, planes, missiles and other projectiles. Such a dome would even protect the city in case of a third-party nuclear war

involving temporary poisoning of the Earth atmosphere by radioactive dust. The building of the offered dome is easy; the film spreads on the ground, the fan engines turn on and the cover rises to the needed altitude and is supported there by a small internal overpressure. In case it is raised higher it may protect from nuclear weapon attack as well.

The problem is considered in ([2] Ch.6, 8). Rocks and stones cost nothing.

2. ***Unmanned intelligent combat aircrafts*** [23].

Intelligent unmanned aircrafts will be widely used in wars of the future. Currently they are used by the US Army in Afghanistan not only for reconnoitering but also to attack preset targets. Unmanned planes are smaller than manned (as there is no human pilot with his life-support system), much cheaper and lighter; their flight characteristics are better (no overload limits, no armor to protect a pilot).

The main problem connected with intelligent unmanned aircrafts is a strategy of their behavior in different situations. In the US Air Force and NASA labs I was working on optimal tactics of their behavior in air fights between a group of unmanned planes and a group of manned ones. Unmanned planes always overtook even in fights with the most skilled and experienced pilots. Their artificial intelligence seized up and assessed the situation much quicker and better and chose more optimal maneuvers and tactics than human pilots. In any case they could just ram more expensive enemy aircrafts, so unmanned never lost the battle.

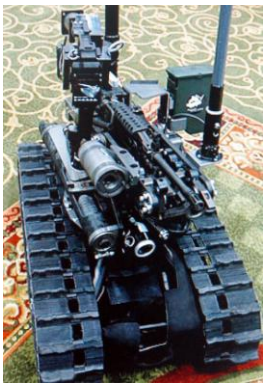
Now I'm not sure how are these things now in Russia, but from my experience of working for the USAF and NASA I may conclude that the leaders in the US Department of Defense and NASA are not overblessed with intelligence. For instance, DARPA initiated the project which goal was development of micro airplane for a single operator or a small military unit to launch and use for reconnaissance. However DARPA made all those collaborations according to the established rules and prescriptions for designing big planes what showed how narrow-minded the project managers were. They gave out lots of grants to different universities and those universities sent them back heaps of equations describing flapping motion, flights of birds, microhelicopter rotors and microplanes. About $200 million had been spent on the project. With a null practical result.

I tried to propose a simple and cheap way to solve this problem considering that producing micro-aircrafts (aircraft models or radio-controlled toy planes) drastically differs from producing brand new big aircrafts which cost millions of dollars. And any skilled aircrafts modeler could match the necessary parameters experimentally by practical consideration. Besides, details for aircrafts models are available at a next-door shop selling radio components. If NASA or any other organization could ever be so generous to promise, say, $100 thousand to those who would design a micro-airplane enable to show the site 1-2 km (about a mile) away, then aircraft modelers would easily and quickly create the required aircraft without the whole megillah and recondite theories. Time showed that I appeared to be right. A couple of years later in New York I saw aircraft modelers with little simple radio controlled airplanes and helicopters with electrical motors on batteries. The aircrafts perfectly did higher aerobatics including loops; some advanced ones could show the site below via video camera. They were made by average toy plants which never received any support from the USAF or DARPA.

3. ***Intelligent robots – leaping soldiers*** [23].

Development of small winged combat machines I consider very prospective. First I offered this idea to NASA within a framework of Mars exploration. But in those times NASA was

fussing over an idea to build a small aircraft to fly over the Mars surface in honour of the Wright brothers flight celebration. After having wasted several millions of dollars the idea faded away altogether.


Predator - unmanned aircraft. There are more than 4,000 US military robots on the ground in Iraq.

As to small leaping combat machines, they can operate in any conditions, in any place – in water or on land; they can choose a place to land, can move fast across an extended rugged terrain, camouflage in water. Canyons, precipices, rocks, plants, snow, sand, rivers are not obstacles for them as they move around leaping. They can not only carry out reconnaissance, but carry guns and grenades. It is very important to develop a tactics of interaction between intelligent robots in a group, as in many cases they will be sent to missions in groups.

POSSIBLE GLOBAL CATASTROPHES AND DISASTERS [26].

I am not going to talk about well-known forecasts of global warming or cooling, overpopulation, people IQ decrease or fall of an asteroid. These forecasts do not consider that our knowledge of Nature exponentially grows.

Climate warming or cooling depends on solar activity cycles and does not depend on limitations of carbon dioxide emission into the atmosphere (even if all the plants emitting dioxide were closed). The way out of the problem is to cover all big cities (ideally – all the continents) using a method of film domes described above and start living in an environment with the artificially controlled climate.

The surplus of population will be easy to feed as all the cold regions and deserts will turn into fruitful greenhouses. The fact of IQ decrease isn't so true, thus it's doesn't matter in our case, especially as in the nearest future artificial intelligence will excel human brain tenfold and another – electronic – civilization will emerge. A fact of collision with a big asteroid has not been observed for millions of years, so such a probability in future is negligibly small.

However, there is a real danger which still remains unseen. I happen to research this problem several years ago. I mean an artificial explosion of the Sun. Everybody knows that 90% of the Sun is hydrogen. Hydrogen is a fuel for thermonuclear reaction (which enables the Sun to produce heat). The calculations show that if an H-bomb is exploded deep inside the Sun, there under certain conditions can be initiated a high-temperature dense shock wave which generates thermonuclear reaction maintaining this wave and itself; this will end up with the Sun explosion burning all the planets in the Solar system.

Sun explosion and the Earth right before being burnt.

Note that the Sun is a dense gas and a rocket falling on it moves with a speed of 618 km/s under the solar gravitation. In case the rocket got burnt in 10 minutes a thermonuclear charge would explode 360 000 km (223 693,6 mi) deep inside the Sun (remember the Sun radius is 700 000 km (434 959,8 mi)) where temperature and density are very high, and the shock wave would make them million times higher. In order co come to the Sun as closer as possible the carrier rocket could be equipped with a mirror system reflecting almost all the radiation [3. Ch.12, A3]. A primer in the thermonuclear bomb (H-bomb) is a regular A-bomb.

According to statistics in the nearest 10 – 15 years about 40 countries including those with totalitarian regimes are able to develop nuclear weapon and rockets to carry it. Who can guarantee that a dying leader-dictator of one of those states would not want to make the Earth population accompany him in his grave?

FEMTOTECHNOLOGY AND CONVERTING OF MATTER TO ENERGY BY AB-GENERATOR [6, 7]

Everybody knows that matter consists of molecules. And everybody heard about nanotechnologies. At present the term 'nanotechnology' is well known – in its' ideal form, the flawless and completely controlled design of conventional molecular matter from molecules or atoms.

Molecules consist of atoms. Atoms consist of a nucleus and a cloud of electrons. The atom nucleus consists of protons and neutrons. Their dimensions are sized in the femtometer range, (10^{-15} m, millions of times less smaller than the nanometer scale). The author offers to create materials of future out of nuclei and their components. This is what he calls 'femtotechnology'.

It is also well-known that the forces inside a nucleus are million times more than interaction forces between atoms and molecules. Out of this we may conclude that materials made out of these particles will possess characteristics which never occurred to modern science yet.

This 'AB-matter' is fantastically durable and strong, million times more rigid and solid than nanotubes to say nothing of regular materials. 'AB-Matter' has extraordinary properties (tensile strength, stiffness, hardness, critical temperature, superconductivity, supertransparency, etc.), which are up to millions of times better than corresponding properties of conventional molecular matter. The author shows concepts of design for aircraft, ships, transportation, thermonuclear

reactors, constructions, and so on from nuclear matter. These vehicles will have unbelievable possibilities (e.g., invisibility, ghost-like penetration through any walls and armour, protection from nuclear bomb explosions and any radiation flux, etc.)

Femtotechnologies will give people opportunities to make threads and nets out of atomic nuclei and their components. Out of these threads and nets fabrics and composite materials can be done. These materials, in their turn are to be used in production of different stuff for different industries including mechanical engineering and machine building, aviation and spaceship building. Nowadays we have quite durable materials but unique technologies must perform unique properties.

Some forms of AB-matter have zero heat conductivity, enormous dielectric and breakdown strength, absolute reflectivity, zero friction, etc.

Femtotechnologies will allow people to create inexhaustible storages and sources of energy. A car with a two-gram flywheel instead of an accumulator can run through all its service life without recharging. An aircraft with the same sort of 100-gram flywheel also can fly through all its service life without refueling.

A spacecraft equipped with a femtounit can fly thousand times faster and travel to the farthest planets. The thinnest film made out of AB-matter is able to protect from radiation and nuclear explosions.

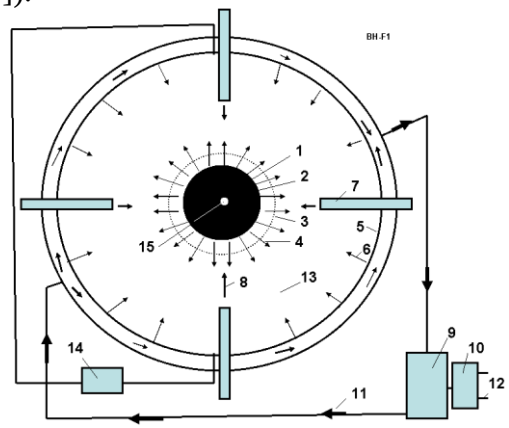
Besides, a variety of microchips (billion time less than current microcircuities) can be produced for different purposes. Femtotechnologies allow people to start making electronic intelligent creatures which intellect equals with men's but their dimensions are less than microbes'.

People may think this is a fantasy. But fifteen years ago most people and many scientists thought – nanotechnology is fantasy. Now many groups and industrial labs, even startups, spend hundreds of millions of dollars for development of nanotechnological-range products (precise chemistry, patterned atoms, catalysts, metamaterials, etc) and we have nanotubes and other achievements beginning to come out of the pipeline in prospect. Nanotubes are stronger than steel by a hundred times. These technologies allow us to create brand new materials. They may be with one-layer or multi-layer bonds, nanotubes, grapheme, spiral, zigzag and others. This is possible because molecular forces are not spherical and act within an atom diameter range. And nucleus forces are not spherical, too, and also act within a proton\neutron diameter range. So why not bind elements in threads, tubes, planes? By adding elements to each other the way we want we get a new material which does not exist in Nature!

Note that nano idea (new matter construction out of separate molecules was first offered in 1959 by Richard Feynman, a physicist and had been laughed at for about 40 years. But in recent years nanotechnologies got a real spurt. We know of some examples of nuclear matter. It exists in Nature at neutron stars. We just have to recreate it in Earth conditions and shape it the way we need.

One more research made by the author concerns a new nuclear generator converting any matter to nuclear energy in accordance with the Einstein equation $E = mc^2$ where m is an energy mass, c – a velocity of light, E - energy. The method is based upon tapping the energy potential of a Micro Black Hole (MBH). Many scientists expect the Large Hadron Collider at CERN will produce one MBH every second. In case the tests of the suggested method pass successfully the AB-Generator can produce gigantic energy outputs and should be cheaper than a conventional electric station by a factor of hundreds of times.

The author offers a new AB-generator converting any matter into nuclear energy according to the Einstein equation $E=mc^2$ (see [7]).



Offered **nuclear-vacuum energy AB- Generator**. *Notations*: 1- Micro Black Hole (MBH), 2 - event horizon (Schwarzschild radius), 3 - photon sphere, 4 – black hole radiation, 5 – radiation reflector, antenna and heater (cover sphere), 6 – back (reflected) radiation from radiation reflector 5, 7 – fuel (plasma, protons, electrons, ions, matter) gun (focusing accelerator), 8 – matter injected to MBH (fuel for Micro Black hole), 9 – heat engine (for example, gas, vapor turbine), 10 – electric generator connected to heat engine 9, 11 – coolant (heat transfer agent to the heat machine 9), 12 – electric line, 13 – internal vacuum, 14 – customer of electricity from antenna 5, 15 – singularity.

NON-ROCKET SPACE LAUNCH AND FLIGHT [1-20]

At present, rockets are traditionally used for launches and flights into space. Herein the author offers several new low-cost methods [1]-[20]. Let us consider a series of papers devoted to absolutely new revolutionary methods of space launch and flight [1-3].

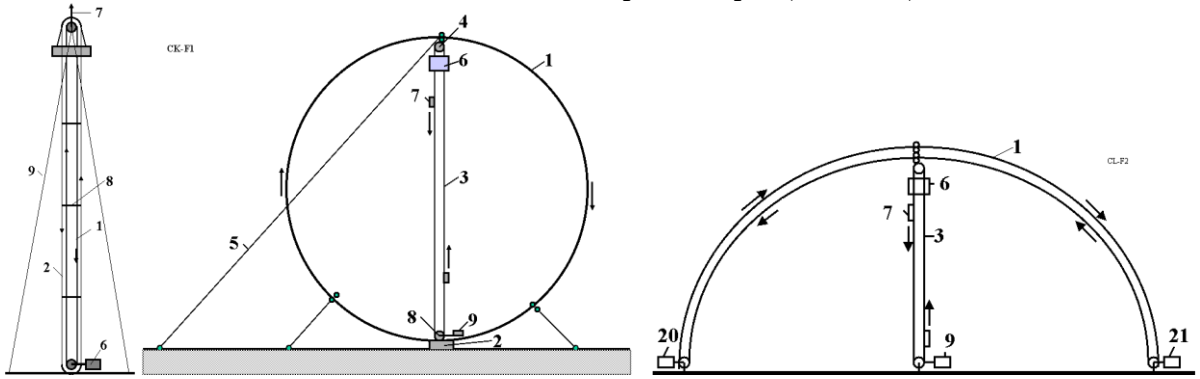
These include:

The cable accelerator,
Earth–Moon or Earth–Mars non-rocket transport system,
circle launcher and space keeper,
space elevator transport system,
space towers,
kinetic towers,
the gas-tube method,
sling rotary method,
asteroid employment,
electromagnetic accelerator,
tether system,
Sun and magnetic sails,
solar wind sail,
radioisotope sail,
electrostatic space sail,
laser beam,
kinetic anti-gravitator (repulsitor),
multi-reflective beam propulsion system,
Electrostatic levitation,
AB- levitation,
Space Magnetic Sail. (See: Some Common Mistakes; and the Electrostatic Magsail),

The High Speed Solar Sail,
Transfer of Electricity into Outer Space,
Thermonuclear Propulsion,
Electrostatic AB ramjet space propulsion,
Beam space propulsion,
New Method of Atmospheric Reentry,
Solid Space Tower,
Electrostatic Linear Engine and Cable Space Launcher,
Simplest AB-Thermonuclear Space Propulsion and Electric Generator,
Optimal Electrostatic Space Tower,
AB Levitrons and their Application to Earth's low-orbit Motionless Satellites,
AB Electronic Tubes with Quasi-Superconductivity at Room Temperature,
Wireless transfer of electricity from continent to continent and unlimited electricity storage.

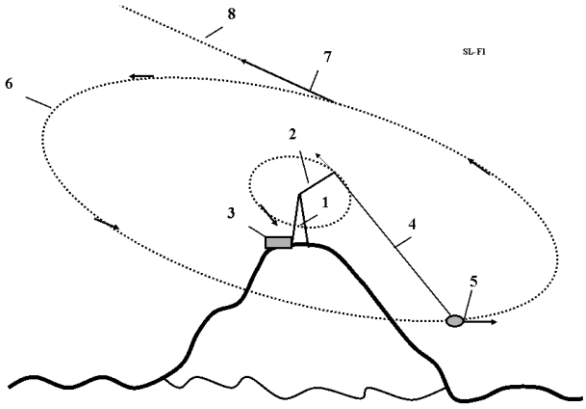
Samples of space kinetic towers and space propulsion systems

Circle Launcher and Space keeper ([3], Ch.3).

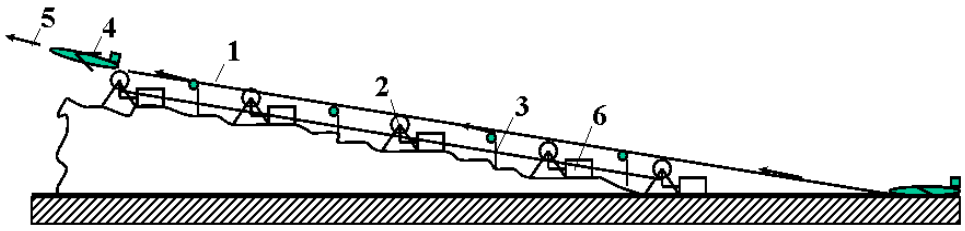


Left: Circle launcher and space station keeper. Notations are: 1 – cable circle, 2 – main engine, 3 – transport system, 4 – top roller, 5 – additional cable, 6 – the load (space station), 7 – mobile cabin, 8 – lower roller, 9 – engine of the transport system.

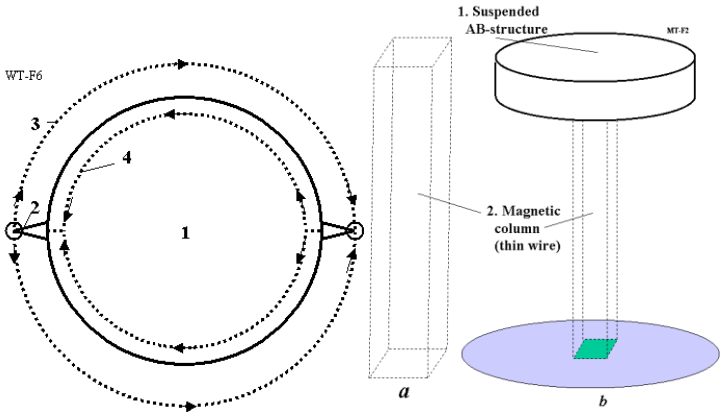
Right: Semi-circle launcher (space station keeper) and transport system. Notation is the same with lest side.



Centrifugal (Sling rotary) space launcher ([2], Ch.10). Launcher locates on mountain. Notations: 1 – tower, 2 – lever or disk, 3 – engine, 4 – sling, 5 – space apparatus (s.a.), 6 – circular launch trajectory, 7 – point of disconnection, 8 – direction of launch,



A fixed slope small launcher for projectiles. ([3], Ch.2). . Notation: 1 – cable contains 3 parts: main part, outlet part, and directive part; 2 – power drive station; 3 – cable support columns; 4 – winged space apparatus (space ship, missile, probe, projectile and so on); 5 – trajectory of space apparatus; 6 – engine.



Left. Trans-continental wireless electric power transmission and Electricity storage ([30], [1], Ch.6). Using the ionosphere as a conducting medium for transferring a huge electric energy between continents and as a large capacity storage 'battery' for electric energy. *Notations*: 1 - Earth, 2 - space towers about 100 km of height, 3 - conducting E layer of Earth's ionosphere, 4 - back connection through Earth.
Right. Suspended levitating structures (AB Levitrons) and application to low-orbit motionless satellites [17].

Magnetic Space Launchers

Superconductivuty Hypersonic Accelerator [20],[21].

Magnetic Suspended AB-Structures and Motionless Satellites and Space Stations [17];

High-altitude tower for Extraction of Freshwater and Energy from the Atmosphere ([1] Part B, Ch.8]).

Suppression of Forest Fire without Water [29];

The author offers lots of different low-cost space towers. Among them pneumatic (inflated), electrostatic, kinetic, cable, magnet, towers of hard materials and others [22].

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Appendix 2.

REFLECTIONS ABOUT LIFE, MANKIND AND SCIENCE

People's destinies and life experience are valuable in case they are considered by next generations and these young generations make conclusions out of them. Unfortunately, each new generation makes one and the same mistakes and triggers a backflash. Below I give some conclusions which are inevitable from my life experience and studies of reality and other people's experience. These conclusions are very bitter, they will surely cause wild rage, hatred and curses of so-called patriots, shock and condemnations of infantile liberalists and many honest respectable people living in their own world of illusions (where I lived long time ago).

These conclusions displease me myself. But being a man of science I have to think objectively and make independent conclusions.

Conclusion 1. This Conclusion is trivial. Everyone would agree with it deep in one's heart (though may start yell about immoral behaviour of the author). So: ***every person acts pro domo sua or for the benefit of him- or herself.*** Or, speaking primitively, for the benefit of his or her existence.

This is a human nature (as every living being on the Earth nature) and arises from the struggle for existence of an individual of his family. There is nothing bad or wrong about it. Otherwise human wouldn't overtake, becoming the strongest living thing in the living world. On this basis the world leaders, dictators and tyrants made people do what they (leaders) considered right and beneficial for themselves by threatening, deceits and promises. I mean wars, terror, violations, abuse, murder, etc. To pursue their purpose they subdivided the society into classes, casts, groups and fleece ones and maintain others.

Leading positions are taken, as a rule, by the most cunning, unprincipled, unscrupulous, dishonest and impudent people, especially in totalitarian states.

Only single individuals can resist and oppose this general tendency due to their inner convictions or spirituality. However only this sort of people makes revolutions to occur and they are usually the first to die.

The only way out of the situation (as I see it), I believe, is a transfer of all mankind into E-creatures and creation of E-society [10,23,24]; its code of behavior and morality needs to be designed and developed in details in order the current situation not to remain and worsen.

Conclusion 2. ***The most people is a herd of sheep***, easily manipulated by insidious rulers and other dodgers by means of propaganda (what a yell they raise about wisdom of people!). Fight for their rights is a sign of infantile liberalism or just stupidity. Have you ever seen old newsreels of 1930s and 40s shot in Nazi Germany about highly-civilized nation worshiping Hitler, its leader and is ready to kiss his feet.

Just watch documentaries about the burial of Stalin when poor miserable people (not cottoning on to their terrible poverty and misery) - one third of which died in labor camps and prisons – elbow their way through a crowd to see a last glimpse of the dearest Leader. Even nowadays many people go into a fit of crying about the Great Commander-in Chief (with two grades of a village parochial school and war losses 10:1) and the greatest Victory over Germany (which is 10 times less in territory and three times in population). Germany would hardly attack the USSR (as a fly cannot swallow an elephant), if it didn't knew that Stalin had created giant offensive armaments (the number of his tanks, aircrafts, ordnance was 3 - 5 times more than Hitler's); Germany had been scared to death and decided to be the first to attack in order to have a chance not to be defeated.

The Soviet human rights activists sacrificed their lives to make the crucial contribution into a downfall of the Communist regime and gaining a relative freedom of information, into the struggle for the right to leave the country and deliverance of the Soviet people and the whole world from the nuclear holocaust threat (for the USSR had produced nuclear weapons 3 times as much as all the rest countries altogether and was openly declaring about its ambitions to spread the Communist regime worldwide).

By the end of the Soviet period the average monthly wage in the SU was about 140 rubles (a black market exchange rate of those times was $14 to 140 rubles); you may compare this with a current situation in Russia - the average monthly wage in 2010 was $300 – 400, in Moscow - $1000 and more.

The current leaders came to power mostly due to efforts of civil rights activists and dissidents struggling for democratic elections.

And what's the gratitude? Were these strugglers acknowledged or appreciated? Victimizations of Alexander Podrabinek (a civil rights activist, journalist and Chief editor of *PRIMA-News*) for his article supporting the "Antisovetskaya Kebab House" signboard showed that the majority of people don't care at all, especially when young people belonging to the pro-Kremlin movement "Nashi" ("Our Friends") supported by the Kremlin were persecuting the journalist.

Human rights activists deprived of their citizenship and compelled to leave the country now are supposed to receive an official compensation for the backbreaking work in labor camps ($2.5 per month but not more than $300 for 25 years) – all these things also showed the leaders of the ex-USSR in their true colors. Having ascended to power even Stalin and Hitler granted privileges to their supporters and recompensed for their injuries and deprivations. Having come to power due to other people struggling for democracy, the "pure Russian democrats" just kicked out those who had suffered for the democracy and hypocritically deprived them of their rights, to say nothing of

appropriate compensations or even regular pensions. According to the Law the minimum wage in Russia is 4330 rubles per month (since 2009); but for rehabilitated civil rights and democracy strugglers this sum is only **100** rubles (see http://www.buh.ru/info-14); to be more precise, 75% of 100, i.e. 75 rubles a month. An important part of human rights activists' task was a struggle for a freedom of emigration. As you know, this goal had been achieved. 2 million of Soviet people rushed to the USA as refugees "persecuted by anti-Semitists". The majority of them have never worked in the USA – they were put on welfare, given free accommodations, they receive a 700-dollar allowance plus $100 in foodstamps, free medicare\medicaid and medicine; the state provides them with all expenses paid home help and free cellphones, they are delivered for free to a doctor and to entertainment centers with free lunches. Besides, these people receive Russian pension as Russian citizens, they can visit Russia and go back to the USA without any visas or any other documents. They look down on the ex-Soviet human rights activists as on jerks. Not one of them came to the funeral of Alex Murzhenko who was sentenced to 20-year custody for an attempt to escape from the USSR by hijacking a plane (a so-called Leningrad Case; after it had been made known the Communist power had to let out hundreds of thousands of emigrants due to the world public pressure). When our Association asked for help through mass media only two people (out of 2 000 000) sent $100 each and another two people sent "thank you" messages. I wonder who we were struggling for if they cannot afford just to say "thank you"? But in the "good old" Soviet times there were hundreds of thousands of people attainting the slanderers- defectors-turncoats-and-American-imperialism-adherents as strictly as possible.

An average man may be grateful for something his neighbor has done especially for HIM. But in case this neighbor has done it for ALL the people, that man thinks: "Why am I supposed to be grateful to him?" Writer Maxim Gorky in one of his works noted a psychological phenomenon: Workers couldn't care less when their employer donated millions of rubles for their children education, but they were ready to lick his heels when this employer gave them personally a crate of vodka.

Totalitarian propaganda can make a deity out of any scum or felon, or bemire and fling mud at any honest person.

Now I came up to the American Administration. After the collapse of the USSR the US Administration saved about $ 150 billion of its defense budget. But they had never thought it necessary to arrange some support for a dozen of ex-Soviet dissidents fighting for USSR democratization. The USA showed that it is going to betray all the dissidents in totalitarian countries deprecating totalitarianism and suffering for democracy ideals in their countries.

When I was young and had a lack of information I admired Germany and Switzerland which paid compensation to Holocaust victims. After I came to the USA I found out the truth and realized that it was far not a fine sporting gesture or a sign of conscience. The things were much more trivial: some very cunning lawyers declared that they represent interests of concentration camps victims. Through the American court they were wringing from the German Administration and Swiss banks milliards of dollars and promised to distribute those sums among the victims. Swiss and Germany had to pay, otherwise by a court order America could sequester their property in the USA or ban their banking business in the USA so that they could loose much more

money.

A lion share of those money the lawyers put into their pocket. Another part covered organization expenses and salaries of those dodgers. And concentration camps victims had to arrange demonstrations in front of these lawyers' offices in hopes to get the promised compensation (a reply was: "If you've got a document certifying that you were at the concentration camp, you are welcome to receive your compensation…"

Conclusion 3 (for young people). ***Do deprecate any restrictions of freedom of information.*** Avoid parties, organizations and movements of totalitarian kind. Avoid forcible upheavals and "revolutions". Submission of all the mass media to the authorities is the main characteristic of slipping to totalitarianism and slavery. Totalitarian parties (Communists, Nazis, Fascists and others) are showering the listener with honeyed words about power of working people, total equality, equal rights and "radiant future", etc. But the bitter truth is that their only goal is to initiate chaos and gain power by any means. And in chaos the power is always seized by the most lowdown and foul party ready to use any kind of violation without any limits or restrictions, and everybody around get turned into slaves. Then fights inside the party itself starts. But even after the power is divided and you appear to get rather a high position ready to fulfill any orders of your criminal leader – it doesn't guarantee your personal security. You inevitably would have to join this or that intraparty fraction which once may suffer a defeat in that race for power and nobody can guarantee that you would survive at that state of things. Although there would be lots of twaddling about enormous achievements of the new regime, in fact the country would be falling into an abyss.

Conclusion 4. Science. Original, brand new revolutionary breakthrough solutions require not just some special skills, profound knowledge in many areas of science, but also enormous mental and nervous tension, which makes you a sort of highbrow, a figure of fun and sneering (remember anecdotes about absent-minded professors? And if it's not a professors then just a jerk!). Science is forwarded by single-handed enthusiasts sacrificing to it their life, welfare and social success which causes only gibes and mocking remarks all around ("If you are so smart why you are not rich?"). Inventorship, awards and glory are harvested by scientists holding high positions, coat-tails and propaganda recourses.

Honor and glory finds those who really deserve it very seldom. I can give you one example. More than 60 years ago when superconductivity had been discovered Vitaliy L. Ginzburg became a co-author (together with L.D. Landau) of the first theory explaining this phenomena (1950). Later many papers had been written concerning this topic. Ginzburg wrote many papers on other different topics, became a member of USSR AS in 1966 and then of RAS. Many times RAS nominated him as a Nobel prize candidate, but it was not easy for him to become the first among 800 yearly candidates despite the Academy of Sciences of the most powerful country was supporting him (Khrushev, for example, was eager to collect the Nobel peace prize when he improved relationship with the USA, but he failed). Ginzburg got his Nobel prize only in 2003, but he would hardly ever get it if he remained an ordinary professor from Perm.

Working in science (as in any other scope of activity) one can successfully exist (and even prosper) doing only that job which is paid for. And there is another way of working in science, advancing and forwarding it when nobody pays for your efforts and

an inventor or researcher gets nothing but banters, sneers and gibes. This sort of devotee scientists are usually unknown to public, never granted any prizes or awards.

Clever rulers can set before a researcher any – even very absurd – task like go-there-don't-know-where-find-some-don't-know-what. All that this researcher needs for achieving real results is means of subsistence and total uncontrolled freedom. Heads of Princeton University (NJ, USA) were advanced enough to realize that so they gave Einstein a position of a professor and set him free from any teaching load, that is why he managed to make so much, actually due to all that he created what we call modern physics. Though research chores are to be done by a great number of scientists, fundamental original revolutionary ideas and theories are advanced and developed by single geniuses.

So, technologically advanced democratic states spending lots of money on science development and hi-tech share practically for free all these expensive technologies with their enemies – terroristic and totalitarian states, Arab and Muslim countries – in fact, directly with terrorists whose goal is to subjugate and destroy the civilized nations and spread their religion and baneful regulations all over the world. The USSR achievements were made on the basis of samples taken from advanced states and, of course due to poverty of most of population. The most advanced weapon had been produced wholesale inflaming aggression. The civilized world should work out a special convention in order to protect themselves from this kind of threat. The way out of the situation is simple: they should sell to totalitarian countries and terrorists only 30-60 year old technologies and samples and never sell them any weapons or arms. I think everyone will agree that it's much easier to fight with terrorists if they are armed just with bows and arrows but not with Kalashnikovs, automatic rifles and A-bombs.

Back cover

Bolonkin, Alexander Alexandrovich (1933-)

This is book about life, researches, ideas, innovations of Dr. Sci., professor Alexander Bolonkin. He worked in Soviet aviation, rocket and space industries and lectured in main Moscow Universities in the former USSR. He earned many official awards from the Soviet Union officialdom.

In 1972 professor Bolonkin was arrested by the notorious Soviet Secret Police (RGB) because he had been discovered reading forbidden political literature about freedom and democracy and had been monitored listening to "Voice of America". For more than 15 years, the vicious YGB torturers in various special prisons, concentration camps, and in exile in utterly miserable Siberia.

In 1988 the Soviet authority allowed him to leave the USSR. Following his arrival in the United States in 1988, he lectured at the New Jersey Institute of Technology and worked as a Senior Researcher at NASA and the US Air Force Research Laboratories.

Bolonkin is the author of more than 180 scientific articles and books and has 17 inventions to his credit.

Short Biography:

Dr.Sci., professor A. Bolonkin worked in Soviet aviation, rocket and space industries and lectured in main Soviet Universities. In 1988 he arrived in the USA as political refugee, worked as senior researcher in NASA, labs of the USA Air Force and lectured in NJIT, NYU.