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Gradisil

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Extract

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one

This is where the story starts: in the spring of 2059 an American woman called Kristin Janzen Kooistra came to my father and offered to pay him a significant sum of money. In return, my father agreed to hide her in the uplands, a country, unique in our world, in which there are no extradition treaties to the USA or Europe; a country without policemen and without taxes. This agreement between my father and Kristin Janzen Kooistra was where our difficulties began.

She was, of course, in some sort of official trouble. She was on the run from one set of authorities or another. Why else would she have wanted sanctuary in the uplands? But we didn't enquire too closely.

My father took her to the uplands. She paid him a fee of 35,000 euros beforehand, and agreed a rental of eleven hundred euros a month whilst she was up in hiding. We didn't ask her any questions. This was clearly a No Questions sort of deal. Dad said to me: 'This will clear us for the year. She'll schlep us the *purchasing power* to do tremendous things with Waspstar.' I was as excited as he was. I was sixteen that spring. Waspstar was a craft that I called 'our spaceship'. My dad was more restrained. He called it an 'orbital plane'.

Here is my dad, talking about NASA: 'That was the problem, right there, right at the beginning. Is where the rot set in, with the initial premise, and everything subsequent was poisoned by it. If your premise is faulty, then *necessarily* everything that follows is faulty. Oh, NASA. After the Second War last century, the Euro-Asiatic-American war, the Nazis were defeated, but one Nazi, called von Braun, he was given sanctuary by the Americans: he lived in the US the rest of his life, and changed his name to von Brown. And because he had been in charge of Nazi military missiles, he steered the America space programme in the direction of rocketry. He became head of the programme that developed enormous liquid fuel rockets to shoot men into orbit – can you imagine it? That was the only way into orbit in those days – on the apex of these great rockets, like a fairy on top of a Christmas tree. Great

rockets, big as the Giza Pyramid. The waste! Then the Russians copied the Americans, out of a spirit of envious emulation, and soon the world was spending twenty to thirty billion euros a year building these rockets!' My father would shake his head in great, mournful motions, left to right, right to left, as if full of pity for the idiocy of twentieth-century humanity. 'And because von Brown was so influential, nobody explored other means of flying to space. And the irony is that the twentieth century was the *great century* of fixed-wing flight! All the great advances in *actual flying* happened then. But oh *no*' (emphatically sarcastic emphasis), 'for fucking NASA it was rockets, only rockets, always rockets. They're still committed to fucking rocketry. A hundred years later and they're still launching their junk and their robots by *rocket*.' His tone of voice was eloquent with his contempt. I learned to hate rockets early. When I was eleven I went to live with my father full-time. At the beginning of that period, I did not understand his hostility to rockets.

I would say: 'But what's wrong with rockets, Father?'

He would roll his eyes, and tug at his doughy earlobes. 'Oh, *very* pretty fireworks they make!' he would say. 'Oh such bright lights! What's wrong with them? Wrong? Klara, I'll tell you what. Or, better, let me *ask* you. Is there a *more* expensive way of moving material into orbit? No. Throughout the last century, it cost as much to move a kilo of anything into orbit as it would have done to build a replica of the thing in solid gold. Imagine that! Imagine it. When NASA planned to fly a hundred-kilo man into orbit they could have taken the money they were going to spend on doing that and instead spent it on building a replica of the man in solid gold, that's what the costs were. This century the cost has come down a little, it is true; but that only moves the metal from gold to platinum, to silver. It is wasteful – oh! Wasteful. So, here we are, and how few people travel into space? Tell me – how few?'

I didn't know.

'Two men last year,' he said, disgusted. 'This year, nobody. Nobody from NASA, at any rate.' Father had various cod-names for NASA. He would refer to them as 'No sir', as 'Nil-ascension sad-acts' and '*Nada*' and other such waggishnesses.

My father was always asking me questions of the following nature: what is the most expensive way of raising a person to orbit? What is the escape velocity? How much heat must a shield process to withstand re-entry? When I was a very small child I did not know the answer to these questions. But I was not very old when I knew as much as he did of the technicalities of fixed-wing flight into space. I worked with him

on Waspstar, converting an old Elector private jet into a spacecraft, which was simply a matter of mounting a generator and running the Elemag coils the right way around the wings and under the belly. Soon, I was seeing the world in a different light, as he did. The curve of the horizon around me, when I occupied a vantage point, seemed to me to trace out a ballistic trajectory, an arc rising from the left and falling away to the right. I'm thinking of a particular vantage point when I say this: specifically, the west coast of Iceland where we stayed for a year. It was a beautiful land, though bleak, very hard compared to what I had known as a child. I remember a storm; the weather was such that we had been unable to fly, I think, and so my father stomped off on a walk in the foul weather, and of course I tagged along behind him, like a faithful dog. His temper swirled up from nowhere when he was frustrated, and raged all around him like thunder and lightning; but, equally, he could be so very tender, so very loving. Nobody knew him as I did. I remember that walk very precisely. We walked the cliff walk. The Atlantic wind was enormous, a pressure on the skin like gravity, with sparkles of rain on my face and the sound of distant but tumultuous applause on my waterproof. The sky had turned purple and black, the clouds were great clusters of plums and grapes, great undulations of black cloth, great bulging muscles of black cloud flexing and flowing. As we walked back towards our home the weather worsened. It was as if the wind was trying to pull the sea up by its roots, the water moving in heavily shifting masses and shouldering up against the rocks at the shoreline. And the sky much closer, so low I might almost have reached up my hand and touched it, the ceiling of clouds heaving like a great upside-down flood.

Back inside our ground house, Father was calm again, as if the weather had effected a catharsis upon him. He tinkered with a canister of lithium hydroxide catalyst, and hummed to himself. 'The problem with this place,' he said to me, twitching his head a little to the left to take in the whole of Iceland, 'is that it doesn't have forests. Where I grew up,' (he meant in Hungary-EU), 'there were great conifer forests, hundreds of acres.' I didn't say anything, because I was thinking of the forests of my own childhood, on the southern coast of Cyprus.

'Do you know what a tree is?' he asked me, another of his many rhetorical questions. 'A tree is a seed that wants to get into orbit. Its trunk is evolution's strategy for overcoming gravity. It is rocket-thrust solidified as wood, much more efficient than ballistic flight. If it grew tall enough then we could climb it to space.'

This was one of his favourite themes. After I left home to be with him

he took over my schooling, in an erratic sort of way, and made sure I read many books on space flight. 'Only,' he would say, 'ignore the equations for ballistic flight. That is humanity's great wrong-turn, right there. If it hadn't been for NASA, and von Brown, and Korolev in Russia, and their mania for rockets, mankind would have colonised the planets by now. Instead of, what? Two men in space last year, and both of them on three-day repair missions. Nobody scheduled to go up this year, nobody at all. We fly robots up there these days, and precious few of those. Man has turned his back on space. Why? Because they were fooled,' (he was riffling the pages of one of my school books, from the last pages back towards the first), 'because they believe *that*.' He pointed to a passage about escape velocity. 'Eleven kilometres a second, that says. Ignore it! That only applies to free ballistic flight. Ignore it! Imagine a space elevator – imagine a tree tall as orbit – imagine a great tower, like the one in the fairy tale, with a princess at the top. Imagine it reaching hundreds of miles into the sky!' (I was eleven; I'd read plenty of science fiction; I knew that such a structure would have to reach up to the geostationary point above the earth, and up beyond it as far again). 'Imagine a staircase winding up and up inside that tower,' my father continued. 'Like stone DNA, curling and curling all the way to the top. With such a prop, we wouldn't need to reach eleven km a second – would we? We could *walk* into space, slow as we liked.'

'It would take us a terrible long time,' I said.

'It *would* take longer,' he conceded. 'That is not the point. Speed is where all this went wrong. Humanity became hypnotised by *eleven kilometres a second*, and all its space research was oriented towards achieving that ridiculous speed. Only rockets could do this, so rockets were what the space programme became. But the tower – that's a thought experiment, you see? Eisenstein used to do thought experiments.' Father was never very precise with names. In this case he meant Serge *Einstein*, the physicist. '*We'll* use them. What does the tower teach us? That the key to getting into space is not speed, but having *something to climb up* – having somewhere to stand, having what the Greeks call *pou sto*. That's the key.'

'Building a space elevator would be as costly as the rocket programmes, wouldn't it, though, Dad?' I said.

'Oh, building an elevator would certainly be costly – certainly. Too costly, certainly. Yes. But why not grow a tree? A great tree, like the Yggdrasil itself, its branches reaching into space. Then we could climb, up, couldn't we?'

'No tree would grow so high,' I said. I was thirteen, and my mind was

logical. 'Higher up its branches would die in the vacuum. And what's *gradisil*?' I had not heard the word before.

'It,' said my father, 'is a mighty tree from Viking myth. But don't worry about that. We don't need to grow such a tree. The Earth has already provided for us. The Earth possesses something called a magnetosphere, created by the differential in rotation between the Earth's molten core and its solid mantle. Really – think of it like a bar magnet, though on a huge scale. The lines of magnetic force run out from the North Pole in a great sweep through space, and in again at the South Pole. Ions from the sun stream down the branches of this tree, my princess, at the north and the south poles, to create the auroras. Better, we can climb up the same branches to space.' He put down what he was doing and came to hug me. Can you genuinely take this as a symptom of disintegration? Naturally not.

That night I dreamt about forests. There is a great deal of pine forest on Cyprus, and it is very lovely. Calm and fragrant. You should go there, visit it. Inside a pine forest it is cool on a hot day, and silent. The tall trunks, like the masts of ships, stand in stately congress. It shrinks you to the size of an ant amongst grass-stems without diminishing your spirit. You're walking between them now: close your eyes. The sound of your footfall is muffled by the spread of pine needles under your tread. The air is aromatic and soothing. The storms of northern latitudes are fine, almost sublime, but I prefer the blue skies of the Mediterranean. Now that I am an old woman I prefer blue skies to any other. I can point up and say *I've been there.*

We were almost a year in Iceland. At the end of that time Father was summoned to appear in an Icelandic court to speak to a case brought by my mother's family, and rather than face that judge we left for Canada.