

Excerpt from: The Ministry for the Future¹

Kim Stanley Robinson

He was having panic attacks whenever he got hot, and then the panic attacks made him hotter still. Feedback loop for sure. When he was stabilized enough to move him, we flew him to Glasgow. He had spent a year abroad there, he said, and we thought that familiarity might help. He didn't want to go home to the States. So we took him to Glasgow and kept him cool, and took walks with him around the neighborhood at night. It was October and so the usual rain and raw sea air. That seemed to comfort him.

One night I was out there walking the streets with him, letting him take the lead. He hardly ever said a word, and I let him be. On this night he was a little more talkative. He pointed out to me where he had gone to school, theaters he had frequented. Apparently he had taken an interest in theater, done some work backstage with lighting and sets and costumes. Then when we found ourselves on Clyde Street, he wanted to walk out onto the pedestrian bridge that ran out over the river to the south bank.

Out there in the dark the city looked foursquare and massive. It's low for a city, not much different than it must have appeared a century or two ago. A little uncanny somehow, like a city in some dark fantasy. He stood there and looked down at the black water, elbows on the railing.

We talked about various things. At one point I asked him again if he would be going home. No, he said sharply. I'm never going back there. It was the blackest look I ever saw on him. *Never*, he said.

I let it go. I didn't want to ask. We stood there leaning against the railing. It looked like the city was slowly floating in toward the hills.

So why did I survive? he said all of a sudden. Why just me, out of all those people?

I didn't know what to say. You just did, I said. Probably you were the healthiest person there. Maybe one of the biggest, I don't know. You aren't that big, but maybe bigger than most Indians.

He shrugged. Not really.

Even a bit more body mass would help. You have to keep your core temperature under about 104. A few pounds could help with that. And a lifetime of better food and medical care. And you're a runner, right?

I was a swimmer.

That probably helped. Stronger heart, thinner blood. That sort of thing. Ultimately I think it just means you were the strongest person there, and only the strongest survived.

I don't think I was the strongest person there.

Well, maybe you were better hydrated? Or you stayed in the water more? They said they found you by the lake.

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¹The present work comprises a few chapters from Robinson's forthcoming novel *The Ministry for the Future*. We are grateful to Kim Stan Robinson for generously offering us these portions, as well as to Ellen Wright from Orbit publisher for the permission to print these chapters.

Yes, he said. Something I said had troubled him. He said, I did stay submerged as much as I could. Just my face up there to breathe, all night long. But a lot of people were doing that.

It added up to survival, I said. You made it. You were lucky.

Don't say that.

I don't mean lucky. It was chance. I mean there's always an element of chance.

He looked at the dark low city, spangled with its night lights. It's just fate, he said. He put his forehead on the railing.

I put a hand on his shoulder. Fate, I agreed.

Humans are burning about 40 gigatons (a gigaton is a billion tons) of fossil carbon per year. Scientists have calculated that we can burn about 500 more gigatons of fossil carbon before we push the average global temperature over 2 degrees Celsius higher than it was when the industrial revolution began; this is as high as we can push it, they calculate, before really dangerous effects will follow for most of Earth's bioregions, meaning also food production for people

Some used to question how dangerous the effects would be. But already more of the sun's energy stays in the Earth system than leaves it by about 0.7 of a watt per square meter of the Earth's surface. This means an inexorable rise in average temperatures. And a wet-bulb temperature of 35 will kill humans, even if unclothed and sitting in the shade; the combination of heat and humidity prevents sweating from dissipating heat, and death by hyperthermia soon results. And wet-bulb temperatures of 34 have been recorded since the year 1990, once in Chicago. So the danger seems evident enough.

Thus, 500 gigatons; but meanwhile, the fossil fuels industry has already located at least 3,000 gigatons of fossil carbon in the ground. All these concentrations of carbon are listed as assets by the corporations that have located them, and they are regarded as national resources by the nationstates in which they have been found. Only about a quarter of this carbon is owned by private companies; the rest is in the possession of various nation-states. The notional value of the 2,500 gigatons of carbon that should be left in the ground, calculated by using the current price of oil, is on the order of 1,500 trillion US dollars.

It seems quite possible that these 2,500 gigatons of carbon might eventually come to be regarded as a kind of stranded asset, but in the meantime, some people will be trying to sell and burn the portion of it they own or control, while they still can. Just enough to make a trillion or two, they'll be saying to themselves—not the crucial portion, not the burn that pushes us over the edge, just one last little taking. People need it.

The nineteen largest organizations doing this will be, in order of size from biggest to smallest: Saudi Aramco, Chevron, Gazprom, ExxonMobil, National Iranian Oil Company, BP, Royal Dutch Shell, Pemex, Petróleos de Venezuela, PetroChina, Peabody Energy, ConocoPhillips,

Abu Dhabi National Oil Company, Kuwait Petroleum Corporation, Iraq National Oil Company, Total SA, Sonatrach, BHP Billiton, and Petrobras

Executive decisions for these organizations' actions will be made by about five hundred people. They will be good people. Patriotic politicians, concerned for the fate of their beloved nation's citizens; conscientious hard-working corporate executives, fulfilling their obligations to their board and their shareholders. Men, for the most part; family men for the most part: well-educated, well-meaning. Pillars of the community. Givers to charity. When they go to the concert hall of an evening, their hearts will stir at the somber majesty of Brahms's Fourth Symphony. They will want the best for their children.

Down in Zurich's Niederdorf, the old medieval district bordering the east side of the Limmat under the tower of the Grossmünster, Zwingli's austere warehouse of a cathedral, there were still some little bars tucked here and there, too stodgy to attract many tourists. Not that Zurich got many tourists in November. Rain was turning into sleet, and the old black cobbles in their pattern of overlapping fans were getting slippery. Mary Murphy glanced down a broader street that led to the river; there stood the construction crane that wasn't really a construction crane but rather a work of art, a sculptor's joke at the ubiquity of cranes in Zurich. The city was always rebuilding itself.

In one of the smallest bars she sat down with Badim Bahadur, her chief of staff, who was hunched over a whisky reading his phone. He nodded at her in a morose greeting, pushed the ice around in his glass.

"What's the word from Delhi?" she said as she sat across from him.

"It's to start tomorrow."

She nodded at the waiter, pointed at Badim's drink. Another whisky. "What's the reaction?"

"Bad." He shrugged. "Maybe Pakistan will bomb us, and we'll retaliate, and that will start a nuclear winter. That will cool the planet quite nicely!"

"I should think the Pakistanis would want this as much as anyone, or even more. A heat wave like the one that just happened could kill everyone there."

"They know that. They're just piling on. China is doing it too. We are now the pariah of the world, all for doing the needful. We're getting killed for getting killed."

"It's always that way."

"Is it?" He glanced out the window. "I don't notice Europe hurting too badly."

"This is Switzerland, not Europe. The Swiss stay out of shit like this, they always have. That's what you're seeing here."

"Is it so different in the rest of Europe?"

"They killed Greece for getting killed, remember? And the rest of southern Europe isn't doing much better. Ireland neither for that matter."

We got killed by the Brits for centuries. Something like a quarter of all the Irish died in the famine, and about as many left the island. That was something.”

“Post-colonials,” Badim said.

“Yes. And of the same empire too. It’s funny how England never seemed to pay too much of a price for its crimes.”

“No one does. You pay for being the victim, not the criminal.”

Her whisky arrived and she downed half of it. “We’re going to have to figure out how to change that.”

“If there is a way.”

“Justice?”

Badim made a skeptical face. “What is that?”

“Come on, don’t be cynical.”

“No, I mean it. Consider the Greek goddess of justice. Bronze woman in a toga, with a blindfold covering her eyes to make her be fair. Her scales held up to measure the balance of crime and punishment, no consideration given to individual influence. But nothing ever really balances in those scales. If it’s an eye for an eye, maybe. That will balance out. But if someone is killed, no. The murderer gets fined, or jailed for life—is that a real balance? No.” “And thus capital punishment.”

“Which everyone agrees is barbaric. Because if killing is wrong, two wrongs don’t make a right. And violence begets violence. So you try to find some equivalent, and nothing is equivalent. So the scales are never balanced. Particularly if one nation murders another nation for three centuries, takes all its goods and then says Oh, sorry—bad idea. We’ll stop and all is well. But all is not well.”

“Maybe India can get England to pay for this casting of dust.”

He shrugged. “It costs like ten euros. I don’t see why everyone isn’t supporting it one hundred percent. The effect will only last three or four years at most, and during that time we can see what it does, and decide whether we should keep doing it or not.”

“Lots of people think it will have knock-on effects.”

“Like what?”

“You know them as well as I. If doing this stops the monsoon, you’ll have doubled your own misery.”

“So we decided to risk it! After that it’s no one else’s business.”

“But it’ll be a worldwide effect.”

“Everyone wants the temperatures lowered.”

“Not Russia.”

“I’m not so sure. The sea ice is melting and the permafrost is thawing, that’s half their country. If their rivers don’t freeze, Siberia has no roads for nine months of the year. They’re made for the cold there, they know that.”

“There’s cold and cold,” Mary said.

“But it’s colder than ever there, sometimes! You know that. No.

They’re just piling on, like everyone else. Someone takes the bull by the horns, grabs the wolf by the ears, and everyone takes that opportunity to stick knives in his back. I’m sick of it.”

She took another sip. “Welcome to the world,” she said.

“Well I don’t like it.” He downed his drink. “So what are we going to do? We’re the Ministry for the Future. We have to take a stand on this.”

“I know. We’ll have to see what our scientists say about it first.”

He gave her a look.

“They will prevaricate.”

“Well, they don’t know enough now to make a considered judgment.

So they’ll say it’s a good experiment, that we should run it and wait a decade and see what happens.”

“As usual!”

“But that’s science, right?”

“But we have to do more than the usual!”

“We’ll say that. And I’m sure we’ll end up backing India.”

“With money?”

“Ten euros, sure! Cash on the barrel.”

He laughed despite himself. But quickly his expression darkened.

“It isn’t enough,” he said. “What we’re doing with this ministry. I’m telling you, it isn’t enough.”

Mary regarded him closely. This was a reproach. And he wasn’t meeting her eye.

“Let’s go for a walk,” she suggested. “I’ve been sitting all day.”

He didn’t object. They polished off their drinks, paid and walked out into the twilight. Down to the crane statue and then upstream by the Limmat in its stone channel, the black surface of water sheeting past them, cracking the light reflected from the other side. Past the old stone cube of the Rathaus; as always, Mary marvelled that the entire city government could have been stuffed into such a small building. Then past the Odeon and across the big bridge spanning the lake outlet, to the tiny park on the other side, where the statue of Ganymede stood, his uplifted hand seeming to hold up the moon, low over the Zurichsee. This was a place she often came to; something in the statue, the lake, the Alps far to the south, combined in a way she found stirring, she couldn’t say why. Zurich— life—she couldn’t say. The world seemed a big place when she was here.

“Listen,” she said to Badim. “Maybe you’re right. Maybe there’s no such thing as justice, in the sense of some kind of real reparation of a wrong. No eye for an eye, no matter what. Especially historical justice, or climate justice. But over the long haul, in some rough sense, that’s what we have to try for. That’s what our ministry is about. We’re trying to set things up so that in the future, over the long haul, something like justice will get created. Some long-term ledger of more good than bad. Bending the arc and all that. No matter what happened before, that’s what we can do now.”

She pointed at Ganymede, holding his back hand aloft. The moon lay right there in it, as if he were about to throw it across the sky.

Badim sighed. "I know," he said. "I'm here to try." And the look in his eye—distant, intense, calculating, cold—told Mary that he would. It made her shiver to see it.

More relaxing for Mary, even entertaining, were her meetings with Tatiana Voznesenskaya, head of the ministry's legal division. They were in the habit of meeting on some mornings at the Utoquai schwimmbad, and if it was warm enough, changing into their bathing suits and swimming out into the lake, freestyling in tandem and then chatting as they did the breaststroke for a while, circling out there, looking at the city from that strange low offshore angle; then back in to shower and sit in the schwimmbad café over hot drinks. Tatiana was tall and dark, dramatic in that Russian way of pale blue eyes and fashion model cheekbones, of grim high spirits and fuligin black humor. She had gotten pretty high in the Russian state department before running afoul of some part of the power structure there and deciding she would be better off in an international agency. Her expertise in Russia had been international treaty law, which she now brought to bear in working to find allies and legal means to advance the cause of defending the generations to come. This she felt was mostly a matter of establishing situations where these generations to come were given legal standing, such that their currently existing lawyers could file suits and be heard by courts. Not easy, given the reluctance of any court to grant standing to anyone or anything outside the magic circle of the law as written. But Tatiana had experience with most of the already existing international courts, and was now working with the Network of Institutions for Future Generations, and the Children's Trust, and many other groups, all to leverage the power given to the ministry by its origins in the Paris Agreement. Mary often felt that it was really Tatiana who should have been made the head of the ministry, that Mary's experience in Ireland and the UN had been rather lightweight compared to Tatiana's tough career.

Tatiana had waved this off when Mary once mentioned the thought over drinks. "No you are perfect! Nice Irish girl, everyone loves you! I would wreck everything at once, bashing around like a KGB thug. Which I am," she added with a dangerous glint in her eye.

"Not really," Mary said.

"No, not really. But I would wreck things. We need you at the top, getting us in the door. It's similar to legal standing, really. Less formal but just as important. You have to get people to listen to you before you can make your case. That's what you do—people listen to you. Then we can go to work."

"I hope so. Do you really think we can get significant legal standing for people who don't exist yet?"

"I'm not sure. On the one hand, the circle of inclusion has been

growing over historical time, which is a kind of precedent. More kinds of people given standing, even ecologies given standing, as in Ecuador. It sets a pattern, and logically it holds water. But even if we succeed in that part, we have a second problem, maybe bigger, in the weakness of international courts generally."

"Do you think they're weak?"

Tatiana gave Mary a sharp look, as if to say Please be serious. "Nations agree to them only if they like their judgments. But judgments always side with one side or other, so the losing side is never pleased. And there is no sheriff for the world. So, the US does what it wants, and the rest of us also do what we want. The courts only work when some petty war criminal gets caught and everyone decides to look virtuous."

Mary nodded unhappily. The Indians' flouting of the Paris Agreement with their geoengineering, not much different legally than the general disregard for the Agreement's emission reduction targets, was just the latest example of this kind of behavior. "So what do you think we can do to improve that situation?"

Tatiana shrugged. "Rule of law is all we've got," she said darkly. "We tell people that and then try to make them believe it."

"How do we do that?"

"If the world blows up they'll believe it. That's why we got the international order we got after World War Two."

"Not good enough?" Mary suggested.

"No, but nothing is ever good enough. We just make do." Tatiana brightened, although Mary saw the sly look that indicated a joke: "We make a new religion! Some kind of Earth religion, everyone family, universal brotherhood."

"Universal sisterhood," Mary said. "An Earth mother religion."

"Exactly," Tatiana said, and laughed. "As it should be, right?"

They toasted the idea. "Write up the laws for that," Mary said. "Have them ready for when the time comes."

"Of course," Tatiana said. "I have entire constitution already, in here." And she tapped her forehead.

We took off from Bihta and Darbhanga and INS Garuda and Gandhinagar, mostly in Ilyushin IL-78s, bought long ago from the Soviet Union. We had some Boeing and Airbus refuelers too. They were old planes, and it was very cold inside them. Our suits were old too, they were hard to move in, and hardly anything as insulation. We got very cold up there, but the flights were relatively short.

We flew to sixty thousand feet, as high as the planes could get. Higher would have been better but we couldn't do it. It took a couple of hours, as we always carried a maximum load. Two planes got caught in the so-called coffin corner and stalled catastrophically, and one of the crews didn't get out.

Once up there we deployed the fuel lines and pumped the aerosols into the air. The plumes looked like dumped fuel at first, but they were really aerosol particulates, we were told mostly sulfur dioxide and then some other chemicals, like from a volcano, but there wasn't ash like in a volcanic explosion, it was a mix made to stay up there and reflect sunlight. Manufactured at Bhopal and elsewhere in India.

We flew most of our missions over the Arabian Sea, so the prevailing winds of late summer would carry the stuff over India before anywhere else. We wanted that, it was for us we were doing it, and some felt we might also avoid some criticism by doing it that way. But soon enough what we released would get carried by the winds all over the stratosphere, mostly in the northern hemisphere but eventually everywhere. There it would be deflecting some sunlight.

Even in India you could hardly see any difference in the sky. For all our lives we were living under the ABC, the Asian Brown Cloud, so we were used to dusty skies. Our operation only made things a little whiter by day, and the sunsets were sometimes more red than before. Quite beautiful on certain days. But mostly things looked the same. The sunlight we deflected to space was said to be about a fifth of one percent of the total incoming. Very important crucial stuff, but it's not really possible to see a difference that small.

Global effect was said to be like Pinatubo's eruption in 1991, or some said a double Pinatubo. The total release was taken to the stratosphere in several thousand individual missions. We had a fleet of only two hundred planes, so we each went up scores and scores of times, spread out over seven months. That was a lot of work. Of course it was a pretty small effort as these things go. And if it helped to prevent another heat wave, it was worth doing.

We knew the Chinese hated the idea, and Pakistan of course, and although we flew only when the jet streams were running toward the east or northeast, there were times when those countries lay in the path of dispersion. And all over the world people pointed out that the ozone layer would get hurt, which would be bad for everyone. Once a heat-seeking missile flew right by our plane, Vikram dodged it at the last minute, the plane squealed like a cat. No one ever found out who shot it at us. But we didn't care. We did what we were told, we were happy to do it. Everyone had lost someone they knew in the heat wave. Even if they hadn't, it was India. And it could happen again, anywhere in India and really anywhere in the world. As our officials told people, over and over. Even farther north a heat wave could strike. Europe once suffered one that killed seventy thousand people, even though Europe is so far north. Well more than half the land on Earth is at risk. So we did it.

Day after day for seven months. And round-the-clock, what with maintenance and refueling, and the filling of the tanks. It was a routine that took many thousands of people working together. We got tired,

exhausted, but also we got into the rhythm of it. There were enough crews to fly once out of every three missions per plane. For many weeks in the middle of it, it felt like it would go on forever. That it was all we were ever meant to do. We felt like we were saving India, and maybe saving the world. But it was India we were concerned with. No more deadly heat waves. So we hoped. It was a very emotional time.

Now, if I go anywhere in the world, and if someone speaks against what we did, I challenge them. You don't know anything, I tell them. It wasn't your people, so you don't care. But we know and we care. And there hasn't been a heat wave like that since. One may come again, no doubt of that, but we did what we could. We did the right thing. I must admit, I sometimes shout at people if they deny that. I damn them to hell. Which is a place we in India have already seen. So I have no patience for people who object to what we did. They don't know what they're talking about. They haven't seen it, and we have.

Ideology, n. An imaginary relationship to a real situation. In common usage, what the other person has, especially when systematically distorting the facts. But it seems to us that an ideology is a necessary feature of cognition, and if anyone were to lack one, which we doubt, they would be badly disabled. There is a real situation, that can't be denied, but it is too big for any individual to know in full, and so we must create our understanding by way of an act of the imagination. So we all have an ideology, and this is a good thing. So much information pours into the mind, ranging from sensory experience to discursive and mediated inputs of all kinds, that some kind of personal organizing system is necessary to make sense of things in ways that allow one to decide and to act. Worldview, philosophy, religion, these are all synonyms for ideology as defined above; and so is science, although it's the different one, the special one, by way of its perpetual cross-checking with reality tests of all kinds, and its continuous sharpening of focus. That surely makes science central to a most interesting project, which is to invent, improve, and put to use an ideology that explains in a coherent and useful way as much of the blooming buzzing inrush of the world as possible. What one would hope for in an ideology is clarity and explanatory breadth, and power. We leave the proof of this as an exercise for the reader.