Chapter 2: Smile For Future in Lausanne and Scientists for Future

August – September 2019: The task of science

The meeting begins

So the summer begins, and with it, a further group of adults becomes even more active: the scientists. At the same time, the Swedish activists find themselves in Switzerland.

A gentle breeze blows from Lake Geneva across the fields of stubble and up to the modern glass building of the University of Lausanne. A few young people are standing in front of the main auditorium, still sleepy, looking down at the water. It is the beginning of August, exactly a year since the first strike, and behind the glass walls of the university building, more than four hundred young activists are scurrying through the corridors: the participants in the first big international FFF meeting. They have come from all European countries, including Russia, Ukraine, Afghanistan, and Israel, as well as from Stockholm. Loukina, who has just finished her final days at high school here in Lausanne, came up with the idea together with Isabelle and all the others during the Strasbourg trip in March. She runs the organisational team and finds funding for the 400 young people from more than 28 countries to cover their travel and their board and lodging. With a small team, she puts together a program, finds a core group to take over media work, and leads the press conferences. So many questions came up back in March, which are still burning issues for all of them in their individual countries: how should decisions be organised? When and how often should strikes take place? And: should there be global demands, European demands?

Temperatures are almost unbearable, and not only in western Switzerland. In country after country, the highest ever temperatures are seen since records

began (Eumetsat 2019). A large proportion of glacier water will have melted away, and billions will have to flee because they live in places which are too hot and dry, researchers are now saying (Xu et al. 2020), already in the middle of the century, when Loukina and Isabelle are as old as I am now – if politicians don't reorganise the entire economy together with the people who are sitting next to us in the tram in Lausanne and listening in bemusement to the shouts of "climate justice."

At the university, Loukina sits on the stage. On the benches in front of her, they are all sitting, the heroes who are around her age, who for such a long time have only been able to discuss with each other via chats: Ianthe, Erik and Balder from Holland, who visited us in Mynttorget; Saoi from Ireland, Dylan from Scotland; Anna from England; David from Turin; Jakob from Kiel, who was one of the first people we noticed from the German-speaking region; Jonas, Fanny, Lena and the group from Zurich, and many of the young people from Mynttorget in Stockholm, surrounded by four hundred other activists who organise the strikes in their own countries.

A few hours earlier, the young people were greeted by the president of the university and a research team. Now the atmosphere is expectant. In the various rooms in the labyrinthine building, there will be parallel workshops and seminars on questions such as social justice, organising the communication channels on Facebook, Discord and Telegram, and the basic demands being brought to politicians. A "Declaration of Lausanne" is to be composed: which words, which principles, which organisational guidelines and which demands should – at least as a proposal from these hundreds of young people – become accepted and shape the European FFF movement from now on?

In the midst of the hustle and bustle, Isabelle, Greta and the other Swedish activists sit on the floor, deep in discussion. How strange, I think to myself, they are sitting here in a university which has placed its main building at their disposal – for the sake of their fundamental idea – for a week, surrounded by hundreds of their peers, who are discussing the details of Fridays For Future as a complex movement and planning the global rebellion in September. Some of the regular strikers are among them, who already joined Greta in the first week, exactly a year ago; could they have imagined such a development at the time?

I stand outside in front of the entrance and see, reflected in the glass façade, the lake and the French alps rising behind it like a picture on a postcard. Behind the glass, they are working hard, the young people who wrote

to the professors, spoke to the university on the phone and organised the program with all its workshops.

In July 2019, temperatures are recorded in European countries which were barely thinkable before. In Germany, they climb higher than 42 degrees (before that, the highest ever temperature was 40.5). There are similar records in France (more than 40 degrees in Paris) and Belgium. The month of July is the warmest since records began.

The European network and Mont Pèlerin

My gaze shifts over to the Swiss side of Lake Geneva. Only a few kilometres away from the campus, really a stone's throw away, there was another gathering of politically interested people seventy years ago, who met and looked down at the lake with the will to change society, not only here, but across the world. They, too, discussed their concept of humanity and of economics, and they founded the notorious Mont Pèlerin Society. Many of the main participants were later awarded the Nobel Prize for economics, including Friedrich von Hayek, Milton Friedman and so on. They are the inventers and developers of the neoliberal model of society which has shaped life and economics in Europe and the world more than any other ideological movement in the last

fifty years. State regulations should be abolished, most things should be privatised, accessible to a global market, exposed to competition between all people, with minimal social safety nets, if any; competition should encompass all areas of life and all areas of nature, too (Mirowski 2015). Nature is defined and used as a giant supplier of free raw materials and – implicitly – as a rubbish dump. Politicians since the 80s, spearheaded by Reagan and Thatcher, will listen to them, employ them as consultants, award them prizes and in doing so strengthen the oil, gas and coal industries, the car industry, agribusinesses like Monsanto and Bayer with their mix of monocultures and pesticides, and above all the whole finance industry; the astonishing development of Exxon, Shell, BP, J.P. Morgan, UBS, CS and so on would not be conceivable without Mont Pèlerin, the ideology and the legal framework of the corresponding politics. However, the greatest "achievement" of this elite network, this Mont Pèlerin group, was establishing the idea in the minds of the majority of human beings that there is no alternative to this economic and social model. It suits us, as humans, they say. It can be applied in all areas, even in schools and universities. It defines who we are, what is seen as valuable and what is not. And it has led to immeasurable wealth for a small number of people – as well as the systematic destruction of much of what these young people see as the most important things.

My gaze returns to the main auditorium. Greta and Isabelle are just standing up and joining the other Swedish activists to discuss the situation. Loukina comes over holding some food which she has been carrying around all day because she never has time to eat it. I think: this is the alternative model. Here at Lausanne University, with all the young activists, it is at least possible to get a faint idea of it. Instead of a collection of men without a scientific grounding, without media, with their own economic interests, in strict secrecy, here a predominantly female group of young people are hurrying around. They have invited everyone from the media, including the tabloids, and in principle, the press has free access to all events. They are well-read and are in constant contact with scientists. And they are just as determined to change our lives. They have neither founded an international association with statutes, nor do they have finances, nor a political program. But now they are searching for structures that could make them stronger.

Quickly, I go back through the corridors of the building and sit down at the back of the plenary meeting, beside the scientists from Switzerland and Austria. We want to form a team for Scientists For Future, a group offering scientific assistance. All the young activists' questions are collected and passed

on to the existing network of 25 000 German-speaking scientists, who came together in the run-up to the first global strike. Several hundred of them reply to emails within a few minutes, including some of the most renowned climate researchers in the world.

But then the week begins, and with it the problems and challenges among both young people and scientists. Debates arise, existential ones, which basically relate to strategy. At heart, the question is whether society can rid itself of the toxic legacy of Mont Pèlerin. And beyond that, the biggest question of all: how do we really organise democracy? How do we make sure everyone is involved and everyone is heard? And that everyone's basic needs are met?

The fundamental conflict

On Tuesday evening, the debate comes to a head. The young people's strategy group meets. Outside, in front of the doors, some of the most hard-working Swiss activists are sitting; they have been active already since the movement's beginnings in December, and now they are enjoying the evening sun on the floor on the upper storey of the university. To many people's surprise, the Swiss organisers have planned the conference in such a way that there are already statements and demands on every imaginable political topic, including energy policy, agricultural policy, transport and so on, and now everyone is being asked to respond to those statements and demands.

The door opens and we are greeted by furious faces. One faction is sceptical: we do not regard it as a sensible idea to go into these detailed demands, they say. We want to organise strikes, and not behave as if we were a youth party attempting to get involved with governments on an equal footing, with policy demands, and trying to play the politicians' game; we want real change. This conflict is a running theme throughout the history of FFF: on the one hand, those who make concrete demands and discuss policy suggestions (such as carbon pricing) with governing politicians; and on the other, those who emphasise that this steers the whole dynamic of the movement in the wrong direction. Two needs emerge: the need to know how a zero emissions society in 2030 could look in concrete terms; and the need for a dynamic of real change.

On Wednesday morning, the situation becomes even more heated. There is to be a vote in the plenary hall, with the hundreds of young people taking part in front of the press. For some of them, the situation is absurd. They don't want to vote because they are not for or against the specific demands, such as the de-

mand for a zero emissions society in 2030 with nutrition being mainly plant-based rather than animal-based, with a price on carbon emissions, without subsidies for fossil infrastructure, and so on. They agree with all those ideas, but they are against any such demands being made in the name of FFF. For them, most of the demands are right, but making demands is wrong. How should they behave in such a situation? They simply withdraw, marking the fact that something here is wrong, and force the plenary meeting to break early for lunch.

To outsiders, the delicate situation might seem strange. Rarely have so many people who agree with each other been found in the same room, right down to the details. The beginning of the 2030s should be the date we reach net zero emissions, not 2045 as demanded by the Swedish government, and not 2050 as the Swiss government has said. That means that emissions must be reduced by more than twelve percent per year in all sectors, starting now (Anderson et al. 2020). There is barely any conflict in terms of content or substance. The fundamental principles are shared by most of those present: we must listen to climate science; the transformation has to come about on a socially just basis, locally and globally; and the rebellion has to take place without violence.

Even after a turbulent year, the biggest youth climate movement on the planet is as united in terms of its ideas and values as a movement can be. Precisely that gives a youth movement unbelievable strength, which is clear to us scientists in the university rooms. The only thing that forces discussions to happen is this question of strategic direction. Some of the activists believe that agreeing on a catalogue of demands would mean conforming to the established political discourse and losing the whole potential of the strike movement, which is after all directed against and towards those who rule; they are the ones who have to change. And only because it is possible to address themselves to those in power is it possible at all for millions to join them with so much momentum and force, distinguishing FFF from every other environmental movement, NGO and youth party. However, the difficulty in these hours in the Lausanne auditorium is that this alternative does not seem to be clear to most of them in the hall, because they are under such pressure from adults to come up with solutions, as 15-year-olds. The adults simply aren't up to it, I think to myself, sitting at the back of the hall with the scientists; they can't take the task off the children's hands: coming up with a well thought-out, global-local plan covering all sectors as well as the overall economic ap-

proach. They would rather ask the children to come to them with a catalogue of demands and then point out small mistakes or make bad compromises.

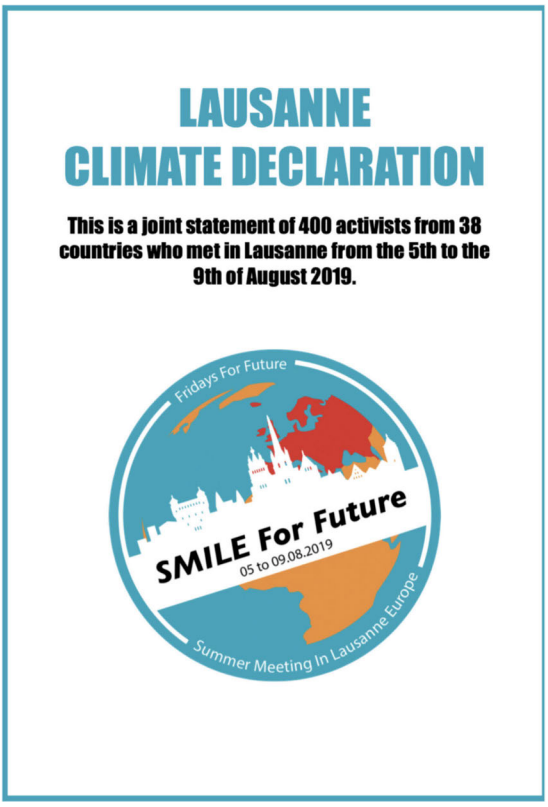
And so, the young people end up with an impossible task. They have to use civil disobedience to break through the status quo in the first place, show that the governments are negligent pyromaniacs, pull the emergency brake – and at the same time work out what should take the place of a fossil society. The tension in the air on this Tuesday and Wednesday in the first week of August in the hall of Lausanne University comes from the failure of my generation, I think to myself, not just from a conflict among the 15-year-olds. This is only a symptom of society's silence, which is not their fault. We adults finally have to act.

The situation is coming to a head. How should they go on? Some are disappointed, having worked for months on these demands. Two o'clock comes, all 400 participants arrive at the plenary hall, but only the strategy group of about 30 are allowed in. The two groups are becoming ever more entrenched in their positions. Some "facilitators" are brought in from outside. And suddenly, as in a film, they sit there, gathered on the stage at the front: all of those who have created the youth movement in a tour de force in the last eight months. Really, they should be running across the fields, I think to myself, all of them together, but they've been stopped from doing that by us, by the adults who have no political plan. And so, they are standing there, on the stage, conjuring up the essence of democracy, power distribution, political strategy and a shared future. A democratisation of structures would certainly be a good idea. They can agree on that.

In fact, two problems are being negotiated at once: on the surface, this is about the catalogue of demands with specific political solutions; at a deeper level, it is about democratic decision structures, or much more simply and more fundamentally: about the hundreds of thousands of young people who have the feeling that they can contribute something relevant and be seen as such by everyone else. How can everyone be included without the compass being lost?

The conference agrees to present the detailed demands on energy, agricultural, economic and transport policy as possible paths that could be taken, rather than as ultimate demands. Both sides can live with that. On the one hand, these detailed demands can be found written down in the "Declaration of Lausanne", the first core FFF document, and for a long time the only one. On the other hand, the movement can finally focus again on its central point, the strike, putting a stop to business as usual; the rebellion. On Friday, they all

stand side by side at the strike in the centre of Lausanne. But I have the sense that an uneasiness is making itself known behind the conflict, perhaps without the activists realising it. It is not possible to cover up the scar caused by the fact that these children have to rebel against the whole of their own society, including their parents' generation.



The curse and blessing of the scientists – the facts

Another conflict is being played out behind the scenes, among the Scientists For Future. The young people, particularly the Swiss activists, had asked us in the middle of the hectic final preparations for the conference to re-familiarise

ourselves with the fundamental problems and describe them to the strategy group in the form of a short presentation: whether we have to transform our society within ten or fifteen years (around 2030) or around thirty years (2050), by stopping emissions, makes a difference.

What are the arguments? I do some research and then write a group email in which I ask leading scientists for arguments, particularly those whom I know have differing views of the question. I receive a corresponding variety of answers, but those answers are still within a clear range: the richer countries have in 2019 about twelve years to reach "almost" zero emissions, if they don't want to pass the limit of 1.5 degrees global warming, assuming you follow one of the central calculations in the IPPC-SR-1.5 report. The criteria become increasingly clear: the basis is formed by the budget calculations made by Kevin Anderson (2020) and by Rahmstorf and Schellnhuber (2019), among others, which practically all scientists agree on, and which coincide with the IPCC SR 15 (i.e. the special report on the 1.5 degree goal from October 2018).

Again, the idea is that there is a budget, a certain amount of carbon dioxide we can emit if the earth is not to become more than 1.5 degrees warmer, because there is a direct connection between CO2 emissions and global warming. These calculations are of course not completely exact, but at the beginning of 2018 the budget is around 420 Gt CO2. This is what the UN says according to the first scenario in the IPCC report (figure 5). And currently, we are emitting between around 45 and 50 Gt each year, at least. The climate prognoses of the last forty years have been incredibly accurate. If we continue like this, we will use up all the oil, coal, and gas that we can ever emit in 8 years if we don't want to pass 1.5 degrees of warming. Irrevocably. For that reason, the whole world has to reach zero emissions soon, in 2040 at the latest, according to Schellnhuber at the Potsdam Institute for Climate Impact Research (2017): so emissions here in Europe have to be reduced by more than twelve percent immediately.

On Wednesday morning, my presentation keeps being delayed; the temperatures in the university rooms are unbearable; it is well above 30 degrees and the strategy group once again splits into smaller groups. My attitude is this: I try to present the scientific situation and debates in the most accessible way, but not simplistically, and then I try to get out of the way. I have nothing to do with the young people's decision on the FFF movement's possible direction. This is the line I've followed since the first day of the strike last August, and I want to remain true to it. We adults cannot decide for them, we cannot even "advise" them, as some scientists call it, and as more and more of them do, especially in Germany, which worries me. We can only go into their questions

and describe the state of research – taking account of the perspectives which are most important to them, in the most wide-ranging and transparent way possible. They have to find their own compass.

The scientific dispute in the replies of all the professors regarding the question of whether zero emissions should be reached in 2030/35 or in 2050 for European countries develops around the following issues: what percentage of "risk" can we accept; or more precisely, should we follow the IPCC 1.5 SR 67 percent scenario, or the 50 percent scenario? "Risk" is a misleading term, however, since this is really about the margin of error in the calculation of the correlation between warming and emissions (see MacDougall et al. 2017).

The second question is even more controversial: what exactly is social justice, or as the Paris Agreement says, "equity"? How should we calculate that scientifically? For reasons of fairness, European countries, especially those in western Europe (known as the II Group), because they are a rich continent which is historically already responsible for a disproportionate share of the emissions, cannot have the same amount of the emissions "pie" as poorer countries (added to this is the legacy of colonialism). The Swiss activists place particular importance on the fact that we should also apply different standards within Europe, so that poorer eastern European countries are not disadvantaged. A famous scientist writes in the email replies that reach us that weighing this up is not a question for the natural sciences but an ethical question which cannot be answered scientifically. Other researchers object and point out that we can also pursue questions of justice and fairness. That has to change, I think to myself in the heat of Lausanne; the fact that natural scientists do not see ethics and political philosophy as being part of their universities at all.

A third question also leads to disagreement among the scientists: should the young people take account of something like political feasibility, as some people demand? The argument is: when the reduction of emissions by 12 to 15 percent per year is mentioned, or when the year 2030 or 2035 is mentioned as a goal for zero emissions, many people will object that this is not "realistic". The production of new diesel and petrol cars would have to be stopped immediately, the replacement of oil heating with gas heating would have to be banned, meat production would immediately have to be reduced by ten percent every year, a large proportion of cement would have to be replaced with wood as a building material, and so on. For that reason, we have to fall back on 2040, some of them write. Here, there are also different opinions in the replies.

I go through the speeches by Greta and other activists again and see that they have answered these three questions clearly from the start: we cannot play

with the future of humanity, so we can't take very big risks. We have to take account for equity properly, and take on more responsibility as western European countries in the global transformation of energy systems and the economy. And we cannot say beforehand that something is too demanding politically, but have to stick with what is really needed in order to avoid exposing entire countries to unbearable heat and forcing hundreds of millions of people to flee, and to prevent the catastrophic floods that are already taking place. In addition, European countries ought to be paying substantial "fair shares", massive amounts for the socially, economically, and ecologically sustainable green transformation of poorer countries, far beyond what has been planned so far (see http://civilsocietyreview.org). In other words: the Swiss, who on average emit 14 tonnes of CO2 per year according to the Swiss Federal Office of Statistics, would have to reduce this within a few years to a level of around 1.5 tonnes, which would be globally fair.

But how on earth, the young people ask, do governments come up with the idea of focusing all their policies, from agriculture to transport, on a "net zero emissions goal 2050", meaning a 20-year delay, which means a much bigger emissions budget which might lead to 3 degrees of global warming? Well, the scientists answer: they are accepting enormous "risks"; they are more or less ignoring the justice and "equity" aspect of the Paris Agreement; but above all, they are completely ignoring Scenario 1 in the UN report IPCC SR 15.

Instead, they are coming up with numbers which can only be reached by calculating huge amounts of so-called negative emissions, meaning future processes through which a technology that doesn't yet exist will capture carbon dioxide from the air. That is why they all talk about "net zero": the sum of the excess greenhouse gases and the negative emissions should be zero. (There are also "natural" sorts of negative emissions such as reforestation, which no one objects to – on the contrary – if it is achieved sustainably and doesn't transform old forests into "bioenergy" and "biomass"). It is as if governments were to build a waste-water treatment plant to produce drinking water and say: we're building the plant in such a way that thirty percent of the toxic particles can pass through it, but we will capture them again afterwards from the drinking water. With a brilliant technology. That doesn't exist yet. As school pupil Leonie of FFF says after a discussion with the German Minister for Economic Affairs Altmaier: governments are not simply failing drastically to meet their own climate goals year after year. These climate goals are themselves deliberately skewed; and that is the much bigger problem. The movement has been drawing attention to this crucial point since Greta sat down with her

famous sign a year ago, with her A4 factsheets weighed down by a stone, and handed them out to passers-by.

This argumentation seems reasonable, but I do not want to anticipate what the working group will say or manipulate them, and so I send them the whole discussion and explain it at the conference, including possible objections. The most important thing for me is that these numbers should be visible for the whole population in the first place, so that everyone can see how tiny the remaining emissions budget is. All coal power stations and oil pumps in Germany, China, America, and Norway (where at this time the biggest oil field is being opened, designed to run for 40 years) would soon have to suspend operations. Even the most conservative of the researchers ultimately writes in our email correspondence: "The implication of all my remarks here is that we have to pull the handbrake immediately and introduce drastic measures."

I move away from the team of scientists, take a plastic chair, sit down in the middle of the stubble field and let the sun shine onto my face. How bizarre, I think to myself, that there are people who have voluntarily immersed themselves in these facts and found out all these connections: the greenhouse effect and the albedo effect, the connection between carbon dioxide emissions and global warming, and so on. Someone could calculate the albedo effect – that is, the ability to reflect light – of the tip of my nose. How bizarre, I think to myself again. How can someone express the experience of the sun on the tip of my nose in terms of physics? The world is full of stories, after all, so much richer and more magic than the natural sciences imply. Like so many of the young people here, I miss my world of books, my students, who run around the theatre spaces in Stockholm as Emil or Ronja. Imagination. This year with the climate movement is also a year which threatens to reduce us all to beings with a purely scientific worldview, I think. Why do the rays of the sun follow a law; why can't they fly freely through the air however they like?

That same day, the nearby UN offices in Geneva state in a central "IPCC land" report (IPCC 2019): overall, the world population must shift very quickly to a vegetarian or vegan diet because of the ecological and climate crisis and the loss of biodiversity.

"Tipping points" and "feedback loops" – what is the state of the world?

The next day, all these thoughts can once again be seen in quite a different light. Many older activists and scientists have come to Lausanne to give seminars on the strategy of FFF and XR, on the structure of our societies and activism in general. The room is huge, so that the young people are almost lost in it.

The activists giving the workshops remind us once again how social change takes place and how it doesn't, according to some traditions of sociological research. Not much is changed by marches, clicks on petitions, flyers and so on. What has worked, historically, has been massive disruptions of the status quo, directed straight at governments. That was shown by the civil rights movements of Martin Luther King and Rosa Parks; the suffragettes of the women's movement, Gandhi's rebellion, the workers' movements, and so on. Real change happens when the main squares in capital cities are occupied for several days with blockades, or when children keep refusing to go to school and the ministries start cracking down, so that the population turns against them.

Some of the activists and scientists begin again to list all the examples of ecological collapse which have become familiar to us during our work in the last months. From the unbelievably rapid melting of the Arctic ice to the catastrophic droughts. According to the picture they paint, there is a massive risk that within twenty or thirty years there will be so many crop failures and food production will be disrupted so badly across the world that there will be enormous social conflicts, famines and possibly wars over the most important resources. They describe a simplified chain of causation: coal power plants are being built or kept running in order to maintain our society of fossil, car, heating and cement industries; governments are not really adopting any measures; the Arctic ice is melting; the jet stream is growing weaker; we are seeing more extreme droughts and weather events; that knocks out food production in some parts of the world; drinking water becomes scarce; and so the social conflicts over distribution begin very quickly.

One of the most important points is that the whole discussion about emissions budgets needs to be called into question, which means all the work that we have been presenting so carefully during the last few days. We are, according to their claim, already well past the 1.5 degree "goal". That is why radical measures are needed. Once again, I bring in the scientific community via the email lists and ask them to check this claim. The unanimous result from these

hundreds of climate scientists: there is the problem of "committed emissions" and air pollution ("aerosols"), which ensure that global warming that is already in the system is not perceptible. Estimates diverge on whether this could mean 0.2 or 0.4 or even 0.8 degrees – disastrous numbers. Because with the warming that has already been measured (1.1 degrees), we would then already have passed the goal of the Paris Agreement – even if all of the fossil infrastructure, all coal power plants, and all oil refineries stopped running immediately, and all cars, flights, steel and cement factories came to a standstill.

But the even more confusing point which some of the older activists now emphasise: most IPCC scenarios (which all governments rely on) do not take account of tipping points, which could come into play soon or which already have done so. For example, the permafrost in Northern Russia is melting drastically; and the methane being released exacerbates this dynamic. On this, too, all the scientists who reply to us agree. Perhaps these processes are even already going on without us realising it. And as soon as these effects are calculated, talking about still being able to emit so many tonnes of CO2 becomes problematic: there is already much too much in the air, and there is a real danger of effects reinforcing themselves. This brings with it the horror scenario of two to three billion people having to flee in little more than 50 years (Xu et al. 2020). In my inbox, I receive a few explanations by scientists including Stefan Rahmstorf, pointing out that this information about "committed emissions" and aerosols (air pollution) is correct, and so are the calculations of global warming, but that these processes could in turn bring about complementary processes that might have slightly mitigating effects (Rahmstorf 2019).

So when governments talk about 2050 as a goal, they are ignoring all these aspects, including "committed emissions", tipping points and feedback loops, and they are reckoning on huge negative emissions with a technology that doesn't exist, and they are betting on a principle of incaution, and therefore accepting enormous risks.

At the same time, even at the current level of global warming of 1.1 degrees, millions of people in Bangladesh and China are losing their homes because of floods. And yet there is consensus in the scientific community that the Keeling curve shows a concentration of carbon dioxide in the air of 415 ppm. 350 ppm are regarded as somewhat stable for the current climate. So, we ought to be investing massively right now in protecting forests, in addition to stopping emissions (Röstlund 2022). That is why the idea of "offsetting" is so inadequate, according to many of our Stockholm scientists. In any case, we have to invest

huge sums in "rewilding", in protecting and expanding forests. That cannot be outsourced colonially as compensation for our lifestyles.

One of the young people from Mynttorget lays her head on the desk in front of her and sighs. Most of them will still be going to school for years in Stockholm and maybe meeting on Fridays to strike in Mynttorget. These scenarios worry them: what are they supposed to think about them? What arguments are there? It is possible that huge famines and social conflicts will come about abruptly in a few decades? David Wallace-Wells gathered research on this in his book *The Uninhabitable Earth* (2019), and new results are coming in all the time. I sit on the bench in the auditorium and think about these scenarios. Actually, when talking to the young activists, I hardly mention the most depressing variants of the "hothouse" effect (see Lynas 2020). I also feel that scientific caution is required.

But it is just as important to point out that governments and parliaments are basically deceiving populations worldwide by not taking all these risks seriously and by playing tricks with the numbers. I flick through the speeches and papers by Greta and the other activists. They have said most of this from day one, the part about the aerosols, negative emissions, feedback loops and tipping points: that all of these are missing from governments' calculations. For me, it has taken a year before I've really understood it, along with the real dimensions of the dangers. Governments know that they are already very unlikely to be able to keep the agreements they've made, including the Paris Agreement. Something fundamental is wrong.

The curse and blessing of science – the conflict over the basic principles of Scientists For Future

If a few thousand children are punished for taking part in ever longer school strikes, say some of the older activists from the blackboard at the front of the room, political constellations will begin to change. Then there will be a confrontation which could lead to real change, as in the case of the civil rights movement in America.

And suddenly, a bad feeling comes over me again. The scientists have the idea of offering the young people the possibility of asking us more questions during the congress – and forwarding those questions to Scientists For Future. From this, a list of questions is created, and a document which is soon around eighty pages long, a little book on the most urgent specialist questions which

the FFF activists have on the ecological crisis. And problems are connected with that which ultimately relate to all the big questions of our time: what counts as scientific; how does science relate to politics, and how should the adults behave towards the children and young people?

The questions brought up by the young people are sent first of all to the email lists. More and more scientists send their answers back. And those are – naturally, how could it be otherwise – shaped by their individual personalities. I hesitate. Some things are unproblematic, simply facts of physics, such as the mechanism behind the greenhouse effect itself, or behind tipping points. But there are barely any questions with no political slant, meaning that they not only have political consequences but also a political undertone. Can a "circular economy" work? What do we have to do to stop the climate crisis? And so on.

The problem is not that a political component is suddenly coming into play, but that those who are answering seem to ignore this and blithely send along their personal opinions: maybe the population needs to be reduced – to name one example of an argument which most of us in Lausanne regard as wrong or even racist; after all, the richest ten percent of the world's population produce more than 50 percent of all emissions (Oxfam 2015). They have to change their behaviour.

But what are the criteria we can follow? "This isn't going to work", I tell the others, who are working day and night on the document. I feel like a spoilsport. "It's neither scientific nor sensible. The young people here are just being flooded with ideological assumptions, without that being pointed out." They agree. We have to develop a process which reflects this problem.

Questions arise from that: what are the principles which should shape us, the people who call ourselves Scientists For Future? Scientific rigour, of course: calling results into question; working methodically; and so on. But it doesn't make any sense to send the young people's questions to some scientists who are not familiar with discussions and facts on topics such as social justice and the climate crisis. What distinguishes us as Scientists For Future in relation to our colleagues? Long discussions take place, in Lausanne, but above all behind the scenes in all the scientific networks. These conversations are spurred on by another fundamental development in S4F: in March, first 15 000 and then 25 000 scientists supported the young people and announced: what you are saying is the truth (Hagedorn et al. 2019). It's true: "The house is on fire." But S4F do not leave it at that. This stance remains the basis for everything else, but more and more the specialists feel the need to formulate in their own fields what would

be needed in terms of societal transformation: describing the zero emissions world in 2030/5, which they have been researching for a long time, an incredibly multifaceted and powerful project. So, some of them write a paper about carbon pricing. Others "help" young activists to write catalogues of demands which include all sorts of things: from renovating buildings to building wind turbines, from transforming the transport sector to sustainable agriculture.

It is Thursday evening, and these discussions are making me panic more and more, given that we've promised the young people that we will come back to them with answers the next day. The individual suggestions all seem sensible. But the dynamic behind them seems suspect to me, and dangerous for the whole movement. On the one hand, there is our relationship to the young people. It is their movement, and we can't put words in their mouths. I insist on that. We can give them information, and point out debates, but we are not consultants for catalogues of demands. Consulting work is for clients or governments, not children. We ourselves have to stand up for what we believe in; we cannot foist it onto the young people.

But what seems much more important: more and more, from the jumble of policy suggestions, a false picture is emerging, as if we only had to tighten hundreds of small screws in order to reach a new society which would really be sustainable. That is precisely the ideology of the green liberal centrist parties which have been calling the shots in the Swedish parliament for five years without anything actually happening. It was their policies that the activists were protesting against when they first went on strike, because they precisely do not ensure that emissions go down, or question the economic approach which destroys biodiversity. Actually, almost none of the scientists seem to want to put forward such an idea explicitly – that is, the idea that we only need hundreds of policy proposals to deal with the climate crisis. It is simply the effect of the hyper-specialisation of the academic world, and the division of measures between different sectors.

The systematic view is missing, meaning a perspective on how all this hangs together and which parts of society are affected. The carbon tax as proposed by many would affect those on benefits most severely, in a socially unjust manner, one specialist calculates for us. None of the young people gathered in Lausanne want that. And so on. We need a systematic approach. We cannot discuss political measures individually without viewing the economic system as a whole, for example: what if we needed a basic income or basic services, globally too, tied to local currencies; or something quite different, different measures which would reshape many different sectors, such as quickly bring-

ing the fossil industry under state control, so that it could then be cut back, or a democratisation of the economy: shifting the focus to the "care economy", looking after children and the sick, feeding and bringing up children; finding our way out of the processes in which we use up nature and wear out products – processes on which everything relies; and also a way out of unjust working conditions. Should we keep all of that and instead fund electric cars? Something is wrong here, and a danger is lurking for us specialists.

Charta von Scientists for Future

(English version below)

Selbstverständnis

Scientists for Future (S4F, auch Scientists4Future) ist ein überinstitutioneller, überparteilicher und interdisziplinärer Zusammenschluss von Wissenschaftler*innen, die sich für eine nachhaltige Zukunft engagieren.

Scientists for Future reagiert auf die historisch beispiellose Klima-, Biodiversitäts- und Nachhaltigkeitskrise, welche die Menschheit vor globale Herausforderungen stellt. Die notwendigen Wandlungsprozesse erfordern entschlossenes und unverzügliches Handeln auf der politischen, wirtschaftlichen und technischen, sozialen und kulturellen, wissenschaftlichen sowie der privaten Ebene. Denn die Zeit drängt. Als Wissenschaftler*innen sehen wir uns deshalb in der Pflicht, öffentlich und proaktiv die Stimme zu erheben.

The feeling also creeps over me – that might be the worst thing about the situation – that these scientists are not imagining at all how these legislative proposals will actually be heard, or considering the fact that they themselves might also have a negative influence on that. Why should governments which have held on for decades to laws which above all help the established fossil industries and banks suddenly accept these catalogues of demands from young people or from adults and say: "Oh yes, thank you so much, that makes complete sense, we will now force through these detailed laws which will change our industries fundamentally"? This problem comes up in Lausanne in more and more dramatic ways. The scientists are limping along a year behind FFF's strategy discussions. We're probably not going to get around system change and a rebellion, many of the young people are thinking; and the scientists are

doing them a disservice by passing them catalogues of demands and thus reinforcing the status quo.

The basic principles for science and politics

What we should do instead, I think, is mark out a framework for crisis legislation. I set out to sketch a solution for the question of principles. After going back and forth for days, four such principles seem to be justified. Firstly: the cautious interpretation of the emissions data outlined above (IPCC-SR-1.5, Scenario 1 with 420 Gt in 2018) is appropriate, and as a result of climate research, it can act as the basis for all argumentations; we cannot retreat from the measures applied by the young people, and we have to uphold a "principle of caution", including intergenerational justice. Secondly: we can only take account of existing solutions; future technologies which have not yet been invented and which lead to negative emissions, cannot play a role, and nor can "solar geoengineering". Thirdly: the aspect of social justice and "equity", which is also mentioned in the Paris Agreement, should be the starting point of all arguments; including when it comes to calculating reductions in emissions and reshaping societies. And this goes just as much for the aspect of historical justice with regard to greenhouse gas emissions so far, as it does for the just distribution of wealth in a way that emphasises the responsibility of richer countries – who have also often built up their wealth through (colonial) exploitation of poorer countries; both between countries and within societies. Fourthly: we cannot lose sight of the systemic perspective, meaning a sustainable society globally and seen as a whole. And this systemic side, in turn, must satisfy the principles which are central for the young people: social justice and ecological sustainability, or in the words of my lectures: we don't accept power relations based on domination any longer (in terms of gender, class, ethnicity…), but instead use the transformation for a humane democratisation of our societies (see appendix).

However, as the young people emphasise again and again: in the short term, all it is about is awakening some kind of appropriate level of awareness of the crisis. And this is obstructed by the thousands of individual suggestions from scientists implying that we could actually leave everything as it is. Behind this problem lies a much bigger one: how can we reshape universities quickly in such a way that this systemically and socially relevant way of thinking is possible, one which combines our specialist knowledge from indi-

vidual disciplines and sheds new light on it? In their courses, too, all students from all subjects must receive a crash course on this most crucial existential knowledge. (Hundreds of FFF activists across the world are specialising in this question, and are working together during these months in a specially created chat concerned with "Climate Emergency Declarations" in schools and universities, aiming to incorporate these declarations into the curriculum (cedamia.org).) I have to get all of this established among my colleagues at the universities, I think to myself, as soon as I travel back from my homeland to Stockholm.

A strike and a farewell

And so, the summer comes to an end. The Mynttorget group stands on the Lausanne station square. Soon, the strike will take place to mark the end of the week; after all, it is Friday, and on Friday they strike, regardless of where they are. If only it was not around thirty degrees. The previous evening, they stood on the terrace of the Lausanne Cathedral, the Stockholm group, and looked across at the French Alps. We talked about the year which had passed and what would come. Some of them would soon be studying, perhaps philosophy or human geography, biology? What would they become? In the 70s and 80s, there were four subtle Swedish comedians who were philosophical and incredibly funny; they made films, were politically active and wrote songs. That wouldn't be such a bad life; they can agree on that. But we are also aware that the climate crisis looms like a dark omen over all such plans.

With these thoughts, the final demonstration begins in the centre of Lausanne. In the middle of the strike procession in the flock of French-speaking people, the Mynttorget activists hold up the banner with the Swedish slogan, "Skolstrejk för klimatet", and yell: "Enough empty words, they do nothing to help the climate," which rhymes better in Swedish. They give me a nudge. "Hey, you have to join in." That's true, I'm part of the Swedish crew, even here in Switzerland, where I can vote. In three months, the Swiss parliamentary elections will take place, and the media are talking about a possible Greta effect which could shift the balance of power after decades.

For a long time, they go on chanting like this in Swedish through the streets of Lausanne. Then Greta has to go back to the station, to the Hambacher Forest and continue the next day to Plymouth. From there, she will sail to New York. We stroll back through the empty lanes. A year has passed since the first strike

mornings, when everyone enjoyed the quiet and lent on the wall in Mynttorget; when journalists popped up from every different country – and often seemed to us like caricatures of their national stereotypes. The Dane with a Hawaiian shirt, gesticulating incomprehensibly with his arms; the orderly German who had planned and prepared the interview for weeks beforehand; the French journalists who just came walking over to try their luck…

Then the Twitter notifications about the Friday strikes start arriving, as they do every week in these months: hundreds of groups of young people can be seen in Afghanistan, Japan, several groups in Bangladesh, Kenya, Sierra Leone, the Philippines; there is no end to it. For a long time, I look at the picture of the young activists walking through the streets of Kabul, behind a huge Fridays For Future banner. The European activists here in Lausanne are part of a much stronger, global movement. And that movement is rising now.