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ENGLISH
EDITION



"Anything under
-50 is no fun"

Floris van den Berg, Arctic traveller

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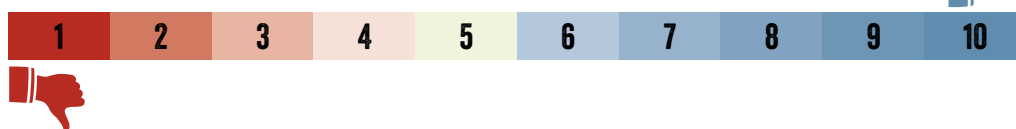
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Vox is the monthly independent magazine of Radboud University.

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Illustrations: Jeroen Murré

Design: Gloedcommunicatie, Nijmegen

Advertising: Bureau van Vliet
Telephone: 023-5714745, zandvoort@bureauvanvliet.com, advertentie@vox.ru.nl.

Print: MediaCenter Rotterdam

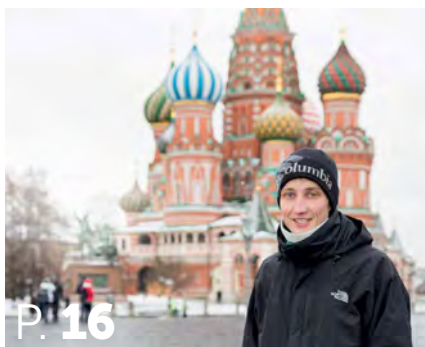
The next issue of Vox is due to appear on 26 January 2017.



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PHOTO COVER: FLORIS VAN DEN BERG

EDITORIAL

BRRRR

"The winter is coming," wrote poet Ilya Leonard Pfeiffer a few days after the American elections in the *NRC Handelsblad*. In his opinion the world will never be the same again. The future will tell whether we have entered a new era with Trump as one of the world's leaders. Certainly, some relations will change. In this Vox edition Russia expert Evert van der Zweerde and historian Bert Bomert predict that the Cold War will shift to Central Asia. Not everyone has negative connotations with the words 'cold' and 'winter'. Take Wim Hof: the Iceman comes to life when he dives into a hole in the ice. Fish grow bigger in cold than in warm water. Neuroscientist Anders Sandberg plans to have his body frozen after death. In this end-of-year special researchers investigate a variety of cold-related issues.

Physician Floris van den Berg tells us about his stay at the South Pole, where he keeps as a pet the only living animal he has seen in months, a caterpillar that he found in a lettuce. Students temporarily studying in places where temperatures drop to minus twenty share their tips for coping with the frost. And for those who can handle more shivering - we have the cold recipes of top restaurant *De Nieuwe Winkel*. Vox would like to wish you a warm 2017!

Annemarie Haverkamp
Editor-in-Chief Vox

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OUTSTANDING PHYSICS STUDENT MELISSA VAN BEEKVELD



Physics student Melissa van Beekveld not only won the Shell Graduation Prize for Physics, she also put research organisation CERN on the right

track. The European particle research organisation in Switzerland is launching new experiments to measure dark matter on the basis of Van Beekveld's findings. Believe it or not, the secondary school teachers of Van Beekveld (who was awarded a 9.5 for her thesis) felt that physics might be too difficult a subject for her.

DULY NOTED

“If ever I saw a job for populists in this country, it is with regard to the Christmas box. [...] Save the Christmas box!”

René ten Bos, In *Het Financieele Dagblad* of 27 November René ten Bos, Professor of Philosophy of Management Sciences, pleads for reinstating the Christmas box. Radboud University cancelled its Christmas box tradition four years ago. A bad idea, thinks Ten Bos.

IN THE NEWS

DAY-TO-DAY
NEWS:
VOXWEB.NL/
INTERNATIONAL

Doping research Nijmegen research is supposed to reduce the number of young top athletes who turn to forbidden substances. Developmental psychologist Tirza van Noorden is trying to recruit as many young athletes as possible for her study. “My goal is to invite athletes to think more about drug use and make them more aware of the consequences.” Van Noorden is conducting this study in collaboration with the Dutch Doping Authorities. Her work is financed by the world anti-doping agency WADA.

Test monkeys What will happen to the two rhesus monkeys of Radboud University? The Association for Animal Rights is concerned about their fate, now that Nijmegen plans to stop conducting medical research on primates by the end of 2017. “Over the past forty years, all the monkeys that were used as test animals were killed afterwards,” says Robert Molenaar, director of Animal Rights. The association collected 27,000 signatures from people who want the monkeys to have a dignified old age.

On 15 November Rector Han van Krieken officially received the signatures. According to the University, relocating the monkeys is a serious option.

Jihad expert Montasser AlDe'emeh has trouble staying out of the spotlight. The Radboud University external PhD candidate specialising in radicalising Muslim youths was convicted for falsifying documents in Belgium. The imposed sanction: a six-month conditional sentence. According to the Belgian court, AlDe'emeh produced a false document for the suspected Syria fighter Jawad O. AlDe'emeh brushes the accusation off as nonsense. “I had nothing to do with this document.” He is appealing against the court's decision.

Poverty index A poverty index for academic study programmes? Doesn't that sound strange? And yet, this is precisely what the *Keuzegids Universiteiten* published this year for the first time: a list of studies that lead to poverty. The relevant Nijmegen study programmes are not pleased about this



In Demos players are assigned a role: from artist to journalist to Prime Minister.



PHOTO: ARTUR ERANOSIAN

Montasser AlDe'emeh

kind of publicity and object to the Guide's methodology. Professor of Cultural Anthropology Toon van Meijl: "This just makes it more difficult for school pupils to decide on a study subject. Just choose what you're passionate about."

Fake transmission masts

Sending a quick WhatsApp or checking your itinerary. It seems innocent enough, but there are privacy risks: you can be tracked when you connect to a mobile network. Your sim card automatically connects to a local transmission mast. This mast may have been placed by a provider, but it may also have been placed by a criminal organisation. Computer scientist Fabian van den Broek has come up with an application that prevents your sim card from being tracked in this way. He will obtain his PhD based on a dissertation on this topic in December.

Crowdfunding After the restoration of the Maria van Gelre prayer book and the Phocas boathouse, the University has found a new project for a crowdfunding action. Demos is a role-playing game that teaches MBO (secondary vocational) pupils about democracy. The researchers hope to collect €7,500 to produce the game on a large scale. "In the game the players are given various roles, from citizen to Prime Minister," explains political philosopher Stefan Schevelier. "The game teaches you among other things that in a democracy you don't always get your own way."

MAGNET LAB BUILDS EXTRA LARGE COOLING TANK



PHOTO: VICTOR CLAESSEN

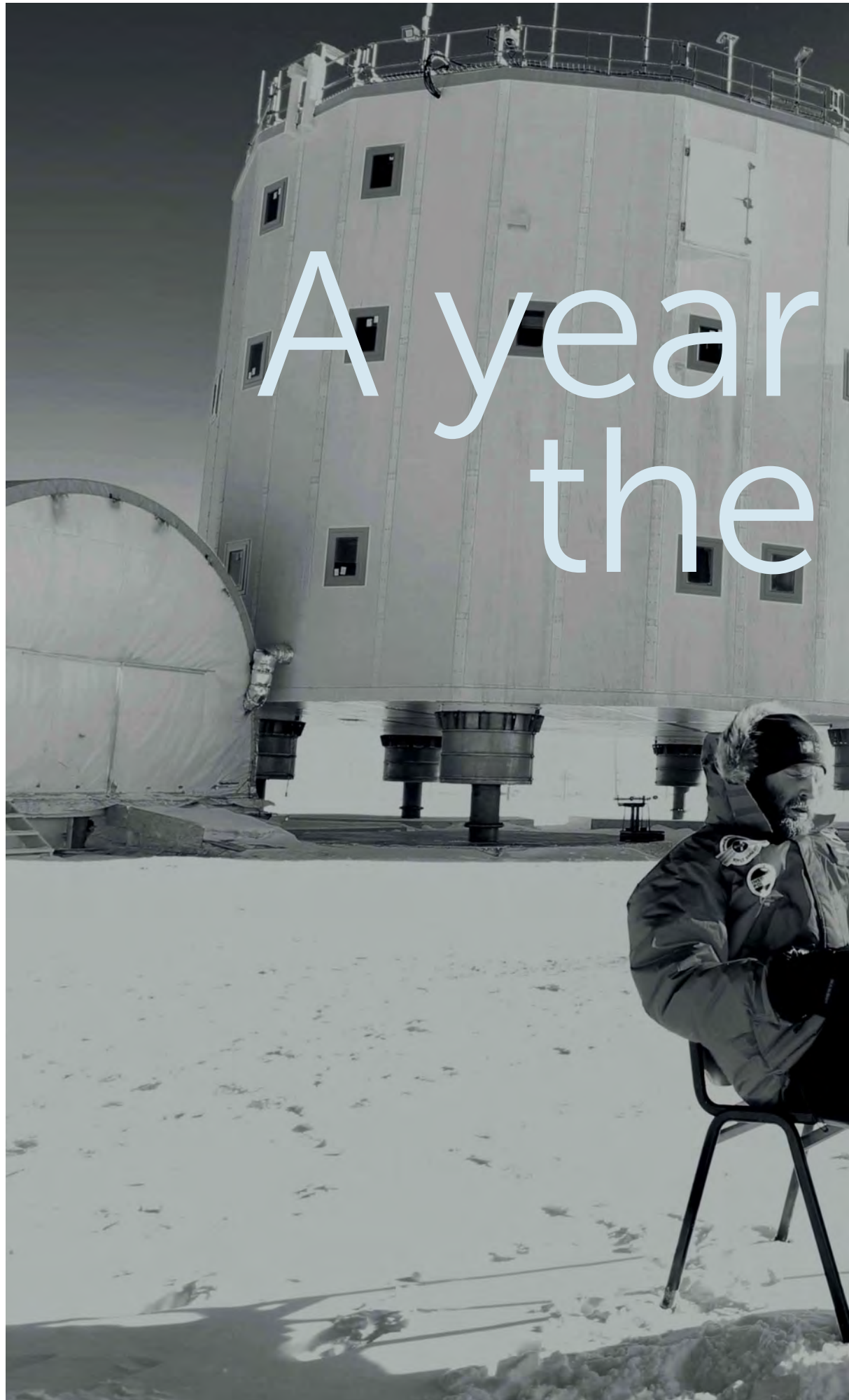
The High Field Magnet Laboratory (HFML) is acquiring a new underground cooling tank. The water in the tank is supposed to cool down the magnets used for lab research. The lab has five mega magnets, one of which can handle fields of up to 37.5 tesla: eight thousand times the power of an average fridge magnet. When used, these magnets get so hot that they heat up the water within an hour and a half. And without cold water the magnets overheat. It takes four hours or more to cool down the water in the tank. Not very convenient when you're in the middle of an experiment.

The more cooling water, the longer the magnets can stay on. With the new tank, this is three to four hours. The cooling tank will have a capacity of 2500 cubic metres, the volume of five large houses. Together with the old tank (1500 cubic metres), they will have much more cold water. "Basically our researchers will be able to conduct much longer experiments," says Martin van Breukelen of the HFML.

The high field magnet lab now sports a large concrete hole (21 metres diameter, 7 metres deep). The tank should be ready by February; 2.5 million litres of water will be poured down this hole. Cold water, of course, at 8 degrees to be precise. "Making the water colder than that requires so much power, it wouldn't be efficient", says Van Breukelen.

There is a place on Earth where for four months of the year the sun never rises and the temperature can drop to minus 80 degrees Celsius. It is here, on Antarctica, that Nijmegen GP Floris van den Berg has spent the past year. "Maybe I'll go to Mars next."

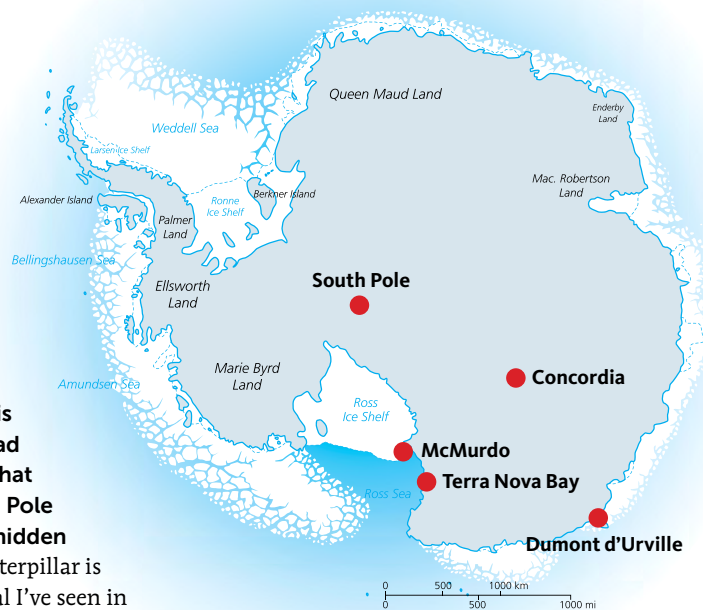
Text: Mathijs Noij
/ Photos: Floris van den Berg



A year the



at South Pole



For a week now Floris van den Berg has had a pet, a caterpillar that made its way to the Pole Station Concordia hidden in a lettuce. “The caterpillar is the first living animal I’ve seen in a year. I call him Bertrand, after the cook who found him.” The caterpillar now keeps Van den Berg company in his room. Every day the GP and researcher feeds him a lettuce leaf.

Van den Berg has managed to endure life at the South Pole for a year now – at the time of our Skype interview he still has seven weeks to go. With his webcam he gives me a glimpse of the South Pole: an empty white landscape stretching all the way to the horizon. Concordia is located about 1200 kilometres from the sea, so there are no penguins or polar bears here. All you can see is snow and blue sky.

“It’s minus thirty today – a warm day. It’s summer now. In the winter the temperature sometimes drops to minus eighty.” And when it’s windy, the wind chill makes it even colder still, says Van den Berg. “Sometimes it drops to below minus one hundred degrees.”

These are not temperatures for a nice walk outside. Just going outside is not an option, if only because of how long it takes to don three thick coats, a hat, ski goggles, and gloves. “Anything under minus fifty is no fun. You immediately notice if your goggles aren’t on right, or if your shawl doesn’t cover your face properly. After a few minutes your hands start to hurt. And within ten minutes your goggles freeze – I usually take a second pair along. There’s no way you can last longer than twenty minutes anyway.”

Mars

The European Space Agency ESA sent Van den Berg to Antarctica for a year to conduct research on the impact of extreme cold, thin air, and isolation on the people living there. Conditions there are somewhat similar to those on Mars, the planet where the space industry is so keen to send people. Van den Berg is staying on Concordia with six Frenchmen and five Italians, all of whom are doing scientific research or maintenance work at the Concordia station.

POLE STATION

Antarctica is the coldest continent on Earth and is situated around the geographical South Pole. The terms South Pole and Antarctica are often used interchangeably. The continent is larger than Europe and almost completely covered in ice: 90% of all the ice in the world is to be found on Antarctica.

Pole station Concordia was opened in 2005 in Dome C: the Eastern part of Antarctica. Concordia is therefore not located precisely on the Earth’s geographic South Pole. The station is used by French and Italian research programmes conducting research in fields such as climate and meteorology. Every year the space agency ESA sends one researcher to Concordia to study the psychological and physical effects of living there.

One of them is a cook. Only Van den Berg is here on behalf of the ESA.

One of the things he is studying is the effect of extreme isolation on the brain and the heart. The future crew of a voyage to Mars will have hardly anything to do for months on end, yet must remain sharp in case life and death decisions have to be made. Is the human brain still capable of carefully landing a spacecraft on the Red Planet after months of boredom? It is hoped that tests in a simulator and the work of the Nijmegen GP will provide answers to these kinds of questions.

What did you discover during the course of your research?

“From a scientific perspective there’s not much I can say about it yet. Every month I collect blood and urine samples from my eleven

co-residents and myself. I also measure our bone density at intervals using a CT scanner. All these data are collected and sent to universities to be studied and interpreted.

All the inhabitants of Concordia also wear special smartwatches that keep track of all kinds of data on their sleep patterns, heart rhythm and where they are located within the station. This data shows me that people tend to withdraw more in the winter. Of course, I’ve also seen with my own eyes how people who live here for an entire year behave. Winter is the hardest season, when the sun doesn’t rise. Not everyone copes with this well.”

What’s it like to live without sunlight for four months?

“I personally didn’t suffer from it too much, but it’s hard. The dark months seem to last forever. People withdraw; they no longer want to take part in joint activities. Everyone becomes sluggish: I often had the feeling that I was living with eleven zombies. As a GP I know the criteria for depression, and some people certainly fulfilled them. The funny thing is that you don’t actually sleep as well when it’s dark all day. You might sleep as long as before, but your energy level still drops. When the sun finally reappeared, it was as if we had all woken up from a long hibernation.”

How did you keep your spirits up?

“You have to keep motivating yourself. The team provides little support. We all have our own work to do. I managed by checking things off in my diary. I would think of everything I wanted to do in the coming week. If I completed a task I would give it a green tick, if I didn’t complete it a red cross. It’s really childish, but it worked. I just did my work and every day I exercised for an hour. Some people didn’t manage to keep this up – they spent more and more time in bed.”

Is it still fun to be with your colleagues?

“We eat together every day. When it’s somebody’s birthday we drink a glass of champagne. But we spent less time together as time went

A lot of snow had to be removed for planes to be able to land at Concordia again.

on. After dinner everybody just disappeared into their own room. There was often a lot of tension and conflict. About the silliest of things. Someone would complain every day about being cold, even though the inside temperature is regulated and the same every day. Some people thought people should not be allowed to eat more than one yoghurt per day. Others thought they should not have to clean. Those kinds of squabbles.”

Doesn't sound like fun.

“Well, you can hardly blame people. Some of them are simply unhappy and not suitable to be here. It's their employers who are to blame. Especially the Italians, half of that group were not properly screened beforehand. The Italian institute that does research here primarily looked at their CV. But you have to have a certain kind of personality to endure here. In the beginning we tried to function as a single group, but after a while the team split into two smaller groups.”

What character traits do you need to survive on Concordia?

“First of all you have to be able to self-reflect. There will be times when you feel unhappy, but you have to be able to admit this to yourself. Some people constantly project their frustrations on the station leader – as if it's all his fault. And you have to have a positive attitude. If a generator breaks down, you have to fix it yourself. There's nobody to come and fix it for you. When you come here, you leave your well-ordered life behind. It doesn't work if you stress out every time something breaks.”

New faces

Over the past year Van den Berg has left the station once to travel five kilometres to meet a land transport. As a rule, he does not go further than one or two kilometres – to the end of the runway. “Even then I take the scooter. You quickly run out of breath walking about here because the air is so thin.”

Today Van den Berg went outside for a while, to help carry provisions. For a week now planes have been able to land at Concordia again. This period lasts three months. The remaining nine



Skyping with ESA-colleague
André Kuipers





Globetrotter Floris van den Berg (33) is GP and expedition doctor. He studied Medicine in Nijmegen from 2001 to 2009. During that time he took photographs for ANS. When he is not travelling, Van den Berg lives in the Nijmegen Benedenstad. He keeps a blog at www.wanderlustdoc.com.

months the extreme cold and darkness make it impossible to reach Concordia. "If you don't catch the last summer flight you know for a fact that you'll be stuck here for nine months. No matter what happens."

The planes bring new faces and stories. This is really nice, admits Van den Berg, after nine months spent with the same group of people. The change is more than welcome. And the planes bring fresh fruit and vegetables. Van den Berg could not believe his luck on the day he got to bite into two fresh avocados. At the top of his wish list now: mangos. For the past months, the

menu has consisted of frozen and canned food.

What do you do when you're done with your work?

"I have a lot of free time here. I don't have to go shopping, I don't have to cook, and I don't have to visit friends on their birthdays. This leaves you with a lot of time on your hands. I spend this time reading and watching series. I also thought it was a good opportunity to learn a new language, so I got started on Russian."

You are going home in seven weeks. Are you looking forward to it?

"Yes, I'm really looking forward to it. Since



**"I OFTEN HAD
THE FEELING
THAT I WAS
LIVING WITH
ELEVEN
ZOMBIES"**

planes can land here again now the first crew members are already leaving. I'm jealous of them. But on the other hand I've still got enough to do. I have to hand over my work and complete some experiments.

When I get home, first of all I want to spend a few weeks with my girlfriend. I'm looking forward to simple things, like grocery shopping. After a few weeks' leave I'll start working as a GP again. I'm a real freelance doctor so I spend a lot of time away from home. Next year I'm going to Siberia as an expedition doctor."

In an earlier interview you said that you might want to become an astronaut. Do you still want to?

"Maybe. I enjoy working as a researcher in such extreme environments. But it's important to have a group of social people around you. For a future mission to Mars I would have to be away from home for two and a half years. That's a really long time. Also for the people you leave behind. I asked my girlfriend whether she might consider joining me, but she wasn't very enthusiastic." *



Still from the film *Realive* (2016) about Marc, who starts his second life after being defrosted.

A remedy against dying: Have yourself frozen

Those of us who refuse to see death as the end of life now have the option of having their body frozen after death. Neuroscientist Anders Sandberg is a cryonicist. He hopes to be revived one day - well, actually, just his head.

Text: Annemarie Haverkamp



ANDERS SANDBERG:
“The best thing would be if I could die in a slow and controlled way”

To pass away peacefully in your sleep. That is what most people wish for, since death itself is inevitable. For scientist Anders Sandberg (44), this scenario is a nightmare. It would mean that he would not be preserved so that he can be brought back to life in thirty years or so. For him a deadly disease would be much better news. “The best thing would be if I could die in a slow and controlled way, so that I would still have time to book a ticket to Arizona, where the company that will freeze me is located,” he tells the VOX reporter from his home in London.

Alcor is the name of the company where a stainless-steel tank, filled with liquid nitrogen, is waiting for him. There after his death he will quietly float for the coming decades in the hope that scientific advances will make it possible for him to be

revived one day and start a second life.

The Swedish Anders Sandberg is a neuroscientist and a cryonicist. Around his neck he wears a conspicuous pendant with the words: ‘*no embalming, no autopsy, see reverse for biostasis protocol*’. “Once I die, they have to treat me as soon as possible,” he explains via Skype. “My body must be cooled down and my bodily fluids replaced with a kind of antifreeze. This optimises the chances of success.”

He has had to pay a lot of money for the chance of life after death. Approximately eighty thousand dollars to be precise. Plus the annual subscription fee of seven hundred dollars. How likely he is to rise from the dead is not something he wants to speculate about. But ‘optimism’ is his middle name. “Life is fun. The world is becoming safer all the time, and people are getting healthier. The future is promising, and I want to be part of it.”

It will take quite some cooperation from technology for Sandberg to grace planet Earth with a second visit. Most cryonicists are likely to be ill (for example with cancer) by the time they surrender their bodies to the science of the future. They trust that by that time doctors will be able to repair damage to their cells.

Incidentally Sandberg has opted for the ‘cheap’ version: only his head will be frozen (preserving the entire body costs two hundred thousand dollars). He wants to preserve his brain, not the rest of his body. He assumes that his brain cells, complete with memories and a retained sense of identity, will one day be linked to a computer or be placed in a cloned body. His mother had to get used to the idea. “But in the end she thought it was just typical of me to want to do this,” says the neuroscientist. Sandberg is trying to convince his partner to become a cryonicist too



(“his main problem is the paper-work”). That way the two could meet in a next life. So ‘Till death do us part’ may never apply to the Swedish couple.

Anders Sandberg (1972) is a transhumanist, i.e. someone who wants to use technological advances to speed up evolution. The goal: to create a better kind of human. Transhumanists regard mortality and ageing as a biological limitation to be overcome. He is affiliated as a researcher to the Future of Humanity Institute of the University of Oxford.

-196 DEGREES

There are four companies worldwide that preserve people: three in the US and one in Russia. The largest ones are Alcor in Arizona and the Cryonics Institute (CI) in Michigan. Both companies have approximately 150 bodies in storage and jointly the two companies have about 1500 ‘members’ who hope to be welcomed one day. Human bodies must be cooled down slowly to avoid damage due to ice crystal formation. Bodily fluids are replaced as soon as possible after death by a kind of anti-freeze. This liquid hardens (just like glass) at low temperatures, but without causing damage. Cryonicists are kept in a large thermos flask (head down) at the temperature of liquid nitrogen: -196 degrees Celsius. In February 2016 cryonicists had reason to celebrate: Californian researchers succeeded in reviving the brain of a rabbit. The brain structure was not damaged. They hope that this has brought them one step closer to reviving people.

Why do animals grow so big in cold water?

One of the world’s largest fish, the basking shark, lives uncomfortably nearby: just around the corner in fact, off the English coast. Another huge animal, the giant squid, lives near the South Pole. And those are just two of the many ‘giant’ water animals living in cold places. In our relatively warm rivers an organism such as an amphipod might grow to one centimetre. His cousin in the cold deep sea is larger than a human hand. Researchers discovered a long time ago that animals grow larger in cold than in warm water. The question is: Why?

At his laboratory ecologist Wilco Verberk is searching for explanations in the cellars of the Huygens Building. There they have placed large water tanks with water isopods. The water temperature can easily be adjusted. And indeed Verberk’s research shows that isopods grow bigger in cold water. “And they remain smaller in warm water. But

if you give them extra oxygen, the warm water isopods will also grow faster and larger.” So oxygen is likely to play a key role. For a long time researchers thought that this growth spurt was due to the fact that cold water contains more oxygen, and animals in cold water have less need for oxygen. But that’s only half the story, as Verberk discovered. Apparently, cold water animals are better off being larger and sturdier.

Here is how it works: water animals, such as fish, have to obtain oxygen from the water, so they have to pump large quantities of water through their gills. But cold water is more viscous than warm water, which makes it more difficult to process. Large animals suffer less from this viscosity, and can therefore absorb oxygen more efficiently than smaller animals. “There are significant advantages to being large in cold water.”



Running through the snow in shorts, swimming under ice, or climbing the Himalaya bare-chested, it's all in a day's work for Wim Hof (57). The Iceman has made the cold his life's work.

Text: Martine Zuidweg /
Photos: Emmily van Oeveren

Wim Hof, alias the Iceman, enjoys old-fashioned cold winters. He bought himself a farm in South West Poland, where it freezes and snows every winter. "We have an ice-cold waterfall here, that's the main attraction," he tells us enthusiastically over the telephone. For Hof the waterfall is not just for watching. Every day he and his workshop participants exercise in the waterfall. "Running water gets really cold!"

His training centre is located on the outskirts of the village of Przesieka, at the foot of the Giant Mountains. There is an impressive mountain just around the corner. A six-day 'winter trip to Poland' costs €1599, but many are prepared to pay the price. They come from far and wide to Poland for Hof's 'cold experience', his breathing tips, and his meditation techniques. Next week he expects guests of 24 different nationalities, he tells us proudly.

'Sold out' it says next to the announcement on his website. And 'January trips soon available'. There is a lot of interest, but the number of sleeping places is limited, says Hof. "I can accommodate 66 people on my farm. Luckily people can also stay at the hotel further on in the village."

Shorts

For forty years now Hof has been wallowing in snow and ice. On his seventeenth birthday he took his first dip in the ice-covered Zuider Amstelkanaal in his hometown of Amsterdam. "That first time I only stayed in the water for a moment. But I immediately felt: this is it.

It was such an amazing, perfect feeling. I felt so incredibly good." The next day he returned, and again there was the same incredible feeling in the ice-cold water, like rapture. "I learned to breathe very deeply in the cold, to pump my body full of oxygen."

After a while

he was able to spend the whole winter night outdoors, meditating in his shorts.

Two decades after his first dip in the Zuider Amstelkanaal Hof got his nickname 'Iceman'. At age 39 he broke his first world record in Paris by spending half an hour in a glass tank filled with ice cubes. Twelve days later he managed a full hour in Hollywood. Three months later he swam fifty metres under the pole ice in Finland. He climbed Mount Everest in shorts, and spent seventy minutes standing up to his chin in a tank filled with ice cubes in the polar bear enclosure at the Ouwehands Zoo.

Sometimes he went too far in his need to perform. After a half marathon through the snow in Lapland, in temperatures between 20 and 30 degrees below zero, he ended up in hospital in Kolari with second-degree frostbite on his feet.

Johan Cruijff

But the large numbers of participants signing up for his workshops, he tells us from Poland, are not attracted by his world record attempts. "I think that the scientific basis has played a key role. The researchers of the Radboudumc deserve a Nobel Prize as far as I'm concerned!"



Sitting in a hole in the ice, that's why you do it



Do sheep get cold when you shear them?

The short answer is yes. "If you put a shorn sheep outside in winter, it will get cold," says sheep farmer Wilbert Verriet, who keeps approximately 120 sheep in the Ooijpolder. "You can't shear sheep in December and then send them out to graze. It's bad for their health and bad for the farmers – they need their animals to be fit too. When sheep are cold, they huddle close together with rounded backs. When they do that, you have to take them in." "You only have to shear sheep once a year. I usually do it in late February, three weeks before the lambs are born. Then I keep them inside for a few more weeks and they go out to graze in the spring freshly shorn."

Coldest day

The lowest temperature on record was measured in our country on 27 January 1942 in Winterswijk: an icy -27.4 degrees Celsius. February 1956 was overall even colder, so cold in fact that it killed several Dutch people. Incidentally all of Europe suffered: more than six hundred Europeans died that winter from snow or avalanches. This winter also had the coldest day: 16 February 1956, with an average temperature of -14.9 degrees in De Bilt. And while many people are disappointed every year when the Elfstedentocht fails once again to take place, in the coldest Dutch year on record you would have been wise to leave your skates at home. The Elfstedentocht of 1963 has gone on record as the most difficult race ever, with only 69 of the original 9,294 riders reaching the finish line.

Good news for those who can't stand the cold: according to the KNMI the Dutch winters are getting warmer. Winter temperatures averaged 2.4 degrees Celsius in the period 1951-1980, and 3.4 degrees thirty years later. Winter temperatures are expected to rise further by 1.1 to 2.7 degrees by 2050. Not particularly good news for polder inhabitants, as sea level rises together with the temperature. The winters are also getting wetter, with more frequent rain, hail and storms. So we end up with a cold shower anyway.

The impartiality-seeking physician researchers Hof refers to are shocked every time Hof, in his enthusiasm, makes such claims. Six years ago, when the Iceman first knocked on his door, Professor of Medicine Peter Pickkers already warned him: "Let's say your technique works; still, you shouldn't forget that you are the Johan Cruijff of meditation. Other people might never succeed."

In an experiment led by Pickkers in the Nijmegen hospital Hof managed to resist a dead pathogenic bacteria he was injected with. The Dutch Arthritis Foundation is funding a follow-up study: wouldn't it be amazing if arthritis patients could, just like Hof, control their own immune system? Twelve male test subjects, all of them students, were trained by Hof at his farm in Poland. The cherry on the cake? A bath in a hole in the ice. Back at the Radboudumc they too were injected with dead bacteria. And something seems indeed to have happened: the trained test subjects hardly show any symptoms of flu, while the control group lies shivering with fever. "We've proven that humans can consciously affect their autonomous nervous system and immune system," says an excited Pickkers to the camera.

But the medical world is sceptical: they fear he promises sick people too much. For many patients the Iceman is their last hope. Astronaut Wubbo Ockels – who was suffering from an advanced form of cancer – spent six days with Hof in Poland. And died fairly soon afterwards. "I can't cure people, only make them stronger," says Hof.

He has full confidence in the study being carried right now, he tells us from Poland. In this third experiment the physician researchers of the Radboudumc are looking at what precisely boosts the immune response: is it the breathing technique, the meditation, or the cold? The results of this study are due to be published in March.

The workshop participants in Poland don't seem to care; they keep on coming anyway. And Hof? Is he managing to keep a cool head with all this attention? "Ha ha. Yes, I am. I just take a dip in the waterfall, and everything is OK."



STUDYING WHILE IT IS MINUS 20 OUTSIDE

Nijmegen students and researchers in Sweden, Norway and Russia are experiencing *real* winters. The snow pitches for months on end and the sun sets at 2 pm. "Everybody advises me to wear wool."

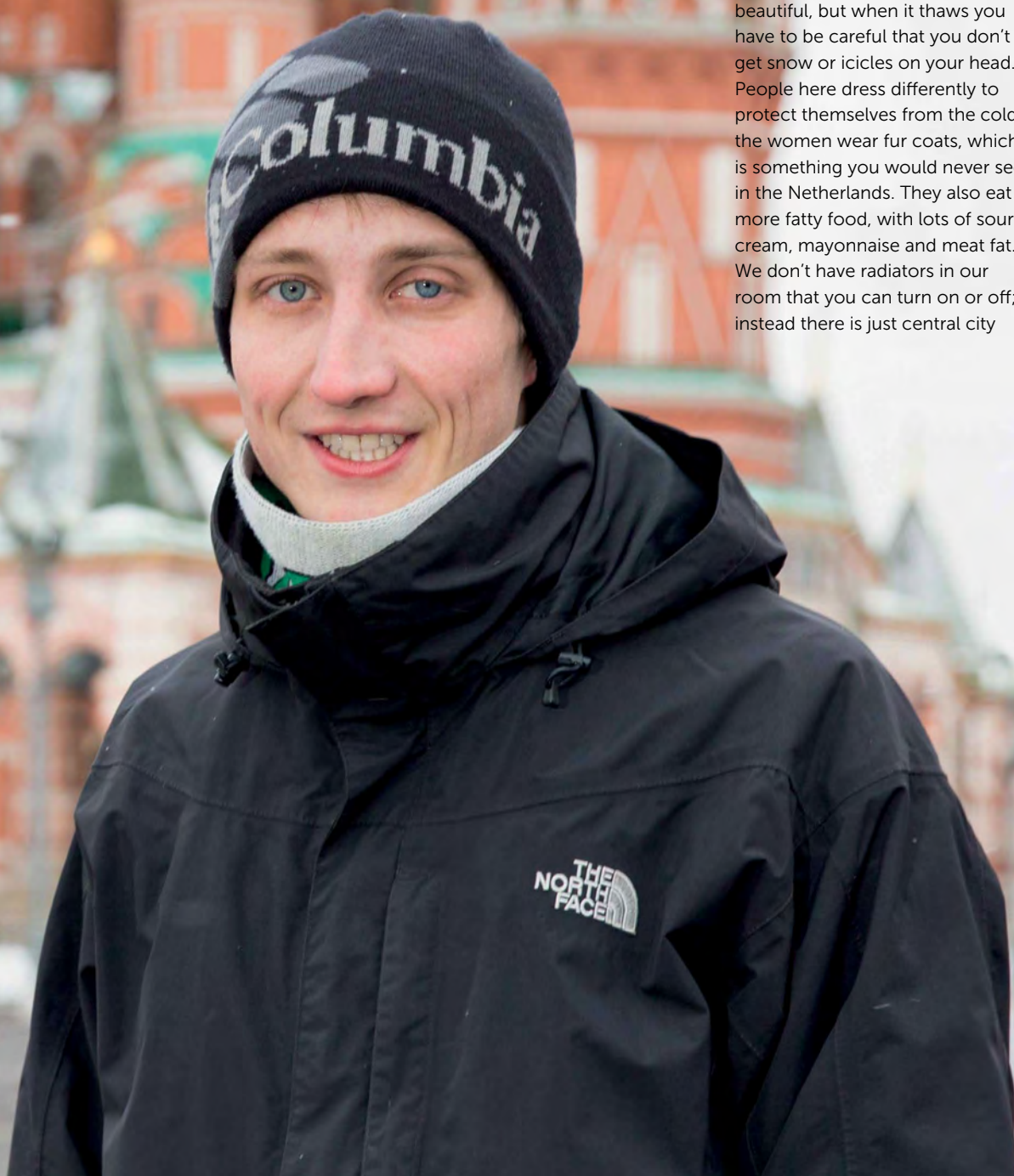
Text: Jozien Wijkhuijs

FELIX WAGNER (22): "IT'S 24 DEGREES IN MY ROOM"

**Student in Political Sciences at
the Higher School of Economics
in Moscow**

"I've been places where the wind chill factor was minus twenty, such as Lake Baikal and Saint Petersburg. In Moscow itself it's also very cold: the ground has been covered in snow since October. It makes the city more beautiful, but when it thaws you have to be careful that you don't get snow or icicles on your head. People here dress differently to protect themselves from the cold: the women wear fur coats, which is something you would never see in the Netherlands. They also eat more fatty food, with lots of sour cream, mayonnaise and meat fat. We don't have radiators in our room that you can turn on or off; instead there is just central city

heating that switches on and you just have to live with it. It gets turned on as soon as the weather remains cold for a few days. First we were really cold and then it got really hot. Russians like their houses hot: it's often 24 degrees in my room. In the Trans-Siberian Express, the temperature would sometimes reach 26 or 27 degrees and we would all sit there sweating in our shorts and T-shirts. Some travellers opened a window, so we ended up heating the outside air. It's not like in the Netherlands; public life doesn't stop because of the snow and ice. Entire armies of cleaners walk around shovelling snow, and the streets are covered in salt and other chemicals. I don't expect my shoes will last long here."





**MURIEL VAN
TEESELING (29):
"GOING
TO WORK IN
A SKI SUIT"**

**Postdoc in Microbial Cell Biology
at the University of Umeå in
Sweden**

"Today the sun rose at ten to nine and set at two in the afternoon. Later on in December it will get even worse. I do feel it, for instance in the fact that I have less energy and that I think my work day is nearly done at two in the afternoon. There are things you can do about it, such as using a daylight lamp. I now use one on a regular basis.

I've lived in Sweden for a year now. I conduct research on bacteria forms at the University of Umeå. The first few months I was here, I didn't see my garden once. The winters last half a year, and the snow stays on the ground for five months straight. On my way to work I cycled on a path that I assumed was a bicycle path, but I later found it was a park. These things are kind of strange.

I'm used to the cold now. We've already had temperatures below minus twenty, and I went outside when it was minus fifteen. You just have to wear proper clothing and not worry about what you look like on your bicycle. Swedes wear ski suits and goggles to work, and I do this too sometimes.

The city looks like you would expect a Swedish city to look: wooden houses painted different colours with white edges. It makes everything look even prettier around Christmas. People often have advent candles in their windows. The Christmas season starts with the Lucia celebration on 13 December, when girls take part in a procession wearing candles on their heads, and people eat *lussekater*, saffron buns."

A woman with blonde hair, wearing a grey beret, glasses, a blue patterned scarf, a dark navy blue double-breasted peacoat with gold buttons, blue jeans, and tan leather boots, stands on a pile of snow. She is looking off to the side. In the background, a large, modern stadium with a curved, metallic roof is visible under a clear blue sky. The stadium's architecture is unique, with a prominent vertical structure. The scene is set in a snowy, mountainous area.

LEONOOR BORGESIUŠ (27): "I'M A REAL WINTER PERSON"

Master's student in History at the University of Oslo

"Here in Oslo we've had a lot of snow and frost already. I'm a real winter person. I skated for a long time, and I don't like hot weather: it makes me cranky. Children here learn that there is no such thing as bad weather, only bad clothing. Everybody advises me to wear wool. My lecturer, an elderly Norwegian lady who bakes buns for her students, already insisted back in September that I should buy myself some wool underwear at the sports shop, because otherwise I might get sick when it starts freezing. Everybody here wears those typical Norwegian jumpers. The most famous kind, with blue and red, are called *mariusgenser*. These jumpers cost almost two hundred euros, but

they last a lifetime. The father of a friend of mine here has been wearing his for forty years. I bought myself a cheaper version. My lecturer could tell by the pattern and colours that it came from Trondheim. When I get on the metro here, especially at the weekend, I see lots of people in ski suits heading for the mountains. Norwegians do a lot of alpine and cross-country skiing. There are even lit slopes, so that they can go cross-country skiing after work. I find the dark at this time of year harder to cope with than in the lighter months, but there are things you can do about it. I just take vitamin D pills and then everything is OK."



THE COLD WAR IS SHIFTING

Donald Trump as the new American President holds the promise of improved relations between Russia and the US. A new potentially explosive Cold War seems to have been averted. But relations could still get icy between China and Russia and Russia and the Baltic States, predict historians Bert Bomert and Russia expert Evert van der Zweerde.

Text: Annemarie Haverkamp / **Illustration:** Jeroen Murré

The fact that the American elections were won not by Hillary Clinton but by Donald Trump is good news for those who feared a new Cold War. The businessman is more popular with Vladimir Putin. What's more, the two machos are cut from similar cloth. They understand each other. Clinton's reproachful human rights attitude combined with her tendency to take military action would probably only have further deteriorated already strained relations between the two world powers.

Historian Bert Bomert works for CICAM, the Centre for International Conflict Analysis & Management. Yes, he says, he was surprised to hear that 'The Donald' would soon be moving into the White House. But he is not overly upset about it. "In his campaign Trump said that

"TRUMP IS THE TYPE TO SAY: LET'S SIT DOWN AND **DIVIDE THE WORLD** AMONG OURSELVES"

America will no longer be jumping head first into strange foreign adventures," says Bomert. "Clinton is considered to be much more interventionistic and she would probably have intervened in Iraq, Libya, Syria and Afghanistan. Now that Trump has said 'We are done with all that', the world may become slightly more stable in the sense that America will stop playing police officer all over the place."

And let Russia have its way? Is that really good news? If you live in Western Europe, yes, according to the historian. But if you happen to be born in Ukraine or the Baltic States (Estonia, Latvia and Lithuania), the future seems a lot less safe with Putin as your next-door neighbour.

But first let us come back to this threat of a new Cold War. Threat is an understatement, says Bomert. "According to some, the Cold War has already been going on for some years." In 2014, when Putin sent his troops to Crimea and declared that the strategically important peninsula belonged to Russia, Europe and America reacted with economic sanctions. Completely inappropriate behaviour according to Putin, who was already very displeased with the eastward expansion of the European Union and NATO's ambitions in the former Soviet sphere of influence. According to the Russians, NATO had violated earlier agreements to remain at a distance. So Putin started flexing his muscles. Not so long ago by ostentatiously sailing an advanced aircraft carrier through the Channel on its way to Syria. In Syria, the Russians are steadily building their base along the coastline.

Alliances

If you define Cold War as serious tensions between two world powers, then we have had one for some time now. If you define it as an arms race with the danger of a nuclear conflict between continents that would change our planet for good – as in the cold years between 1949 and 1991 (see box) – then there is no such war at present, according to Bomert. A comparison with the Cold War between communist Russia and capitalist America does not apply because the world can no longer be divided into two territorially defined ideologies with accompanying alliances.

In the twentieth century we still had the Warsaw Pact, a treaty between the Soviet Union and countries such as Poland, the Czech Republic, and Hungary. The Soviet Union included the Baltic States, as well as Belarus and

Kazakhstan. Together this represented a massive territory. On the other side there was the NATO block, with America, Europe and Turkey. And Europe was not as divided on its course of action as it is now.

No wonder that citizens within and outside the two alliances followed with dread the game of chess between the two world leaders. If the Cold War had turned into a Hot War, with neutron bombs and other weapons, it would have led to a disaster of unprecedented proportions. Potential 'collective suicide', says Bomert. With the collapse of the Soviet Union in 1991, this threat came to an end. Moscow had other priorities; it had lost a big chunk of its territory and therefore its power over the citizens of former Soviet Republics. Economically, the country entered a period of recession. And with the collapse of the Communist system, Russians experienced hunger again for the first time in a long while. It was only when Putin came to power at the start of the 21st century that the country began to recover. An increase in welfare brought an increase in self-confidence. Or, to use Bomert's words: "Russia became more assertive."

Its irritation with its old enemy also returned. Russia did not want to be dominated by America. It still had a strong army and economic interests in various parts of the world. Russia asserted itself in Syria, and in Ukraine. The tensions in these regions between the cautious Barack Obama and Vladimir Putin might have quickly escalated under Hillary Clinton. NATO had already started gathering armed forces in Poland and the Baltic States. Trump has a different attitude - he has let Europe know that when it comes to defence, it will have to take care of itself. Apparently he wants to focus on problems closer to home. *'America first.'*

A drink and a good cigar

The Western European citizen can sleep in peace, it seems. Threatening noises from the sky are probably just low-flying jet fighters on exercise missions. But let's switch to the perspective of a Ukrainian citizen: the country is preparing for a new invasion by the Russians. The big question is: Will the West just look on? Will the Americans send troops if Putin invades the Baltic States – full-fledged NATO members? Based on Trump's statements, probably not. This would also mean the end of NATO's

credibility, since the alliance is based on the principle that attacking a NATO country is the same as attacking all of NATO, including powerful America.

According to Russia expert and philosopher Evert van der Zweerde, if Trump does anything, it will be this: "He will make deals, because he is a businessman. I think he is much more pragmatic than Obama or Clinton and he will simply say to Putin: 'If you want Ukraine, you can have it.'" What Trump and Putin have in common is that they primarily focus on economic interests, which for both of them are closely linked to personal business interests – both gentlemen are at the head of an enormous global trading emporium. "Trump is probably not at all interested in endless negotiations and diplomatic relations. I think he is more like Churchill than Roosevelt. He's the type to say: 'Let's sit down and divide the world among ourselves – you get this part, I'll take that part. We'll be done in half an hour and then we can enjoy a drink and a good cigar'."

Putin is familiar with this way of doing business, predicts Van der Zweerde. "Birds of a feather flock together. Those two, as Immanuel Kant would say, are hewn from the same piece of crooked wood."

Ukraine is not powerful enough to defend itself and will succumb. Van der Zweerde fears that history might repeat itself. "Russian has never tried to conquer the world, but it has a tradition of creating buffer zones to increase its sphere of influence. This offers economic advantages, because it can put pressure on its neighbours to provide it with goods." It's bad news for the Baltic States, Belarus and the Caucasus, thinks Van der Zweerde. "There's a good book by Timothy Snyder, called Bloodlands. Snyder talks about the land between Finland and the Black Sea, where the soil is drenched in blood. This is where the main uprisings of the twentieth century took place. In Ukraine, a guerrilla war raged until the late 1950s. The Ukrainians were resisting the new Soviet regime. This could happen again."

Once again: Western Europeans might follow all these developments with concern, but they have nothing to fear directly from Russia. Or from America, now that Clinton has lost. Not even from the contrasts between the two. Evert van der Zweerde expects that Putin will turn his attention East. A major bone of contention in the coming decades according to the Russia expert is Central Asia. "China is busy reviving the Silk Route and building a railway line from Uzbekistan to Turkey. This route runs right through Russia's backyard, an area that used to belong to the former Soviet Union. Putin on the other hand wants to create a Eurasian community. He is trying to draw the Central Asian Soviet Republics closer: Tajikistan, Turkmenistan, Kazakhstan, Uzbekistan and Kirghizia. He wants to curb China's influence."

Because anno 2016 China has become a major econo-

THE COLD WAR BETWEEN THE US AND THE SOVIET UNION

The Cold War started in the wake of World War II. Germany and Berlin were divided into different zones. The Allies were given authority over the western part, and the Soviet Union the eastern part. The contrast between Capitalism and Communism grew. In 1949 the Soviet Union founded the German Democratic Republic, known as the GDR (East Germany). Twelve years later, the Berlin Wall was constructed between East and West, a symbol of the Iron Curtain. Anyone trying to flee from the East to the 'free' West was shot. To reinforce their military position, Western Europe and the US founded NATO in 1949. The Soviet Union and the Eastern European countries united under the Warsaw Pact. Both camps developed nuclear weapons. The Cold War reached a crisis point during the

Cuban Crisis of 1962. Russia had secretly placed nuclear weapons on the island. When the Americans found out, they were in uproar. The US set up a blockade around Cuba. Together, Presidents Khrushchev and Kennedy were able to avert the imminent nuclear war. In the 1970s the West was once again in terror of nuclear weapons when nuclear powers started modernising their arms. The next decade was marked by protests against nuclear weapons. In the Netherlands too, people took to the streets en *masse*. 'Better a Russian in the kitchen than a rocket in the garden,' sang Dutch protest singer Armand ('Liever een Rus in de keuken dan een raket in de tuin'). The Cold War ended with the fall of the Berlin Wall in 1989 and the collapse of the Soviet Union two years later.

mic and military player on the world stage. The question is how this country, with its enormous army, will respond to Russia's movements. And what will Turkey, led by the dictatorial Erdogan, do? Turkey too has a strong army and is closely related to Central Asia. "Central Asia is where you can expect things to get messy in the coming decades," says Van der Zweerde, "but maybe there will just be a Cold War between Russia and China."

All far away from Europe, which is not to say that we can look forward to a period of peace, what with Brexit and the permanent threat of terrorist attacks. Bert Bomert and Evert van der Zweerde both expect the Islamic State to ultimately succumb under a coalition between Russia and America. The Caliphate might be defeated, but the ideology will not be eradicated. The IS fighters who left France, Belgium, Germany and the Netherlands to fight will return home. "These are the most serious threats at the moment in our own region," says Bomert.

Van der Zweerde: "This is an even greater problem for Russia. So many Russians from the Islamic regions defected to IS – 7% of the Russian population is officially Muslim, but the real percentage is much higher than this. Think of people from Dagestan and Chechnya. Russia has had to deal with more attacks in the past ten years than Europe."

Maybe a reason for Russia and Europe to join forces. *

